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AND EDUCATION  
OF THE REPUBLIC OF CROATIA

# Table of contents

## ACCOUNTING

<b>INTERNAL AUDIT FUNCTION IN CORPORATE GOVERNANCE CODES: ANALYSIS OF CURRENT PROVISIONS IN CEE COUNTRIES .....</b>	<b>1</b>
Ivana BARIŠIĆ	
Ana NOVAK	
Lajoš ŽAGER	
<b>COMPARISON OF COST CALCULATION METHODS IN CROATIAN AND GERMAN HEALTHCARE SYSTEM .....</b>	<b>19</b>
Sanja BROZ TOMINAC	
Denis JAKOPIČEK	
<b>DIGITALIZATION OF ACCOUNTING AND TAX PROCESSES – CHALLENGES AND OPPORTUNITIES FOR ACCOUNTANTS AND TAX ADMINISTRATORS .....</b>	<b>30</b>
Nikolina DEČMAN	
Sanja SEVER MALIŠ	
Ivana MAMIĆ SAČER	
<b>NON-FINANCIAL REPORTING IMPLEMENTATION – A CROATIAN-GERMAN CONTEMPLATION .....</b>	<b>41</b>
Gunther MEEH-BUNSE	
Ana REP	
Stefan SCHOMAKER	
<b>ANALYSIS OF THE IFRSs’ APPLICATION IN NORTH AND SOUTH AMERICAN COUNTRIES....</b>	<b>58</b>
Ivana PAVIĆ	
<b>SERVICE QUALITY AS A DIMENSION OF AUDIT QUALITY .....</b>	<b>69</b>
Sanja SEVER MALIŠ	
Mateja BROZOVIĆ	
<b>ACCOUNTING COST VS FUNCTION COST .....</b>	<b>84</b>
Zsuzsanna SZELES	
<b>THE ROLE OF CASH FLOW STATEMENT IN THE REGULATORY DOCUMENTS AND PRACTICES OF THE REPUBLIC OF LATVIA AND OTHER STATES .....</b>	<b>93</b>
Džeina ŠTEINBERGA	
Ruta ŠNEIDERE	
<b>ECONOMICS.....</b>	<b>102</b>
<b>MANAGING CONFLICT OF INTEREST TO PROMOTE PUBLIC SECTOR INTEGRITY .....</b>	<b>103</b>
Ana ANDABAKA	
Ivana KOVAČ	
<b>SYNCHRONIZATION AND SPILLOVERS OF BUSINESS CYCLES IN THE EUROPEAN UNION .</b>	<b>113</b>
Vladimir ARČABIĆ	
Tihana ŠKRINJARIĆ	
<b>REGIONAL HEALTH AND ECONOMY IN RELATION TO HEALTH CONSCIOUSNESS .....</b>	<b>128</b>
Beatrix FARAGÓ	
Ágnes KOVÁCSNÉ TÓTH	
Csaba KONCZOS	
Zsófia PÁPAI	
Zsolt SZAKÁLY	
<b>MULTILATERAL GOVERNANCE OF FOREIGN DIRECT INVESTMENTS IN THE DIGITAL ECONOMY .....</b>	<b>136</b>
Sanja FRANC	
Zoran WITTINE	
Antea BARIŠIĆ	

<b>ALLOWED REVENUE OF NETWORK SYSTEM OPERATORS IN THE CROATIAN ENERGY SECTOR AND INTEREST RATE CHANGES ON THE CROATIAN CAPITAL MARKET .....</b>	<b>146</b>
Tomislav GELO	
Željko VRBAN	
Dalibor PUDIĆ	
<b>IMPACT OF CHINESE “BELT AND ROAD INITIATIVE” STRATEGY IN CENTRAL AND EASTERN EUROPE (CEE), INSTITUTIONAL INFLUENCE ON SOCIAL INTERACTION GOES BEYOND ECONOMIC ACTIVITIES .....</b>	<b>161</b>
Martina GOTTWALD BELINIC	
<b>SHIFT TO THE EAST? HUNGARY’S FOREIGN POLICY IN CENTRAL ASIA UNDER VIKTOR ORBÁN .....</b>	<b>174</b>
Edmond JAEGER	
<b>DEMAND ELASTICITY IMPACT ON AIRLINE’S PROFITABILITY ON ZAGREB-DUBROVNIK AIRLINE ROUTE .....</b>	<b>186</b>
Ivan JAJIĆ	
Tomislav HERCEG	
<b>WHEN LINDER MEETS GRAVITY MODEL: THE CASE OF USA, GERMANY AND JAPAN.....</b>	<b>194</b>
Hrvoje JOŠIĆ	
Maja BAŠIĆ	
<b>ENHANCING REGIONAL COOPERATION THROUGH CUSTOMS DIGITALIZATION IN CEFTA - 2006 .....</b>	<b>208</b>
Ljuben KOCEV	
Irena KIKERKOVA	
Katerina TOSHEVSKA TRPCHEVSKA	
Elena MAKREVSKA DISOSKA	
<b>TEMPORARY EMPLOYMENT: WORRISOME MYTH OR THE REALITY OF THE EU LABOUR MARKET?.....</b>	<b>217</b>
Alka OBADIĆ	
Viktor VILJEVAC	
<b>TERRITORIAL DIFFERENCES IN COMPANIES' FINANCIAL PERFORMANCE IN THE CASE OF HUNGARIAN LARGE CITIES .....</b>	<b>230</b>
Veronika POREISZ	
<b>AN ANALYSIS OF OFFICIALLY PUBLISHED STATISTICS PERTAINING TO POWER SYSTEM GREENIFICATION .....</b>	<b>242</b>
Dubravko SABOLIĆ	
<b>EFFECTS OF THE CONCENTRATION OF MANUFACTURING INDUSTRY ON CROATIAN REGIONAL GROWTH .....</b>	<b>255</b>
Tomislav SEKUR	
Katarina MAROŠEVIĆ	
<b>IMPACT OF TEXTILE INDUSTRY ON THE ENVIRONMENT AS A CONSEQUENCE OF THE DEVELOPMENT OF SOCIAL NETWORKS .....</b>	<b>269</b>
Jurica ŠIMURINA	
Nora MUSTAĆ	
<b>GROSS FIXED CAPITAL FORMATION AND PRODUCTIVITY IN SOUTHEASTERN EUROPE ..</b>	<b>277</b>
Predrag TRPESKI	
Marijana CVETANOSKA	
<b>UNEMPLOYMENT DISTRIBUTION BY EDUCATION LEVEL IN EUROPEAN COUNTRIES: DOES THE LOCATION MATTERS? .....</b>	<b>288</b>
Berislav ŽMUK	
<b>EDUCATION .....</b>	<b>299</b>
<b>WILL THE LIKERT SCALE PASS THE FINAL EXAM? A NOVEL, FUZZY-NUMBER-BASED EVALUATION OF SUPERVISORS’ PERFORMANCE.....</b>	<b>300</b>
Gábor ÁRVA	
Zsuzsanna Eszter TÓTH	

Tamás JÓNÁS Vivien SURMAN	
<b>IDENTIFICATION OF CRITICAL TO SERVICE QUALITY ATTRIBUTES IN HIGHER EDUCATION WITH STUDENT INVOLVEMENT .....</b>	<b>317</b>
Bálint BEDZSULA Zsuzsanna Eszter TÓTH	
<b>THE ENTREPRENEURIAL PROPENSITY OF STUDENTS FOR STARTING A NEW BUSINESS AND THEIR KEY FACTORS .....</b>	<b>331</b>
Ján DVORSKÝ Zora PETRÁKOVÁ	
<b>UNIVERSITY-INDUSTRY COLLABORATION: A CASE STUDY OF AUTOMOTIVE INDUSTRY IN SOUTH AFRICA .....</b>	<b>341</b>
Igor A. GORLACH	
<b>ARE INNOVATIVE STUDENTS BETTER ACHIEVING? STUDY OF UNIVERSITY LEVEL STUDENTS .....</b>	<b>348</b>
Amila PILAV – VELIC Jasmina SELIMOVIC Hatidza JAHIC	
<b>FINANCE .....</b>	<b>359</b>
<b>FINANCIAL CYCLES AND PERFORMANCE OF THE CREDIT-TO-GDP GAP INDICATOR IN CESEE AND WESTERN EUROPEAN COUNTRIES .....</b>	<b>360</b>
Kristína BOJĀRE	
<b>THE PERFORMANCE OF THE TAYLOR RULE IN EMERGING ECONOMIES .....</b>	<b>373</b>
Trung Thành BÙI Gábor Dávid KISS	
<b>HOW TO ESTIMATE THE SIZE OF CAROUSEL FRAUD? .....</b>	<b>385</b>
Eliška ČEJKOVÁ Hana ZÍDKOVÁ	
<b>INVESTMENT PORTFOLIO OF UCITS EQUITY FUNDS IN THE REPUBLIC OF CROATIA .....</b>	<b>399</b>
Fran GALETIĆ Magdalena NOVAK	
<b>THE DYNAMICS OF MARKET POWER ON THE BANKING MARKET IN CROATIA.....</b>	<b>419</b>
Fran GALETIĆ Tena OBRADOVIĆ	
<b>AUSTRALIAN FIRMS UPTAKE OF TRADE CREDIT AS EXTERNAL FINANCING DURING THE GLOBAL FINANCIAL CRISIS OF 2008 AND FOR THE FOLLOWING 10 YEARS .....</b>	<b>439</b>
David Ross HAYSOM John ZELEZNIKOW	
<b>AN QUALITATIVE APPROACH TO DETERMINE THE IMPACT OF STICKY COSTS IN THE MANUFACTURING INDUSTRY .....</b>	<b>452</b>
Wolfram IRSA	
<b>DIVIDEND SMOOTHING ASYMMETRY ON ZAGREB STOCK EXCHANGE .....</b>	<b>461</b>
Marko MILETIĆ Tomislava PAVIĆ KRAMARIĆ Josip VISKOVIĆ	
<b>FREE CASH FLOW AS DIVIDEND DETERMINANT .....</b>	<b>468</b>
Petar PEPUR Ivan PERONJA Stjepan LAČA	
<b>TESTING FOR INTERCONNECTEDNESS AS A PROXY FOR SYSTEMIC RISK IN UNLISTED BANKING MARKET.....</b>	<b>474</b>
Kristine PETROVSKA	

<b>MONETARY STABILITY VERSUS FINANCIAL STABILITY, A LEGAL TENDER BETWEEN SCYLLA AND CHARYBDIS .....</b>	<b>485</b>
Mario PINES	
<b>IMPLEMENTATION OF BASEL AND SOLVENCY MODEL IN BANKS AND INSURANCE COMPANIES – CASE OF BOSNIA AND HERZEGOVINA .....</b>	<b>499</b>
Jasmina SELIMOVIC	
Tea MIOKOVIC	
<b>ASSET RISK EVALUATION USING SHAPLEY VALUE .....</b>	<b>509</b>
Marina SLIŠKOVIĆ	
Tihana ŠKRINJARIĆ	
<b>INNOVATIVE STRUCTURES OF COVERED BONDS: PERSPECTIVE IN FINANCING SMALL- AND MEDIUM-SIZED ENTERPRISES.....</b>	<b>519</b>
Branka TUŠKAN	
Alen STOJANOVIĆ	
<b>IT .....</b>	<b>531</b>
<b>APPLICATIONS OF THE SMART CITIES CONCEPT .....</b>	<b>532</b>
Markéta CHALOUPKOVÁ	
Martina JAŇUROVÁ	
<b>BUSINESS PROCESS MANAGEMENT SOFTWARE FUNCTIONALITY ANALYSIS: SUPPORTING SOCIAL COMPUTING AND DIGITAL TRANSFORMATION .....</b>	<b>547</b>
Dalia SUŠA VUGEC	
Ana-Marija STJEPIĆ	
Luka SUŠAC	
<b>MANAGEMENT .....</b>	<b>559</b>
<b>ATTRIBUTION PROCESS, ERRORS AND CONFLICT MANAGEMENT STYLES.....</b>	<b>560</b>
Filip BELOŠEVIĆ	
Ana ALEKSIĆ	
<b>RESEARCHING IMPACT OF COST SYSTEM GENESIS ON PROFITABILITY LEVEL OF MANUFACTURING ENTERPRISES .....</b>	<b>570</b>
Amra GADŽO	
Srđan LALIĆ	
<b>THE INCIDENCE OF FLEXIBLE WORKING ARRANGEMENTS – DOES CONTEXT MATTER? .....</b>	<b>584</b>
Maja KLINDZIC	
Matija MARIC	
<b>ECONOMY OF COMMUNION, HUMAN CAPITAL AND SUSTAINABLE DEVELOPMENT OF FAMILY BUSINESS .....</b>	<b>595</b>
Dragan KOPECKI	
Lukša LULIĆ	
<b>OPERATIONS STRATEGY: LITERATURE REVIEW AND CASE STUDY OF IKEA .....</b>	<b>606</b>
Kristian KREMER	
<b>EVALUATING CRISIS MANAGEMENT PLANS: EMPIRICAL STUDY OF CROATIAN MEDIUM AND LARGE SIZED FIRMS .....</b>	<b>617</b>
Davor LABAŠ	
<b>CORPORATE GOVERNANCE IN THE POST-TRANSITION ECONOMIES .....</b>	<b>628</b>
Matej LAHOVNIK	
<b>THE ROLE OF THE IN-DEPTH INTERVIEW IN THE IMPLEMENTATION OF THE MANAGEMENT BY MISSIONS (MBM) MODEL.....</b>	<b>635</b>
Ivan MALBAŠIĆ	
Nikolina POSARIĆ	
Iva GREGUREC	

<b>AN INQUIRY INTO CAUSES AND CONSEQUENCES OF THE REORGANIZATION OF LOCAL PUBLIC ENTERPRISES IN SLOVENIA .....</b>	<b>645</b>
Veronika PETKOVŠEK	
Primož PEVCIN	
<b>THE IMPACT OF R&amp;D EXPENDITURES ON CORPORATE PERFORMANCE: THE CASE OF WORLD R&amp;D COMPANIES.....</b>	<b>658</b>
Dejan RAVŠELJ	
Aleksander ARISTOVNIK	
<b>AN ANALYSIS OF FACTORS AFFECTING THE MUSIC INDUSTRY'S COMPETITIVE ADVANTAGE IN THE DIGITAL ERA.....</b>	<b>668</b>
Pannawit SANITNARATHORN	
<b>FAMILY BACKGROUND AND FINANCIAL LITERACY AS A PREREQUISITE FOR ENTREPRENEURIAL INTENTION OF UNIVERSITY STUDENTS .....</b>	<b>678</b>
Roman ŠUBIĆ	
Ivana NAČINOVIĆ BRAJE	
Karla ŽAGI	
<b>MARKETING .....</b>	<b>689</b>
<b>CONSUMER SATISFACTION ON ONLINE SERVICES IN KOSOVO .....</b>	<b>690</b>
Besim BEQAJ	
Arta KRASNIQI	
Valon BEQAJ	
<b>CHOOSING BETWEEN OFFLINE AND ONLINE CHANNELS IN CASE OF FMCG CATEGORIES .....</b>	<b>705</b>
Otilia DÖRNYEI	
<b>PDCA-BASED IMPROVEMENT OF A SERVICE QUALITY FRAMEWORK ON COURSE LEVEL.....</b>	<b>711</b>
Vivien SURMAN	
Zsuzsanna ESZTER TÓTH	
<b>WHAT ABOUT YOUNG GENERATION? THEIR PURCHASE INTENTION TOWARDS REMANUFACTURED WHITE GOODS .....</b>	<b>730</b>
Jana ŠVECOVÁ	
<b>FEAR APPEAL INTENSITY IN ROAD SAFETY ADVERTISEMENTS AND STRENGTH OF NEGATIVE EMOTIONS .....</b>	<b>743</b>
Radica VELJANOVA	
ANITA CIUNOVA-SHULESKA	
<b>TOURISM .....</b>	<b>753</b>
<b>SOCIODEMOGRAPHIC CHARACTERISTICS OF MODERN TOURISTS AS A DETERMINING FACTOR IN THE NEED RECOGNITION FOR TRAVEL .....</b>	<b>754</b>
Petra BARIŠIĆ	
Marin STRMOTA	
Krešimir IVANDA	
<b>ACHIEVING SUSTAINABILITY OF A DESTINATION THROUGH CREATIVE TOURISM? A CASE STUDY FROM CROATIA .....</b>	<b>770</b>
Vanja KRAJINOVIĆ	
<b>INFLUENCE OF SPORT TOURISM ON SUSTAINABLE TOURISM DEVELOPMENT IN EASTERN CROATIA.....</b>	<b>784</b>
Vanja KRAJINOVIĆ	
Danijela FERJANIĆ HODAK	

<b>CAN EVALUATION TRIGGER CHANGE? THE CASE OF THE INTERIM EVALUATION OF THE CROATIAN TOURISM DEVELOPMENT STRATEGY .....</b>	<b>800</b>
Sanja MALEKOVIĆ	
Sanja TIŠMA	
Daniela Angelina JELINČIĆ	
Ana-Maria BOROMISA	
<b>THE IMPORTANCE OF GASTRONOMY AND CULINARY PRACTICES IN CREATION OF INTANGIBLE CULTURAL HERITAGE-BASED TOURISM PRODUCTS .....</b>	<b>815</b>
Ingeborg MATEČIĆ	
Petra BARIŠIĆ	
<b>INFLUENCE OF HOTEL ACCOMMODATION CAPACITY ON AVERAGE SPEND PER TOURIST .....</b>	<b>827</b>
Zoran NAJDANOVIĆ	
Natalia TUTEK	
Marijana ŽIRAVAC MLADENOVIĆ	
<b>THE ROLE OF GLAMPING IN DEVELOPMENT OF CAMPING TOURISM OFFER – POSSIBILITIES AND FUTURE PROSPECTS IN THE REPUBLIC OF CROATIA.....</b>	<b>834</b>
Ivana PETRUŠA	
Antonio VLAHOV	
<b>POLICY OF ATTRACTION VS. POLICY OF REJECTION OF FOREIGN DIRECT INVESTMENTS IN TOURISM: COMPARATIVE ANALYSIS OF CROATIA AND SLOVENIA.....</b>	<b>845</b>
Zoran VAUPOT	
Maja NIKŠIĆ-RADIĆ	
<b>List of participants .....</b>	<b>859</b>



# ACCOUNTING

# INTERNAL AUDIT FUNCTION IN CORPORATE GOVERNANCE CODES: ANALYSIS OF CURRENT PROVISIONS IN CEE COUNTRIES

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## Abstract

*In a modern business environment, corporate governance mechanisms that enable governing structures to implement external demands for greater accountability, transparency and control have an increasingly important role. In this context, internal audit function (IAF) is an inevitable corporate governance mechanism and the necessity for its regulation arises from that role. Regulating an IAF presence, defining its core responsibilities and providing normative assumptions of its activity is necessary in order to empower its position in the company. Emphasizing the importance of an IAF as an internal corporate governance mechanism can also be achieved throughout the country corporate governance codes that provide guidelines for good practices for the listed companies. A review of pertinent literature identified a research gap on regulatory requirements regarding IAF in corporate governance codes, especially in the context of Central and Eastern European (CEE) countries. We consider this to be particularly relevant due to the recent trends regarding the revision of the country corporate governance codes in Europe. Therefore, this paper provides comparative analysis of the current provisions of an IAF in corporate governance codes on a sample of CEE countries. This can be considered as a contribution to previous findings, within the context of existing literature, since this paper undertakes analysis of certain topics that are considered important for the regulation of an IAF. For better understanding of an IAF regulation in country corporate governance codes, we operationalized corporate governance code provisions through five categories. These being: existence of the Definition of internal auditing (or its scope), requirements regarding IAF independence (defined through reporting lines and Board responsibilities regarding an IAF), conformance with International Standards for the Professional Practice of Internal Auditing (International Professional Practices Framework), an IAF right to unrestricted information access and provision for establishing an IAF. Based on the results of the comparative analysis of corporate governance codes provisions of an IAF on a sample of CEECs, it can be concluded that they do not represent guidelines of "best" practice when it comes to an IAF regulation. They take into account necessary IAF attributes that are important for its establishment, but not the ones that are also important for its functioning.*

**Keywords:** *internal audit, corporate governance, codes of corporate governance, CEECs*

**JEL classification:** G34, M42

## **Introduction**

According to the Institute of Internal Auditors, “internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes”. Cadbury Committee (The Committee on the Financial Aspects of Corporate Governance, 1992, point 4. 39) considers the establishment of the IAF, as a “good practice” for the companies and regular monitoring of the key controls and procedures provided by the IAF is an “integral part of a company's system of internal control and helps to ensure its effectiveness”. In 2006, the Institute of Internal Auditors issued a Position statement on the role of internal audit in corporate governance, which emphasized its dual role: by providing support to management and monitoring the system for the effective corporate governance. An IAF provides reasonable assurance on the effectiveness of risk management, control and governance processes which positions it as a “key cornerstone” underlying the effective management of the company (The Institute of Internal Auditors, 2006). In addition, Gramling and Hermanson (2006) consider the role of an IAF in corporate governance as a source of information, assurance and advice for the Board and the Audit Committee.

According to OECD (2015, p. 13) “effective corporate governance requires a sound legal, regulatory and institutional framework that market participants can rely on when they establish their private contractual relations”. Duh (2017, p. 57) summarizes them into “hard law (i.e. mandatory requirements, hard regulations and regulatory approach) or soft law (i.e. voluntary recommendations, soft regulations and market-based approach)”. Corporate governance codes or sometimes referred to as “codes of good governance” (Aguilera & Cuervo - Cazorra, 2009) “are forms of soft regulation or the so-called soft law” (Duh, 2017, p. 58). European Confederation of the Institute of Internal Auditors (ECIIA) conducted research in 2012, and found that the 90% of the EU member states through the provisions of the country corporate governance codes require or recommend the establishment of an IAF for the listed companies (ECIIA, 2012). According to Page and Spira (2004), internal auditors generally consider these corporate governance guidelines for good practice to be very useful especially regarding the enhancement of the perception of IAF in the company.

Provisions of an IAF in the country corporate governance codes undoubtedly exist, however, we consider it important to analyse the extent of an IAF regulation. We support the standpoint of the professional associations (e.g. ECIIA, 2012; THEIIA, 2015; THEIIA, 2017; IIASA, 2017) on the necessary presence of certain topics related to regulating an IAF such as defining the scope of work, independence and defined reporting lines, compliance with International Standards for the Professional Practice of Internal Auditing (Standards) or requirement for establishment of an IAF. Considering that “governance (cg) codes play a crucial role in improving corporate governance practices” (Nowland 2008 as cited in Djokic & Duh, 2016, p. 339) and that they “attempt to improve the firm’s corporate governance overall” (Aguilera & Cuervo-Cazorra, 2004, p.420) it is important that an IAF is present in the provisions of

corporate governance codes. Also, if the implementation of the corporate governance code provisions is considered a way of improving corporate governance as a whole, and internal audit is an undoubtedly part of it, we consider that the extent of an IAF regulation in the corporate governance codes is an important issue.

Since the review of recent literature indicated the research gap as well as the knowledge gap in the context of regulating the IAF in corporate governance codes, we conducted comparative analysis of corporate governance codes of CEE countries. Previous research in the European context were focused on the analysis of the Audit Committee responsibility regarding an IAF (ECIIA, 2012) or the existence of certain features of an IAF (Bostan & Grosu 2010; Zaharia et al. 2014) and others were conducted within the different geographic areas (ACIIA, 2015 in the Asian geographic area).

This paper is divided into several sections. Following the introduction section, the literature review on the role of internal audit function in corporate governance is carried out along with the analysis of the internal audit regulatory framework and guidelines. In the following section, we conducted comparative analysis on the provisions of corporate governance codes on the internal audit of CEE countries and the final section of the paper highlights the most important research findings as well as the possible and future research directions.

## **Theoretical framework**

### *The role of internal audit function in the corporate governance*

According to the G20 / OECD Principles of Corporate Governance (OECD, 2015, p. 7) “corporate governance involves a set of relationships between a company's management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the goals of the company are set, and the means of achieving those goals and monitoring performance are determined”. There is a common understanding that “there is no single model of good corporate governance”. However, “some common elements underlie good corporate governance” on which OECD (2015, p.10) built globally accepted Principles of Corporate Governance (G20 / OECD). Principles were revised in 2015 and were the source of many recent corporate governance codes changes on a national level. Principles also define the role of an IAF, which is more emphasized in relation to the previous version of the Principles from 2004. Principles from 2004 state that “it is an important function of the Board to oversee the internal control systems covering financial reporting and the use of corporate assets and to guard against abusive related party transactions. These functions *are often* assigned to the internal auditor which should maintain direct access to the Board” (OECD, 2004, p.49). On the other hand, the new revised Principles (OECD, 2015 p.49) include the risk management in Board responsibilities, which has had an impact on the IAF role in discharging Board responsibilities with provision that “*normally*, this includes the establishment of an internal audit system directly reporting to the board. It is considered good practice for the internal auditors to report to an independent audit committee of the board or an equivalent body... “. The provision from Principles in (2004) “the Audit Committee or an equivalent body *is often* specified as providing oversight of the internal audit” (OECD, 2004, p.55) was changed in 2015. It is emphasized that “the Audit Committee or an equivalent body *should* provide oversight of the internal audit” (OECD, 2015, p.43), which clearly supports internal audit effectiveness and independence.

Internal audit, external audit and the Audit Committee (Anderson et al.1993; Blue Ribbon Committee 1999; Institute of Internal Auditors 2003, as cited in Coram, et al., 2007, p.6; The

Committee on Financial Aspects of Corporate Governance, 1992), are mechanisms of corporate governance commonly present in academic discussions in the field of accounting and auditing. Cohen et al. (2004, p. 88) describes the dynamic interaction between these mechanisms as a “corporate governance mosaic”. Gramling et al (2004) consider that corporate governance is based on four cornerstones: internal audit, external audit, Audit Committee and management, and IAF contributes to the corporate governance through relationships with these other participants. Goodwin- Stewart & Kent (2006, p. 85) in this context, analyse the importance of an IAF in providing assistance to the senior management. Internal audit is an important factor in achieving effective governance and is considered “an integral part of the mosaic of corporate governance” (Cohen, et al., 2004, p. 35), or “a continuous contributor to corporate governance practices in the private and public sectors worldwide” (D 'Silva & Ridley, 2007, p. 114). Mihret & Grant (2017, p. 709) used Foulcauldian perspectives to explain the role of an IAF in the corporate governance and “argued that internal auditing can be conceptualized as: ex post assurance about the execution of economic activities within management’s preconceived frameworks and ex ante advisory services that enhance the rationality of economic activities and the accompanying controls of the organization.”

In 2013 The IIA issued a Position paper entitled “*The three lines of defense and effective risk management and control*” (an updated version is planned for release in 2019), which positioned an IAF as a third line of defense regarding risks, the first one being “management control” and second “various risk control and compliance oversight functions established by management” (p.2). The “*Three lines of defense*” model clearly defines responsibilities of all participants in the company's risk management process and requires a clear division of duties, but also co-operation in order to achieve more effective actions. This model has become an almost globally accepted framework for positioning internal audit and provides guidelines for many international regulatory bodies, (see Basel Committee on Banking Supervision, 2015; International Association of Insurance Supervisors, 2018). In 2015 the internationally respected The Group of Thirty (G30) in its report on corporate governance challenges of the world's largest banks, provided crucial recommendations for banks, regulators and supervisors and emphasized the importance of the “*Three lines of defense*” model. They consider that “banks should ensure that the third line of defense is robust, has operational independence, is suitably staffed, and has a clear mandate to examine adherence to standards. This responsibility is usually discharged by internal audit functions that have freedom to examine any businesses or units within the bank (...)” (p.54) and “the third line should have full autonomy to report to the Board and Executive Management as it deems necessary” (p.54).

#### *Internal audit regulatory framework and guidelines*

Regulation of an IAF is most important in the financial and public sector. In that context, international regulatory bodies, such as the Bank for International Settlements, have a great impact with its regulatory guidelines on the national legislation of the financial sector. The Basel Committee on Banking Supervision, which operates under the Bank for International Settlements, has a longstanding practice of promoting reliable corporate governance for banks with its guidelines *Principles for Enhancing Corporate Governance*, whose last revised version was issued in 2015. The guidelines, based on OECD Principles, define the role of an IAF “charged with the third line of defense” (p.5), emphasizing the importance of its independence and relationship with the Audit Committee.

The insurance sector, as an important component of the financial system, has similar

regulatory provisions related to an IAF. International Association of Insurance Supervisors (IAIS), an institution that sets global standards in the insurance sector, in 2018 issued a revised *Insurance core principles and methodology*. The principles emphasize the role of an IAF as an independent assurance provider “on the quality and effectiveness of the internal controls system” and consider it as a third line of defense (International Association of Insurance Supervisors, 2018, p.69-70). Prerequisites that enable an IAF independence and its efficient engagement are also ensured through the right for unrestricted access to information. In that context, the insurers are obliged (under provision “should”) to enable proper reporting lines in such a way that control functions (IAF is one of them) can effectively operate and perform their roles and “this includes direct access to the Board or the relevant Board committee” (point. 8.3.9, p.72). The laws at the national level, where the legislation defines the necessary attributes and prerequisites related to the IAF establishment (Deloitte, 2011, p. 45), mostly regulate an IAF in the public sector.

Some scholars (Coram, et al., 2008; Archambeault et al., 2008; Hermanson et al., 2008) consider that great importance in the post Sarbanes-Oxley era has been placed right upon the IAF as one of the key corporate governance mechanisms that should be part of a solution for problems regarding control, reporting and ethics in the company. Emphasizing the importance of the IAF is also reflected in the corporate governance codes that provide guidelines of good practices for the companies. Corporate Governance Codes “are a set of ‘best practice’ recommendations regarding the behavior and structure of the board of directors of a firm” (Aguilera & Cuervo-Cazurra, 2004, p.419). O'Shea (2005, as cited in Aguilera & Cuervo-Cazurra, 2009) summarizes most code recommendations on the “six governance practices explicitly or implicitly: (1) a balance of executive and nonexecutive directors, such as independent non-executive directors; (2) a clear division of responsibilities between the chairman and the chief executive officer; (3) the need for timely and quality information provided to the board; (4) formal and transparent procedures for the appointment of new directors; (5) balanced and understandable financial reporting; and (6) maintenance of a sound system of internal control.” They can be issued by the stock exchange, government or the various association (managerial, professional ...) or in collaboration of previously mentioned (Aguilera & Cuervo-Cazurra 2004, p.423). Their provisions are mainly voluntary and in some countries, there is a “comply or explain” mandatory disclosure requirement for “quoted firms to justify the reasons for noncompliance with the country code of good governance in their annual reports (Aguilera & Cuervo-Cazurra, 2004, p.421).

One of the most significant and most famous examples of internal audit regulation in this context is the New York Stock Exchange (NYSE). In the Corporate governance rules since 2003, as a consequence of the SOX, it has been required that “each listed company must have an internal audit function” (NYSE, 2003, p. 13) with the responsibility to “provide management and the Audit Committee with ongoing assessments of the company’s risk management processes and system of internal control” (NYSE, 2003, p.13). This represented a major breakthrough in the regulation of internal audit, since it was the first time that this function was incorporated in the regulation that applied to private companies not just for financial institutions (Paape, 2007, p.82). Business environment is characterized by a constant change, which also has an impact on the regulation. In 2015 The Institute of Internal Auditors (Global) in its response to the American Securities and Exchange Commission (SEC) stated “we believe the current environment is conducive for the SEC to require internal audit functions for all publicly traded companies” (THEIIA, 2015). They required establishing internal audit function in all listed companies in the United States “as a matter of basic good governance” (THEIIA, 2015). Additionally, according to a research conducted in 2015

(ASIIA, 2015) on Asian stock exchange perspectives on internal audit, (included ten ACIIA member institutes: Australia, Indonesia, China, Malaysia, Chinese Taiwan, Philippines, Hong Kong, China, Singapore, India, Thailand), “seven of the ten respondents have a mandate from their respective stock exchange / governments that require listed companies to have an Internal Audit function, whether in-house or outsourced” (p.3).

Regarding an IAF regulatory requirements in Europe, there are no recent findings, but according to the research conducted in 2012 (ECIIA, 2012, p.1), more than 90% of the EU member states through the provisions of the country codes of corporate governance” require or recommend the presence of an internal audit function for listed companies” (p.1). Research also revealed that an IAF was “generally compulsory within the financial institution sector” (p.1) and “41% of the codes consider an internal audit function mandatory, 48% of the codes strongly recommend the presence of the internal audit function and 11% of the codes do not have a specific requirement or recommendation about internal audit”. ECIIA (2012) also analysed Corporate governance codes in order to determine degree of transposition of Article 41 of the *Directive 2006/43/EC on statutory audits of annual accounts and consolidated accounts* into analysed national corporate governance codes. According to Article 41 “(...) the Audit Committee shall, inter alia: monitor the effectiveness of the company's internal control, internal audit where applicable, and risk management systems “and this was the legislative act that directly connected Audit Committee, internal control, risk management and internal audit function for the first time in EU legislation. In 2011, Bantelon et al. conducted a research on implementation of this Directive and concluded, “implementation varies considerably from one jurisdiction to another, and there is no consensus regarding the internal audit function and other internal governance mechanisms within Europe”. According to Zaharia et al (2013), based on analysis of corporate governance codes of some EU countries (Romania, France, Germany, Italy and Netherlands), there are mainly “lack of clear provisions” or “insufficient provisions” on the role of internal audit, its position and the organization of the internal audit process (exception was only Italy).

It can be concluded that the regulation of an IAF, previously more focused on certain sectors (such as financial and public), nowadays becomes increasingly important in the context of all companies, regardless the sector, especially for the listed companies which is particularly relevant for the subject of this paper. In this context, we consider that within the provisions of corporate governance codes there should be certain areas of an IAF regulation. Along with its support to internal audit position in accordance with the model “*Three lines of defense*” ECIIA (2012, p.1-2) provided the following recommendations regarding internal audit regulation: “Internal audit must be properly structured in order to achieve the objective of global assurance, organizational independence, exclusion of limitations to its scope of review, full and unrestricted access to any information and person necessary to achieve its objective, the adoption of the IIA's International Standards for the Professional Practice of Internal Auditing, including internal and external quality assessment reviews. In addition, regulatory references 'to the auditor' should be specific as to whether they are referring to external audit or internal audit”. They should be universally applicable, regardless the industry or the specific sector.

In the IIA (2015) opinion, internal audit function in order to be effective should be in conformance with the Standards. Conformance should be disclosed and monitored as part of audit committee's oversight of internal audit, which should be “part of any mandating disclosure regime”. The IIA (2017) supports internal audit independence by promoting “independent auditing structure in which the chief audit executive reports directly to the

independent directors of the reporting company”. They consider that in case a company does not establish an IAF they “must explain reasons for this” (THEIIA, 2017) and they encourage “comply or explain approach” (THEIIA, 2015). The IIA (IIASA, 2017) suggests four main topics regarding internal audit that legislatures and regulators should take into consideration. Those are: defining Internal auditing, promoting internal audit independence and objectivity in accordance with Standards, conformance with International Professional Practices Framework (IPPF) and delegating oversight responsibilities regarding internal audit to the audit committee “to whom the chief audit executive reports functionally” (p.3).

Providing the Definition of Internal auditing or otherwise defining its scope of work, demand for independent IAF, in accordance with the Standards (IPPF) and the requirement for establishing IAF are most commonly referred topics within the guidelines for the regulation of IAF. These are also categories taken into consideration in the next section of the paper when conducting an analysis on the extent of an IAF regulation within the country corporate governance codes of CEE countries. In addition, we consider it important for the right on unrestricted access to information to be a part of the provisions of IAF (aligned with ECIIA, 2012) since it represents one of the prerequisites that enable effective functioning of an IAF. In fact, management support and acceptance is of utmost importance for the efficient and effective functioning of the IAF and management needs to demonstrate that support through enabling an IAF access to all needed information. This can also be seen as one of the prerequisites for achieving the internal audit independence and full potential.

## **Analysis of current provisions in corporate governance codes regarding internal audit function in CEE countries**

### ***Research sample and methodology***

We conducted an analysis of the provisions of corporate governance codes based on “comply or explain” principle on the sample of 14 Central and Eastern European Countries (CEECs as defined by OECD), presented in Table 1, comprising: Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, Slovenia, Bosnia and Herzegovina, Montenegro, Macedonia and the three Baltic States: Estonia, Latvia and Lithuania. Kosovo was not considered in the analysis because no country corporate code was found in English. The common attribute of the selected countries is that these are the countries in transition (some of them have just undergone a transition period) which clearly separates them from most developed European countries. That contributes to the research efforts regarding the convergence practice of an IAF as part of the convergence practice of corporate governance, which has been in the focus of scientific research in recent years. Convergence of functions refers to conducting similar processes, procedures or following same rules in order to achieve the same goal, i.e. convergence of practices. Convergence of internal audit practice can be understood as the tendency of the IAF to accept the best practice despite differences in institutional, organizational and management systems (Sarens & Abdolmohammadi, 2011, p.105). The best internal audit practice can be implemented as part of the effective corporate governance, and some authors believe that improving internal audit practice in developing countries derives from the necessity to improve corporate governance. While an IAF has had a relatively long period of time of growth in developed countries, growth of internal audit in less developed countries happened in a shorter period of time in order to catch up with the practice of more developed countries (Sarens & Abdolhammadi, 2011, p.105).



**Table 1. CEE countries and applicable corporate governance codes**

Country	EU member	Title/ Adopted/developed
<b>Bosnia and Herzegovina</b>	Non-EU	Standards of Corporate Governance Banja Luka, 2011.
<b>Bulgaria</b>	EU member since 2007	Bulgarian National Code for Corporate Governance, 2012
<b>Croatia</b>	EU member since 2013	Corporate Governance Code, 2010
<b>Czech Republic</b>	EU member since 2004	Corporate Governance Code based on the OECD Principles, 2004
<b>Estonia</b>	EU member since 2004	Corporate Governance Recommendations, 2005
<b>Hungary</b>	EU member since 2004	Corporate Governance Recommendations, 2018
<b>Latvia</b>	EU member since 2004	Principles of Corporate Governance and Recommendations on their Implementation, 2010
<b>Lithuania</b>	EU member since 2004	The Corporate Governance Code for the Companies Listed on NASDAQ OMX Vilnius, 2019
<b>Macedonia</b>	Non-EU	Corporate Governance Code for Companies Listed on the Macedonian Stock Exchange, 2006
<b>Montenegro</b>	Non-EU	Corporate Governance Code in Montenegro, 2009
<b>Poland</b>	EU member since 2004	Best Practice for GPW Listed Companies 2016
<b>Romania</b>	EU member since 2007	Code of Corporate Governance, 2015
<b>Slovakia</b>	EU member since 2004	Corporate Governance Code for Slovakia, 2016
<b>Slovenia</b>	EU member since 2004	Slovenian Corporate Governance Code For Listed Companies, 2016

In order to further understand the extent of an IAF regulation in country corporate governance codes of CEE countries, we operationalized provisions of an IAF through five categories: existence of Definition of internal auditing (or its scope), requirement for IAF independence (defined through reporting lines and Board responsibilities regarding internal audit function), conformance of IAF with International Standards for the Professional Practice of Internal Auditing (International Professional Practices Framework), an IAF right for unrestricted information access and requirements for establishing an IAF.

### **Research results**

Provisions of the country corporate governance codes used for analysis are presented in tables 4-8, in the Appendix.

The Definition of internal auditing is not present in any corporate governance code. Internal audit scope is present in more than half of all analyzed codes (57,14%, 8 countries). Scope is aligned with the Definition, although there is less emphasis on IAF responsibilities regarding risk management in relation to IAF responsibilities regarding internal controls. There was no Definition or scope in the country codes of Bulgaria, Estonia, Hungary, Latvia, Lithuania and Macedonia. The positioning of an IAF in accordance with the *Three lines of defense* model was not observed in any of the analyzed codes. Provisions of some country codes explain internal audit responsibility under the responsibility of the Board, e.g. "if the function is separated in the company" (Slovakia) or "in case these functions are assigned to the internal auditor or other ...." (Poland).

In most of the analyzed codes (71. 43%, 10 countries), there are provisions that enable prerequisites for an IAF independence. It is provided by direct reporting to the Supervisory Board or Audit Committee (Croatia, Hungary, Macedonia, Romania, Slovakia) or by the responsibility of the Audit Committee in preparing recommendations for the selection, appointment, reappointment and dismissal of the chief audit executive (Croatia). In the case of

the Romanian Corporate Governance Code, there is an explicit requirement for dual reporting of an IAF, administrative directly to the CEO and functionally to the Board via Audit Committee. In some other codes, the Audit Committee has responsibility for overseeing the effectiveness of internal audit. Concerning this, it is possible to conclude on the adoption of Article 41 of the *Directive 2006/43/EC on statutory audits of annual accounts and consolidated accounts*, regarding the responsibilities of the Audit Committee in respect to the oversight of the effectiveness of an IAF. It is a provision in the case of eight analyzed country codes (Croatia, Czech Republic, Macedonia, Montenegro, Poland, Romania, Slovenia, Slovakia) and two of them are not EU members (Macedonia and Montenegro). It can also be concluded that the requirements of the aforementioned Directive have largely formed the relationship between the internal audit and the Audit Committee, since Standards explicitly require dual reporting. This is the reason why the prerequisites for achieving an IAF independence in some country codes are assumed to arise from Audit Committee and IAF relationship.

International Professional Practices Framework and Standards, as its mandatory part, provide guidelines for organizing and conducting internal audits. According to research, internal auditors in practice consider compliance with Standards to be a key factor for IAF in creating added value (Chen & Lin, 2011, p. 5), while the IIA considers them one of the key topics in regulating internal audit. Based on the analysis, it can be concluded that the compliance of an IAF with the Standards (IPPF) is included in the provisions of the corporate governance code in only three countries (Romania and Slovenia) while in Poland compliance with the Standards is required only for internal audit independence. In case of Romania, there is also a provision that the Audit Committee should monitor this conformance.

Provision of an IAF unrestricted access to information is present in two country codes (Bosnia and Herzegovina, Hungary).

Provision on the establishment of the internal audit function is present in seven countries' (Croatia, Czech Republic, Hungary, Montenegro, Poland, Romania and Slovakia) corporate governance codes, which means that half of the analyzed CEE countries do not require listed companies to establish internal audit function or recommend its establishment. This is in contrast to global trends where an IAF is considered an indispensable corporate governance mechanism, and requirements for IAF establishment are included in country code provisions. In Hungarian corporate governance code there is a provision "companies *should* create an independent internal audit function", while in other countries if there is no IAF, the Audit Committee (or Supervisory Board) should regularly review the need for its existence. In addition, Romanian corporate governance code requires establishment of separate internal audit department (or retaining independent third party entity) for carrying internal audits but there is no explicit provision that all listed companies must have an IAF. On the other hand, Bosnia and Herzegovina corporate governance code does not have a provision regarding IAF establishment but it is emphasized that "natural person who is employed in the company and who has necessary qualifications provided for in the company's acts shall perform internal audits" (Banja Luka Stock Exchange, 2011, p. 30). In Croatia, for example, there is a provision that "in the case where internal audit is carried out by freelancers, they may not, in any case, be independent external auditors of the company" (The Zagreb Stock Exchange, 2010, p. 20). In the case of Bulgaria there are ambiguities regarding the terms "internal audit system" and "internal control system". It is stated that one of the tasks of the Board of directors, in a one-tire system, is to "establish the corporate risk management policy as well as control and ensure the proper functioning of the company's internal audit and risk

management systems” (NCGC, 2012, p. 5). In a two-tier system “the Management Board should develop and adopt the company's risk management and internal audit policy. It must implement the company's internal audit and risk management systems and report on implementation to the Supervisory Board.” (NCGC, 2012, p. 8). These Board responsibilities generally relate to the implementation of internal control and this is why it is not possible to precisely determine the meaning of this provision. The same ambiguities are present in the case of Estonia, where in the section regarding Board duties it is stated: “The Management Board shall ensure that it undertakes proper risk management and internal audit controls in the activities of the Issuer and those proceeding from its activities. (The Tallinn Stock Exchange and Financial Supervision Authority 2005)”. In the case of Hungary there is a provision that “companies should create an independent internal audit function (agent or employee), who reports directly to the Audit Committee / Supervisory Board. One of the independent members of the Audit Committee / Supervisory Board can also be appointed to this internal auditor position” (Corporate Governance Codes Budapest Stock Exchange Ltd., 2018, p. 21). Consequently, this raises the issue of ensuring of the IAF independence.

Based on the previous analysis we materialized views on the presence of observed topics in the country corporate governance codes. Each category has equally participated in the assessment of the extent of IAF regulation in country corporate governance codes. The structure of observed topics and their materialization are presented in Table 2.

**Table 2. Structure of the observed topics and their materialization**

<i>Category</i>	<i>Code</i>	<i>Category has value 1</i>
<i>Definition of internal audit (or its scope)</i>	<i>IA_DS</i>	the <i>Definition of Internal Auditing</i> or otherwise stated fundamental purpose and scope of internal auditing are present
<i>Internal audit independence</i>	<i>IA_IND</i>	In case of the presence of at least one of these conditions: <ul style="list-style-type: none"> <li>the chief audit executive has direct and unrestricted access to senior management and the board (Standard 1100 – Independence and Objectivity)</li> <li>dual-reporting relationship (according to Standard 1100 – Independence and Objectivity)</li> <li>chief audit executive reports functionally to the board (examples of functional reporting to the Board according to Standard 1110 – Organizational Independence)</li> <li>chief audit executive communicates and interacts directly with the board (Standard 1111 - Direct Interaction with the Board)</li> </ul>
<i>Conformance with International Standards for the Professional Practice of Internal Auditing Standards (International Professional Practices Framework)</i>	<i>IA_STAND</i>	Provision that internal audit function must be in conformance with International Standards for the Professional Practice of Internal Auditing Standards (International Professional Practices Framework.
<i>Provision on internal audit unrestricted access to information</i>	<i>IA_INF</i>	Provision that internal audit function has unrestricted access to information
<i>Provision on establishing internal audit function.</i>	<i>IA_EST</i>	Provision that listed companies must establish an internal audit function or recommendation for its establishment

Categories were evaluated with 0 (in case there was no provision related to a particular category) or 1 (in case the provision exists) and based on their sum we calculated a score of the provision of IAF corporate governance codes (IA\_CG) for CEE countries, presented in Table 3. The minimum value for each country is 0 and the maximum value is 5.

$$IA\_CG \text{ score} = IA\_DS + IA\_IND + IA\_STAND + IA\_INF + IA\_EST$$

The value (0-5) indicates the extent of the IAF regulation in corporate governance codes, considering the five observed categories, where the higher value indicates the presence of more observed categories in the code, and implies a higher extent of an IAF regulation. The data presented in Table 3 is based on the author's observations regarding the provisions of IAF in corporate governance codes in the observed countries.

**Table 3. Values for IAF regulation in corporate governance codes (IA\_CG) for CEE countries**

COUNTRY	IA_DS	IA_IND	IA_STAND	IA_INF	IA_EST	IA_CG score
Bosnia and Herzegovina	1	1	0	1	0	3
Bulgaria	0	0	0	0	0	0
Croatia	1	1	0	0	1	3
Czech Republic	1	1	0	0	1	3
Estonia	0	0	0	0	0	0
Hungary	0	1	0	1	1	3
Latvia	0	0	0	0	0	0
Lithuania	0	0	0	0	0	0
Macedonia	0	1	0	0	0	1
Montenegro	1	1	0	0	1	3
Poland	1	1	1	0	1	4
Romania	1	1	1	0	1	4
Slovakia	1	1	0	0	1	3
Slovenia	1	1	1	0	0	3
Total	8	10	3	2	7	
Frequency	57,14	71,43	21,43	14,29	50	

In accordance to previous analysis, it is possible to conclude on homogenous results at CEE countries level. The most frequent value of the IA\_CG score is 3. The Baltic countries (Estonia, Latvia and Lithuania) have the lowest the IA\_CG score (0), while Poland and Romania have the highest IA\_CG score (4), which means there are four observed topics in their corporate governance codes. When analyzing the IA\_CG score for Croatia (value 3) and the surrounding countries (Bosnia and Herzegovina, Slovenia, Montenegro, Hungary, with the average value of 3), it is possible to conclude on the same score but the differences still exist regarding the content of provisions of IAF. The average value of the IA\_CG score for EU member countries is 2.09 while this value for non-EU countries is somewhat higher (2.33), but with no significant difference in the conclusion. Among the analyzed countries, Croatia is the youngest member of the EU and has a higher value (3) than the other "older" EU members (average score 2), and it can be concluded that there is a greater number of internal audit requirements in Croatian corporate governance codes than in other EU member states, that are also part of CEECs.

IA\_IND is the category most commonly present in the analyzed codes, in 71.43% case code (10 countries), followed by the IA\_DS category in 57.14% (8 countries). This means that most frequent provisions in CEE countries corporate governance codes are those related to internal audit scope and independence. The requirement to establish an internal audit function (category IA\_EST) is present in 50 of cases (7 countries) and 6 of them are EU members. This is followed by IA\_STAND present in three codes (21.43%), and IA\_INF category present in 14.29% of the codes (2 countries), and thus the least common category.

## Conclusion

In summary, based on the comparative analysis on provisions of an IAF in CEE corporate governance codes, it is possible to conclude that the cross-country results are very diversified. Results of the comparative analysis of corporate governance codes provisions of IAF in CEECs indicate they do not represent guidelines of “best practice” when it comes to IAF regulation. Consequently, it would be interesting to analyze to what extent these provisions are integrated in corporate governance. Establishing an IAF in listed companies is required or recommended in only seven CEE countries from the sample, which is exceptionally low, especially given the recent trends of requesting establishment of an IAF on a global level. We also consider it as one of the fundamental indicators of the internal audit importance, because in the absence of the requirement for establishment (or recommendation for establishment) of an IAF, no other requirements have the necessary power. Codes define its scope in 57.14% which is, along with requirements for an IAF independence (71.43%), the most frequent topic in IAF regulation in CEECs corporate governance codes. Defining requirements that set the basis for internal audit independence should undoubtedly emphasize the dual reporting, administrative and functional, thus defining the relationship between internal audit and governing bodies along with the Audit Committee. There was also a lack of provisions regarding the IAF compliance with the Standards (present in only three country codes), which can be interpreted as ignoring the importance of professional IAF guidelines. There is also a lack of provisions defining the IAF right on the free access to information. Likewise, although they are a part of the same group of CEE countries, there are significant differences between provisions of IAF in corporate governance codes between the Baltic countries and other CEECs. The IA\_CG score for Baltic countries is 0, meaning that in corporate governance codes of those countries we found no definition or scope of an IAF, requirements regarding an IAF independence, conformance with Standards, right to unrestricted access to information or the requirement (recommendation) for its establishment. In order to understand the context, we consider it important to analyze the IAF regulation within the mandatory requirements of these countries, as well as all other countries, given that they are to a certain extent the basis for the voluntary provisions of the corporate governance country codes.

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## Appendix

**Table 4. Content of the component IA\_DS in corporate governance codes (cross-country)**

Country	Definition/Scope
<b>Bosnia and Herzegovina</b>	20.2. The company's internal auditor shall: carry out controls of the company's financial statements and report to the audit committee whether they meet the requirements of veracity and completeness, carry out controls of the financial reporting and other types of reporting to the shareholders and report to the audit committee whether they meet the requirements of veracity and completeness, carry out controls of the contracts made between the company and members of the management/supervisory board, as well as of the contracts made between the company and related parties, and report on those to the audit committee, carry out controls of compliance of the company's organization and operations with the code of conduct and carry out controls of the procedures to address grievances filed by the company's shareholders, members of the company's bodies or other persons with respect to the company's activities and carry out controls of the company's other activities and report on them in accordance with the activity plan and the company's needs.
<b>Bulgaria</b>	No
<b>Croatia</b>	Title II Internal Auditors: The task of internal auditors shall be supervision of the internal control system, as well as verifying compliance with regulations, guidelines and instructions.
<b>Czech Republic</b>	3. Protection of assets and supervision of internal controls: In co-ordination with the internal audit department, the audit committee should supervise major risks such as financial misappropriation, technological and natural risks, including health hazards and environmental risks. It should review monitoring methodologies and make recommendations to improve the effectiveness of established safeguards.
<b>Estonia</b>	No
<b>Hungary</b>	No
<b>Latvia</b>	No
<b>Lithuania</b>	No
<b>Macedonia</b>	No
<b>Montenegro</b>	Article 33. A company is advised to appoint an internal auditor in order to enable accuracy and completeness of accounting records, as well as prepare reliable financial information within the deadline.
<b>Poland</b>	III. Internal Systems and Functions Detailed principles III.Z.1. The company's management board is responsible for the implementation and maintenance of efficient internal control, risk management and compliance systems and internal audit function. III.Z.4. The person responsible for internal audit (if the function is separated in the company) and the management board should report to the supervisory board at least once per year with their assessment of the efficiency of the systems and functions referred to in principle III.Z.1 and table a relevant report.
<b>Romania</b>	SECTION B RISK MANAGEMENT AND INTERNAL CONTROL SYSTEM GENERAL PRINCIPLES The company should arrange for internal audits to independently evaluate, on a regular basis, the reliability and efficiency of the risk management and internal control system and the corporate governance practices.
<b>Slovakia</b>	V. 6. The responsibilities of the board Monitoring and managing potential conflicts of interest of management, board members and shareholders, including misuse of corporate assets and abuse in relation party transactions. i. The board should oversee the internal control systems covering financial reporting and the use of corporate assets and guard against abusive related party transactions. ii. In case these functions are assigned to the internal auditor or other corporate officers, they should maintain direct access to the board to be able to efficiently perform these duties and fulfil their reporting responsibilities.
<b>Slovenia</b>	26.2 (...). The main task of persons in charge of internal audit is independent monitoring of the orderliness and cost-effectiveness of the company's operations, and of its compliance with the regulations and the company's internal acts, with special emphasis on the quality and adequacy of the system of internal controls. Their conduct encourages quality valuations and improvement of risk control and risk management procedures, and contributes to added value by providing independent and impartial guarantees to the management and supervisory bodies.

**Table 5. Content of the component IA\_IND in corporate governance codes (cross-country)**

Country	Independence (position; reporting line)/Board/committee responsibility regarding IA
<b>Bosnia and</b>	20.5. The audit committee shall: render internal audit work plans, consider internal audit reports and issue



<b>Herzegovina</b>	recommendations with respect to the audit reports, report to the management board on implementation of the recommendations issued with respect to the audit reports
<b>Bulgaria</b>	No
<b>Croatia</b>	<p>Title II Internal auditors shall submit reports on their results directly to the audit committee i.e. the Supervisory Board of the company. The Supervisory Board shall approve the internal auditors' annual work plan, analyse their results and monitor the implementation of their recommendations. The audit committee and the Supervisory Board shall actively participate in planning of activities of internal auditors.</p> <p>4.12.3. (...) Audit committee should</p> <ul style="list-style-type: none"> <li>- ensure the efficiency of the internal audit system, especially by preparing recommendations for the selection, appointment, reappointment and dismissal of the head of the internal audit department, and with regard to funds at his/her disposal, and the evaluation of the actions taken by the management after findings and recommendations of the internal audit (if there is no internal audit system in the company, the committee shall consider the need to establish it once a year).</li> <li>- External and internal auditors shall have the possibility of establishing a direct communication with the audit committee (...)</li> </ul>
<b>Czech Republic</b>	<p>Commentary on Chapter VI. (...) the supervisory board should take over all tasks connected with the control framework of the company: the audit, remuneration and appointment committees should be advisory bodies of the supervisory board, and the company secretary and internal audit should also be subordinate to the supervisory board.</p> <p>THE AUDIT COMMITTEE An audit committee could typically: oversee the functioning of the internal audit function (if applicable) 1. Supervision of Internal audit (...)</p>
<b>Estonia</b>	No
<b>Hungary</b>	<p>2.8. Internal control systems and risk management</p> <p>2.8.1. (...), Companies should create an independent internal audit function (agent or employee), who reports directly to the Audit Committee / Supervisory Board. One of the independent members of the Audit Committee / Supervisory Board can also be appointed to this internal auditor position.</p>
<b>Latvia</b>	<p>3. Obligations and responsibilities of the Board</p> <p>3.4. The board shall perform certain tasks, including:</p> <p>3) timely and qualitative submission of reports, ensuring also that the internal audits are carried out and the disclosure of information is controlled.</p>
<b>Lithuania</b>	<p>5.4. Audit committee.</p> <p>5.4.4. The audit committee should be informed about the internal auditor's work programme and should be furnished with internal audit reports or periodic summaries.</p>
<b>Macedonia</b>	<p>The Audit Committee</p> <p>12.4: The audit committee supervises the activities of the executive directors or the management board with respect to: (...): The role and functioning of the internal audit department;</p>
<b>Montenegro</b>	Article 27. The Committee for Audit should (...) The Committee should examine internal audit and periodical financial statements before they are publically disclosed.
<b>Poland</b>	<p>III.Z.1. The company's management board is responsible for the implementation and maintenance of efficient internal control, risk management and compliance systems and internal audit function.</p> <p>III.Z.5. The supervisory board should monitor the efficiency of the systems and functions referred to in principle III.Z.1 among others on the basis of reports provided periodically by the persons responsible for the functions and the company's management board, and make an annual assessment of the efficiency of such systems and functions according to principle II.Z.10.1. Where the company has an audit committee, it should monitor the efficiency of the systems and functions referred to in principle III.Z.1, which however does not release the supervisory board from the annual assessment of the efficiency of such systems and functions.</p>
<b>Romania</b>	<p>SECTION B RISK MANAGEMENT AND INTERNAL CONTROL SYSTEM</p> <p>GENERAL PRINCIPLES</p> <p>The Board of Directors or Supervisory Board, as the case may be, should set up an independent audit committee capable of ensuring the integrity of financial reporting and of the internal control system, including the internal and external audit processes.</p> <p>B.3. Among its responsibilities, the audit committee should undertake an annual assessment (...) B.4. The assessment should consider the effectiveness and scope of the internal audit function (...)</p> <p>B.7. (...) The audit committee should receive and evaluate the reports of the internal audit team.</p> <p>B.12. To ensure the fulfillment of the core functions of the internal audit department, it should report functionally to the Board via the audit committee. For administrative purposes and in the scope related to the obligations of the management to monitor and mitigate risks, it should report directly to the chief executive officer.</p>
<b>Slovakia</b>	<p>IV. C. i. The audit committee or an equivalent body should provide oversight of internal audit activities (...)</p> <p>V. 6. The responsibilities of the board</p> <p>(...) iii. The board should ensure that there is appropriate oversight by senior management which normally includes the establishment of an internal audit system directly reporting to the board.</p> <p>(...) It is considered good practice for the internal auditors to report to an independent audit committee or an equivalent body which is also responsible for managing the relationship with the external auditor, thereby allowing a coordinated response by the board.</p>
<b>Slovenia</b>	<p>26.3 The audit committee offers professional support to the supervisory board in approving the annual internal audit plan (...).</p> <p>APPENDIX A: A.1 Audit committee</p> <p>(...)The audit committee is responsible for monitoring effectiveness and success of the internal audit of the company.</p>

**Table 6. Content of the component IA\_STAND in corporate governance codes (cross-country)**

Country	Conformance with Standards (IPPF)
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<b>Bosnia and Herzegovina</b>	No
<b>Bulgaria</b>	No
<b>Croatia</b>	No
<b>Czech Republic</b>	No
<b>Estonia</b>	No
<b>Hungary</b>	No
<b>Latvia</b>	No
<b>Lithuania</b>	No
<b>Macedonia</b>	No
<b>Montenegro</b>	No
<b>Poland</b>	III.Z.3. The independence rules defined in generally accepted international standards of the professional internal audit practice apply to the person heading the internal audit function and other persons responsible for such tasks.
<b>Romania</b>	SECTION B RISK MANAGEMENT AND INTERNAL CONTROL SYSTEM GENERAL PRINCIPLES B.7. The audit committee should monitor the application of statutory and generally accepted standards of internal auditing.
<b>Slovakia</b>	No
<b>Slovenia</b>	26.2 The internal audit shall be established in accordance with the rules laid down by International Standards for the Professional Practice of Internal Auditing.

**Table 7. Content of the component IA\_INF in corporate governance codes (cross-country)**

Country	Provision on internal audit unrestricted access to information
<b>Bosnia and Herzegovina</b>	20.3. The internal auditor may peruse all documents of the company, check their veracity and the information contained in them, request reports and explanations from the management/supervisory board and the employees and review the condition of the company's assets.
<b>Bulgaria</b>	No
<b>Croatia</b>	No
<b>Czech Republic</b>	No
<b>Estonia</b>	No
<b>Hungary</b>	2.8.2. In order to allow Internal Audit to perform its functions effectively, the Company should ensure that Internal Audit has unrestricted access to all necessary information, documents, data and all persons involved in the activity and process being audited.
<b>Latvia</b>	No
<b>Lithuania</b>	No
<b>Macedonia</b>	No
<b>Montenegro</b>	No
<b>Poland</b>	No
<b>Romania</b>	No
<b>Slovakia</b>	No
<b>Slovenia</b>	No

**Table 8. Content of the component IA\_EST in corporate governance codes (cross-country)**

Country	Requirements for establishing internal audit function
<b>Bosnia and Herzegovina</b>	No
<b>Bulgaria</b>	No
<b>Croatia</b>	Title II In the case where internal audit is carried out by freelancers, they may not, in any case, be independent external auditors of the company. 4.12.3. (if there is no internal audit system in the company, the committee shall consider the need to establish it once a year).
<b>Czech Republic</b>	18. Companies that do not have an internal audit function should regularly reconsider its establishment.
<b>Estonia</b>	No
<b>Hungary</b>	2.8. Internal control systems and risk management 2.8.1. (...), Companies should create an independent internal audit function (agent or employee), who reports directly to the Audit Committee / Supervisory Board. One of the independent members of the Audit Committee / Supervisory Board can also be appointed to this internal auditor position.
<b>Latvia</b>	No
<b>Lithuania</b>	No
<b>Macedonia</b>	No
<b>Montenegro</b>	Article 33. A company is advised to appoint an internal auditor in order to enable accuracy and completeness of accounting records, as well as prepare reliable financial information within the deadline.
<b>Poland</b>	III: Internal Systems and Functions: Listed companies should maintain efficient internal control, risk management and compliance systems and an efficient internal audit function adequate to the size of the company and the type and scale of its activity. III.Z.6. Where the company has no separate internal audit function in its organisation,

	the audit committee (or the supervisory board if it performs the functions of the audit committee) should review on an annual basis whether such function needs to be separated.
<b>Romania</b>	SECTION B RISK MANAGEMENT AND INTERNAL CONTROL SYSTEM GENERAL PRINCIPLES The company should arrange for internal audits to independently evaluate, on a regular basis, the reliability and efficiency of the risk management and internal control system and the corporate governance practices. B.11. The internal audits should be carried out by a separate structural division (internal audit department) within the company or by retaining an independent third-party entity.
<b>Slovakia</b>	V. 6. The responsibilities of the board (...) iii. The board should ensure that there is appropriate oversight by senior management which normally includes the establishment of an internal audit system directly reporting to the board.
<b>Slovenia</b>	No

# COMPARISON OF COST CALCULATION METHODS IN CROATIAN AND GERMAN HEALTHCARE SYSTEM

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## Abstract

*Due to the growing costs and the limited number of available resources, there is a need for more rational use of the resources. Accepting the need for more cost-effective decision-making in the healthcare system, healthcare providers seek strategic tools that will enable them rational cost-management without affecting the quality of care provided to patients. Changes in the business environment over the last few decades have made traditional cost accounting methods outdated from the point of accurate estimates and cost allocations and, consequently, the assessment of the profitability of certain products and services. They are sufficient to measure costs at the level of medical and administrative departments, but they are a bad model in allocating these costs from the level of organizational units to the level of real medical care procedures that help them take care of patients. Since the need for a more reliable and transparent model of cost-effectiveness measurement in the healthcare system has been created, attention is paid to one of today's cost calculations methods, the ABC method, which provides more objective and reliable information on cost-based activity versus obsolete traditional methods. The purpose of this paper is to explore differences in implementation of the ABC method in the healthcare of the Republic of Croatia as well as in the healthcare of Germany on the example of the operative procedure - knee arthroscopy through the report on gross margin analysis. In addition to this report, the differences between the two health systems will be shown through a report which tracks the costs of direct labor, consumables, equipment and other indirect costs. Based on the comparisons and analyzes, it is possible to conclude that the cost of this operation is cheaper in the Republic of Croatia than in Germany, with the quality of the service being the same. This conclusion is in favor of the ever-present trend in medical tourism in the Republic of Croatia, which should also be seen as an incentive for the implementation of cost calculation methods in Croatian hospitals in order to provide a more rational and cost-effective use of available resources.*

**Keywords:** ABC/TDABC method, cost allocation, traditional cost allocation methods, modern cost allocation methods, healthcare system

**JEL classification:** I15, M21, M41

## Literature review

In order to optimize the cost of the healthcare system, it is necessary to provide an appropriate information base that is primarily based on an adequate cost calculating method. Therefore,

the cost calculating method is necessary in order to provide management information about the type and amount of resources spent, and thus provide the prerequisites for: control, management and potentially cost reduction. Chronologically, the first methods of calculating the costs that appear are so called traditional cost calculating methods. In achieving cost efficiency of traditional cost accounting methods, they do not yield satisfactory results, and this is due to the large increase in indirect costs, decreasing direct labor, reducing inventories, shorter product life cycle, faster and more frequent development of new products and expensive distribution. Expense causes are becoming more and more difficult to detect and therefore it is difficult to manage the costs. Traditional cost calculating methods allocate indirect costs based on inadequate keys, leading to the wrong decision on the actual amount of costs that a particular effect causes. In order to improve cost management, an activity-based cost method is developed. The ABC - Activity-Based Costing method provides a more realistic valuation of the effects. By applying the ABC method, each activity is considered in a position to justify its use of resources and the position of its contribution to the creation of new value from the sale of products and services on the market.

Authors O'Reilly et al., have explored the use of ABC methods among several countries as well as in Germany. The main purpose of their research was to examine the reasons for introducing the mentioned cost methodology and the way of development and implementation. It is shown that ABC methodology can be implemented in a healthcare system with a different organizational structure, different financing system, and different involvement of the public / private sector in the provision of healthcare services. The goals of the implementation itself in Germany included increasing efficiency, improving quality and enhancing transparency. In Germany, the ABC-based financing was introduced during 2003 and 2004. That scheme was observed as a way to stimulate competition between public and private providers of healthcare services. The ABC system was generally implemented gradually in phases over several years, enabling hospitals and investors plenty of time to adjust, thus reducing the likelihood of possible rejection of the system. Initially, the application of the ABC system was limited by initial losses and limitations. The German variant of the ABC method (Prozesskostenrechnung) is a cost calculation system based on activities and processes. The system was introduced in the late eighties in Germany by Horvath and Mayer. Despite the fact that this term in English is literally translated as "process cost calculation", this cost calculating system has nothing to do with process cost calculation because of the fact that the process cost calculation is not based on activities and processes but allocates costs according to equivalent units.

Aldogan, Austil and Kocakulahe (2014) wrote a paper exploring the unit cost of services using the ABC method and compared the same with traditional cost calculation. The authors selected a department of gynecology that had three subunits and calculated the cost of natural labor and caesarean section using traditional cost accounting and then calculated using the ABC method. Their case study of the ABC implementation method has resulted in a finding that natural labor is less cost-effective and that caesarean section is more cost-effective than traditional cost calculating methods. The authors have therefore concluded that using ABC method managers can obtain a more accurate distribution of indirect costs, which ultimately provides meaningful revenue and cost analysis and making more accurate price decisions, hospital budgeting, and planning strategies.

Authors Dražić Lutilsky and Butorac (2014) investigated the theoretical application of cost calculation methods based on the activity. The authors proceeded with the benefits of using the ABC method and pointed out the following: (1) The ABC method helps to calculate the

unit cost of patient treatment; (2) The ABC method provides the possibility of determining cost activities that are not directly related to medical services as well as administrative character activities (3) The ABC method provides useful information on the type and quantity of resources used, and determines potential sources of cost reduction while maintaining the level of quality (Dražić Lutitsky, Butorac, 2014). Furthermore, the authors point out that the implementation of the ABC method in the healthcare system requires not only changes as a result of quantitative changes but also changes in the organization's functioning. The aim of this paper is to present the ABC calculation method and explain its implementation within the healthcare system.

Javid et al. (2016) concluded that by utilizing ABC method hospital managers can have a valuable accounting system that can provide a true insight into the costs of hospital departments. They have compared ABC method with traditional costing system in the calculation of unit costs of medical services in Iran hospital.

## **Healthcare system in Croatia**

In September 2012 the Government of the Republic of Croatia adopted the National Strategy for Health Care Development from 2012 to 2020. It is a comprehensive document that tells in which direction it wants to develop healthcare in the next decade. The adoption of the National Health Development Strategy is a significant step in the context of EU accession as the existence of such a document is a necessary prerequisite for financing EU projects in the field of healthcare. Operational plans to be implemented under the Strategy should improve the financing of the healthcare sector and help develop a more effective and equitable healthcare system. There are different definitions of the healthcare system and its scope but for the purposes of this paper the health system will be defined as a system that consists of all organizations, institutions and resources whose primary purpose is to improve health. In most countries, the healthcare system includes a public, private and informal sector. Likewise, the healthcare system differs from country to country according to certain characteristics. Differences in healthcare systems arise from the fact that countries must implicitly develop healthcare systems that are in line with their needs and resources. However, as there are differences in healthcare systems, there are also common elements that appear in almost every healthcare system - primary healthcare and public healthcare (White, 2014).

In addition to the two common elements that connect most healthcare systems are growing costs, and because of that fact cost management becomes very important. Hospitals and other healthcare organizations are at the core of the community. Therefore, healthcare managers often have to find a balance between business decisions and the provision of services or programs of a social character. With limited resources, healthcare providers often have to carefully choose how to use limited resources available to healthcare organizations (Powel, Hodges, 2008). That is why the concept of cost management is extremely important in the contemporary healthcare system.

Cost management can be defined as achieving management goals based on optimum cost engagement. In order for management to be able to make decisions, it is necessary to have an appropriate information base on the direct and indirect costs that should be connected with the patients who caused them. (Tan et al. 2009).

Ultimately, the cost calculating system is important to healthcare providers because the cost increase along with the transparency requirements in the field of public healthcare

expenditure has raised the importance of available information on the costs of healthcare organizations.

## **Cost accounting methods**

With limited resources, healthcare providers often need to carefully choose how to use limited resources available to healthcare organizations (Powell, Hodges, 2008). That is why the concept of cost management is extremely important in the contemporary healthcare system. Cost calculation methods are commonly categorized into traditional methods and modern methods.

### ***Traditional cost calculation methods***

Using traditional methods, it tries to cover the costs of direct material and direct labor, while overhead costs are connected to direct costs. According to their nature, the traditional methods are closely related to the kind of production or service that is provided, and depending on it, they can be divided into: job costing system and process costing.

### ***Modern cost calculation methods***

Cooper and Kaplan have developed a model of cost allocation based on activity or processes used in product manufacturing. The ABC method first begins to be used in the manufacturing sector, and after a certain period of time, it extends to the service sector and thus to the healthcare system.

The ABC method can be defined as a method that allocates costs to products or services based on activities or processes used in product production or providing services. The basic concept of cost allocation using the ABC method states that the cost of a product is equal to the sum of the costs of raw materials used in the production and costs of all the activities used for production. The essence of ABC method is assumed that products do not cause the use of resources in the enterprise. On the contrary, resources use activities that take place in the company, and these activities cause the use of resources, and hence the costs. It can therefore be concluded that the activities taking place in the company are closely related to the overhead costs (Pekanov Starčević, 2013).

Despite numerous benefits of the ABC method, Kaplan and Porter developed this approach further by adding a time component to each activity to ensure even greater accuracy of the costs pertaining to each individual patient. Their approach, known as the "Time-Driven ABC model" (hereinafter the TDABC model), is currently being tested at several US institutions to determine TDABC's performance on healthcare organizations (Telischak, 2014).

## **The research on cost calculation methods in healthcare system in Croatia and Germany**

In the healthcare system, there is a trend of rising demand for health services with simultaneous limited funds. In such conditions, healthcare institutions are subject to numerous reform processes, and in the context of more effective cost and revenue management as one of the key reform processes, it is emphasized the introduction and / or improvement of the

management information system, i.e. internal accounting. The instrumentation of cost accounting and management accounting has been introduced to a healthcare institution that has been increasingly implemented in healthcare institutions over the last few years is a model for the allocation of costs based on activity or process (Vašiček et al. 2016).

These are the different versions of the ABC method and is therefore described below the application of the aforementioned cost methodology in selected healthcare institutions in Croatia and Germany and concrete examples of implementation are presented.

Implementation of the ABC method in the healthcare system starts with the creation of a list of resources spent (working hours of doctors and auxiliary staff, supplies, medical equipment, etc.) and products or services acting as cost carriers.

Thus, the typical services to which the ABC methods later allocate the costs are (Kuchta, Zabek, 2011):

- registration of the patient;
- conversation with a patient and physical examination;
- laboratory examination;
- giving diagnosis;
- performing medical procedures;
- registration of medication;
- home visits;
- administrative activities.

In general, the process of defining activities in healthcare organizations has similar foundations as well as the process of defining activities in manufacturing companies. When implementing the ABC method, the number of activities and the level of detailed description of the system depends on the decisions of the person developing the ABC model in the organization. However, when implementing the ABC method at the organization level, it should be guided by the principle of a limited number of activities to avoid too much data. On the other hand, when applying the ABC method within the individual healthcare segment as a department, it is necessary to elaborate the more detailed structure of activities to get more precise results (Popesko, Novak, 2012).

Activities defined in the ABC method can be classified as primary and secondary activities. Primary activities may relate to the activities the organization conducts to meet external requirements, while secondary activities support and relate to meeting the needs of internal "customers". In healthcare organizations, we can expect higher importance of secondary activities, which accordingly consume a higher share of costs. Analyzes that identify and define the activities are as follows (Popesko, Tučková, Strouhal, 2011):

- analysis of the organization's organizational structure;
- workplace analysis;
- personnel cost analysis.

After the activities and resources, cost objects are determined. Cost objects in a healthcare organization can be different such as: homogeneous groups of patients; types of illness; a certain doctor; medical procedures, etc. Once cost objects of ABC method have been set up, it is necessary to link resource costs to specific activities. Resource costs can be assigned to activities in the following three ways (C'O Guin, 1991): by direct calculation; by assessment and by arbitrary allocation.



Ultimately, in order to implement the ABC method in a healthcare organization, it is necessary to define cost drivers. The most common cost drivers are the following (Popesko, Novak, 2012): employee workload - for allocating staff costs to activities; space - for overheads allocation, amortization, heating and electricity; quantity of equipment and tools; estimation - precise allocation of costs to defined activities. Based on the above, it can be noticed that the ABC method provides a strong link between the cost of resources and resources that cause costs, i.e. cost drivers. By monitoring the cost of healthcare over cost drivers, a more accurate calculation of the cost of services compared to traditional methods was achieved (Cairney, Bennett, 2005.).

As it is usual for each product or service, the total cost of the operation consists of direct work (work of doctors, nurses and other auxiliary staff), direct material (capital equipment and consumables used during surgery) and indirect costs (administrative costs of the hospital). Costs of operating room of hospital are estimated according to the type of procedure, and costs are usually documented on the basis of three documents or reports (Baker, Boyd, 1997):

1. The Gross Margin Analysis Activity – Based Costing Report – GMA;
2. The Bill of Activities – BOA;
3. Capital Equipment Costs.

These three documents represent three different levels of cost reporting. The GMA report is used to make decisions. GMA uses cost information in combination with other decision-making information. Within the BOA report, the cost components used in the GMA report are compiled. The capital equipment cost is a document containing information on what equipment is directly used in which operation (surgery) or another procedure at the individual patient level. For the purpose of this paper, the first two reports will be presented for the observed healthcare institutions.

Operating room costs are shown in the form of GMA reports. Considering how the ABC method measures cost and effect, this report serves to measure both elements. For example, in the case of an operation of the knee - arthroscopy performed as an example, there are 8 individual elements found in the GMA report and consist of the activities and equipment used during the operation (Baker, Boyd, 1997):

1. duration of operation per minute;
2. arthroscope;
3. surgical suture;
4. setting up the infusion;
5. 2nd phase of recovery;
6. surgical preparation;
7. gearing equipment;
8. video equipment.

Each of the above activities (surgical preparation, infusion, operation, and 2 phases of recovery) includes: work, supplies, equipment and operational (indirect) costs.

### ***An example of implementation of the ABC method in the health care of the Republic of Croatia***

*Table 1 Knee arthroscopy GMA report - Croatia*

Medical procedure	Average number of procedures	Charge per unit (kn)	Standard cost (kn)	Total charge (kn)	Total cost (kn)	Gross margin (kn)
Duration of operation per minute	60,0	18	9,51	1080	570,6	509,4
Arthroscope	1,0	195	2,59	195	2,59	192,41
Surgical suture	1,4	18	0,42	25,2	0,59	24,61
Setting up the infusion	1,0	20	2,54	20	2,54	17,46
2 <sup>nd</sup> phase of recovery	163,0	0,4	2,35	65,2	383,05	-317,85
Surgical preparation	1,0	67	15,14	67,00	15,14	51,86
Gearing equipment	1,0	19	0,03	19	0,03	18,97
Video equipment	1,0	79	23,71	79	23,71	55,29
Total operating room				1550,4	998,25	552,15
Gross margin %						35,61%

*Source: Adapted according to Baker, J. J., Boyd, G. F. (1997). Activity – Based Costing in the Operating Room at Valley View Hospital. Journal of Health Care Finance. Aspen Publications Inc.*

As shown in the previous table, the average number of minutes in operation (60) is multiplied by the standard operating cost per minute determined by the hospitals for this type of operation (in this case, 9.51 kn per minute) based on which the total cost is obtained amount of 570,60 kn. Similarly, the total fee for the procedure amounting to 1080 kn (60 minutes x 18,00 kn per minute) was calculated. The difference between the total fee (income) and the total cost represents the gross margin which in the case of the operation is 509,40 kn. Ultimately, the total gross margin percentage is calculated as the total gross margin in relation to the total amount of compensation, which means that in case of arthroscopy the gross margin of the knee is 35.61%.

The following table shows the BOA report for the medical procedure "Duration of the operation per minute", which shows the method of calculating the standard cost for that medical procedure.

As previously mentioned, the BOA report consists of a list of all the activities that are required to provide a particular service. Generally, the BOA report includes the costs of direct labor, consumables, equipment (including depreciation) and other indirect costs. In this case, the list consists of the required activities and associated cost of resources that are consumed by the procedure. The list consists of a total of 10 groups of costs (Baker, Boyd, 1997):

1. Direct variable work spent by the chief nurse
2. Direct variable work spent by a nurse responsible for the visit
3. Direct variable work spent by a nurse (trainee)
4. Indirect fixed work spent by the director

5. Directly used equipment - represents equipment that is directly charged by the patient, such as the aforementioned arthroscope. But there is also equipment that is not charged to a patient such as a surgical table, medical cabinets, etc.
6. Allocated equipment - other equipment not charged to the patient as a special equipment used for the operation
7. Directly used variable consumables - is calculated as a unit cost based on inventory costs. The actual stocks that are consumed are charged through the built-in central purchasing costs.
8. Indirectly used fixed consumables - calculated as allocated cost based on cost of department stocks
9. Variable operating costs and
10. Fixed operating costs - are calculated as unit costs based on the allocation of operating costs. In total there are 33 different operational cost operating cost elements, each of which has its own cost driver and allocated unit cost.

*Table 2 BOA report for medical procedure „Duration of the operation per minute“- Croatia*

Cost group	Resource	Direct quantity	Allocated quantity	Standard cost
1. Direct variable work	Chief nurse	1 minute		0,34
2. Direct variable work	Nurse for the visit		0,01	1,02
3. Direct variable work	Nurse (trainee)	1 minute		0,31
4. Indirect fixed work	Director		0,01	0,3
5. Equipment – directly used		1 minute		0,19
6. Allocated equipment			1	0,34
7. Directly used variable consumables			1	0,32
8. Indirectly used fixed consumables			1	0,61
9. Variable operating costs			1	3,27
10. Fixed operating costs			1	2,81
Standard cost “Duration of the operation per minute”				9,51 kn/min

*Source: Adapted according to Baker, J. J., Boyd, G. F. (1997). Activity – Based Costing in the Operating Room at Valley View Hospital. Journal of Health Care Finance. Aspen Publications Inc.*

The ten elements shown in the previous table result from the 9.51 kn of the standard cost for the "Duration of the operation per minute" procedure. Within the ABC system, the cost allocation base is called cost drivers. Cost drivers include any factor that increases the total cost of a particular activity. In this case direct work was used as the primary cost driver.

### *An example of the implementation of ABC methods in healthcare in Germany*

In addition, in this section of the paper, the method of implementing the ABC method in the healthcare system of Germany will be presented. Along with all the above mentioned, as well as for the Republic of Croatia, reports are presented for Germany. This example will refer to one clinic in Germany.

*Table 3 Knee arthroscopy GMA report - Germany*

Medical procedure	Average number of procedures	Charge per unit (kn)	Standard cost (kn)	Total charge (kn)	Total cost (kn)	Gross margin (kn)
Duration of operation per minute	58,9	26	12,93	1531,40	761,58	769,82
Arthroscope	1,8	211	3,04	379,80	5,47	374,33
Surgical suture	2,1	24,7	0,63	51,87	1,32	50,55
Setting up the infusion	1,0	22,3	2,87	22,30	2,87	19,43
2 <sup>nd</sup> phase of recovery	212	0,7	2,58	148,40	546,96	-398,56
Surgical preparation	1,6	78	17,62	124,80	28,19	96,61
Gearing equipment	1,6	26,9	0,08	43,04	0,13	42,91
Video equipment	1,6	94	29,77	150,04	47,63	102,41
Total operating room				2.451,65	1.394,15	1.057,50
Gross margin %						44,54%

*Source: clinic in Germany (data known to authors)*

As shown in the previous table, the average number of operations in minutes (58.9) is multiplied by the cost of the standard operation cost per minute determined by the hospitals for this type of surgery (in this case, 12.93 kn per minute) based on which gets a total cost of 761.58 kn. Similarly, the total fee for the procedure is 1,531.40 (58.9 minutes x 26.00 kn per minute). The difference between the total fee (income) and the total cost represents the gross margin which in case of the operation is 769,82 kn. Ultimately, the total gross margin percentage is calculated as the total gross margin in relation to the total amount of compensation, which means that in the case of arthroscopy the gross margin of the knee is 44.54%.

The following table shows the BOA report for the medical procedure "Duration of the operation per minute", which shows the method of calculating the standard cost for that medical procedure.

As previously mentioned, the BOA report consists of a list of all the activities that are required to provide a particular service. Generally, the BOA report includes the costs of direct labor, consumables, equipment (including depreciation) and other indirect costs. In this case, the list consists of the required activities and associated cost of resources that are consumed by the procedure. The list consists of the same ten cost groups as was mentioned earlier.

Table 4 BOA report for medical procedure „Duration of the operation per minute“ - Germany

Cost group	Resource	Direct quantity	Allocated quantity	Standard cost
1. Direct variable work	Chief nurse	1 minute		0,56
2. Direct variable work	Nurse for the visit		0,01	1,39
3. Direct variable work	Nurse (trainee)	1 minute		0,42
4. Indirect fixed work	Director		0,01	0,39
5. Equipment – directly used		1 minute		0,36
6. Allocated equipment			1	0,34
7. Directly used variable consumables			1	0,49
8. Indirectly used fixed consumables			1	0,78
9. Variable operating costs			1	4,95
10. Fixed operating costs			1	3,25
Standard cost “Duration of the operation per minute”				12,93 kn/min

Source: clinic in Germany (data known to authors)

## Conclusion

As previously shown, the average number of operation in minutes in the Republic of Croatia is 60 minutes, while in Germany it is 58.9 minutes, which is multiplied at a standard cost per minute for a particular country designated by the hospitals for this type of operation. Croatian hospital sets the standard cost of 9.51 kn per minute while the hospital in Germany for the same operation determines the standard cost of 12.93 kn per minute. After that, the standard cost is multiplied by the average duration of the operation in minutes and the total cost for Croatia is 570.60 and for Germany at 761.58 kn. Similarly, the total fee for the procedure for Croatia is 1,080 kn (60 minutes x 18,00 kn per minute) and for Germany it is 1,531,40 kn (58,9 minutes x 26,00 kn fee per minute). The difference between the total fee and the total cost represents the gross margin which in the case of the operation for Croatia amounts to 509,40 kn, and for Germany it is 769,82 kn. Ultimately, the gross margin percentage is calculated as the total gross margin in relation to the total amount of compensation, which means that in the case of knee arthroscopy for Croatia, the gross margin is 35.61%, and for Germany the gross margin is 44.54%. The above shows that the cost of the same operation in Germany is higher than in Croatia. This is the result of a higher standard of living in Germany as well as the practice of medical tourism.

The ten elements shown in the BOA report result from the 9.51 kn of the standard cost for "Duration of the operation per minute" in Croatia and 12.93 of the standard cost for Germany. From this it can be seen that the standard cost of proceedings in Germany is more expensive by 36% than in Croatia. From the conducted analysis, it follows that the cost of knee arthroscopy in Croatia is cheaper than in Germany, while the quality of service is almost the same.

In fact, the emphasis is on improving efficiency, improving transparency and fairness in financing between public and private providers and providing better service. The use of ABC methods contributes to the improvement of the complex healthcare systems business, but

there are still many adjustments needed to ensure the quality of healthcare, a fairer system for providing services and better allocation of costs.

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# DIGITALIZATION OF ACCOUNTING AND TAX PROCESSES – CHALLENGES AND OPPORTUNITIES FOR ACCOUNTANTS AND TAX ADMINISTRATORS

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## Abstract

*The development of information technology significantly affects all aspects of business. The rapid development of technology, the turbulence and the dynamics of the environment have greatly influenced the digitalization of business in all its spheres. Inter alia, digitalization is increasingly present in the area of accounting, financial reporting and taxation. Digitalization of accounting implies a change in storage and in a way of keeping documents, where documentation no longer exists in a traditional paper-based system but has been fully digitized in electronic form. The introduction of cloud computing has also significantly contributed to the growing trend of digitalization in the area of accounting. On the other hand, there are significant changes in the field of taxation in the context of digitalization. All until recently, the documentation for tax purposes has been submitted exclusively on paper. Globalization has significantly influenced the growth in business volume. Given the growing number of entrepreneurs, it is increasingly difficult for tax administrators to handle this level of growth. Therefore, significant innovations are introduced in the existing taxation system.*

*Given the many positive aspects of digitalization, the paper will explore to what extent digitalization of accounting processes contributes to more efficient business operations and possible cost reduction. Digitalization of the tax system implies the possibility of filing electronic tax returns, but it is also expected that tax administrators will provide a better, streamline service and become more efficient in carrying out their work. In this way, it would leave more space for the owners of the enterprise to deal with their core business, rather than spend time and resources on the often demanding administration. However, in addition to the above, it should be noted that it is especially important to accept the risks and limitations resulting from such ways of doing business. Specifically, electronic business requires good infrastructure for all stakeholders in the process of digitalization. Based on the above, the paper will critically analyze the advantages and potential constraints of digitalization and its impact on the simplification of accounting and taxation processes. The main goal of the paper is to analyze current state and trends in the digitalization of financial reporting and taxation in Croatia. The research methodology includes secondary research of relevant literature as*

*well as the primary desk research of the achieved degree of digitalization in the field of accounting and taxation in the Republic of Croatia. The important finding of the research show that some changes have been made. The basis for the widespread use of electronic business has been introduced. The normative acts which regulate the use of electronic signatures and issuance of e-invoices have been adopted, cloud computing is increasingly evolving, the tax administration continuously expands the offer of its electronic services. Therefore, a significant momentum can be expected in e-business of Croatian economy.*

**Keywords:** Digitalization, challenges, opportunities, accountants, tax administrators, Croatia

**JEL classification:** M41

## **Introduction**

Digitalization is a term that has been mentioned extensively in recent years. Today's business operations are characterized by the development of information technology and the ubiquitous digitalization of virtually all business spheres. Among other things, digitalization is increasingly present in the area of accounting and financial reporting. Significant changes have been introduced with the development of the first computers, both in the methods and in the techniques of accounting, as well as in the form and content of business documentation and business books. Changes in the area of business process organization, change the role and responsibility of the accounting profession. Earlier, the focus of accounting staff was solely on recording historical business transactions, while advanced accounting information systems are now being used as a main support when it comes to making important business decisions. Computer data processing, based on digital data processing, has enabled accounting profession to overcome its traditional role and to be more advisory than executive function in the enterprise.

At the beginning of the 21st century, the conception of digitalization in the field of accounting was evident. Namely, normative preconditions for the introduction of electronic documents are already being created, and the first forms of electronic accounting i.e. cloud computing based accounting are noticed. Today, the digitalization of accounting and taxation system is an imperative and it is inevitable therefore, the paper will discuss how omnipresent digitalization affects accounting and taxation processes. Furthermore, the paper will analyse the significant benefits, but also the potential limitations of digitized accounting and taxation systems. Since the developed countries already well stepped into the world of digitized accounting, existing experience in implementing paperless accounting and taxation will be presented. Particular emphasis will be on research and analysis of the current state of digitalization of accounting and tax processes in the Republic of Croatia, which makes the most significant contribution of this paper.

## **Digitalization and its impact on accounting and taxation processes**

Information technology has immensely affected our daily lives and especially everyday business transactions. Güney says that “growth and development in information technologies have brought digital revolution in economic, social and cultural fields (Güney, 2014: 852).”



The rapid development of technology, the turbulence and the dynamism of the environment have greatly influenced the digitalization of business in all its spheres. “The impact of advanced technologies touches virtually every industry and organization on many levels, from strategic planning and marketing to supply chain management and customer services. (Budnik, Macaulay & O’Donnell, 2017: 4).” Digitalization in accounting, financial reporting and taxation are no exceptions. When it comes to digitalization, the following terms need to be distinguished. Digitization means converting something from analog to digital form while digitalization means converting a business model to digital operations (Musgrove, 2018).

Digitalization of accounting implies a change in storage and how documents are kept, where documentation no longer exists in a traditional paper-based system because it is fully digitized in electronic form. In addition, it requires the establishment of integrated document management systems, possibility of electronic storage of accounting ledger, automatic recording and e-storage of invoices as well as e-invoicing (EY, 2014: 2). This kind of technology innovations drive change in the accounting profession. Accountants are “traditionally viewed as record keepers and verification agents of financial information but now, moving forward, accounting professionals will have more strategic and managerial oriented role (Smith, 2018: 249).” The introduction of cloud computing has also significantly contributed to the growing trend of digitalization in the area of accounting. The most important benefit of cloud computing is a very good management of large amounts of data. According to KPMG research “nearly 90% of those surveyed say they use the cloud in their financial reporting processes and many consider it essential to timely and accurate reporting (Budnik et al, 2017: 11).” In addition, cloud computing is characterized by a high level of adaptability that involves easier adaptation to changes and accessibility, since users are provided with access to all data 24 hours a day and ultimately more efficient business is achieved. The benefits of cloud computing greatly affect the work of accountants, which is confirmed by Elezaj who believes that “cloud computing has brought massive advantages in the way accountants are doing their work and it has made accountants be more responsive to the needs of their customers (Elezaj, 2018: 2).”

In addition to digitalization of accounting processes, it is especially important to digitize the tax system. Digitalization is not just a mere conversion of tax returns from paper forms to PDFs and uploading it to the Tax Administration website, but it should be “revolutionary, considering not only how taxpayers complete their fillings but what is taxed and how the authority can leverage powerful data pipelines to complete audit taxes without (ICAEW, 2019: 2).” Key components of a successful digital transformation of tax administration include (Baisalbayeva, Enden, Ion & Tsavdaris, 2017: 16-19):

- “(1) compliance strategy: an overarching strategy for compliance management in the various taxpayer segments
- (2) legislative framework: establishment of new tax and procedure laws that modernize administrative and procedural provisions across all major taxes
- (3) operational framework: design of a governance model, organizational structure, guidelines for operational processes to achieve the compliance strategy, management reporting and roles and responsibilities within the organization
- (4) tax technology and infrastructure: developing a strategy to guide the direction of innovations and provide a clear picture of the end-state design of tax technology infrastructure
- (5) change management, training and education: structure tax administration in such a way that roles and functions are clearly defined and differentiated, lines of communication and accountability untangled, and decision-making procedures transparent and functional
- (6) performance measurement: communicate with stakeholders results of ongoing monitoring in periodic progress reports which can enhance process transparency and accountability.”

Successful digitalization of the tax system implies the inclusion of a large number of users who must be actively involved and understand the advantages as well as some pitfalls of digital transformation in taxation.

## **Advantages and limitations of digitalization – existing challenges for accountants and tax administrators**

The question that logically implies is who should digitize their business? One of the possible criteria when digitalization is necessary is the number of documents that the company handles on an annual basis. “Digitalization is not just for large companies – any company that manages more than 3,000 documents per year can benefit significantly (EY, 2014: 2).” There is no single answer to this question, but it is certainly important that the benefits of digitalization must be higher than the cost of implementing it and securing the necessary infrastructure. Digitalization of accounting and taxation processes has many benefits (Table 1). First, digitalization can bring cost savings to enterprises because by using cloud computing they can run business in a more cost-effective manner. The most valuable benefit of digitalization in accounting is getting up to date information on daily basis as well as more transparent business processes.

*Table 1: Benefits of digitalization in accounting and taxation*

BENEFITS OF DIGITALIZATION IN ACCOUNTING	BENEFITS OF DIGITALIZATION IN TAXATION
Cost savings – run business in a more cost-effective manner	Simplified compliance – simplified tax services means fewer interactions, simpler forms can faster processes and communication
Quicker, easier and more effective business processes	Minimizing tax fraud – data is automatically entered and calculated
Stronger business information, improved analytics and better process control	Easier access to relevant information
Automated collection and payment processes through structured electronic document sharing	Faster refunding procedures
Improved transparency of processes, opening up new credit models	Increased taxpayer satisfaction due to greater transparency and
A more favourable sustainability profile, better corporate social responsibility performance and stronger environmental credentials	Improvement of risk management techniques and audit efficiency
Increased overall productivity and competitiveness	Decreased operating costs and reducing operation times for tax administrators
Easier making financial forecasts and managing staff	Increased motivation for tax administrators working with new technologies

*Source: Created by authors according to Elezaj (2018), Musgrove (2018), EY (2014) and Baisalbayeva et al. (2017)*

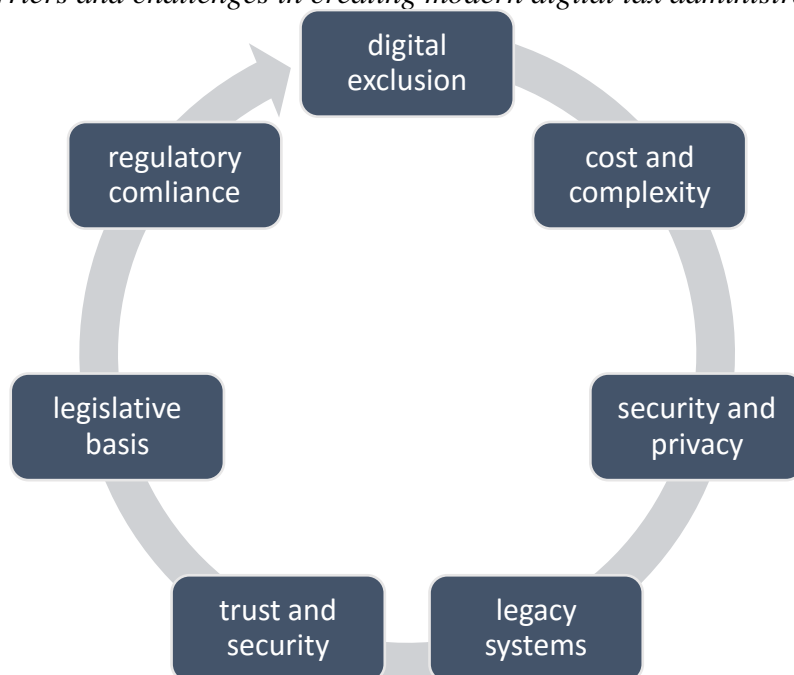
Many different stakeholders are interested in countries tax system: individual taxpayers, corporations, tax agents, software vendors and government. More about stakeholders in the tax system see ICAEW (2019). New technologies could be very helpful for tax administrations when digitalizing their operations to ensure tax compliance and enforcement. According to Hadzhieva (2019) this could be achieved in five steps (Hadzhieva, 2019: 87):

- “e-filing: standardised electronic forms for filling tax returns
- e-accounting: e-invoices and similar data in an electronic format
- e-matching: cross-referencing with accounting, bank and source data
- e-auditing: electronic audit assessments and
- e-assessment: assessments without tax forms by use of Blockchain technologies etc.”

Recently, new technologies such as artificial intelligence and blockchains are being introduced, and it is often stressed that they could soon substitute manual activities. According to Justenhoven et al. “there are currently only limited number of companies where digital technologies such as artificial intelligence are replacing human beings in finance and accounting (Justenhoven, Loitz & Sechser, 2018: 15).”

Besides the obvious benefits, there are certain limitations and challenges when implementing new technologies and modern digital tax administration (Figure 1). According to the KPMG research top concerns of those using cloud in their financial reporting process are “unauthorized access of data, internet outages leaving their data out of reach, reliance on third parties to run their financial reporting system and dwarf worries about costs (Budnik, et al., 2017: 11).”

*Figure 1: Barriers and challenges in creating modern digital tax administration*



*Source: Created by authors according to ICAEW (2019)*

The fact is that new technologies and the introduction of digitalization affect the way the accountants perform their services, which requires their continuous improvement and tracking of new trends in electronic business. “The services that accountants provide will broaden to include forensic accounting, big data analysis, assisting clients to move into cloud computing and business advice and consulting (Birt, Wells, Kavanagh, Robb & Bir, 2018: 8 as cited in Riddell, 2016)”. In continuation, this paper will elaborate whether Croatian companies and

government recognize the benefits deriving from digitalization of accounting and taxation processes.

## **Current state and trends in digitalization of financial reporting and taxation – the case of Croatia**

It has already been mentioned that information technology has a significant impact on all aspects of business operations, especially those closely related to international and national trade. "Growth and development of electronic commerce and electronic communications are an opportunity for every society, especially in economically less developed economies, to accelerate economic, scientific and social development (Katulić, 2011: 1356)." Therefore, it is extremely important to identify and create the foundation for the introduction of electronic business. The first steps that enabled the expansion of digitalization in Croatia were made in 2002 when the Electronic Signature Act was issued. The use of an electronic signature required the establishment of an electronic signature certification system that will guarantee its authenticity. Financial Agency (in further text Fina) was the first issuer of qualified digital certificates and time stamps in Croatia. "The reality is that the electronic signature in Croatian business and administrative practice has not been fully replaced by original hand-written signature, indicating that the advantages of adopting information technology are still not sufficiently recognized in Croatian society and legal practice (Katulić, 2011: 1375)."

In addition to the electronic signature, electronic business implies the use of electronic so-called e-invoices. By removing the obligation to sign and stamp paper invoices, barriers to wider application of e-invoices have been removed. It is worth pointing out that the European Union tries to encourage companies by various measures to use e-invoices by 2020 as the main form of invoice exchange. With the removal of paper invoices and accelerating business processes, it is planned to save 423 billion euros a year (E-poslovanje: Pripremite se – 2018. bit će godina početka potpune digitalizacije, 2018). Although legal solutions have been continuously improving for now, e-business has not been in full swing in our country. One of the drivers of more intense digitalization in Croatia certainly is the obligatory application of electronic invoices in public procurement. Namely, in 2018 the Act on electronic invoicing in public procurement (Official Gazette 94/2018) was adopted, which is in line with Directive 2014/55/ EU of the European Parliament and of the Council, which defines the elements and the way of handling and processing electronic invoices. It is assumed that "for more than 35,000 enterprises that daily exchange e-invoices, the new Act will be an extra wind in the back for a complete transition to e-business. At the same time, for enterprises that have not yet introduced e-business because of fear or ignorance to be an incentive to implement it now (E-poslovanje: Pripremite se – 2018. bit će godina početka potpune digitalizacije, 2018)."

The assessment of the existing state of digitalization in the area of accounting requires a review of the current practice of keeping the accounting records as well as the existing possibilities of submitting financial and tax reports (Table 2). Until recently, it was customary to keep accounting records with the use of computer support, but the documentation was always printed and filed in paper form in person or by post to the relevant regulatory bodies. Even today, the financial statements of entrepreneurs and other documentation can be submitted in paper form, but there is an increasing tendency to submit documentation electronically. Enterprises who submitted the documentation to the Registry completely in electronic form, through the internet service and within the statutory deadline, is given the benefit of not paying a fee for the public announcement of financial and other reports. On the

other hand, the annual financial statements of banks and other financial institutions (whose structure and content is prescribed by HANFA or the HNB) may be submitted exclusively in electronic form in Fina's office in Excel format, CD or USB (<https://www.fina.hr/poduzetnici>).

*Table 2: Options for filing the accounting documentation to the competent authority (Fina) in Croatia*

DOCUMENTATION TYPE	ACCOUNTING DOCUMENTATION	POSSIBLE WAYS OF SUBMITTING ACCOUNTING DOCUMENTATION
<b>Standard documentation</b>  individual and consolidated annual financial statements whose content and form are prescribed	Balance sheet	A. Personally, in any Fina office or by post to the address of the Fina office in whose area the taxpayer is headquartered: a. in paper form or b. Excel file format (on the media for electronic storage)  B. Through the RGFI web application, within the legally prescribed deadline, using the Fina Digital Certificates (FINA e-card / USB token)
	Profit and loss account, with the statement of comprehensive income	
	Cash flow statement	
	Statement of Changes in Equity	
	Additional data for statistical and other needs	
<b>Non-standard documentation</b>  documents whose form is not prescribed in advance	notes to the financial statements	A. Personally, in any Fina office or by post to the address of the Fina office in whose area the taxpayer is headquartered: c. in paper form  B. Through the RGFI web application, within the legally prescribed deadline, using the Fina Digital Certificates (FINA e-card / USB token)
	auditor's report	
	annual report	
	decision on the establishment of the annual financial report	
	decision on the distribution of profits or loss coverage and statement of inactivity	
<b>THE WAY THE DOCUMENTATION IS SUBMITTED FOR THE PURPOSE OF PUBLIC DISCLOSURE</b>		<b>FEE FOR DOCUMENTATION SUBMITTED WITHIN LEGALLY PRESCRIBED DEADLINE</b> (entrepreneurs whose financial statements are not required to be audited)
Standard and non-standard documentation is delivered in the Registry of annual financial statements completely in electronic form, using an Internet service		Free of charge
The standard documentation is submitted electronically - via the internet, non-standard documentation on paper		HRK 160.00
Standard documentation is submitted electronically - on the data carrier, non-standard documentation on paper		HRK 230.00

Standard and non-standard documentation is submitted on paper	HRK 290.00
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Source: Created by authors according to <https://www.fina.hr/poduzetnici>

Digitalization of the tax system implies a personalized and reliable service that is accessible at all times and easy to apply. Digitalization of Tax Administration begins in 2007 when the electronic service system ePorezna was introduced for the first time. The service encompasses a set of services for taxpayers, enabling taxpayers to perform tax obligations by Internet. This system significantly relieves tax administrators as well as taxpayers. In order to understand the current state of digitalization in Croatian taxation system (Table 3), attention will be paid to the normative arrangements for filing tax returns and other data electronically.

Table 3: Current state of the digitalization of taxation system in Croatia

FEATURE	EXPLANATION
<i>Normative framework</i>	General Tax Act (Official Gazette 115/16, 106/18) Accounting Act (Official gazette 78/15, 134/15, 120/16, 116/18) Act on Value Added Tax (Official gazette 73/13, 99/13, 148/13, 153/13, 143/14, 115/16, 106/18)
<i>Who is required to file a tax return electronically</i>	Medium-sized and large enterprises according to Accounting Act: entrepreneurs who exceed two out of three criteria (total assets 150,000,000 HRK; total revenues 300,000,000 HRK; average number of employees 250) including banks, savings banks, housing savings banks, electronic money institutions, insurance companies, reinsurance companies, leasing companies and other institutions under the Accounting Act. Enterprises that are in value added (VAT) system that includes entrepreneurs whose taxable deliveries over the past year exceed 300,000 HRK.
<i>Services of Unified Tax Administration Portal (ePorezna)</i>	A. managing taxpayer's data B. review of taxes and other data in the Tax administration register C. submission of electronic forms D. submission of electronic requests E. seeking tax refund F. the realization of electronic communication with the Tax Administration in order to meet the tax obligations

<i>Forms and requests that can be submitted electronically</i>	A. Personal income tax and contributions B. Corporate income tax C. Value added tax D. Consumption tax E. Tax on motor vehicle liability insurance premiums F. Games of chance and prize games G. Request for registration for value added tax purposes H. Application to the taxpayer's register (RPO) I. Request for tax certificate issue J. Request for exchange of information in the taxpayer's register K. Request for a refund of contributions above the maximum base L. Request for certification of the PKK M. Request for change of tax method N. Request for complaint / appeal O. Request for administrative contract P. Proposal to conclude a tax settlement Q. Issuing / editing tax cards
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Source: Created by authors according to <https://e-porezna.porezna-uprava.hr/Upute/G2B/ePorezna%20G2B-%20Korisni%C4%8Dki%20priru%C4%8Dnik.pdf>

The General tax act defines that all medium and large enterprises in terms of the provisions of the Accounting Act and all taxpayers in VAT system are obliged to submit tax returns or other information required for taxation to the Tax Administration by electronic means. In addition, the Act stipulates that when submitting tax returns and other data electronically, companies must use qualified certificates issued by an authorized legal entity registered for issuing certificates and electronic systems established exclusively for the purpose of data transfer. In addition, at the request of the tax authorities, the company must provide access and download documents in electronic format stored on its computer system (General Tax Act, Official Gazette 115/16, 106/18). Since the submission of tax documents electronically is an obligation for taxpayers, it is necessary that the competent authorities of the Tax Administration enable the delivery of tax documents in this way. For this reason, the Tax Administration has designed the Unified Tax Administration Portal (ePorezna-JPPU). It represents “the central place where taxpayers can access the Electronic Tax Administration services according to the One-Stop-Shop principle. Available services include the management of taxpayers' information, receipt of documents, submission of forms and requests and many other services. Through the ePorezna-JPPU system, it is possible to use electronic tax administration services in a quick and easy way at any time and from anywhere. The use of the application is safe, and the confidentiality and inviolability of the data is guaranteed” (<https://e-porezna.porezna-uprava.hr/Pages/Ousluzi.aspx>). According to the aforementioned data, certain changes in the digitalization of the Croatian tax system are visible. The development of new technology-based solutions enables users to fill, sign and send electronic forms. These solutions result in less manual processing, reduce costs and significantly shorten time spent on fulfilling legal obligations.

## Conclusions

Research findings provide a valuable insight in the way that accountants and tax administrators could benefit from more intense use of information technology. The advantages of using advanced information technology in business are numerous. Therefore,

sometimes it is surprising that companies have insufficiently used its benefits. The reason for this situation can be found in the fact that technology is still not easily available for use in the majorities of small enterprises due to the cost component. In addition to this, a significant contribution to non-use of advanced technology lies in the fear of unknown and challenges in the area of change management that are inevitable.

The paper focuses on the research of the current state and future trends in the area of digitalization of financial reporting and tax system in the Republic of Croatia. The important finding of the research show that some changes have been made. The basis for the widespread use of electronic business has been introduced. The normative acts which regulate the use of electronic signatures and issuance of e-invoices have been adopted, cloud computing is increasingly evolving, the tax administration continuously expands the offer of its electronic services. Therefore, a significant momentum can be expected in e-business of Croatian economy. However, there is space for improvement of digital reporting and taxation processes in Croatia and one can say that the beginning of the real digitalisation in accounting and taxation system is still expected in Croatia.

Finally, it should be noted that the results presented here have their own limitations. The fact that so far no comprehensive empirical research has been carried out encompassing the personal attitudes of accountants, entrepreneurs, taxpayers as well as tax administrators in the context of digitalization of accounting and taxation processes, leaves space for further research which could be focused on exploring digitalization practices on a sample of Croatian companies.

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# NON-FINANCIAL REPORTING IMPLEMENTATION – A CROATIAN-GERMAN CONTEMPLATION

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## Abstract

*Non-financial reporting is considered of great importance nowadays since only financial reporting is not sufficient to get a complete picture of business operations. This is reflected in the EU Directive 2014/95/EU, which is known as a corporate social and responsibility reporting Directive. EU member states had to incorporate the requirements of this Directive into their national legislation and start to implement them as of financial year 2017. The aim of this study is to comprise the non-financial reporting habits of Croatian and German companies before and after the effective date of the Directive. A research on disclosures regarding the environmental, social and employee-related, human rights, anticorruption and bribery matters has been carried out on a sample of nine Croatian and nine German large companies. Even though some companies disclose the financial and non-financial information under the integrated report, most companies prepare a separate report in the form of sustainability report, management report, non-financial report or disclose non-financial information under the annual report since the formal structure of this kind of reporting is not prescribed. Using the content analysis method, all kinds of the non-financial statements have been analysed. Both, Croatian and German companies have started to report about non-financial issues even before the Directive came into force. After the effective date, it was noticed that they improved their non-financial statements, but not significantly. Even though Croatian and German companies are aware of the importance of reporting on non-financial issues, there is still room for improvements. Since there are many different kinds of reports, the companies should think about to prepare an integrated report in order to summarize the disclosures and make them concise, and to avoid multiple disclosures under the different kinds of reports. That would simplify the preparation techniques and improve the relevance of the integrated report. This study has some limitations, in the first line a small sample of companies which reports have been observed. Future studies could consider more companies*

*in the research sample and the impact of the company's characteristics on the quality of non-financial reporting. This could enlarge the using of statistical methods in research and improve overall conclusion in terms of statistical significance.*

**Keywords:** non-financial reporting, EU Directive, Croatia, Germany

**JEL classification:** M41, M48

## **Introduction**

“Corporate Social Responsibility (CSR) can be regarded as one of the most important concepts stressing the business sector’s role for achieving sustainable development” (Esders in Schaltegger, 2008: 7). At European level, Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU regarding the indication by certain large companies and groups of non-financial and diversity information has come into force (in further text: CSR Directive). The aim of the CSR Directive is to bring the social and environmental reporting of companies in all sectors to a comparable high level across the EU. In addition, the CSR Directive is intended to promote a sustainable global economy that takes into account the environmental, economic and social dimensions of sustainability. The standard goal of profit maximization counteracts many societal goals or needs such as environmental protection. Transparency may be regarded as a powerful mean which leads to align these goals. The disclosure of information on sustainability is important in order to strengthen consumer confidence in companies and their consideration of sustainable aspects. The issue of sustainability is also increasingly to be seen as an important component of corporate governance. The sustainability-related effects of the business activities of companies are becoming an important criterion for investors and customers, who are increasingly incorporating corresponding information from companies into their own decision-making processes in the context of awarding contracts. This should motivate companies to engage in non-financial reporting. Companies can make use of national, European or international frameworks to disclose such information. For the financial years from 2017 onwards, certain large companies due to the CSR Directive have to publish a non-financial statement. This includes reporting on environmental, employee, social, human rights and anti-corruption aspects. This has been widening reporting requirements notably with the purposes of fulfilling information necessities of stakeholders and directing the economy towards a sustainable orientation. The non-financial statements based on the CSR Directive have to be published for the first time from the financial year 2017 onwards for both countries, Croatia and Germany. The research includes the comparison of non-financial reporting of certain companies in Croatia and Germany before and after the effective date of the CSR Directive. From this, the influence on the implementation of the CSR Directive can be derived.

“The measurement of environmental performance must go beyond the use of just financial information because it is also of great interest to consider other, non-financial measures included in the annual reports” (Moneva & Cuellar, 2009: 442). A research conducted by McWilliams & Siegel, 2001: 125) showed that “the likelihood of economies of scale and scope in the provision of CSR implies that large, diversified companies will be more active in this arena”. There have been numerous researches which have investigated the influence of CSR reporting at national and international level. Dhaliwal et al. (2011: 59) found that companies which have voluntarily disclosed non-financial information regarding the CSR to

“enjoy a subsequent reduction in the cost of equity capital” and “attract dedicated institutional investors and analyst coverage”. The results of the research conducted by Perez (2015: 22) who has reviewed current literature on CSR showed that “CSR reporting is especially useful for generating corporate reputation, at least from a theoretical perspective”. Based on the research conducted, Carroll & Shabana (2010: 102) concluded that “competitive advantage arguments contend that, by adopting certain CSR activities, a firm may be able to build strong relationships with its stakeholders and garner their support in the form of lower levels of employee turnover, access to a higher talent pool, and customer loyalty”.

Studies in Croatia and Germany show the influence of reporting non-financial aspects even before the EU Directive came into force, for example, on large capital market companies in Croatia and in Germany (e.g. see Dečman, 2016; Dečman & Rep, 2018; Meeh-Bunse, Hermeling & Schomaker, 2018; Meeh-Bunse & Schomaker, 2018). 28 out of the DAX 30 companies, an index that comprises the 30 largest German preparers by market capitalization, anticipated their obligation and reported at least one financial year early. For such formally voluntary reporting for 2016, five companies chose integrated reporting while in the other cases a separate sustainability report is available. In addition, 27 of the DAX 30 companies used the GRI Standards for sustainability reporting (Theis, 2018: 97). Integrated reporting, as used by some DAX companies according to the study, offers an opportunity to include non-financial aspects as well as exclusively financial aspects in the reporting. Integrated reporting aims to align relevant information on a company's strategy, governance and performance to reflect the economic, environmental and social environment in which it operates. The International Integrated Reporting Council (IIRC) was established in 2010 with the aim of developing an internationally recognized integrated reporting framework. In consultation with regulators, companies and investors, an IR framework was published in 2013. The voluntary standard is intended to support companies in implementing integrated reporting. Thus, integrated reporting is an important instrument for non-financial reporting. (IIRC, 2013: 1).

Hladika and Valenta (2016) have conducted a research in order to investigate whether and to what extent companies listed on a stock exchange disclose integrated reports and which framework for compiling the non-financial reports they use. Investigated stock exchanges and related indices were Zagreb Stock Exchange (CROBEX10), London Stock Exchange (FTSE100), Frankfurt Stock Exchange (DAX30), New York Stock Exchange (S&P500), Johannesburg Stock Exchange (S&P South Africa), and Tokyo Stock Exchange (NIKKEI225). *“Over the observed period (2013-2015), the trend of increasing the number of published non-financial reports on most of the world's stock exchanges, especially on the Frankfurt and Zagreb Stock Exchange, is visible”* (Hladika & Valenta, 2016: 177).

If, for example, sustainability reporting refers to German SMEs for the 2015 financial year, a study of 40 already reporting companies shows that 36 have published a separate sustainability report. (IÖW/future e.V., 2017, 84). The result should be seen against the background that it is not mandatory for SMEs to publish a sustainability report both before and after the CSR Directive comes into force. An analysis of selected companies in the Osnabrück region for the 2014/2015 financial year conducted by Meeh-Bunse, Hermeling & Schomaker (2018: 64) shows that only one company out of nine publishes a non-financial statement, while the other companies only provide information on specific non-financial aspects. Compared to certain large entities, SMEs are not obliged to report on non-financial aspects. SMEs are therefore expected to report less.

Several studies related to financial and non-financial disclosures have already been conducted in Croatia, too. An empirical research using the questionnaire was conducted in 2015 by Osmanagić Bedenik et al. (2016). Among other conclusions, *“the only internal determinant that is consistently found to have a positive effect on sustainability reporting is company size”* (Osmanagić Bedenik et al., 2016: 18). Whether Croatian companies report on the non-financial information in their annual reports and the extent to which they consider the non-financial information useful for the corporate governance was investigated by Dečman (2016). Results have shown that the information related to customers are most frequently presented in the annual report (69 %) followed by organizational structure (40 %), human resources (29 %), social responsibility (16 %), and research and development (15 %). In addition, a frequency of using certain accounting information for the purpose of corporate governance according to managers’ and accountants’ opinion has been analyzed. *“Statistically significant difference between managers and accountants in the frequency of using certain non-financial information was found for market share, employee satisfaction, adoption of new knowledge and skills, the quality of information systems, databases and business networks, and for the organizational culture, sharing knowledge and teamwork at the level of less than 5% of statistical significance”* (Dečman, 2016: 537). Another research conducted on a sample of Croatian publicly listed companies (Galant & Černe, 2017) validated that larger, more profitable and efficient companies are more probable to disclose non-financial reports, while indebtedness is not significant for it. *“Based on the presented results it could be concluded that companies disposing with larger amount of resources, greater amount of revenues and larger number of employees are more probable to disclose non-financial reports”* (Galant & Černe, 2017: 55). A research related to the non-financial information presented in the notes to financial statements and annual reports has been carried out by Dečman and Rep (2018) on a sample of 20 Croatian companies achieving the greatest revenue among Croatian companies in the financial year 2016. It has been concluded that *“Croatian companies still do not fully recognize the benefits of integrated reporting”* (Dečman & Rep, 2018: 40) since only 50 % of the investigated companies have disclosed the information about human capital and environmental considerations, among the other investigated information.

In order to compare a non-financial reporting practice in Croatia and Germany before and after the effective date of mandatory non-financial reporting for large and public undertakings, a research on disclosures regarding the environmental, social and employee-related, human rights, anticorruption and bribery matters has been carried out. The content analysis of the annual, management, sustainability, and non-financial reports was used as a research methodology. The conclusion has been made using the method of comparison.

## **Requirements of the Directive 2014/95/EU**

The relevance of non-financial aspects in corporate reporting is promoted by appropriate legislative measures. At the European level through the EU Directive 2014/95/EU. The EU Directive affects certain large companies. According to the Article 1 of the EU-Directive 2014/95/EU:

*“Large undertakings which are public-interest entities exceeding on their balance sheet dates the criterion of the average number of 500 employees during the financial year shall include in the management report a non-financial statement containing information to the extent necessary for an understanding of the undertaking's development, performance, position and*

*impact of its activity, relating to, as a minimum, environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters.”*

The legal framework obliges certain large companies of public interest to add a non-financial statement to their management report. The law applies retroactively for financial years starting 1<sup>st</sup> January 2017 or later if their financial year differs from the calendar year. The significance of the management report is thereby strengthened and provides a more comprehensive picture of the entrepreneurial situation. Due to the additional information, the information base of the various interest groups (stakeholders) of companies is broadened. Thus, an assessment of the company can also be made on the basis of non-financial aspects and not only on the basis of solely financial information and the connected management report. Entities have the possibility to use national and international frameworks in the preparation of the non-financial declaration. The delimitation of the circle of obliged preparers results from the implementation of the CSR Directive into national law. A discussed expansion of the circle of users was not adopted in German law. This has been discussed in advance. The EU Directive 2014/95/EU explicitly points to an extended range reporting of responsibility of large companies. The company declares itself to be subject to certain reportable issues. These include:

- Environmental concerns
- Employee concerns
- Social concerns
- Respect for human rights
- Combating corruption and bribery

The order can be chosen freely and is not to be understood as a list of priorities. One aspect may well include several issues that are explicitly addressed in the statement. There are frameworks for separate sustainability reports that disburden from such a non-financial statement. Examples are the guidelines of the Sustainability Code (DNK), the European Environmental Management and Audit Scheme (EMAS) or the Global Reporting Initiative (GRI Standards). The following table provides examples of the reportable aspects (European Commission, 2017: 8):

*Table 1. Reportable Aspects and Exemplary Facts*

Aspect	Issue (example)
<b>Environmental concerns</b>	<ul style="list-style-type: none"> <li>• Greenhouse gas emission</li> <li>• Water consumption</li> <li>• Air pollution</li> </ul>
<b>Employee concerns</b>	<ul style="list-style-type: none"> <li>• Gender equality</li> <li>• Employment condition</li> <li>• Safety at work</li> </ul>
<b>Social concerns</b>	<ul style="list-style-type: none"> <li>• Dialogue at local or regional level</li> <li>• Measures to protect the development of local communities</li> </ul>
<b>Respect for Human rights</b>	<ul style="list-style-type: none"> <li>• Measures to prevent human rights violations</li> </ul>

Aspect	Issue (example)
Combating corruption and bribery	<ul style="list-style-type: none"> <li>Existing instruments to combat corruption and bribery</li> </ul>

*Source: authors' presentation*

For each aspect, information must be provided to understand the course of business, the results of operations, the position of the group as well as the impact of the business on the operational activities regarding reportable aspects.

## Implementation of the EU Directive into national legislation

### *The case of Croatia*

Financial reporting in Croatia is regulated by the Accounting Act and the Ordinance on the content and structure of the financial statements. There is also a Companies Act but it does not prescribe the accounting and reporting issues. Since Croatia joined the European Union on 1<sup>st</sup> July 2013, it had to, *inter alia*, harmonize its national legislation with the EU legislation. The Accounting Act have had to be aligned with the Directive 2013/34/EU by 20<sup>th</sup> July 2015. From the access to the EU, Croatian Accounting Act has been changed and amended several times. The first issue harmonized with the Accounting Directive was voted by the Croatian Parliament on 3<sup>rd</sup> July 2015 and issued on 17<sup>th</sup> July 2015 (Accounting Act, Official Gazette No. 78/2015). The Act came into force on 1<sup>st</sup> January 2016 (except of two articles which have been postponed to 1<sup>st</sup> January 2018). Minor changes were made on 11<sup>th</sup> December 2015 (Accounting Act, Official Gazette No. 134/2015). By 6<sup>th</sup> December 2016, the EU member states had to comply their legislation with the CSR Directive. In December 2016 Croatia has voted, adopted, and published the Act on amendments to the Accounting Act. Thus, Croatia has complied its national legislation with the Directive 2014/95/EU. In other words, Croatia has directly adopted and transferred into its legislation, *inter alia*, the Article 1 of the Directive 2014/95/EU and by doing so aligned its legislation in accordance with the CSR Directive.

### *The case of Germany*

The implementation of the EU Directive in Germany is achieved through the CSR Directive Implementation Act (CSR-RUG). The requirement for adding a non-financial statement to the management report applies to a specific group of companies. This is regulated in § 289b (1) of the German Commercial Code (HGB). Accordingly, a preparer must extend its management report to include a non-financial statement if the following characteristics are fulfilled:

*A corporation fulfils the requirements of § 267 III 1 HGB and is thus considered a "large company". Two of the following three thresholds must be exceeded on two consecutive balance sheet dates. This concerns a balance sheet total of € 20 million, sales revenues of € 40 million and the employment of more than 250 employees on an annual average. The company is capital market-oriented in accordance with § 264d HGB. On an annual average, more than 500 employees.*

If the requirements are met, the companies are so-called Public Interest Entities (PIEs). Insurance companies and credit institutions with more than 500 employees are also regarded as public interest entities according to the EU-Directive 2013/34/EU. There were also discussions about lowering the threshold for employees to 250, which would expand the circle

of users. Both approaches have not, however, been taken into account in national law. At the same time, the efforts of the legislator not to burden companies excessively with legal obligations and thus keeping cost low are shown by this.

## **Central findings in studies on non-financial reporting before the effective date**

### ***The case of Croatia before the effective date***

Croatian companies are obliged to follow the provisions of the Accounting Act in terms of accounting reporting. Micro, small, and medium-sized entities should prepare and present their annual financial statements according to the Croatian financial reporting standards. Micro and small entities are obliged to prepare and announce the balance sheet, income statement, and notes to the financial statements. On the other hand, medium-sized and large entities, financial institutions, and public interest entities shall prepare the balance sheet, income statement, statement of other comprehensive income, cash flow statement, statement of changes in equity, and notes to the financial statements applying the International financial reporting standards (excluding medium-sized which can apply national standards and therefore they are not obliged to prepare the statement of other comprehensive income). Besides, medium-sized and large entities shall announce the audit report if their statements are a subject to the obligation to carry out audit, as well as the annual report which consists of annual financial statements, audit statement if applicable, statement on application of the corporate governance code (public interest companies), and the management report.

The management report shall contain the data related to the display of (Accounting Act, Official Gazette No. 78/2015, 134/2015, art. 21, par. (2) 4):

- a) *“probable future business development*
- b) *research and development activities*
- c) *information on the repurchase of treasury shares in accordance with the regulations regarding companies operations*
- d) *information on the existing branch offices of the entity*
- e) *financial instruments used, if this is significant for the valuation of assets, liabilities, financial position, and business performance:*
  - *the objectives and policies of the entity in relation to the financial risk management, together with the policy of protecting each major type of forecasted transaction where hedge accounting is applied*
  - *the exposure of the entity to price risk, credit risk, liquidity risk, and cash flow risk.”*

Before the effective date, Croatian companies could report concerning non-financial information either through the notes to financial statements, annual report or management report. In order to search for their non-financial reporting habits, the research regarding integrated reporting of Croatian companies was carried out by Dečman and Rep (2018) for 20 Croatian companies with the highest revenue in financial year 2016. The research was based on the information disclosed in the notes or annual report. *“The aim of the paper was to identify whether and to what extent largest companies in Croatia present the information regarding their intellectual capital, principle customers, business partners, environmental considerations, future plans, investments, market conditions, and further expectations of business development”* (Dečman & Rep, 2018: 31). In order to compare non-financial reporting habits in Croatia and Germany before and after the effective date, the research was



re-conducted because not all of the non-financial information that were investigated were comparable. In addition, since the research conducted in Germany has obtained nine companies based in the German region Osnabrück, this time the research in Croatia was also based on nine companies. These were nine companies with the highest revenue in the financial year 2016 which are based in the most developed Croatian county, Zagreb City. All of them have been included in the prior research which has comprised of 20 companies. Some general information about the companies taken into the research sample are presented in the table 2.

*Table 2: General information about the Croatian companies from the research sample*

COMPANY	Published report	ASPECTS			
		Number of pages	Number of employees	Turnover (€ million)	Total assets (€ million)
INA d.d.	Integrated annual report*	272	10.861	2.164,27	2.705,60
KONZUM d.d.	Annual report	107	11.500	1.408,50	1.098,44
Hrvatska elektroprivreda d.d.	Annual management report + Sustainability report**	23 + 133	428	1.180,88	4.734,77
HEP – Operator distribucijskog sustava d.o.o.	Management report + Sustainability report**	29 + 133	7.569	882,53	2.231,64
Hrvatski Telekom d.d.	Annual report	114	3.730	818,40	1.149,87
Petrol d.o.o.	Annual report	58	796	569,30	220,54
PLIVA HRVATSKA d.o.o.***	Sustainability report*	96	2.246	565,43	869,62
KAUFLAND HRVATSKA k.d.****	Annual report	56	3.565	454,59	462,23
ZAGREBAČKI HOLDING d.o.o.	Annual report	157	8.196	447,03	2.084,70

\*Report compiled according to the Global Reporting Initiative (GRI) Standards

\*\*Sustainability report is compiled for the Group

\*\*\*Sustainability report for financial years 2016 and 2017. Biennial report

\*\*\*\*There is a “DETOX-Report” issued by the Kaufland Warenhandel GmbH & Co. KG available at the website but it is not a report of Croatian undertaking

*Source: authors' presentation*

The non-financial information (proposed in the GRI Standards) disclosed in their annual reports are presented in the table 3 as dummy variables (1 if an information is disclosed and 0 if an information is not disclosed).

*Table 3: Non-financial information disclosed by Croatian companies before the effective date*

COMPANY	ASPECTS					Average
	Environmental concerns	Employee concerns	Social concerns	Respect for Human rights	Combating corruption and bribery	
INA d.d.	1	1	1	1	1	100 %
KONZUM d.d.	1	0	1	0	0	40 %
Hrvatska elektroprivreda d.d.	1	1	1	1	1	100 %

COMPANY	ASPECTS					Average
HEP – Operator distribucijskog sustava d.o.o.	1	1	1	1	1	100 %
Hrvatski Telekom d.d.	1	1	1	0	0	60 %
Petrol d.o.o.	0	0	0	0	0	0 %
PLIVA HRVATSKA d.o.o.	1	1	1	1	1	100 %
KAUFLAND HRVATSKA k.d.	0	0	0	0	0	0 %
ZAGREBAČKI HOLDING d.o.o.	1	1	1	1	1	100 %
<b>Average</b>	78 %	67 %	78 %	56 %	56 %	67 %

*Source: authors' presentation*

According to the research results, most companies taken into the research sample have disclosed all searched non-financial information, mostly in the annual report. Several companies already compile their sustainability report according to the GRI Standards. These companies are Ina d.d., HEP grupa (Hrvatska elektroprivreda d.d. and HEP – Operator distribucijskog sustava d.o.o.), Hrvatski Telekom d.d., Pliva Hrvatska d.o.o. and Zagrebački holding d.o.o. In spite of this, Hrvatski Telekom d.d. did not disclose the information regarding respect for human rights and combating corruption and bribery. On this basis, it can be concluded that there is still a room for improvement. On the other hand, there are two companies which have not disclosed any of investigated information (Petrol d.o.o. and Kaufland Hrvatska d.o.o.), what can be considered to be concerning. Nonetheless, this was the state before the effective date of the Directive and all those disclosures may be considered as a positive example since they were at a completely voluntary level.

### ***The case of Germany before the effective date***

In general, all companies in Germany have to prepare annual financial statements on the basis of the legal provisions of the German Commercial Code (HGB). According to § 242 HGB, annual financial statements consist of a balance sheet and an income statement. In the case of corporations, notes are added in accordance with § 264 HGB. A management report can be added. The requirements for annual financial statements are constantly being expanded. For example, aspects of Corporate Social Responsibility (CSR). The following empirical analysis first aims to examine evidence that shows how well companies are prepared for changing transparency requirements in corporate governance before the effective date. Specifically, the question is being investigated as to whether companies in Osnabrück are making non-financial reports on sustainability aspects. The study investigates the nine largest Osnabrück-based companies from various sectors, based on turnover, whose management reports are analyzed with regards to non-financial reporting. In order to test whether selected large companies based in Osnabrück, issue a non-financial report, the group management reports for the financial year 2016 were examined. These management reports were published in between the adoption of the EU directive and the national transposition. The digital Federal Gazette was used as the database for the examined group management reports. The companies whose group management reports have been examined accordingly are listed first:

Table 4: General information about the German companies from the research sample

COMPANY	ASPECTS		
	Turnover (€ million)	Number of employees	Sector
<b>Hellmann Worldwide Logistics GmbH &amp; Co. KG Osnabrück (K)*</b>	2.474,9	10.536	Transport industry
<b>KME-AG (K)*</b>	1.703,0	3.787	Non-ferrous metal industry
<b>Homestead GmbH &amp; Co. KG</b>	758,8	1.514	Construction industry
<b>Felix Schoeller Holding GmbH &amp; Co. KG (K)*</b>	710,3	2.261	Paper industry
<b>Q1 Energie AG (K)**</b>	481,1	199	Wholesale (Mineral oils)
<b>Piepenbrock Business group (K)*</b>	503,2	26.069	Services, Packaging technology
<b>Stadtwerke Osnabrück AG (K)*</b>	427,9	1.245	Energy provider, Transport company
<b>Paracelsus-Kliniken Deutschland GmbH &amp; Co. KGaA (K)*</b>	417,8	5.379	Health Care
<b>Conditorei Coppenrath &amp; Wiese GmbH &amp; Co. KG</b>	400,0	2.350	Food industry

\* (K) = consolidated group or group information

\*\* Figures for the financial year 2015/2016

Source: authors' presentation

All companies already report (selected) non-financial aspects. This is to be deduced from § 289 III HGB, which requires reporting on non-financial aspects, as far as they are relevant to the understanding of the course of business or the situation. The companies report individual sustainability aspects. The details of specific non-financial aspects are further analyzed on the basis of the individual management reports. The result illustrates which specific non-financial aspects were explicitly mentioned (1) or not (0) in the management report.

Table 5: Non-financial information disclosed by German companies before the effective date

COMPANY	ASPECTS					Average
	Environmental concerns	Employee concerns	Social concerns	Respect for Human rights	Combating corruption and bribery	
Hellmann Worldwide Logistics GmbH & Co. KG Osnabrück (K)*	1	1	0	0	0	40 %
KME AG (K)*	1	1	1	1	1	100 %
Homestead GmbH & Co. KG	0	1	0	0	0	20 %
Felix-Schoeller Holding (K)*	1	1	1	0	0	60 %
Q1 Energie AG (K)**	1	1	0	0	0	40 %
Piepenbrock Business group (K)*	1	1	1	1	1	100 %
Stadtwerke Osnabrück AG (K)*	1	1	1	0	0	60 %

	ASPECTS					Average
Paracelsus-Kliniken Deutschland GmbH & Co. KGaA (K)*	0	1	0	0	0	20 %
Conditorei Coppentrath & Wiese GmbH & Co. KG	1	1	1	1	1	100 %
<b>Average</b>	78 %	100 %	56 %	33 %	33 %	60 %

\* (K) = consolidated group or group information

\*\* Figures for the financial year 2015/2016

Source: authors' presentation

Conditorei Coppentrath & Wiese GmbH & Co. KG reports on all relevant aspects in a separate sustainability report. This company is part of the Dr. Oetker KG and the sustainability report was prepared in accordance with the GRI guidelines (GRI G4). Piepenbrock GmbH und Co KG publishes sustainable aspects online on its website and bases its disclosures on the reporting standards of the Global Reporting Initiative. This means that the company already fulfils the required information before the EU-Directive comes into force. Another company (KME-Group) reports on all aspects too. Accordingly, a code of conduct and specific information on corporate policy have been published by KME-Group, naming the aspects and setting out measures. In summary it should be noted that aspects of environmental and employee concerns were mentioned. The extent to which each aspect has been discussed is highly variable. In addition, it is striking that aspects regarding social concerns, respect for human rights and anti-corruption and bribery were only marginally mentioned. A total of three companies meet the requirements and report on all aspects. All other companies do not fully report on all aspects.

## Non-financial reporting of selected companies after the effective date

### *The case of Croatia after the effective date*

As already mentioned above, Croatian companies have to include a non-financial statement in their management report or can publish it separately. To clarify, the non-financial statement can be announced separately or as a part of the management report which, in addition, can be a part of the annual report. Besides, the information regarding environmental, employee and social issues can be disclosed in the sustainability report. Therefore, the Croatian Accounting Act does not prescribe that the report has to be called the *non-financial statement*. Table 6 gives the main general information about the companies from the research sample.

Table 6: General information about the Croatian companies after the effective date

COMPANY	ASPECTS				
	Published report	Number of pages	Number of employees	Turnover (€ million)	Total assets (€ million)
INA d.d.	Integrated annual report*	280	10.782	2.598,27	2.568,40
KONZUM d.d.	Annual report + Audit report	96	11.045	1.219,47	665,31
Hrvatska elektroprivreda d.d.	Annual management report + Sustainability report**	140 + 67	451	1.176,51	4.582,37
HEP – Operator distribucijskog sustava	Annual financial statements and Audit report +	94 + 67	7.454	576,71	2.231,64

COMPANY	ASPECTS				
	Published report	Number of pages	Number of employees	Turnover (€ million)	Total assets (€ million)
d.o.o.	Sustainability report**				
Hrvatski Telekom d.d.	Annual report	131	3.709	848,67	1.295,33
Petrol d.o.o.***	Annual report	59	880	627,08	229,98
PLIVA HRVATSKA d.o.o.****	Sustainability report*	96	2.402	582,52	904,49
KAUFLAND HRVATSKA k.d.*****	Annual report	53	3.081	484,54	451,78
ZAGREBAČKI HOLDING d.o.o.	Annual report	182	8.825	462,49	2.053,98

\*Report compiled according to the GRI Standards

\*\*Sustainability report compiled for the Group

\*\*\* They are obliged to compile a safety report and they do so

\*\*\*\* Sustainability report for financial years 2016 and 2017. Biennial report

\*\*\*\*\*There is a “DETOX-Report” issued by the Kaufland Warenhandel GmbH & Co. KG available at the website but it is not a report of Croatian undertaking

*Source: authors' presentation*

Croatian Accounting Act prescribes that an entity which is a subsidiary undertaking, as well as a parent undertaking which is also a subsidiary undertaking shall be exempted from the obligation of including a (consolidated) non-financial statement in the (consolidated) management report if that exempted entity (parent undertaking) and its subsidiaries are included in the consolidated management report or the separate report of another entity (Accounting Act, Official Gazette No. 120/16, articles 21.a (7) and 24.a (7)). Based on that, subsidiaries which parent undertaking is based in Croatia may include their non-financial statements in a consolidated sustainability report. However, it was noticed that subsidiaries which parent undertaking is based outside Croatia have just stated that they are excluded and the consolidated management report is compiled by the parent undertaking but not announced in Croatia (or at their websites) so it was not available.

It is clearly seen that most companies disclose the non-financial information under the annual report, while three of them have also a separate sustainability report. After the effective date, the companies have not changed the name of their reports under which they disclose non-financial information. Reporting about the non-financial information proposed by the GRI Standards has been analyzed after the effective date on the same sample as before the effective date. Observed reporting areas have also been the same. Table 7 presents whether the observed non-financial information was disclosed (1) or not (0).

*Table 7: Non-financial information disclosed by Croatian companies after the effective date*

COMPANY	ASPECTS					Average
	Environmental concerns	Employee concerns	Social concerns	Respect for Human rights	Combating corruption and bribery	
INA d.d.	1	1	1	1	1	100 %
KONZUM d.d.	1	1 (0)	1	0	0	60 % (40%)
Hrvatska elektroprivreda d.d.	1	1	1	1	1	100 %
HEP – Operator distribucijskog sustava d.o.o.	1	1	1	1	1	100 %
Hrvatski Telekom d.d.	1	1	1	0	0	60 %
Petrol d.o.o.	1 (0)	0	0	0	0	20 % (0 %)
PLIVA HRVATSKA d.o.o.	1	1	1	1	1	100 %
KAUFLAND HRVATSKA k.d.	0	0	0	0	0	0 %
ZAGREBAČKI HOLDING d.o.o.	1	1	1	1	1	100 %
<b>Average</b>	89 % (78 %)	78 % (67 %)	78 %	56 %	56 %	71 % (67 %)

*Amounts in brackets reflect the state before the effective date only if it differs from the current state.*

*Source: authors' presentation*

Since the disclosure about the non-financial information was well prepared even before the effective date, the changes are to be minor. Disclosures regarding environmental and employee concerns are improved, as well as the overall non-financial reporting. Konzum d.d. included the information regarding the employee concerns into their annual report, while Petrol d.o.o. informed about the environmental concerns. It is important to emphasize that these are the companies among the top 20 through the several years based on the turnover. It is not known why two companies, namely Petrol d.o.o. and Kaufland Hrvatska d.o.o., do not report on the non-financial information after the effective date and it would be interesting to make a deeper investigation, possibly in the form of interview. Based on the research conducted, it can be concluded that the largest companies in Zagreb City as well as in Croatia mainly disclose non-financial information in accordance with the GRI Standards framework, but there is also a need for further improvement of the non-financial reporting of companies which still do not disclose the non-financial information at a satisfactory level.

#### ***The case of Germany after the effective date***

As already explained, the Osnabrück companies reported non-financial information before the CSR-RUG came into force in Germany. In accordance with § 289c of the German Commercial Code (HGB), the contents of a non-financial statement shall contain information on environmental, employee and social concerns, respect for human rights and combating corruption and bribery. It must now be examined to what extent the legal change has also

resulted in a change in the publication of non-financial information by the mentioned companies. First, the company's data for financial year 2017.

*Table 8: General information about the German companies after the effective date*

COMPANY	ASPECTS		
	Turnover (€ million)	Number of employees	Sector
<b>Hellmann Worldwide Logistics GmbH &amp; Co. KG Osnabrück (K)*</b>	2.288,3	10.433	Transport industry
<b>KME-AG (K)*</b>	1.876,1	3.814	Non-ferrous metal industry
<b>Homestead GmbH &amp; Co. KG</b>	1.098,2	1.663	Construction industry
<b>Felix Schoeller Holding GmbH &amp; Co. KG (K)*</b>	747,5	2.230	Paper industry
<b>Q1 Energie AG (K)**</b>	523,3	233	Wholesale (Mineral oils)
<b>Piepenbrock Business group (K)*</b>	551,5	26.631	Services, Packaging technology
<b>Stadtwerke Osnabrück AG (K)*</b>	439,0	1.295	Energy provider, Transport company
<b>Paracelsus-Kliniken Deutschland GmbH &amp; Co. KGaA (K)*</b>	424,3	5.213	Health Care
<b>Conditorei Copenrath &amp; Wiese GmbH &amp; Co. KG</b>	420,0	2.850	Food industry

*\* (K) = consolidated group or group information*

*\*\* Figures for the financial year 2015/2016*

*Source: authors' presentation*

A non-financial (group) declaration must be submitted for each financial year. Companies subject to reporting requirements can publish the non-financial information in three different ways in accordance with § 289b of the German Commercial Code (HGB). In the management report, in a separate non-financial (group) report or in a separate non-financial (group) report on its website. The following table shows whether non-financial information is available (1) or not (0) in the company reports for the 2017 financial year.

*Table 9: Non-financial information disclosed by German companies after the effective date*

COMPANY	ASPECTS					Average
	Environmental concerns	Employee concerns	Social concerns	Respect for Human rights	Combating corruption and bribery	
Hellmann Worldwide Logistics GmbH & Co. KG Osnabrück (K)*	1	1	1 (0)	0	0	60 % (40 %)
KME AG (K)*	1	1	1	1	1	100 %
Homestead GmbH & Co. KG	0	1	0	0	0	20 %
Felix-Schoeller Holding (K)*	1	1	1	0	0	60 %
Q1 Energie AG (K)**	1	1	0	0	0	40 %

COMPANY	ASPECTS					Average
	Environmental concerns	Employee concerns	Social concerns	Respect for Human rights	Combating corruption and bribery	
Piepenbrock Business group (K)*	1	1	1	1	1	100 %
Stadtwerke Osnabrück AG (K)*	1	1	1	0	0	60 %
Paracelsus-Kliniken Deutschland GmbH & Co. KGaA (K)*	0	1	0	0	0	20 %
Conditorei Coppenrath & Wiese GmbH & Co. KG	1	1	1	1	1	100 %
<b>Average</b>	78 %	100 %	67 % (56 %)	33 %	33 %	62 % (60 %)

*Amounts in brackets reflect the state before the effective date only if it differs from the current state.*

*\* (K) = consolidated group or group information*

*\*\* Figures for the financial year 2015/2016*

*Source: authors' presentation*

The following changes can be identified when comparing the 2016 and 2017 financial years. At Hellmann, it is noticeable that a separate sustainability report has been published for the 2017 financial year but it does not follow a guideline. However, two of the five relevant non-financial aspects are not included in this sustainability report. The KME AG and Coppenrath & Wiese GmbH & Co. KG are also the only companies in the 2017 financial year to provide information on all aspects of sustainability via sustainability reports outside the consolidated financial statements and the management report. In the case of the other companies, there has been no change since the 2016 financial year. Employee aspects, environmental aspects and social aspects were mentioned in the majority of the management reports. Each company reported on employee aspects. Information on human rights (e.g. supply chains abroad) as well as the fight against corruption and bribery are not mentioned by the majority.

## Central Findings and Conclusion

It can be concluded that both, Croatian and German companies are aware of the importance of non-financial reporting since they have disclosed non-financial information even before the effective date of the CSR Directive. After the effective date, an improvement regarding the non-financial information disclosure is noticed, but the companies are recommended to continue with the improvements of their non-financial reports. The reason why the differences before and after the effective date are not found to be significant may lie in already standardized reporting habits of companies. Companies may consider preparing an integrated report instead of several non-financial reports in order to standardize their reporting and to harmonize with other companies.

The research has shown that five investigated Croatian companies have disclosed all the non-financial information taken into account. However, one company has not announced its non-financial report and one had disclosed only one observed non-financial issue. Since the disclosures regarding respect for human rights and combating corruption and bribery have found to be at low level, companies should put more effort considering these important issues.



The overall results may be considered satisfying, but there is still need for further improvements of non-financial reporting.

In summary, the analysis of the selected companies in Germany shows that two of the nine companies already report on all non-financial aspects before the EU Directive comes into force. These companies have recognized the relevance. All companies report on employee aspects. It can also be seen that there was only a minor change in the information on non-financial aspects in the 2016 and 2017 financial years at the companies mentioned. If, for example, the information on non-financial information in small and medium-sized enterprises is based on voluntariness, it can be assumed on the basis of the analysis that in many cases the expense is considered to be too great in relation to the benefit.

The comparison between the analyzed companies in Croatia and Germany shows a similar structure. Even before the CSR Directive came into force, there were companies that reported on all necessary non-financial aspects. Likewise, the overall change in the financial years examined is small in both countries.

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# ANALYSIS OF THE IFRSS' APPLICATION IN NORTH AND SOUTH AMERICAN COUNTRIES

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## Abstract

*The goal of this paper was to investigate how many countries in South and North America apply IFRSs as a basis for preparing financial statements. Today, IFRS are recognized as one of the most important instruments for financial reporting harmonization worldwide and many international organizations promote adoption of those standards. European Union also recognized importance of reliable and comparable financial statement as assumption for free exchange of capital across member states and therefore issued in 2002 Regulation requiring from all quoted companies at EU capital markets to prepare consolidated financial statements applying IFRSs. As a result, all EU member states should apply IFRSs for at least such category of companies. Countries usually apply some national standards for small and medium sized entities at national levels, but even those standards are in many cases under the influence of accounting principles form IFRSs. It can be said that IFRSs were primarily recognized as basis for financial reporting of listed companies but many national standards today represent shorten version of IFRSs influencing financial reporting within national boundaries. Due to the fact that IFRSs are very important in Europe, it was interesting to investigate how many countries and in which form in America apply IFRSs and IFRS for SMEs. Paper analyzes IFRS application in 23 North American countries and in 12 South American countries. This analysis was conducted on the basis of individual profiles of American countries published on official IFRS Foundation website. Research showed that most North American countries use IFRSs as basis for financial reporting for listed companies, namely; 14 countries require IFRSs for listed companies, 2 countries permits IFRSs for listed companies, 2 countries requires IFRSs or US GAAP-s, one requires only US GAAP-s (USA), 2 countries do not have stock exchange and only 2 countries require national standards for listed companies (but one of them – Cuba made strong commitment to move towards IFRS in future). IFRSs for SMEs are required or permitted in 19 countries and are not permitted in only 4 countries (Canada, Cuba, Mexico and USA). This paper also analysis application of IFRSs and IFRSs for SMEs in 12 South American countries. Research showed that IFRSs strongly affect financial reporting in this part of the word, namely; 9 countries require IFRSs for listed companies, 1 country permits IFRSs (Paraguay) while 2 countries require only national accounting standard for listed companies (Bolivia and Suriname). Bolivia made strong commitment to move towards IFRSs in future. Moreover, 5 South American countries require IFRSs for SMEs, 5 permits those standards and only 2 countries do not allow IFRSs for SMEs (Bolivia and Suriname). Overall, 80% of American Countries Requires or permits application of IFRSs for listed companies and IFRS for SMEs for small and medium sized entities.*

**Keywords:** IFRS, IFRS for SMEs, application around the world, North America, South

America

**JEL classification:** M40, M41, M48

## **Introduction**

The need for internationally accepted accounting standards as a basis for financial reporting was recognized in the middle of the 20th century. In the 1973. Accounting organizations from 9 countries; Australia, France, Canada, Japan, Mexico, Netherlands, Great Britain, Ireland and West Germany founded International Accounting Standards Committee (IASC) – organization with a task to create and issue international accounting standards. The primary task of this organization was to develop accounting standards that would ensure comparable financial statements and reliable financial information presented in financial statements worldwide. This was very important for achieving higher level of international cooperation of companies and those standards are primarily oriented to investors (shareholders) and creditors as most important financial statement users. Those users evaluate business performance of particular company using financial statements prepared in accordance with accounting standards. Since IASC was founded 41 International Accounting Standard and 17 International Financial Reporting Standards were issued with a goal to provide accounting regulation applicable in different economies, industries and countries ensuring comparable financial statements. More than 140 countries in a world today apply those standard for particular companies, mostly for listed companies. European union as one of the most important international organizations promotes application of IFRSs which is visible in significant founds providing to International Accounting Standards Board – IASB (legal successor of IASC) and requiring listed companies in EU to prepare consolidated financial statements using IFRSs. Knowing that IFRSs are important in financial reporting of large European companies it was interesting to investigate to what extent American countries apply those standards. Therefore, this paper analyses application of IFRSs and IFRSs for SMEs in 35 American countries; 23 from North America and 12 from South America. The goal of this paper was to identify countries in America that require or permits IFRSs for listed companies and those that require or permits application of IFRSs for SMEs for small and medium sized entities. The research showed that IFRS significantly influence financial reporting of listed companies in North and South American countries.

## **Features of International Financial Reporting Standards**

### ***Importance of IFRSs and IFRSs for SMEs in financial reporting on global level***

Accounting standards define rules for initial recognition and subsequent measurement of financial statements' element and therefore have significant role in financial reporting on financial position and performance of particular company. International Financial Reporting Standards have significant role in globalization process and represent a key instrument for harmonization of financial reporting globally. Importance of IFRSs strongly increases in 2002 when EU Regulation 1606/2002 (EU Regulation 2002, eur-lex.europa.eu) was issued. Tis Regulation has committed about 7,000 listed companies in EU to prepare consolidated financial statements using IFRSs. Due to its great application in the world, IFRSs continuously change to adjust to the requirements and information needs of different countries, economies and industries worldwide. In this respect, the International Financial Reporting Standards have developed into a set of rules primarily adjusted to the requirements

of the capital markets, emphasizing the application of the fair value method (Botzem, 2012; 26). Namely, on the one hand, IFRSs should meet the information needs of investors, and on the other hand they should be flexible enough to be applicable globally. The International Accounting Standards Board (IASB) develops standards based on accounting principles unlike the USA Financial Accounting Standards Board (FASB), which develops accounting standards based on strictly defined rules. Because of the strong impact of American accounting practice (FASB), newly issued IFRSs are more alike US GAAP-s due to large volume of standards. Accounting standards based on accounting principles define general principles related to recognition and measurement of financial statements positions and disclosure requirements. Following this approach in the designing accounting standards, IFRSs encourage professional judgment in the application of accounting principles in recording specific business transactions for particular company or industry (Doupnik and Perera, 2009; 80). The International Accounting Standards Board has full support from the US Accounting Regulators in developing principle-based standards, although historically speaking, US accounting organizations have a different approach to the development of accounting standards based on strictly defined rules. On the other hand, the structure of the IASB as an organization is very similar to structure of the FASB, which is considered to be the best institutional structure in the world for the development of accounting standards.

Many countries apply national accounting standards to simplify financial reporting process and to reduce administrative burden for small and medium sized entities. Those standards are in many cases based on full IFRSs. This may cause different application of IFRSs on national levels and may result with incomparable financial statements of SMEs across countries. To solve this problem and to achieve a greater degree of harmonization of small and medium-sized entities' accounting systems, the IASB issued in 2009 IFRS for Small and Medium Sized Entities (IFRS for SMEs). It is not simply to create international standards that need to reconcile different accounting solutions, as well as the national specificities. International Financial Reporting Standards are primarily designed to meet the information needs of capital market participants and are therefore are extremely comprehensive and complex. Small and medium-sized enterprises consider the application of such standards as administrative burden, which eventually becomes more and more extensive as the scope and detail of the standards increase. Therefore, the IASB issued IFRSs for SMEs with a goal to meet the information needs of SMEs by balancing the costs and benefits of compiling financial statements. The purpose of creating those standards was to provide a significantly simpler set of accounting standards harmonized with full IFRSs and tailored to the needs of small and medium-sized entities. Some standards that are not relevant to small and medium-sized entities, such as Earnings per share and Segment reporting, are not included in IFRS for SMEs. Adoption of IFRS for SMEs is interesting for private companies for many reasons: (1) easier access to capital, (2) a higher level of financial statements' comparability, (3) higher level of reporting quality in relation to national standards, (4) meeting the information needs of users of financial statements of SMEs, (5) less administrative burden for companies located in countries that require the implementation of a full set of IFRSs or complex national standards (Barone and Kothari, 2011; 29). Both set of standards, IFRSs and IFRSs for SMEs have continuously been changing according to the requirements of the users of financial statements.

### ***Cooperation of IFRS Foundation with international organizations***

International Financial Reporting Standards have been recognized as a key instrument for financial reporting harmonization from many relevant international organizations such as European Union, IOSCO – International Organization of Securities Commissions, United

Nations, OECD - Organization for Economic Cooperation and Development, IFAC – International Federation of Accountants and they all act as global promoters of IFRSs. IOSCO also recognized the benefits of global Standards when, in the year 2000, it recommended to its members that they allow IFRS Standards to be used on their exchanges for cross-border offerings (IFRS Foundation, 2019). Benefits of IFRS application are as follows: (1) they bring **transparency** ensuring quality and comparability of financial statements, (2) strengthen **accountability** by reducing the information gap between shareholders (who provide capital) and managers (who manage with such capital) and (3) contribute to **efficiency** by providing investors information about opportunities and risks.

*Table 1 Cooperation Agreements of IASB Foundation and relevant international organizations in last 5 years*

<b>Date</b>	<b>Organization with Cooperation Agreement</b>	<b>Document - source</b>
September 2017	Basel Committee On Banking Supervision	Memorandum of Understanding for mutual cooperation between the Basel Committee on Banking Supervision And the IFRS Foundation, 2017
May 2017	The World Bank	Memorandum of Understanding between the International Financial Reporting Standards Foundation and The World Bank, 2017
October 2016	European Securities and Markets Authority	IFRS Foundation and ESMA statement of protocols for cooperation on International Financial Reporting Standards 09 July 2014 (Revised 13 October 2016)
May 2016	International Organization of Securities Commissions	International Organization of Securities Commissions and IFRS Foundation Statement of Protocols for Cooperation on International Financial Reporting Standards, 14 May 2016
April 2015	International Actuarial Association	Memorandum of Understanding between the International Actuarial Association and the International Financial Reporting Standards Foundation, 2015
March 2015	International Federation of Accountants	Memorandum of Understanding between the International Federation of Accountants and the International Financial Reporting Standards Foundation, March 2015
November 2014	International Integrated Reporting Council	Memorandum of Understanding between the International Integrated Reporting Council and the International Financial Reporting Standards Foundation, November 2014
April 2014	International Forum of Accounting Standard Setters	The IASB and other accounting standard-setters Working together to develop and maintain global financial reporting standards, April 2014
March 2014	International Valuation Standards Council	Statement of Protocols for Co-Operation on International Financial Reporting Standards and International Valuation Standards Between the International Valuation Standards Council and the IFRS Foundation 6 March 2014

Source: IFRS Foundation, [www.ifrs.org](http://www.ifrs.org) [25.02.2019.]

In a table 1 it can be seen formalized cooperation agreements between International Financial Reporting Standards Foundation and relevant international organizations concluded in a last five years. Those organizations made commitment to enable the development, in the public interest, of high quality accounting standards and to promote the adoption and rigorous implementation of IFRS standards. IFAC and IFRS Foundation noted in Memorandum of Understanding that “*the confidence of all users in the transparency and integrity of financial reporting is crucially important to the effective functioning of capital markets and efficient capital allocation. Transparent financial information will improve users’ confidence in that information and thus contribute to promoting global financial stability and sound economic growth. Such information also enhances the accountability of entities to their stakeholders.*”

### ***Application of IFRSs in a world according to research of IFRS Foundation***

According to analysis of IFRS Foundation on application of IFRSs in 166 jurisdictions worldwide, representing 99% of the world's GDP, 144 (87%) of these jurisdictions require the use of IFRS Standards and another 12 jurisdictions permit the IFRSs. 86 of the 166 jurisdictions require or permit the IFRS for SMEs (IFRS Foundation, 2019). The GDP of jurisdictions that require the use of IFRS Standards is \$35 trillion of the total world's \$76 trillion. 15 from 20 G20 economies require the use of IFRS standards. The G 20's members represent two-thirds of the world's people and 85 percent of its economy. G 20 members are; Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, United Kingdom, United States and European Union. From January 2019, 17 West and Central African jurisdictions that are member of Organization for the Harmonization of Corporate Law in Africa (OHADA) will start to apply IFRSs for a purpose of preparing consolidated financial statements. Those jurisdictions, according to IFRS Foundation official website are: Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Côte d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Gabon, Guinea, Guinea-Bissau, Mali, Niger, Republic of the Congo, Senegal and Togo. Furthermore, Papua New Guinea requires from all companies to apply full IFRSs or IFRSs for SMEs. This suggests that African countries have recognized the importance of transparent financial reporting that can contribute to its' economic development.

In 2015 Australian Accounting Standards Board conducted research to receive feedback on effects of adoption of IFRSs in 2005 on Australian economy. The overall feedback suggests that the adoption of IFRS Standards was generally positive for the Australian economy (AASB Research Report, 2015). The key benefits recognized by stakeholders are; (1) cost savings for entities that previously required multiple national GAAPs to be applied across the group, (2) access to international capital markets (3) enhancing comparability of financial statements across borders, (4) the ability to readily assist subsidiaries in jurisdictions that have adopted IFRS Standards in recent years. Stakeholder recognized also some concerns about IFRS application, (1) costs to manage changes to standards, (2) excessive disclosure requirements and the costs of some may outweigh the benefits, (3) the inconsistent interpretations of standards between preparers and auditors from various sectors and jurisdictions, (4) the standards are not always written clearly, for example words such as 'should' or 'may' have caused confusion, (5) the standards do not consider the use of technology for reporting, (6) the application of fair value etc. All above mentioned benefits and concerns could be copied to other countries experiences in application of IFRSs. Moreover, Korea published the document (KASB Research Report, 2016) on its experience on IFRS application in national economy. Namely, Korea is applying IFRSs since 2011. Research conducted by the Korean Accounting Institute and released by the Korea Accounting Standards Board (KASB) showed that IFRS application has had a positive impact on international financing for Korean firms. Since Korea adopted IFRS Standards in 2011, foreign investors have enlarged their Korean investment portfolios to include smaller firms (less than ₩100 billion or US\$85 million in assets), due to the increased and improved access to financial information (KASB Research Report, 2016). Moreover, according to research results, positive effect could be recognized in higher use of accounting information in decision-making process, lower risk perceptions among foreign banks in their credit and lending decisions to Korean firms, greater attraction of foreign capital etc.

## Research results on application of IFRSs and IFRSs for SMEs in American Countries

### *Application of IFRSs and IFRSs for SMEs in North American Countries*

Analysis of the application of IFRS in 35 North and South American countries was conducted on the basis of individual profiles of American countries published on official IFRS Foundation website. In a Table 2 are presented the key features on IFRSs and IFRSs for SMEs application in North American countries. As previously mentioned, most countries in America applies IFRSs as a basis for financial reporting. Some countries like Barbados apply IFRS under the name of national accounting standards. Cuba and Haiti in North America still applies national accounting requirements for the purpose of financial reporting. USA domestic companies should apply US GAAPs while IFRSs are permitted for listings by foreign companies. US GAAP converge with IFRSs since 2002. formalized agreement on cooperation between International Accounting Standards Board and Financial Accounting Standards Board was signed. Today, those two set of standards reached high level of comparability. Latest standards issued; IFRS 15 – Revenues from contracts with customers and IFRS 16 – Loans are commonly issued standards from those two Boards. As can be seen in table 1, 14 North America countries require IFRSs for listed companies, 2 do not have stock exchange (Belize and Honduras), 2 requires IFRSs or US GAAPs (Nicaragua and Panama), one requires only US GAAPs (USA), 2 countries permit IFRS application (Barbados and Guatemala), 2 countries apply domestic GAAPs (Cuba and Haiti). It can be concluded that IFRSs are present as a regulatory framework for financial reporting on almost all capital markets in North America. For instance, Cuba applies national accounting standards but it made commitment to harmonize its standards with IFRSs. IFRSs for SMEs are not permitted in only 4 countries (Canada, Cuba, Mexico and USA) where SMEs should apply national accounting standards. Other countries require or permits application of IFRSs for SMEs.

*Table 2 Application of Full IFRSs and IFRSs for SMEs in North American Countries*

<b>COUNTRY</b>	<b>Application of IFRSs for listed companies</b>	<b>Application of IFRSs for SMEs</b>
Antigua and Barbuda	Required for listed companies (domestic and foreign) and financial institutions.	Permitted for all SMEs. SMEs use IFRSs for SMEs or full IFRSs.
Bahamas	Required for all listed companies (domestic and foreign).	Any SME that does not have public accountability is permitted to use the IFRS for SMEs. Alternative is full IFRSs.
Barbados	IFRSs are adopted as the national accounting standards. While use of another accounting framework is technically permitted, in fact all listed companies do use IFRS Standards.	Permitted for all SMEs. SMEs use IFRSs for SMEs or full IFRSs or any other GAAP approved by ICAB (Institute of Chartered Accountants of Barbados).
Belize	Does not have a domestic stock exchange. Required for banks and allowed for all domestic companies (they can choose other internationally accepted standards – US GAAPs or Canadian GAAPs).	All SMEs are permitted to use the IFRS for SMEs Standard. Alternative are full IFRSs.
Canada	Required for most listed companies and financial institutions. Permitted to use US GAAPs.	Not required or permitted. The AcSB has developed a separate financial reporting framework for private enterprises (Canadian GAAPs).
Costa Rica	Required for all listed companies and banks.	Required IFRS for SMEs or alternative full



COUNTRY	Application of IFRSs for listed companies	Application of IFRSs for SMEs
		IFRS.
Cuba	Cuban Financial Information Standards. Currently Cuba is working to harmonize its accounting standards with IFRSs.	Cuban Financial Information Standards. Currently Cuba is working to harmonize its accounting standards with IFRSs.
Dominica	IFRS Standards are required for listed companies and financial institutions.	All SMEs are permitted to use the IFRS for SMEs Standard. SMEs that do not use the IFRS for SMEs Standard are required to use full IFRS Standards.
Dominican Republic	Mandatory use of full IFRS Standards for all companies whose shares trade on the Bolsa de Valores de la República Dominicana.	All SMEs are mandatory for all unlisted companies that are classified as medium-sized or large under Law.
El Salvador	Required for companies listed on the Bolsa de Valores de El Salvador. Special national regulation for banks, insurance and pension funds.	All SMEs are permitted to use the IFRS for SMEs. Alternative is full IFRS.
Grenada	IFRS Standards are required for listed companies and financial institutions.	All SMEs are permitted to use the IFRS for SMEs Standard. Alternative full IFRS.
Guatemala	Permitted, other than for banks and insurance companies, which must follow national accounting standards.	SMEs may choose either full IFRS Standards or the IFRS for SMEs Standards
Haiti	All companies a prepare financial statements in accordance with the accounting system— <b>the Plan Comptable National.</b>	N/A
Honduras	No stock exchange. IFRS Standards required for banks (with modifications) and for insurance companies and brokerages.	All SMEs are required to choose either full IFRS Standards or the IFRS for SMEs Standard.
Jamaica	Required for all listed companies.	All SMEs are permitted to use the IFRS for SMEs Standard. Alternative is full IFRS.
Mexico	All listed companies must follow IFRS Standards except for financial institutions and insurance companies, which must follow national standards. Foreign issuers are allow to use US GAAPs.	National standards.
Nicaragua	Either IFRS Standards or US GAAP is required	All SMEs that do not use the IFRS for SMEs may use full IFRS Standards. Micro-sized SMEs – specially designed standards.
Panama	Either IFRS Standards or US GAAP is required.	All SMEs are permitted to use the IFRS for SMEs Standard. Alternative is full IFRS.
Saint Kitts and Nevis	IFRS Standards are required for listed companies and financial institutions	All SMEs are permitted to use the IFRS for SMEs Standard. Alternative is full IFRS.
Saint Vincent and the Grenadines	IFRS Standards are required for listed companies and financial institutions.	All SMEs are permitted to use the IFRS for SMEs Standard. Alternative is full IFRS.
St. Lucia	IFRS Standards are required for listed companies and financial institutions.	All SMEs are permitted to use the IFRS for SMEs Standard. Alternative is full IFRS.
Trinidad and Tobago	IFRS Standards are required for listed companies.	All SMEs are permitted to use the IFRS for SMEs Standard. Alternative is full IFRS.
USA	Domestic public companies must use US GAAP. Permitted for listings by foreign companies	IFRS for SMEs is not under consideration.

Source: Created by author on the basis of jurisdictional profiles for each county available on IFRS Foundation official website; [www.ifrs.org](http://www.ifrs.org) [25.02.2019.]

### ***Application of IFRSs and IFRSs for SMEs in North American Countries***

In a Table 3 some basic features on application of IFRSs in 12 South American Countries can be found. As ca be seen, 9 countries requires IFRSs for listed companies. Only 3 countries

apply national accounting standards for listed companies (Bolivia, Paraguay and Suriname). Bolivian GAAPs are required for all companies, but Bolivia made a commitment to move towards IFRSs. Moreover, Paraguay permits IFRSs for listed companies, but most of them apply national accounting standards. Suriname has not adopted IFRS and the majority of companies apply Netherlands national accounting standards because of the historical relationship of Suriname and Netherlands. In South America, 5 countries required application of IFRSs for SMEs for small and medium sized entities (Brazil, Chile, Colombia, Uruguay and Venezuela), 5 countries permit application of IFRSs for SMEs (Argentina, Ecuador, Guyana, Paraguay and Peru). Two countries in South America do not allow application of IFRSs for SMEs (Bolivia and Suriname).

*Table 3 Application of Full IFRSs and IFRSs for SMEs in South American Countries*

COUNTRY	Application of IFRSs for listed companies	Application of IFRSs for SMEs
Argentina	Required for listed companies other than banks and insurance companies (national standards).	Permitted for all companies other than listed companies. SMEs can apply IFRSs for SMEs, full IFRS Standard or Argentinean standards developed by CENCyA.
Bolivia	Bolivian GAAPs for all companies. <b>Commitment to move towards IFRSs.</b>	Not permitted for SMEs. Bolivian GAAPs for all companies.
Brazil	Required for all listed companies and for banks. BR GAAPs – fully converged with IFRSs.	All SMEs are required to use the IFRS for SMEs unless they choose to use full IFRS. Brazilian GAAPs equivalent to IFRSs for SMEs. Micro entities may use simplified standards established under Resolution CFA 1418/2012.
Chile	Required for all listed companies, banks and financial institutions (prohibited fair value option for banks). IFRSs adopted as national standards.	Required for all SMEs.
Colombia	Required for: (a) All companies whose securities are publicly traded, (b) public interest entities, (c) large companies whose parent or subsidiary reports under IFRS Standard and (c) companies that derive at least 50% or more of their revenue from exports or imports	Required for all companies whose securities are not publicly traded other than; (a) micro sized entities and (b) large companies whose parent or subsidiaries report under full IFRS Standards and major exporters or importers. <b>Micro entities</b> – standard specially developed for them.
Ecuador	IFRS Standards are required for listed companies, large unlisted companies, and state-owned companies.	Permitted use of IFRS for SMEs by all companies that are not registered under the Securities Act and that meet some conditions (total asset, revenues, employees).
Guyana	Required for all listed companies.	All SMEs are permitted to use the IFRS for SMEs Standard. Alternative is full IFRS.
Paraguay	Paraguayan national accounting standards. IFRS permitted, but few companies apply it.	Paraguayan national accounting standards. IFRS for SME permitted, but few companies apply it.
Peru	IFRS Standards are required for all domestic companies whose securities trade in a public market in Peru other than banks, insurance companies, and pension funds.	All Peruvian companies with total assets and/or net revenues less than approximately US\$4 million are permitted to use the IFRS for SMEs Standard. Other must use full IFRS.
Suriname	Suriname has not adopted IFRS Standards or the IFRS for SMEs Standard. The majority of companies in Suriname follow a form of Netherlands national accounting standards because of the historical relationship of Suriname and the	Suriname has not adopted IFRS Standards or the IFRS for SMEs Standard.

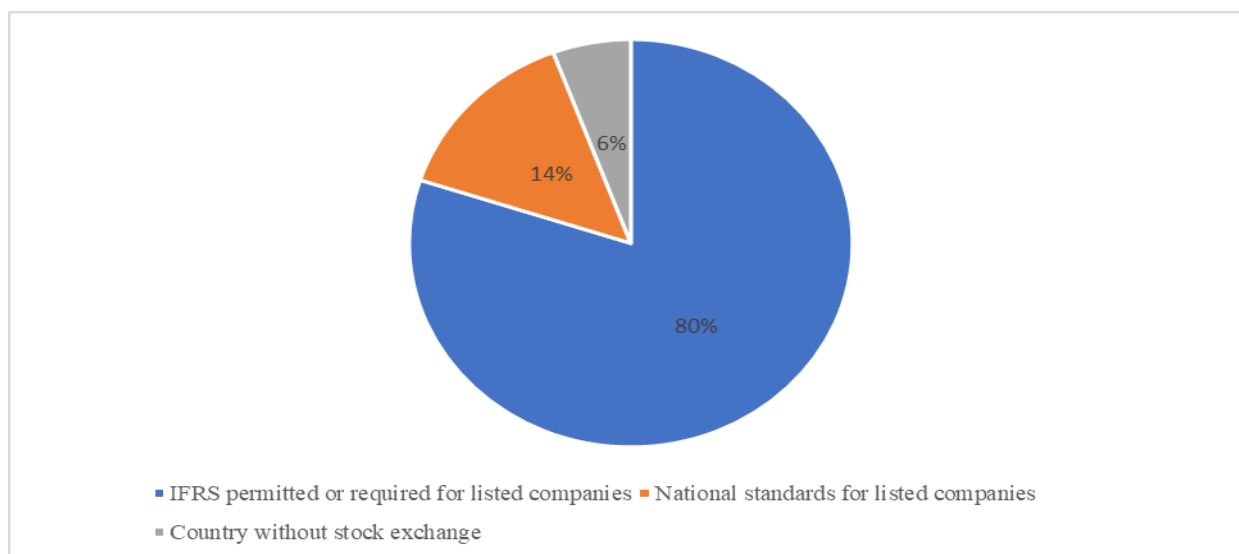
COUNTRY	Application of IFRSs for listed companies	Application of IFRSs for SMEs
	Netherlands.	
Uruguay	IFRS Standards are required for listed companies..	Decree 291/14 requires the IFRS for SMEs Standard to be applied by SMEs (under some criteria). Alternative is full IFRS.
Venezuela	IFRS Standards are required for listed companies..	All SMEs are required to use the IFRS for SMEs Standard, other than SMEs in the oil, energy, and mining industries, which are required to use full IFRS Standards as adopted in Venezuela

*Source: Created by author on the basis of jurisdictional profiles for each county available on IFRS Foundation official website; [www.ifrs.org](http://www.ifrs.org) [25.02.2019.]*

### ***General conclusion on IFRS application in American Countries***

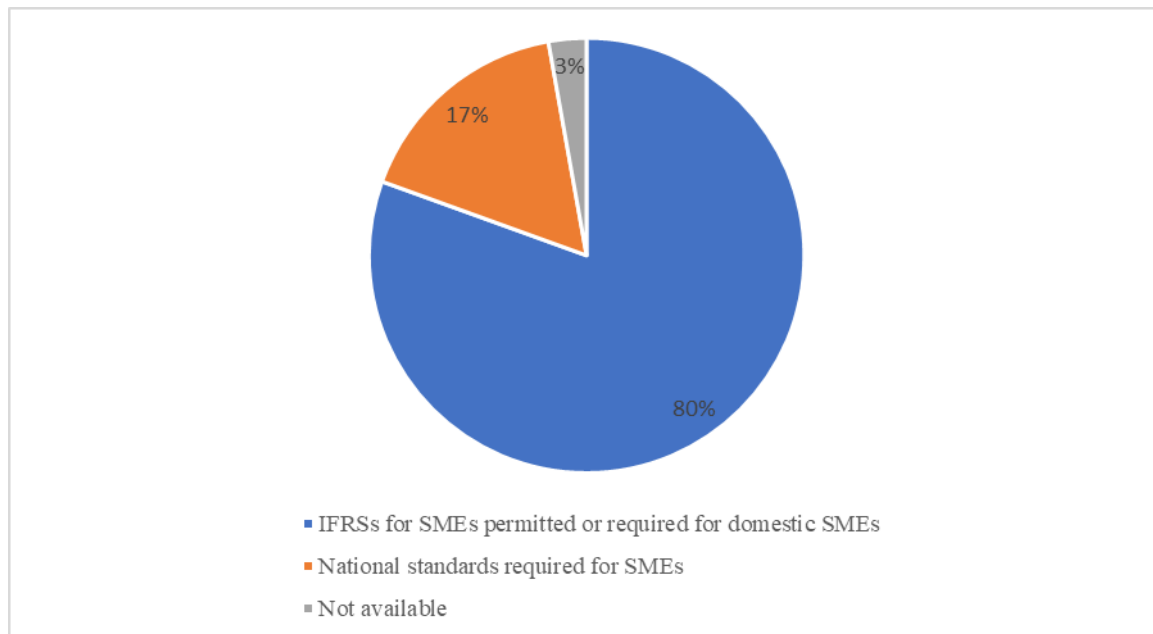
Graph 1 confirms the importance of IFRS in American accounting systems showing that 80 % of observed countries in North and South America permits or requires application of IFRS for quoted companies trading with securities in organized public market. Only 14 % of countries allow only domestic accounting standards for listed companies. Some of them started the process of harmonization of national accounting standards with IFRSs (Cuba), or made strong commitment to move towards IFRSs in future (Bolivia). Therefore, we can expect from those countries to change their accounting regulation in a future in relation with IFRSs application.

*Graph 1 Application of IFRS on stock exchanges in North and South American Countries*



Graph 2 presents the application of IFRSs for SMEs in North and South America Countries. In many countries IFRSs for SMEs are not prohibited. Only in 6 countries those standard could not be applied for the purpose of financial reporting (Canada, Cuba, Mexico, USA, Bolivia and Suriname) according to national regulatory framework. Application of IFRSs for SMEs is mandatory in Dominican Republic, Chile and Colombia and Venezuela. The most of remaining countries permits or require to use IFRSs for SMEs and at the same time providing full IFRSs as alternative to apply for small and medium sized entities.

*Graph 2 Application of IFRSs for SMEs in North and South American Countries*



## Conclusion

Research showed that IFRSs contributes to the world economy by bringing transparency, accountability and efficiency to financial reporting. According to research of IFRS Foundation, around 27.000 domestically listed companies on 88 major stock exchanges in the world use IFRSs. Academic research provides evidence that adoption of IFRSs has brought net benefits to capital markets. IFRS Foundation as non-for profit organization was established to serve public interest and contribute to development of capital markets and cross border economic activities. European Union recognized benefits from using those standards as basic regulation for financial reporting of companies listed at capital markets. Other countries in the world are following such example and it can be said that IFRSs are today the most important instrument for achieving comparable financial statements and therefore to facilitate communication between user and preparers of financial statements across national boundaries. Research showed that around 80 % of American countries apply for listed companies. Moreover, American countries recognized benefits of financial reporting harmonization for SMEs and most countries requires or permit IFRSs for SMEs for small and medium sized economies. Only few countries still do not allow application of these standards but some of them already made strong commitments to move towards IFRSs because they recognized potential economic benefits from it.

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# SERVICE QUALITY AS A DIMENSION OF AUDIT QUALITY

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## Abstract

*Audit of financial statements serves a public interest by providing credibility to financial statements. Therefore, it is mandatory for a certain type of companies. Since it is a highly regulated and complex service, it is often perceived differently from other services provided to clients, especially in terms of its quality. It is common to emphasize the importance of the technical quality of the audit, which refers to auditor's ability to detect and report misstatements in audited financial statements. It is undeniable that this is the most important dimension of audit quality, since audit loses its purpose if audit users do not have confidence in the auditor's opinion. However, it should be taken into account that there is another dimension of audit quality, which refers to non-technical or service quality, as a dimension that is particularly important to internal audit users, i.e. employees of the client. Audit users that are in direct contact with auditors value their approach, confidentiality, reliability, etc., meaning that auditors' approach to each client can serve as a competitive advantage. Service quality as a dimension of audit quality has mainly been neglected, which may not be completely unintentional. Due to the fact that an increasing emphasis is placed on the auditor's independence, service quality determinants such as empathy and responsiveness might be potentially perceived as a threat to the technical quality of audit.*

*This paper provides an overview of relevant definitions of audit quality and systematizes factors that make it challenging to reach a uniform definition of audit quality that would satisfy all stakeholders in the audit process. Since audit is a service provided to a client, previous general research on service quality determinants were explored. These researches served as a starting point in developing a proposed model of audit service quality determinants, which included five determinants: added value, reliability, responsibility, behavioral safety and empathy. Each determinant was further divided into three components. The validity of the proposed model was tested among auditors and audit users in Croatia, with the aim of identifying the most important components and comparing the attitudes of different groups of audit users. When observed at the level of all audit users, it can be concluded that audit users assign the greatest importance to confidentiality, accuracy and sharing knowledge as components of audit service quality. These components are assigned to behavioral safety, reliability and added value, as proposed determinants of audit service quality. When comparing mean values of internal and external audit users' responses, it is evident that internal audit users generally put greater emphasis on suggested service quality components than external audit users. Such results are expected, given that internal audit users are involved in the audit process and in direct contact with auditors. Statistical tests of differences in means have confirmed that there is a difference in the way internal and external audit users value suggested audit service quality components.*

**Keywords:** audit of financial statements, audit quality, technical quality, service quality, Croatia.

**JEL classification:** M41, M42

## Introduction

High quality financial reporting is necessary and indispensable for the proper functioning of the economy at the national and global level. To ensure this, new requirements are constantly imposed on the audit profession in order to encourage improvements in audit quality. Audit quality has been the subject of research for more than two decades, resulting in numerous contributions at institutional and scientific level. First research related to audit quality and its determinants at a scientific level started in the early 1980s, while regulators and other relevant institutions began to deal intensively with this issue after the global financial crisis and numerous corporate scandals from the beginning of the 21<sup>st</sup> century. Literature review has revealed that previous research had primarily dealt with the technical aspect of audit quality, while neglecting non-technical or service quality that is especially important to internal audit users as employees of the audited clients.

When observing statutory audit as a service provided to a client, there are certain specifics when compared to other services, that make it challenging to define audit quality. This paper provides an overview of factors that distinct audit from other services and that must be taken into account when trying to identify audit quality determinates. In order to test how different interest groups involved in the audit process perceive service quality determinants, an empirical research has been conducted in Croatia. Based on the literature review, a proposed model of audit service quality determinants was created. The validity of the model was tested among auditors and audit users, which were divided into internal and external audit users. Methods used in the research include descriptive statistics, as well as parametric and non-parametric tests for differences between means that were used in comparing answers of the two groups of audit users.

## Challenges in defining the quality of audit as a service provided to a client

Although the term *audit quality* is often used in communication and publications by regulators, standard-setters, audit firms and other stakeholders in the field of audit, it is a complex concept for which there is still no single and universally accepted definition, nor an agreement on how to measure it (IAASB, 2013: 10). The audit of financial statements is a service, and the assessment of the quality of a particular service implies an assessment of how much the service delivered according to the expectations of the client or the user (Business Dictionary, 2016). Taking into account specific features of audit as a service, it is possible to identify the basic reasons why it is difficult to reach an agreement about a single definition of audit quality. Financial statement users, and therefore audit users, are not a homogenous group with the same interests and goals. They include numerous stakeholders, such as company owners, current and potential creditors and investors, business partners, the government and the general public (Sever Mališ, Tušek & Žager, 2012: 54-55). Since they all, to a certain extent, have different initial expectations from audit, the perception of audit quality largely depends on from whose point of view it is considered. In addition, defining

audit quality is further complicated by the features of the audit process. It is a process that is generally incomprehensible to audit users, based on risk assessment and contains a significant degree of professional judgement (Chiş & Achim, 2014: 217). Despite the efforts of audit firms to develop tools and frameworks that will help them in standardizing the audit process, it should be taken into account that each audit is different and adapted to the specifics of the individual client (Manita & Elommal, 2010: 88). Audit results are generally intangible and immeasurable, with the only tangible element for external audit users being the auditor's report, which is largely standardized (Mamić & Tušek, 1999: 224) and therefore provides relatively little information to users. This is the main reason why external audit users are usually faced with the information asymmetry regarding the access to the information about company's operations beyond from what is publicly presented. Misunderstanding of the audit process and information asymmetry can lead to the audit users forming unrealistic expectations that the audit is not able to meet, and therefore can get the impression that the audit was not carried out in a quality manner. When all these limitations and specificities are taken into account (auditors generally do not have information about the conducted audit process, they create their expectations based on incomplete information and represent a heterogeneous group with sometimes different interests), it is understandable that there are difficulties in identifying what audit users consider under audit quality.

Despite the difficulties when attempting to define audit quality, different authors have offered several different definitions of audit quality, which have been upgraded and changed over time, as the role of audit evolved (Table 1). By analyzing the definitions used in relevant research and publications, it is possible to notice two different approaches. The first approach is to view audit quality in the context of the degree of financial statements' and audit process' compliance with the applicable accounting and auditing standards, which means that the emphasis is put on the form (e.g. definition used in the International Standard on Quality Control 1 and by the United States Government Accountability Office – GAO from Table 1).

*Table 1: An overview of relevant quality audit definitions*

<b>Author/s</b>	<b>Definition of audit quality</b>
DeAngelo, 1981: 186	<i>The quality of audit services is defined to be the market-assessed joint probability that a given auditor will both (a) discover a breach in the client's accounting system, and (b) report the breach.</i>
Titman & Trueman, 1986: 160	<i>Auditor quality is defined here in terms of the accuracy of the information he supplies to investors; the information provided by a higher-quality auditor allows investors to make a more precise estimate of the firm's value.</i>
International Standard on Quality Control (ISQC) 1, pg. 11	<i>The objective of the firm is to establish and maintain a system of quality control to provide it with reasonable assurance that: (a) The firm and its personnel comply with professional standards and applicable legal and regulatory requirements; and (b) Reports issued by the firm or engagement partners are appropriate in the circumstances.</i>
United States Government Accountability Office - GAO, 2008: 89	<i>...we defined a quality audit as one conducted, in accordance with applicable auditing standards to provide reasonable assurance about whether the audited financial statements are presented in accordance with applicable accounting principles and are free of material misstatements.</i>
IAASB, 2012: 3	<i>Some academics have observed that audit involves both a technical component and a service component. The relative importance of these two components is likely to vary between different stakeholder groups. The technical component of audit quality is often considered as having been achieved when there is a high probability that an auditor will both (a) discover a misstatement in the client's financial statements, and (b) report that misstatement. The technical component is most likely to be of greatest importance to users of financial statements, those charged with governance and regulators. The service component of audit quality is more likely to be of importance to management who will likely focus on the efficiency of the</i>



Author/s	Definition of audit quality
	<i>audit and its cost. Management is likely to have an interest in ensuring that the cost of the audit is constrained, the audit is completed as quickly as possible and that the disruption to the entity's ongoing operations is minimized.</i>
Public Company Accounting Oversight Board - PCAOB, 2013: 3-4	<i>For purposes of our discussion, we define audit quality as meeting investors' needs for independent and reliable audits and robust audit committee communications on: 1) financial statements, including related disclosures; 2) assurance about internal control; and 3) going concern warnings.</i>

*Source: systematized by the authors*

However, these definitions place the substance of the audit in the second plan. Namely, the question that arises is to whether the audit is necessarily of lower quality if the auditor did not fully comply with all the provisions of the standards during the audit process, even when the final financial statements do not contain significant misstatement (Barry, 2014: 5). Accordingly, another approach to defining audit quality has been developed, based on the level of assurance that the auditor provides to audit users that the financial statements do not contain significant misstatements. Audit quality was first defined in this manner in the work of DeAngelo (1981: 186), who stated that the audit quality is a market-assessed joint probability that a given auditor will both (a) discover a breach in the client's accounting system, and (b) report the breach. The emphasis in this definition is placed on the technical quality of audit. However, some academics have observed that audit involves both a technical dimension and a service dimension (IAASB, 2012: 3), whose relevance is likely to vary across different groups of stakeholders. The definition that IAASB used in its publications therefore includes both dimensions and as such presents a comprehensive view of the audit quality.

## Previous research on service quality dimensions

Previous research in the field of audit quality, with some exceptions, have mainly dealt with the technical aspect of audit quality, which refers to the auditor's ability to examine and report on truthfulness and fair presentation in the financial statements. Therefore, the most common audit quality determinants that have been especially emphasized are knowledge, expertise, experience, independence, etc. However, auditors that are hired to conduct statutory audit provide a very complex service to a client. From the standpoint of its users, a quality of a certain service depends on the perception of users and the extent to which the service satisfied their initial expectations. Apart from the visible outcome of the audit in the form of the auditor's report, users' perception partly depends on the direct contact with the auditors during the audit process, especially in the case of internal audit users as employees of the client. Given that the statutory audit is a very regulated service that is prescribed by law, this aspect of audit quality has often been neglected.

When identifying audit service quality determinants, general service quality models can serve as a starting point. Determinants identified by various authors are shown in Table 2 and they are mainly based on the Servqual model. *Servqual* is the most widely used model for measuring perception of users on the service quality, developed by Parasuraman, Zeithaml and Berry (1988). The results of the initial application of the Servqual model referred to five service quality determinants that appeared in different types of services. These are tangibles, reliability, responsiveness, assurance and empathy. "An examination of the content of the final items making up each Servqual's five dimensions (three original and two combined dimensions) suggested the following labels and concise definitions for the dimensions:

*tangibles* (physical facilities, equipment, and appearance of personnel), *reliability* (ability to perform the promised service dependably and accurately), *responsiveness* (willingness to help customers and provide prompt service), *assurance* (knowledge and courtesy of employees and their ability to inspire trust and confidence), *empathy* (caring, individualized attention the firm provides its customers)” (Parasuraman, Zeithaml and Berry, 1988: 23). Due to different characteristics of individual services, the basic model was modified by different researchers to reflect the most important determinants that users may potentially value when receiving a service.

*Table 2: Previous research on service quality determinants*

Authors	Isolated service quality determinants
Berry, Zeithaml, Parasuraman, 1985	reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding, tangibles
Parasuraman, Zeithaml, Berry, 1988	<i>Servqual</i> instrument: tangibles, assurance, reliability, empathy, responsiveness
Armistead, 1990	firm dimensions: framework of time (availability of the service package, responsiveness to the customer, waiting time), fault freeness, flexibility; soft dimensions: style (way of treating customers, attitudes of service staff, accessibility of staff and manager, ambience of the service environment), steering, safety (trust, security, confidentiality)
Mersha, Adlakha, 1992	knowledge of the service, thoroughness/accuracy, consistency/reliability, reasonable cost, willingness to correct errors, timely/prompt service
Johnston, 1997	commitment, attentive/help, friendliness, care, courtesy, responsiveness, flexibility, competence, comfort, communication, availability, access, cleanliness/tidy, security, reliability, functionality, integrity, aesthetics
Sureshchandar, Rajendran, Anantharaman, 2002	human element of service delivery, tangibles of service, core service or service product, systematization of service delivery, social responsibility
Duff, 2004	<i>Auditqual</i> : <i>technical quality</i> (reputation, capability, independence, expertise, experience), <i>service quality</i> (responsiveness, non-audit services, empathy, client service)
Akhtar, 2011	product features, physical aspects, customer services, technology and security
Đukić, Kijevčanin, 2012	service product, human factor (trust, empathy, communication, reliability of employees), service processes (simple and standardized), tangibility of services (facilities, equipment, employees), social responsibility

*Source: systematized by the authors*

Research conducted by Duff (2004) in the United Kingdom is an example how the *Servqual* instrument can be adjusted to fit audit as a service. It also serves as an example of the research in the field of audit quality that explored both technical and service quality as dimensions of the overall audit quality. “The corporate strategy literature indicates service quality can be a source of competitive advantage, i.e. a sustainable means of providing clients (and stakeholders) with what they want or need, better and more effectively. A premise of this monograph is that service quality and technical quality are both necessary components of audit quality, if audit firms are to generate sufficient fee income to attract and retain high calibre staff” (Duff, 2004: v-vi). The main outcome of the research was the *Auditqual* instrument, that consisted of nine distinct determinants: reputation, capability, responsiveness, independence, non-audit services, empathy, client service, expertise and experience (Duff, 2004: 110). According to Duff, “research considering audit quality focuses on matters of competence and independence: issues of direct relevance to external users of accounting information. An emphasis on (non-technical) service quality aspects is likely to benefit the auditor (through increased fees, levels of business, and a more profitable relationship) and the audit client (through better service levels). However, the benefits of service quality to external users of accounting information are much more intangible” (Duff, 2004: 4). Therefore, the

service aspect of audit quality has been in the shadow of technical quality and has received much less attention.

## Empirical research conducted in Croatia

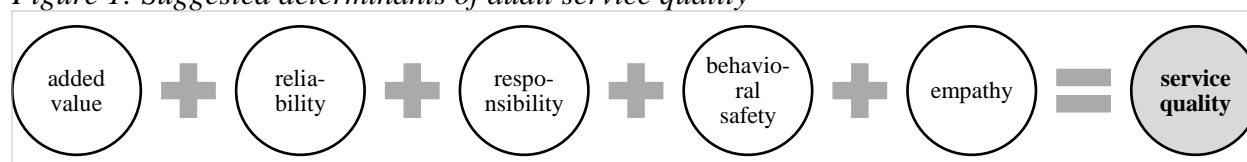
In order to test how different interest groups involved in the audit process perceive service quality determinants and their contribution to the overall audit quality, an empirical research has been conducted in Croatia (Brozović, 2018). Literature review served as a basis for creating a proposed model of audit service quality determinants, while the validity of the model was examined among auditors and audit users.

### Research methodology

For the purpose of this research, audit quality was defined in line with the definition presented by IAASB (2012), according to which the overall audit quality is divided into two dimensions: *technical quality* and *service quality*. Technical quality is a dimension that has received much more attention in previous studies, especially when it comes to standard setters and regulators. Although such developments are understandable and justified, given that the statutory audit of financial statements is aimed at serving public interest by adding credibility to financial reporting, it is still necessary to investigate the quality of the service itself from the position of the audit client and its employees, which has been largely neglected. Apart from the fact that the technical quality of audit was always primarily considered when discussing audit quality, additional reason why the service quality was in the shadow is because it partly refers to determinants such as empathy and reliability, which may be perceived as a potential threat to audit quality in terms of auditor's independence and skepticism. However, audit is a service provided to a client, which is why, from a marketing point of view, the important part of its perceived quality is the experience of client to whom the service was provided.

Based on the results of the previous research, a model of audit service quality determinants was created. The first step in designing the model was taking into account general research in the area of service quality, after which the initial model was modified due to the specificities of audit as a service. The proposed model of audit service quality consists of five determinants presented in Figure 1.

Figure 1: Suggested determinants of audit service quality



Source: created by the authors

For companies that are subject to audit, audit fee represents a cost. Therefore, it is expected from management to try to maximize the benefit gained for the audit fee paid. Auditing standards and auditor's report clearly state that the auditor's task is to familiarize with the client's internal control system with the purpose of assessing the control risk, rather than expressing an opinion on its effectiveness. The auditor's responsibility ceases after reporting to the management and those responsible for governance the identified significant

deficiencies, meaning that the auditor is not required to assist in their correction. Likewise, the auditor's tasks do not include assistance in improving the accounting knowledge of client's accounting function or management. However, providing additional assistance and advice beyond what the financial statements audit itself covers may, from the client's point of view, be considered as an *added value*. Additionally, it may be more financially viable for a client to engage the same audit firm to provide certain non-audit services, although it should be borne in mind that, for the purpose of ensuring independence, the scope of these services is significantly limited in the business year under which a statutory audit is carried out. *Reliability* primarily refers to compliance with the agreements about the manner and timing of conducting audit. Given that the audit largely involves fieldwork in the client's premises, communication with the staff and access to client's records, respecting mutually agreed time frames and reliability is important to the client's management. This also extends to a timely communication of potential problems and irregularities identified during the audit, so that the management and supervisory board have enough time to respond appropriately. *Responsibility* is equally important to all audit users and implies the conduct of the audit firm in accordance with the principles of documenting and correct reporting. This means that the auditor's opinion must be based on a sufficient amount of appropriate audit evidence, which must ultimately be orderly and completely stored in the auditor's working documentation. *Behavioral safety* is primarily determined by respecting the principle of confidentiality, which implies that the auditor must not disclose business secrets outside the audited client, and often not within the client. In addition to respecting business secrets, from the standpoint of client's employees, it is essential that the auditors are forthcoming, kind and respect the work responsibilities of all client's employees. This is accompanied by *empathy*, which implies all those features of the provided service that will allow the employees of the client to know that the auditors are not “cops” who want to harm the client, but among other things work for the benefit of all employees of the audited company. In this context, paying individual attention to each client regardless of its size has been isolated, especially in terms of equal involvement of a manager or partner in the audit engagement. For the purpose of testing the proposed model of audit service quality among auditors and audit users, each of the five determinants was further elaborated into three components, which resulted in a total of 15 components or statements (Table 3).

*Table 3: Elaboration of the suggested determinants of audit service quality into components*

Determinant	Code	Component
added value	D1	Audit firm is capable of providing non-audit services (e.g. tax consultancy).
	D2	Members of the audit team are inclined to give recommendations for improving the client's internal control system.
	D3	Members of the audit team are inclined to share knowledge about the latest accounting and auditing standards, as well as legal regulations.
reliability	D4	Audit firm is reliable and accurate when conducting statutory audit.
	D5	Members of the audit team communicate in a timely manner with the management and audit / supervisory board.
	D6	Members of the audit team respect the agreed timelines for carrying out the audit procedures.
responsibility	D7	Auditor's opinion is based on a sufficient amount of quality audit evidence.
	D8	Audit firm is materially responsible for its expressed opinion.
	D9	Members of the audit team keep proper records and working documentation.
behavioral safety	D10	Members of the audit team respect the principle of confidentiality regarding the information they have collected during the audit process.
	D11	Members of the audit team are courteous and responsive to the client's employees.
	D12	Members of the audit team are trying to minimize the interference with the daily operations of the client.
empathy	D13	Audit firm devotes individual attention to each client, regardless of size.
	D14	Members of the audit team have understanding for the client.

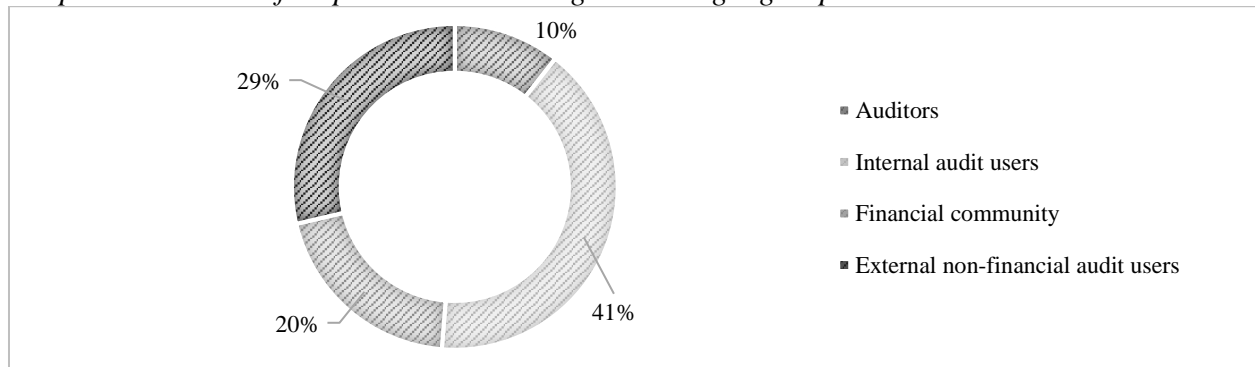
Determinant	Code	Component
	D15	Audit firm takes into account the client's interests.

*Source: created by the authors*

The main tool for testing the model was a questionnaire, that was distributed electronically. In addition to the questions that referred to the characteristic of the respondents, the questionnaire contained three groups of questions. For the purpose of this research, second part of the questionnaire is relevant. Respondents were given statements listed in Table 1 and were asked to, according to their own opinion, rate how each proposed service quality determinant affects the overall audit quality. A seven-degree Likert scale was used for ranking the responses, with answer 1 referring to *strongly negatively affects* and answer 7 meaning *strongly positively affects*. A scale with both negative and positive side was modeled on the research conducted by Beattie, Fearnley and Hines (2010) in the United Kingdom.

Targeted respondents were divided into four main groups. The first group were employees of audit firms registered at the Croatian Chamber of Auditors. Managers and accountants in audited companies were the second group, representing internal audit users that are also involved in the audit process. It can be assumed that the components of audit service quality would be of most importance to this interest group. External audit users were divided into two additional groups: representatives of financial community, and external non-financial audit users in terms of managers and accountants employed by companies that are not subject to statutory audit. The total number of responses was 548, collected from November 2016 to April 2017. The distribution of respondents across targeted groups is shown in Graph 1.

*Graph 1: Structure of respondents according to the target group*



*Source: created by the authors*

Responses at the level of each individual statement or component (D1-D15) were analyzed using the measures of descriptive statistics. Measures of central tendency, such as mean and median, were used to evaluate the influence of components to the audit quality from the standpoint of respondents, while the dispersion measures pointed to the uniformity of their attitudes. Descriptive measures were calculated at the level of all respondents participating in the research, but also at the level of each of the four groups of respondents separately. In order to examine if internal and external audit users have different attitudes towards the contribution of service quality determinants to the overall audit quality, mean values of their responses were compared for each of the 15 statements to determine whether they are statistically significantly different. Given that the statistical tests have showed that the distribution of responses for all components is approximately normal and that variance is homogeneous for most components, parametric tests were used to test the significance of differences in means. Conclusions were also confirmed by a non-parametric test.

## Research results

Auditors and internal audit users represent interest groups that are directly included in the audit process, but in different roles. The majority of both groups of respondents that participated in the research have over 10 years of experience in accounting and/or audit profession, meaning that they are experienced and that their responses are representative. Measures of descriptive statistics at the level of their responses are presented in Table 4.

*Table 4: Measures of descriptive statistics at the level of auditors' and internal audit users' responses*

Code	Auditors			Internal audit users		
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation
D1	5.48	6	1.28	5.73	6	1.10
D2	5.97	6	1.00	5.97	6	1.10
D3	6.31	6.5	1.00	6.20	6	0.93
D4	6.26	6	1.03	6.27	6	0.88
D5	6.16	6	0.96	6.01	6	0.98
D6	6.17	6	1.00	6.16	6	0.92
D7	6.38	7	1.01	6.15	6	0.85
D8	5.71	6	1.26	5.76	6	1.15
D9	6.10	6	1.12	6.10	6	0.90
D10	6.19	7	1.15	6.29	7	0.91
D11	6.07	6	1.13	6.10	6	0.93
D12	5.33	6	1.44	5.83	6	1.12
D13	6.19	6	0.92	6.13	6	0.90
D14	5.66	6	1.24	5.88	6	1.08
D15	5.50	6	1.50	5.74	6	1.13

*Source: calculated by the authors*

Mean and median values for all of the 15 suggested audit service quality components are above 4, meaning that both groups of respondents believe that they have a positive impact on audit quality. The highest rated component by auditors, according to both mean and median values, is D7: *Auditor's opinion is based on a sufficient amount of quality audit evidence*, which is classified under *responsibility* as one of the suggested determinants of audit service quality. On the other hand, managers and accountants as internal audit users give the most value to *behavioral safety*, namely component D10: *Members of the audit team respect the principle of confidentiality regarding the information they have collected during the audit process*. These results are expected, given that each group wants to protect its best interests: auditors want to reduce the risk of expressing unfounded opinions that could potentially lead to lawsuits, while client employees value confidentiality and protecting business secrets. Both groups of respondents agreed on the second and third ranked component, which suggest that they equally value auditor's willingness to share knowledge with the client (D3), as well as accuracy during the audit process (D4). They also have similar views regarding components that have the least impact on audit quality among the 15 that have been suggested, assigning the lowest average grades to D1: *Audit firm is capable of providing non-audit services (e.g. tax consultancy)*, and D15: *Audit firm takes into account the client's interests*. The most likely reason for such results is that they are worried that these components of service quality could potentially negatively affect technical quality as the other dimension of the overall audit quality, by threatening auditors' independence. As for the measures of dispersion, in line with Beattie, Fearnley and Hines (2010: 36), it is considered that the consistency is high if the

standard deviation is lower or equal to 0.85, while the values greater than or equal to 1.25 indicate a low level of uniformity. Therefore, calculated standard deviation suggests that the groups of respondents are not always uniform in their answers and attitudes.

External audit users are divided into two groups: representatives of financial institutions and employees of companies that are not subject to statutory audit. A common feature for both groups is that they are not directly involved in the audit process, but are interested in audit reports of their clients, partners, etc. Analysis of their answers is presented in Table 5.

*Table 5: Measures of descriptive statistics at the level of external audit users' responses*

Code	Financial community			External non-financial audit users		
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation
D1	5.30	5.5	1.25	5.75	6	1.15
D2	5.99	6	1.06	6.01	6	0.94
D3	5.96	6	1.01	6.16	6	0.99
D4	6.21	6	0.94	6.15	6	0.99
D5	5.99	6	0.91	5.90	6	1.01
D6	5.95	6	0.99	5.95	6	0.96
D7	6.05	6	0.99	5.90	6	0.98
D8	6.03	6	1.12	5.72	6	1.28
D9	5.98	6	0.95	5.97	6	1.01
D10	6.27	7	1.01	6.17	6	0.95
D11	5.60	6	1.15	5.88	6	1.08
D12	5.42	6	1.25	5.72	6	1.17
D13	6.09	6	1.00	5.96	6	1.01
D14	5.51	6	1.26	5.64	6	1.09
D15	5.48	6	1.20	5.76	6	1.12

*Source: calculated by the authors*

Both groups of external audit users assigned the highest average grades to component D10, which refers to *confidentiality* and *behavioral safety*, the same as internal audit users. Apart from the components that have already been isolated as the most important by auditors and internal audit users, it is interesting that the representatives of financial community have also singled out devoting individual attention to each client, regardless of their size (D13). There are also similarities regarding the components with the lowest assigned grades. Respondents that represent financial community on average believe that the audit firm's capability of providing non-audit services (D1) has the lowest positive impact on audit quality, while the external non-financial users singled out empathy in the form of having understanding for the client (D14). These results are again in line with the results presented at the level of auditors and internal audit users, where they assigned the lowest grades to components that might negatively affect auditor's independence.

When observed at the level of pooled sample (i.e. all audit users), it can be concluded that audit users assign the greatest importance to confidentiality (D10), accuracy (D4) and sharing knowledge (D3) as components of audit service quality. These components are assigned to the following service quality determinants: *behavioral safety*, *reliability* and *added value*. On the other hand, they also agree that the capability of the audit firm to provide non-audit services (D1) is the least important in terms of audit quality, which can partly be attributed to the imposed restrictions on audit firms when it comes to providing certain non-audit services to audit clients (Table 6).

Table 6: Comparison of mean values of internal and external audit users' responses

Code	Internal audit users	External audit users	All audit users	Code	Internal audit users	External audit users	All audit users
D1	5.73	5.56	5.64	D9	6.10	5.98	6.03
D2	5.97	6.00	5.99	D10	6.29	6.21	6.25
D3	6.20	6.08	6.13	D11	6.10	5.76	5.92
D4	6.27	6.17	6.22	D12	5.83	5.60	5.70
D5	6.01	5.94	5.97	D13	6.13	6.01	6.07
D6	6.16	5.95	6.04	D14	5.88	5.58	5.72
D7	6.15	5.97	6.05	D15	5.74	5.65	5.69
D8	5.76	5.85	5.81				

Source: calculated by the authors

When comparing mean values of internal and external audit users' responses (Table 6), it is evident that internal audit users generally put greater emphasis on suggested service quality components than external audit users (in case of 13 out of 15 components). Such results are expected, given that internal audit users are involved in the audit process and in direct contact with auditors. The highest absolute difference in mean values exists in case of the following components: D11 (courteously and responsiveness), D14 (understanding) and D12 (minimum interference), which are classified into *behavioral safety* (D11 and D12) and *empathy* (D14) as service quality determinants.

Therefore, the comparison of internal and external audit users' responses has showed that, although the attitudes of these two groups of audit users are more similar than expected, there are still certain differences. Before selecting the appropriate type of tests to determine the statistical significance of the differences between means of two independent samples in one variable, it is necessary to examine the statistical characteristics of responses' distribution. It primarily refers to the normality of distribution and homogeneity of variances. If the initial assumptions in terms of the variance homogeneity and normal distribution are satisfied, parametric tests are appropriate. Otherwise, nonparametric tests are recommended. The existence of problems of heteroskedasticity was investigated using Brown-Forsythe's homogeneity variance test. With a level of significance of 5%, it can be concluded that the heteroskedasticity problem does not exist in case of the majority of components (13 out of 15). However, although parametric tests, such as t-test, are based on the assumption of homogeneous variances, previous research has shown that "t-test gives relatively accurate results when the condition of homogeneity variance is violated, but with the same number of entities in both samples" (Nikolić, 2008: 33). Additionally, Kolmogorov-Smirnov test and Shapiro-Wilk test suggest that the assumption of distribution normality can be accepted for all 15 service quality components, both at the level of internal and external audit users. Given that for the majority of components all initial statistical assumptions are satisfied, t-test as a parametric test was used in testing the statistical significance of differences in means across groups of audit users. However, due to the existence of problems of heteroskedasticity in a small number of components, conclusions obtained by parametric tests have also been verified by a nonparametric test.

Results of the t-test as a parametric test are presented in Table 7. Statistically significant differences (with a 5% level of significance) between means of responses exist in 5 out of 15 service quality components. Therefore, research results have confirmed that internal audit users put greater emphasis on certain service quality components when assessing the overall audit quality. When compared to external audit users, they value more respecting agreed timelines in conducting audit (D6), responsibility of auditor when gathering quality audit



evidence (D7), courtesy and responsiveness of audit team members (D11), trying to minimize the interference with the daily operations of the client (D12) and having understanding for the client.

*Table 7: Results of the t-test of differences between means of internal and external audit users' responses*

Variable	T-tests; Grouping: Group of respondents										
	Group 1: Internal audit users					Group 2: External audit users					
	Mean	Mean	t-value	df	p	Valid N	Valid N	Std. Dev.	Std. Dev.	F-ratio	p
D1	5.73	5.56	1.5583	488	<b>0.1198</b>	223	267	1.10	1.21	1.2095	0.1420
D2	5.97	6.00	-0.3240	488	<b>0.7461</b>	223	267	1.10	0.99	1.2203	0.1202
D3	6.20	6.08	1.3492	488	<b>0.1779</b>	223	267	0.93	1.00	1.1663	0.2349
D4	6.27	6.17	1.1998	488	<b>0.2308</b>	223	267	0.88	0.97	1.2112	0.1389
D5	6.01	5.94	0.8295	488	<b>0.4072</b>	223	267	0.98	0.97	1.0164	0.8961
D6	6.16	5.95	2.3822	488	<b>0.0176</b>	223	267	0.92	0.98	1.1322	0.3377
D7	6.15	5.97	2.2134	488	<b>0.0273</b>	223	267	0.85	0.99	1.3426	0.0231
D8	5.76	5.85	-0.7769	488	<b>0.4376</b>	223	267	1.15	1.23	1.1359	0.3250
D9	6.10	5.98	1.4066	488	<b>0.1602</b>	223	267	0.90	0.99	1.2060	0.1480
D10	6.29	6.21	0.9066	488	<b>0.3651</b>	223	267	0.91	0.98	1.1555	0.2642
D11	6.10	5.76	3.5461	488	<b>0.0004</b>	223	267	0.93	1.12	1.4387	0.0051
D12	5.83	5.60	2.2425	488	<b>0.0254</b>	223	267	1.12	1.21	1.1741	0.2150
D13	6.13	6.01	1.4139	488	<b>0.1580</b>	223	267	0.90	1.01	1.2566	0.0779
D14	5.88	5.58	2.8710	488	<b>0.0043</b>	223	267	1.09	1.17	1.1570	0.2599
D15	5.74	5.65	0.9260	488	<b>0.3549</b>	223	267	1.13	1.16	1.0531	0.6907

*Source: calculated by the authors*

Given the existence of a potential heteroskedasticity problem in 2 components, the obtained results were verified by using Mann-Whitney test as a nonparametric test (Table 8). It was confirmed that the means of responses in case of the same 5 components are statistically significantly different, which is in line with the results of the t-test.

*Table 8: Results of the Mann-Whitney U Test of differences between means of internal and external audit users' responses*

Variable	Mann-Whitney U Test (w/ continuity correction) By variable Group of respondents Marked tests are significant at p <.05000								
	Rank Sum	Rank Sum	U	Z	p-value	Z adjusted	p-value	Valid N	Valid N
D1	56,772.00	63,523.00	27,745.00	1.2974	0.1945	1.3494	<b>0.1772</b>	223	267
D2	54,874.50	65,420.50	29,642.50	0.0817	0.9349	0.0875	<b>0.9303</b>	223	267
D3	56,565.50	63,729.50	27,951.50	1.1651	0.2440	1.2518	<b>0.2106</b>	223	267
D4	56,239.00	64,056.00	28,278.00	0.9559	0.3391	1.0399	<b>0.2984</b>	223	267
D5	56,150.50	64,144.50	28,366.50	0.8992	0.3685	0.9620	<b>0.3360</b>	223	267
D6	58,526.00	61,769.00	25,991.00	2.4211	0.0155	2.5947	<b>0.0095</b>	223	267
D7	57,672.50	62,622.50	26,844.50	1.8743	0.0609	2.0237	<b>0.0430</b>	223	267
D8	52,884.00	67,411.00	27,908.00	-1.1929	0.2329	-1.2552	<b>0.2094</b>	223	267
D9	56,576.50	63,718.50	27,940.50	1.1721	0.2411	1.2554	<b>0.2093</b>	223	267
D10	55,649.50	64,645.50	28,867.50	0.5782	0.5631	0.6326	<b>0.5270</b>	223	267
D11	59,701.00	60,594.00	24,816.00	3.1739	0.0015	3.3447	<b>0.0008</b>	223	267
D12	58,097.00	62,198.00	26,420.00	2.1463	0.0319	2.2554	<b>0.0241</b>	223	267
D13	56,335.50	63,959.50	28,181.50	1.0177	0.3088	1.0856	<b>0.2777</b>	223	267

Variable	Mann-Whitney U Test (w/ continuity correction) By variable Group of respondents Marked tests are significant at $p < .05000$								
	Rank Sum	Rank Sum	U	Z	p-value	Z adjusted	p-value	Valid N	Valid N
<b>D14</b>	59,258.00	61,037.00	25,259.00	2.8901	0.0039	3.0495	<b>0.0023</b>	223	267
<b>D15</b>	56,190.00	64,105.00	28,327.00	0.9245	0.3552	0.9694	<b>0.3323</b>	223	267

Source: calculated by the authors

## Conclusion

Audit of financial statements is a service provided to a client. However, its mandatory character, complexity and heterogeneity of audit users make it challenging to reach an agreement on how to define audit quality to cover all its dimensions. The dimension of audit quality that has often been ignored or neglected is the service quality, referring to the dimension of audit quality that is especially visible to employees of the audited client who are in contact with auditors during the audit process. Based on the literature review, a model of audit service quality was proposed, consisting of five suggested determinants: added value, reliability, responsibility, behavioral safety and empathy. Each determinant was further divided into three components. In order to investigate how auditors and audit users perceive these service quality determinants and value them in the context of the overall audit quality, an empirical research was conducted in Croatia. Research results have shown that the respondents that participated in the research on average believe that all 15 service quality components have a positive impact on audit quality, especially emphasizing the importance of confidentiality, accuracy and sharing knowledge as components of audit service quality. On the other hand, they agreed that the capability of the audit firm to provide non-audit services is the least important among the suggested components, which may be attributed to the imposed restrictions on audit firms regarding the provision of non-audit services to audit clients. The important finding of the research is that internal audit users generally assign greater value to service quality determinants when compared to external audit users, which may be explained by the fact that the internal audit users are usually in the direct contact with auditors. External audit users are more interested in the outcome of the audit, in the form of the auditor's report, rather than the approach of the auditors to the client.

Research findings provide a valuable insight in the way that auditors and audit users perceive audit service quality. Since the external audit users are a very heterogeneous group, the research was limited to two groups: representatives of financial community, and managers and accountants of companies that are not subject to audit. Further research could be focused on the differences between different groups of external users, by including regulators, standard setters, investors, etc.

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# ACCOUNTING COST VS FUNCTION COST

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## Abstract

*The main goal of every profitable business is to increase its productivity and efficiency. It is important to increase the production, the revenue, the profit and the expenditure decreasing, but the highest result with the smallest investment is the efficiency. Nowadays, in a global economy characterized by growing competition, even market leaders struggle to achieve target growth rates through innovation.*

*In the accounting the functional classification is the cost classification required for external reporting. The cost can be product and period cost by preparing external financial statement. Period costs are taken directly to the income statement as expenses in the period in which they are incurred or accrued. Product costs are associated with the manufacture of goods or the provision of services. We can classify costs different point of view and one of this view can be the function. What the function is and how we can identify, classify and organize the functions. I tried to compare the accounting costs and the function costs.*

*Knowing a product's functions and the cost to produce the functions is imperative to meeting the needs and demands of the customer. A function in Value Methodology is defined as "that which a project, product, or process must do to make it work and meet the customer's needs." The main purpose or objective of function analysis is to identify the greatest opportunity for value improvement. The value management significantly helps companies to recognize hidden reserves for competitiveness and sustainable growth in performance, efficiency, profitability. The companies in the competitive environment can generate significant advantages by using value methodology to identify breakthrough points in development, management, innovation and knowledge capital.*

*FAST (Function Analysis System Technique) is a powerful, structured tool used to identify and analyze functions with intuitive logic to stimulate creative and innovative thinking. The primary objective is to improve value of functions for a given project, product, or process.*

**Keywords:** Accounting cost, Cost Classification, Value Methodology, Function Analysis and Function Cost

**JEL classification:** M49, M21, O32

## Introduction

In last years, according to Harvard Business Review Research in some industries business models have changed or opportunities to grow revenue aren't what they used to be, which adds to the allure of efficiency for efficiency's sake. We learnt the long term aim is maximize the profit (shareholder's value) and it has changed. An uncertain global economic situation for

example, in 2007 the financial and economic crisis shifted the focus of many enterprises toward costs. Businesses are increasingly coming to the realization that simply cutting costs or perpetually postponing investment cannot help for them. In the end, a business must grow, innovate, and create value to live. (Harvard Business Review Research, 2018)

The main goal of every profitable business is to increase its productivity and efficiency. It is important to increase the production, the revenue, the profit and the expenditure decreasing, but the highest result with the smallest investment is the efficiency. The advancement of digitization brings new challenges to economists in every area. (Széles, Széles & Papp-Váry, 2018)

## **Accounting cost**

The cost appears in an entity's financial statements and an accounting cost is recorded in the ledgers of a business. Accounting cost is the recorded cost of an activity. The place of the accounting cost in the financial statements on the following (Bragg, 2018):

- If an accounting cost has not yet been consumed and is equal to or greater than the capitalization limit of a business, the cost is recorded in the balance sheet.
- If an accounting cost has been consumed, the cost is recorded in the income statement.

The scope of an accounting cost can change, depending on the situation. These are in different case (Bragg, 2018):

- Example 1, a manager wants to know the accounting cost of a product. If this information is needed for a short-term pricing decision, only the variable costs associated with the product need to be included in the accounting cost.
- Example 2, if the information is needed to set a long-term price that will cover the company's overhead costs, the scope of the accounting cost will be broadened to include an allocation of fixed costs.

All types of organization incur different kind of costs for example, business, nonbusiness, manufacturing, retail, and service. In most cases, the kinds of costs are incurred and the way in which these costs are classified depends on the type of organization. (Garrison, Noreen & Brewer, 2006) Nowadays the most of countries use International Financial Reporting Standards (in sort, IFRS) and the international companies use US GAAP. If we compare the IFRS and US GAAP by classification of expenses in the Income Statement there are some differences. No general requirement within US GAAP to classify income statement items by function or nature although there are requirements based on the specific cost incurred (e.g., restructuring charges, shipping costs). In the IFRS, entities may present expenses based on either function or nature (e.g., salaries). However, if function is selected, certain disclosures about the nature of expenses must be included in the notes. (EY, 2018) We can classify costs by function but here is the question how we can identify, classify and organize the functions. It will be the main topic of the next part after the accounting cost.

According to Garrison, Noreen & Brewer (2006) five different groups have by purpose of cost classification. Basically, costs are recognized as expenses on the income statement in the period that benefits from the cost. Table 1 shows summary of cost classifications. The cost can be product and period cost by preparing external financial statement. Period costs are taken directly to the income statement as expenses in the period in which they are incurred or accrued. They say all costs that are involved in the purchase or manufacture of goods. In the

case of manufactured goods, these costs consist of direct materials, direct labor, and manufacturing overhead. Product costs are associated with the manufacture of goods or the provision of services by Hansen & Mowen (2006).

*Table 1: Summary of Cost Classifications*

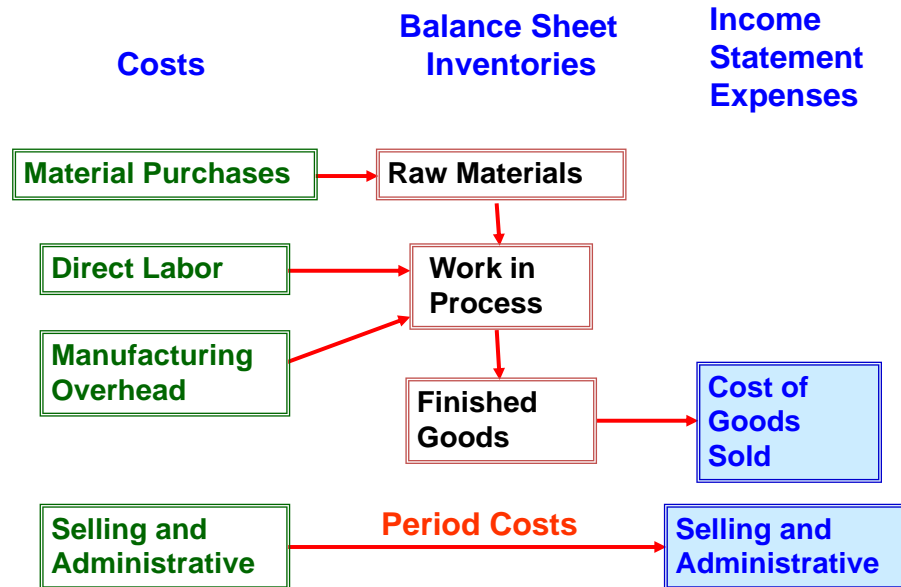
Purpose of Cost Classification	Cost Classifications
Preparing external financial statements	<ul style="list-style-type: none"> <li>- Product costs (inventoriable) <ul style="list-style-type: none"> <li>- Direct materials</li> <li>- Direct labor</li> <li>- Manufacturing overhead</li> </ul> </li> <li>- Period costs (expensed) <ul style="list-style-type: none"> <li>- Nonmanufacturing costs</li> <li>- Marketing or selling costs</li> <li>- Administrative costs</li> </ul> </li> </ul>
Predicting cost behaviour in response to changes in activity	<ul style="list-style-type: none"> <li>- Variable cost (proportional to activity)</li> <li>- Fixed cost (constant in total)</li> </ul>
Assigning costs to cost objectives such as departments or products	<ul style="list-style-type: none"> <li>- Direct cost (can be easily traced)</li> <li>- Indirect cost (cannot be easily traced; must be allocated)</li> </ul>
Making Decisions	<ul style="list-style-type: none"> <li>- Differential cost (differs between alternatives)</li> <li>- Sunk cost (past cost not affected by a decision)</li> <li>- Opportunity cost (forgone benefit)</li> </ul>
Cost of quality	<ul style="list-style-type: none"> <li>- Prevention costs</li> <li>- Appraisal costs</li> <li>- Internal failure costs</li> <li>- External failure costs</li> </ul>

*Source:* Garrison, R. H., Noreen E. W. & Brewer P. C. (2006) *Managerial Accounting*. New York, NY: McGraw-Hill International Edition, 47.

According to Hansen & Mowen (2006) the functional classification is the cost classification required for external reporting. In preparing an income statement, production and nonproduction costs are reported. Product costs also called inventorial costs. Figure 1 shows the product and periodic costs in the financial statements. The reason for the separation is that production costs are product cost (costs that are inventoried until the units are sold) and the nonproduction costs of marketing and administration are viewed as period costs. Appearance of production costs are in the financial report on the following:

- Production costs attached to the units sold are recognized as an expense (cost of goods sold) on the income statement. Cost of goods sold represents the total cost of merchandise removed from inventory and delivered to customers as a result of sales. It is shown as a separate expense because of its significance and because of the desire to show gross profit as a separate item. (Marshall et al, 2014)
- Production costs attached to units that are not sold are reported as inventory on the balance sheet.

Figure 1: Product and periodic costs in the financial statements



Source: Marshall D., McManus W., Viele D. (2014). *Accounting: What the Numbers Mean*. McGraw-Hill/Irwin

## Value Methodology

According to Miles (1989) value analysis and value engineering constitute of function based thinking system to identify and remove all unnecessary cost, on the same time keeping or enhancing all quality in any manufacturing (construction or service). Value Analysis was conceived in the 1940's by Lawrence D. Miles who was a product engineer at General Electric. During World War II Miles was tasked with finding alternate materials, not reserved as strategic to the war effort, to meet functional specifications. (Lenzer, 2018)

“Value management (VM) is a proactive, creative, systematic and team-oriented methodology that maximizes the functional value of a project by managing its development from concept to occupancy according to the value requirement of the client.” (Gui et al, 2006:1)

According to SAVE International the Value Methodology is „also known as value engineering (VE), value analysis (VA) and value management (VM), so the Value Methodology process can optimize projects, processes and product development in significant ways. Through this process, companies and government agencies regularly:

- decrease costs,
- increase profits,
- improve quality and performance,
- enhance customer satisfaction.”

The evolution can be traced from typical definitions provided by Miles (1961), Zimmerman and Hart (1982) and Kelly and Male (1993). Whilst these definitions provide the differences between VM, VE and VA, it is not correct to perceive them as three totally different processes. VM in construction is increasingly being seen as the term to describe the total process of enhancing value of a project for the client from concept to operation. VE and VA



can be viewed as special cases of the generic discipline of VM, whose focus is on improving value in the design and construction stages of a project (Male et al., 1998).

Value management is taken as an umbrella term embracing the three processes, namely (Cooper - Potts K, 2009):

- value planning,
- value engineering,
- value reviewing.

This investigation concentrates on value engineering which is defined as ‘A systematic approach to delivering the required functions at lowest cost without detriment to quality, performance and reliability’ (Connaughton – Green, 1996).

Through the function definition, function rearrangement and function evaluation, the functions of innovation management and the cost of each function are confirmed, and then the application of value engineering improve the efficiency of enterprise’ s innovation management. Value engineering applied to innovation management, its emphasis is on the functional analysis of innovation management. (Zhong - Zhang, 2009)

According to Thiry (2004) the value method retains the three basic concepts of function, cross-functional teams and a structured process. Its use has spread to, inter alia, strategic planning, process re-engineering, organizational change and concurrent engineering. Different study styles have been put forward as suitable for strategic studies, in contrast to other styles for organization change or various project specific outcomes (Kelly et al., 2004). Possibilities continue to be explored, more recently with the development of balanced scorecard and strategy maps (Davies and Davies, 2011). In essence, new applications of value management continue to emerge – making it a powerful tool for entrepreneurial development. (Jay – Bowen, 2015) This is the most important for enterprises, so they can find a powerful equipment for development. It is important to increase the production, the revenue, the profit and the expenditure decreasing, but the highest result with the smallest investment is the efficiency.

Before we continue logically we should go back to the value definition. First, we have examined the fundamental statements about value methodology and its elements.

What does value mean? How can we calculate it? What is the background for the calculation? These are crucial questions, in case we would like to analyze the value as a definition. According to SAVE International „the value is the reliable performance of functions to meet customer needs at the lowest overall cost.” The formula which can be used is the following:

$$Value = \frac{Function}{Resources (cost)} \quad (Equation 1)$$

In this formula the function can be what the product or service supposed to do and resource (cost) is the expenditure needed to create it.

Cost can often be measured by the amount paid by the customer/user, but function is not easy to measure objectively due to its inherent subjective quality as well as value. Value has been influenced with the customer's/user’s purpose, requirements and perception. (Gui et al, 2006)

In our opinion, managers can get into a situation when they hesitate or cannot decide what the acceptable price is for the product or service. According to analysts the cost is easier to measure as part of the value, but we may not share this statement. A lot of different factors can influence the expenditure, these are as follows:

- individual aims;

- user's requirement;
- customer's observation;
- the global economy: for example, the economic and financial crises has influenced our lives and user's price sensitivity;
- different kind of possibilities on the market etc.

## Function Analysis

Knowing a product's functions and the cost to produce the functions is imperative to meeting the needs and demands of the customer. The customer wants function. A customer wants something done, such as wanting something enclosed, held, or whatever under certain conditions; and, within certain limits, wants a shape, a color, or whatever brings pleasure to him or herself. Thus, the language of function is the heart of VM. (Lenzer 2018)

A function in VM is defined as "that which a project, product, or process must do to make it work and meet the customer's needs." Many professionals feel that the main purpose or objective of function analysis is to identify the greatest opportunity for value improvement. (Bolton et al, 2016)

Function Analysis System Technique (FAST) is a powerful, structured tool used to identify and analyze functions with intuitive logic to stimulate creative and innovative thinking. The primary objective is to improve value of functions for a given project, product, or process. Figure 2 shows the methodology of the functions relationship. The components of a FAST diagram consist of the classified functions, which include:

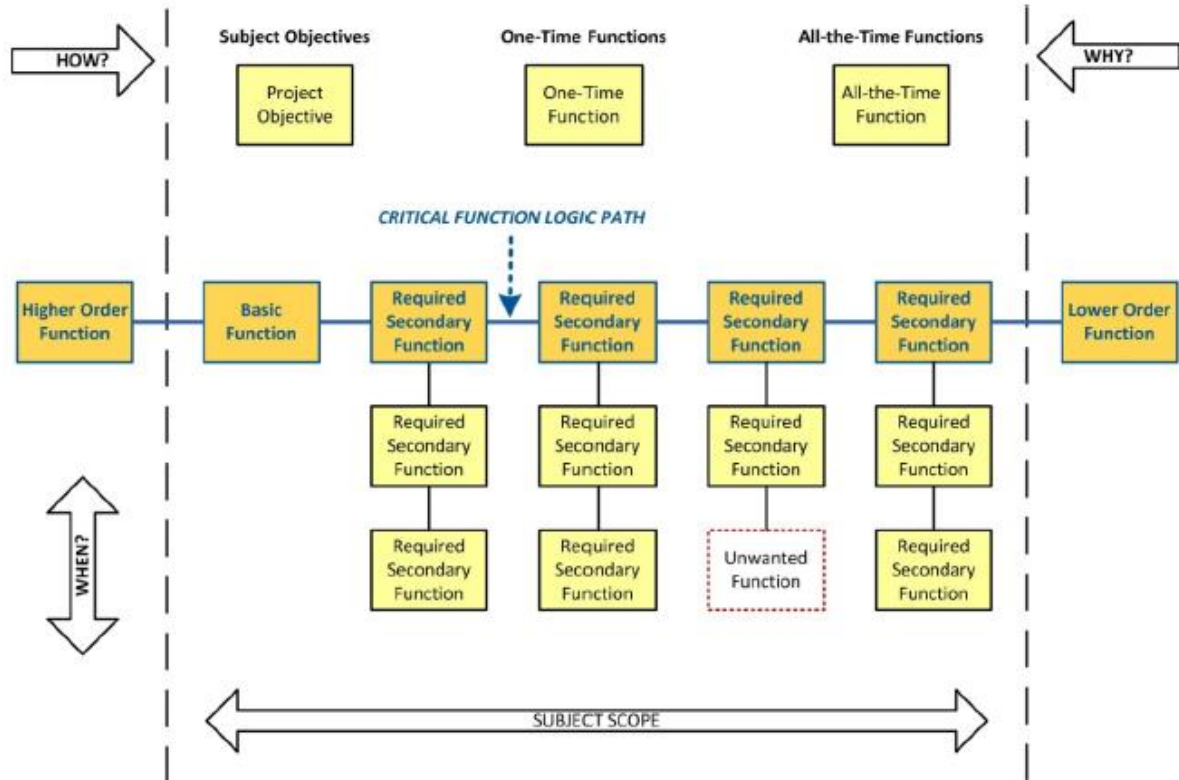
- basic and secondary functions,
- higher order function(s), and
- lower order function(s), including project or design objectives, one-time functions, and all the time functions, as required.

A FAST diagram has two vertical lines referred to as scope lines as illustrated in Figure 2. The scope of the project, product, or process, as represented by function statements, is always between the left and right scope lines. The lower order function(s) are always on the right side of the right scope line, and the higher order function(s) are to the left of the left scope line. The higher and lower order functions are the bookends and functions connecting them form the critical function logic path.

FAST diagram offers many benefits that include on the following (Bolton et al, 2016):

- an orderly arrangement of a project's functions (organizing functions in how-why logic),
- testing the validity of the functions chosen,
- stimulating team interaction, and
- creating a common understanding of the project by all team members regardless of their background or education.

Figure 2: FAST Diagram Guidelines



Source: Bolton J. D., Harrington R. A., Kirk S. J., Lenzer B. L., Rains J. A. & Stewart R. B. (2016). *Function Analysis Guide: A supplement to the SAVE Body of Knowledge*. Mount Royal, NJ: SAVE International, 52.

## Summary

The cost appears in an entity's financial statements and an accounting cost is recorded in the ledgers of a business. Accounting cost is the recorded cost of an activity. The scope of an accounting cost can change, depending on the situation. The functional classification is the cost classification required for external reporting.

The value management significantly helps businesses to recognize hidden reserves for competitiveness and sustainable growth in performance, efficiency, profitability. The companies in the competitive environment can generate significant advantages by using value methodology to identify breakthrough points in development, management, innovation and knowledge capital.

Through this process regularly:

- decrease costs,
- increase profits,
- improve quality and performance,
- enhance customer satisfaction.

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# THE ROLE OF CASH FLOW STATEMENT IN THE REGULATORY DOCUMENTS AND PRACTICES OF THE REPUBLIC OF LATVIA AND OTHER STATES

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## Abstract

*The development of any country is based on a successful company that creates such added value, which brings not only its own worth but also contributes to the development of the state. The company's long-term development is unthinkable without its own resources control, which is most convenient to control by using its financial statement data. Based on data of the report of the Ministry of Economics of the Republic of Latvia, the small and medium-sized companies in Latvia are 98% of all economically active companies. The preparation of financial statements in Latvia is determined by the Annual Account and Consolidated Annual Account Law, according to which the cash flow statement should be prepared for medium and large companies, however according to authors view, cash flow statement contains information that other financial statements do not provide so clearly and therefore could also be used by small companies both for planning financial resources and insolvency prediction. The authors have set the objectives of the study: to study and assess the preparation of the cash flow statement and the availability of information on the practice of preparing a cash flow statement in different countries and to develop recommendations for extending the meaning of the cash flow statement among the preparers and users of financial statements in Latvia. The authors used economic analysis and synthesis methods - studying theoretical aspects and official informative sites, statistical methods - performing data processing and analysis, as well as a logical constructive method, interpreting research results, formulating conclusions and proposals. Based on the results of study the conclusions have been defined, formulated proposals for increasing the significance of the cash flow statement in Latvia and made a comparison of the practice of different countries in preparing the cash flow statement. The article has theoretical and practical significance for expanding the meaning of preparation of the cash flow statement among financial report preparers and its information users.*

**Keywords:** Cash flow, financial statements, financial analysis, accounting

**JEL code:** M41, M49

## Introduction

The amount of profit will not be an indicator of the financial stability of companies, but the sufficiency of the funds of companies to cover all its liabilities. Solvency instability can only

be eliminated by a complex assessment of the financial situation. If assessing the cash flow movement and controlling it in a timely manner, the authors believe that entrepreneurs would have sufficient resources to make effective and correct decisions to stabilize the company's financial position.

One of the main sources of information about the company's financial position is the financial statement on which the financial analysis can be based. In the financial analysis it is possible to use the information provided by all financial statements, however, based on the authors' literature research, the data from the balance sheet and profit or loss account are used more often in financial analysis, less frequently from the cash flow statement. In the opinion of the authors, based on the previous researches, the cash flow statement data also provides useful information in the analysis of financial results and can point to the regularities that should be used in decision making. Therefore, despite the fact that the cash flow statement according to the Law on Annual Reports and Consolidated Annual Accounts should be prepared only 2% of all economically active companies of the Republic of Latvia (Administrative procedures and business environment in Latvia, 2017), according to the opinion of the authors, the management of the company should determine that the preparation of a cash flow statement is necessary at least once in the reporting period in order to make the decision making process based on the most possible information level. It is also underlined in Loukopoulos G., Roupas T. research "Financial Analysis of the Greek Private Health Sector Over the Last Decade (2002-2012)" - „The comparison between earnings and operating cash flows, informs us about the amount of the accrued profits and hence on the quality of accounting information. Generally the difference between these figures and their volatility is not desirable.” (Loukopoulos G., Roupas T., 2014)

In order to achieve the goal of the article: to study and assess the preparation of the cash flow statement and the availability of information on the practice of preparing a cash flow statement in different countries and to develop recommendations for extending the meaning of the cash flow statement among the preparers and users of financial statements in Latvia, the following tasks were put forward:

1. to explore the purpose of the historical cash flow statement and its role in financial decision making;
2. to analyze the different forms of cash flow statement of different countries and differences in presentation of information in comparison with the requirements specified in the regulatory documents of the Republic of Latvia;
3. to analyze the information on the best cash flow report preparation practices found on the official information websites of different countries;
4. to make conclusions on the significance of the cash flow statement in the practice and legislation of other countries and the Republic of Latvia;
5. to develop recommendations for expanding the meaning of cash flow statement among financial reporting preparers and users.

In order to provide the widest and most accurate summary of results, the authors have used various methods of displaying results: methods of economic analysis and synthesis, statistical methods and logical constructive method.

### *The origins of the cash flow statement*

Accounting emergence are often associated with an increase in various economic processes, such as growing businesses and then their bankruptcy. Bankruptcy affects not only a particular

company but also the state. This is confirmed by Barry Elliott and Jamie Elliott in their book "Financial accounting, reporting and analysis" where they say "Scandals surrounding company failures, notably in the USA in the 1920s and 1930s and in the UK in the 1960s and 1980s, had a marked impact of financial reporting in those countries" (Elliott B., Elliott J., 2006:8). For the first time in the financial statements, it was suggested to use the statement of source and application of funds in the Accounting Principles of 1963- Regulations No. 3. "The statement of source and application of funds" – "In Opinion 3, the Board said that "a statement of source and application of funds should be presented as supplementary information in financial reports" (Opinions off the Accounting Principles Board No. 3, 1963:4). Here, for the first time, it was officially stressed that the financial statements also need to include the movement of funds, which we understand today as "cash flow", but the Accounting Principles Board did not oblige this report to be included in the financial statements, moreover it was the auditor's choice to audit it. "The inclusion of such information is not mandatory, and it is optional as to whether it should be covered in the report of the independent accountant". (Opinions off the Accounting Principles Board No. 3, 1963:4). The Director of the Accounting Division in that time, which was directly subordinated to the Accounting Principles Board said that "The funds statement should be treated as a major financial statement. It should be presented in all annual reports of corporations and be covered by the auditors short-form report" (P.Mason., 1961:90) Based on information from the above mentioned sources, the authors state that in the rules No.3 issued by the Accounting Principles Board the statement that the statement of source and application of funds are voluntarily applicable is surprising, considering that a team of researchers from the same Board indicated that the use of the report is necessary and recommended. P. Mason pointed out "It should be standard practice for the management to include in the annual report interpretive comments related directly to the funds statement which assist the reader in understanding the financial policies, plans, and operations of the company. (P.Mason., 1961:90) The authors conclude that, at the beginning of the cash flow statement, the statement of source and application of funds (known as the direct opening of the cash flow statement) was shown as statement with practical significance in its use and the authors of that time saw its role in gaining a clearer picture of the company's financial position. In 1971, the Accounting Principles Board issued new regulation - No. 19, which, in its introduction, referred to Rule No. 3 meaning: "Support of that Opinion by the principal stock exchanges and its acceptance by the business community have resulted in a significant increase in the number of companies that present a statement of sources and uses of funds (funds statement) in annual financial reports to shareholders. Several regulatory agencies have acted recently to require funds statements in certain reports filed with them" (Opinions off the Accounting Principles Board No. 19, 1971:1). In the opinion of the authors, despite the fact that the Accounting Principles Board did not emphasize the importance of the fund statement as a complete part of the financial statement, companies of that time understood and started to use this statement in practice. As a result, the Accounting Principles Board issued Regulations No. 19 "Statement of Changes in Financial Position", in which pointed that "The funds statement is related to both the income statement and the balance sheet and provides information that can be obtained only partially, or at most in piecemeal form, by interpreting them. An income statement together with a statement of retained earnings reports results of operations but does not show other changes in financial position. Comparative balance sheets can significantly argument that information, but the objectives of the funds statement require that all such information be selected, classified, and summarized in meaningful form." (Opinions off the Accounting Principles Board No. 19, 1971:2) According to the authors' view, it was initially emphasized in 1971 that the statement of source and application of funds should be viewed in the context of other financial statements, that the balance sheet and the profit and loss account do not give a



complete picture of the financial position of the company, that the financial information of the company can only be fully understood by using the financial statements data. The definition of the cash flow statement appears for the first time in 1987 in the Statement of Financial Accounting Standards No. 95 "Statement of Cash Flows". "It concluded that a cash flow statement should replace the funds flow statement, concentrating on changes in cash rather than changes in working capital. The cash flow statement should represent all of a company's cash receipts and cash payments during a period. There are also widespread support for the belief that cash flow statements were more decision-useful and that they should replace the funds flow statement." (Elliott B., Elliott J., 2006:470). In line with the development of the cash flow statement, the authors conclude that financial analysts of that time began to pay more attention to the information provided by the cash flow statement and understood the increasing role of the cash flow statement in financial analysis. The main reason for replacing the funds flow statement with the cash flow statement was that the cash flow statement provides more relevant and useful information to users of financial statements. As can be seen from the above sources, the cash flow statement was conceptually generated in the United States of America and was made by the Accounting Principles Board. In Europe, its regulation basically appeared in 1992 with the provisions of the International Accounting Standards Board, by issuing the standard No. 7 "Statement of Changes in Financial Position".

"The objective of IAS 7 is to require the presentation or provision of information about the historical changes in cash and cash equivalents of an company by means of a statement of cash flows, which classifies cash flows during the period according to operating, investing, and financing activities". (IAS 7, Statement of Cash Flows – A Closer Look, 2014)

According to the authors, this standard was the starting point for the modern notion of a cash flow statement in Europe and pointed to the main guidelines for the cash flow statement and began to draw attention to the fact that the cash flow statement format should be standardized. This is also proven by Barry Elliott and Jamie Elliott "IAS7 was revised and renamed in 1992 by the IASC to require companies to issue a cash flow statement. Its objective was to require companies to provide standardized reports on their cash generation and cash absorption for a period" (Elliott B., Elliott J., 2006:471).

In the authors' view, the origins of the cash flow statement originated in the 1960s in America, with the Regulations No. 3. of which, although the Board itself only recommended to use the statement of source and application of funds as voluntary statement, the companies and the researchers at that time understood the importance of this statement and builded its usefulness not only in the eyes of the companies but also in the Board itself, resulting in the development of a number of other rules that was issued later. Over the time, the title of the original report has become to its modern version called a cash flow statement, but nevertheless its basic principles have come along with it - it has to be viewed in the aggregate with the balance sheet and profit or loss statement as it is a significant addition to them and gives a more accurate picture about the financial situation.

### ***Requirements or regulatory enactments in the legislation of various countries for the preparation of the cash flow statement***

At the beginning of this decade, the European Commission started developing a new accounting directive to facilitate the preparation of financial statements for small businesses. Directive are applicable to all European countries and have to implemented in their legislation. In the working documents of the responsible commission making the directive

was stated that “During the past 30 years, amendments to these Directives have tended to pay insufficient attention to the comparability and user friendliness of the financial statements and have gradually increased complexity and the regulatory burden for companies, especially for the smaller ones”. (Commission staff working paper. Part 1, 2011:2) Based on the desire to reduce the bureaucracy of small businesses, which, in the European Commission's view, rarely uses the financial statement information for their own business decisions (Commission staff working paper. Part 1, 2011:2) in 2013 a new directive was adopted - 2013/34/EU. For the first time, it introduced a new category of "micro-companies" and set thresholds for companies to be classified according to categories. Based on thresholds, companies are allowed to prepare a shortened financial statement or not to prepare a cash flow statement. In Marius Deac research “The new EU accounting directive – a comparison of reporting requirements” pointed out, that “Only 1.21% of the companies in Europe could be classified as medium and large and will be required to prepare and publish a full set of annual financial statements.” (The new EU accounting directive – a comparison of reporting requirements, 2014)

Articles 45 to 48 of the Republic of Latvia Law on the Annual Financial Statements and Consolidated Financial Statements reflect the regulatory framework for the preparation of a cash flow statement. However, Article 5 of the aforementioned law, which regulates the categorization of companies, must also be taken into account. According to the existing regulatory framework, the cash flow statement in the Republic of Latvia must be prepared for companies that are classified as medium and large companies for two consecutive years. In order to clarify the cash flow statement preparation requirements in other countries and compare the results, the authors compared the laws and regulations in different countries.

First, the comparison was made within the framework of the Baltic States (Latvia, Lithuania and Estonia). The authors conclude that a cash flow statement should be compiled for companies in the Baltic States that are large and medium-sized companies under the threshold of at least two consecutive years: the balance sheet total of EUR 4 000 000, net turnover of EUR 8 000 000 and the average number of employees in the reporting year is 50. (Annual Account and Consolidated Annual Account Law, 2018), (Accounting Act, 2018), (Republic of Lithuania corporate financial reporting law, 2018.), (Comparison of each form of business, 2018)

The authors point out that since the three Baltic States have adopted the European Union directive No. 2013/34/EU, the division of all categories of countries into the middle and large societies does not differ. Differences can only be observed in the case of Estonia, where the micro-company has other recognition criteria than in Latvia and Lithuania. In the opinion of the authors, the absence of examples of cash flow reporting is a major obstacle to its understanding, therefore it would be advisable to include in the national legislation a more detailed presentation of the cash flow statement, including examples and typical problem solving solutions. The authors did not see in any national regulation a reference to additional methodological material or rules that would help to better understand the preparation of cash flow. The authors point out that in Lithuanian legislation only the definition of cash flow statement was found in one of the articles of the law, in Estonia only four articles are related to the cash flow statement, in the Republic of Latvia Law on Annual Financial Statements and Consolidated Financial Statements there is a separate appendix showing cash flow reporting schemes, also there are definitions for each of the cash flows, but neither in the legislation nor in the regulations of the Cabinet of Ministers, which are the basis for the law and are directly related to any subjects of the law, there are no broader explanations, examples or references to

the places where to find them. Since the preparation of a cash flow statement is often difficult, if there are not enough examples and a solution to the most common problem issues, the authors believe that national legislation should include methodological materials or separate rules that would help financial statement preparers to understand issues related to the preparation of a cash flow statement and understand the information it provides. It should be noted that the Republic of Latvia does not have its own national accounting standards that could explain the methodology for the preparation of the cash flow statement; proper and understandable reflection of the preparation procedure. It would also be desirable to have a scheme or a detailed example on which the cash flow statement and its results could be understandable, for example, adjustments to the operating cash flow required to achieve its outcome must be explained.

In order to compare the legislative requirements of the Republic of Latvia with the requirements of some of the major economies, the requirements of the legislation of other countries in the preparation of the cash flow statement were compared. Authors choose those countries, which has all specific information about needed data for comparison. Authors main goal is to compare regulation in Republic in Latvia with some other countries which has their own standards which regulates cash flow statement and their are publicly available and has information about schemes provided by national standard that regulates cash flow statement as it is under Directive of European Countries. For example, India has adopted its own national accounting standards, where separate standards are also devoted to the cash flow statement. In India, the cash flow statement is regulated by two standards, depending on the size and breakdown of the company. No 7 has made for listed companies and companies with a net worth of more than 250 billion of Indian Rupees (INR) at an exchange rate of approximately EUR 31 million. Other companies that are not one person companies, small businesses, and inactive companies are subject to standard No. 3. (Companies Act, 2013). A small company is a company that is not a public company and whose paid-in capital is less than 5 million Indian rupees, which at the exchange rate is about 62 000 euros and whose turnover is less than 20 million Indian rupees, which at the exchange rate is about 248 000 euros. (Companies Act, 2013) Looking at the national accounting standards developed in India, it can be concluded that they are comprehensibly described and based on various examples, which, according to the authors, make it easier for Indian financial preparers to orient themselves in the correct preparation of the cash flow statement and enable them to fully understand the meaning of the cash flow statement. One example of this statement is seen in India Accounting Standard No. 7, where there is a separate subdivision named: “Benefits of cash flow information” (India Accounting Standard (Ind AS) 7). India National Accounting Standards underline the importance of a cash flow statement with other financial statements: “A statement of cash flows, when used in conjunction with the rest of the financial statements, provides information that enables users to evaluate the changes in net assets of an entity, its financial structure (including its liquidity and solvency) and its ability to affect the amounts and timing of cash flows in order to adapt to changing circumstances and opportunities. Cash flow information is useful in assessing the ability of the entity to generate cash and cash equivalents and enables users to develop models to assess and compare the present value of the future cash flows of different entities. It also enhances the comparability of the reporting of operating performance by different entities because it eliminates the effects of using different accounting treatments for the same transactions and events.” (India Accounting Standard (Ind AS) 7)

Accounting standards emphasize historical cash flow information: “Historical cash flow information is often used as an indicator of the amount, timing and certainty of future cash

flows. It is also useful in checking the accuracy of past assessments of future cash flows and in examining the relationship between profitability and net cash flow and the impact of changing prices.” (India Accounting Standard (Ind AS) 7)

The Accounting Standard for Cash Flow Statement is, in the authors' opinion, developed in a logical order so that the user can easily understand the information provided by the standard, which is based on the purpose of the cash flow statement, the benefits of its information, its definitions and the order of presentation of specific items in the report. In addition, India Accounting Standards also provide examples of cash flow statements based on a specific example that are considered positively in author's opinion. The Standard also compares itself with International Accounting Standard No. 7 and point out the differences, such as the recognition of dividends paid, where, unlike the International Accounting Standard, the India Accounting Standards does not allow paid dividends to be recognized as operating cash flows but only as cash flows from financing activities. (India Accounting Standard (Ind AS) 7)

Comparing the criteria for the preparation of a country's cash flow statement for India, it can be seen that they are significantly lower than in the Baltic States, so the authors conclude that this is a lower limit than the average in the Baltic states due to the average economic data of companies.

In Brazil, on the other hand, the threshold for the cash flow statement is to be calculated on the basis of one indicator - the amount of equity, i.e. if the equity at the balance sheet date is less than 2 million Brazilian reals, which, at an exchange rate of approximately 475 000 EUR, does not need to prepare a cash flow statement. (LEI N° 11.638, 2007). Brazil also develops its own internal accounting standards, but they focus more on the breakdown of financial reporting - for example, the standard chapters are divided into what they refer to - external independent auditors, internal auditors or accounting service providers. As well as Brazilian accounting standards have been aligned with International Accounting Standards, which means that Brazilian accounting standards for regulating and reporting cash flow statements are aligned with International Accounting Standards.. (RESOLUÇÃO CFC N° 1.328, 2011) According to the authors, it is positive that national accounting standards have been developed in Brazil, however, compared to India's example, it would be necessary to supplement them with specific examples of cash flow statement preparation.

## **Conclusions, proposals, recommendations**

Based on the purpose of the article, the authors have come to the following conclusions and suggestions:

1. The origins of the cash flow statement are in 1963, when the Accounting Principles Board issued rules No. 3 where was mentioned the recommendation to include at that time the funds flow statement as an integral part of the financial statements, although only in 1971 it was formally emphasized in the rules No. 19 issued by the Accounting Principles Board;
2. The importance of the cash flow statement is best seen, mainly by reviewing the balance sheet and profit or loss statement data together;

3. Comparing the national legislation of the three Baltic States in the preparation of Annual financial statements, it can be concluded that the criteria for preparing the cash flow statement are the same in all three Baltic States, however, in the regulation of cash flow statement, more extensive information is provided by regulatory enactments of the Republic of Latvia, although there is also a lack of information on concrete examples of cash flow statement preparation;
4. India legislation provides for different criteria that determine whether a cash flow statement is mandatory and they are significantly lower than in the Baltic States. They intend to prepare the report in accordance with national accounting standards, prepared with a broad outline of information not only on the importance of the cash flow statement, but also on the example of its preparation, which indicates a greater importance to the cash flow statement in Indian legislation, as in the legislation of Republic of Latvia. Brazilian legislation only specifies one criterion for the preparation of the cash flow statement, which depends on the size of the equity and which is much lower than the threshold in the Republic of Latvia.
5. Comparing information from the national standards of the countries under author's review, broader and more comprehensible information is provided in India's internal accounting standards, which demonstrate an understanding of the importance of the cash flow statement in India and can serve as an example for other countries' national standards.

Based on the results, the authors conclude that the article has a theoretical meaning. The authors believe that the various countries have different meanings in the cash flow statement, but when looking at the example of India, the authors believe that it would be necessary to incorporate similar information in India in the form of methodological materials or national standards, paying special attention to listing of how a cash flow statement is useful for companies and why. Also, to improve the quality of the cash flow statement, it is necessary to include several examples of cash flow statement preparation in order to better understand the nuances of the preparation of the financial statements and the uncertainties that arise in its preparation.

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# ECONOMICS

# MANAGING CONFLICT OF INTEREST TO PROMOTE PUBLIC SECTOR INTEGRITY

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## Abstract

*Conflict of interest in the public sector is a contemporary problem of democratic societies and at the very core of the abuse of public office. A conflict of interest arises when the personal interest of the public official is in conflict with the public interests. Regardless of the broad and narrow definition of the official's private interest, the public sector needs to implement proper tools and controls for managing conflict of interest. Ensuring that civil servants and public officials perform their public duties for the public good, requires understanding of the sources and types of conflict of interest that could lead to corruptive behaviour. The aim of this review paper is to give insight into system for recognizing and managing conflict of interest in the public sector. The activities and the measures of the government for regulating public officials conduct are necessary for ensuring the integrity of public sector institutions. Therefore, the focus of this paper is on identifying conflict of interest, implementation of strategies for resolving conflicts of interest, and the regulatory framework for managing conflict of interest in the public sector.*

**Keywords:** conflict of interest, corruption, integrity, public sector

**JEL classification:** H11, H83

## Introduction

In the context of public sector management, the conflict of interest arises when the personal interest of civil servants or public officials is in conflict with public interest. The concept of conflict of interest is opposed to the concept of good governance and is very often related to the concept of corruption (Romanian Academic Society, 2013). According to OECD (2005: 13) „a conflict of interest involves a conflict between the public duty and the private interest of a public official, in which the official's private-capacity interest could improperly influence the performance of their official duties and responsibilities“. Therefore, a conflict of interest refers to the situation when the private interest of public official is in conflict with public interest or when the private interest affects or could affect the unbiased performance of public duties.

Serving the public interest presents the picture-perfect functioning of the democratic governments and public institutions. When public officials serve the public interest, they contribute to the well-being of society and perform their duties in a fair and unbiased way (OECD, 2005: 95). The official's conduct or decision-making should not be affected by the



private-capacity interest. „Private interests are not limited to financial or pecuniary interest or those interests which generate a direct personal benefit to the public official“ (OECD, 2005: 98). Private interest can generate both gain to the public officials and associated entities or persons to whom the public officials would like to help or loss to the persons they want to disadvantage. Private interests are related to direct personal gain or avoidance of direct personal losses, but can also include interests in social and professional activities, and interests with individuals or groups, including family and friends (ICAC, 2012).

Governments are expected to ensure that the integrity of official decision-making and public management is not compromised (OECD, 2005: 95). The interconnectedness of public and private sector raised the possibility of conflict of interest occurrence and stressed the need to manage such situations accordingly. Considering that it is practically impossible to avoid conflict-of-interest situations, public sector organizations are responsible for identifying and resolving such situations in order to preserve the integrity of public administration. Therefore, the main research question of the paper is “What constitutes a conflict of interest in the public sector and how can it be managed?”

The remainder of this paper is organized as follows. Section 2 describes different types of conflicts of interest that could arise while performing public duties and the ways to identify them. The relationship and differences between a conflict of interest and corruption is explained in Section 3. Section 4 is concerned with the regulatory framework for managing conflicts of interest. Finally, Section 5 concludes the paper by highlighting the need to manage conflict of interest effectively.

## Identifying the type of conflict of interest

The conflict of private and public interest causes the lack of trust in the public authorities and public administration. In order to manage conflict situations properly, public sector managers must identify the type of the conflict of interest that occurred in the public sector. The OECD (2003) makes distinction between “actual”, “apparent”, and “potential” conflict-of-interest situations. *Actual* or *real* conflict of interest refers to the situation that is already defined as the conflict of interest according to OECD. A conflict of interest already exists if it is obvious that the private interest is in conflict with the public official's duty. Therefore, the identified conflict-of-interest situations should be examined in order to establish possible abuse of office or corruption (Romanian Academic Society, 2013). An *apparent* or *perceived* conflict of interest exists „where it appears that an official's private interests could improperly influence the performance of their duties but this is not in fact the case“ (OECD, 2003: 58). Due to the capacity of an apparent conflict turning into an actual one, it should also be regulated, declared or identified and investigated (Romanian Academic Society, 2013). A potential conflict arises „where a public official has private interests which are such that a conflict of interest would arise if the official were to become involved in relevant (i.e. conflicting) official responsibilities in the future“ (OECD, 2003: 24). In this case, a conflict of interest turns from potential into actual if the particular person acquires public capacity which conflicts with his/her current private capacity. In such a situation, there should be regulations which require such person to give up the particular private capacity in order to take the public position or not to take the public position (Romanian Academic Society, 2013).

According to the „Code of conduct for public officials“ (Council of Europe, 2000: 9), “the public official's private interest includes any advantage to himself or herself, to his or her

family, close relatives, friends and persons or organizations with whom he or she has or has had business or political relations, as well as any liability, whether financial or civil, relating thereto.“ Although the financial or pecuniary interests of officials are generally considered as the principal causes of conflict of interest, private interests are not limited to financial gains (OECD, 2003). Esadze (2013: 6) makes clear distinction between pecuniary and non-pecuniary interest as follows. Pecuniary interests involve an actual or potential financial gain from a public official, or a member of his or her family, owning property, holding shares or a position in a company bidding for government work, accepting gifts or hospitality, or receiving an income from a second job. Money does not have to change hands as the benefit could be an increase in the value of a property because of a favourable rezoning decision, or the selection of a particular tenderer for a contract. Non-pecuniary interests do not have a financial component and may arise from personal or family relationships, or involvement in sporting, social or cultural activities. The most obvious example is when recruitment officer may have an interest in influencing hiring procedures to secure a position for his brother or cousin, without ever benefiting financially. Conflicts of interest have been grouped into eight categories as shown in the table 1 (Esadze, 2013: 8-9).

*Table 1. The categories of conflict of interest*

Category	Description of conflict-of-interest situation
Self-dealing	A situation where public official takes an action in an official capacity which involves dealing with oneself in a private capacity, and which confers a benefit on oneself.
Accepting benefits	Public employees solicit or accept transfers of economic value from persons with whom they have contact in their official capacity. Such benefits range from token gifts to significant "transfers" prohibited by the criminal code.
Trading in influence	“The practice of soliciting some form of benefit...in exchange for the exercise of one’s official authority or influence on their behalf”.
Using government property	Using government property for personal use. It might involve significant private use of government telephones, computers, vehicles, aircraft, etc.
Using confidential information	A public official discloses to others, or uses to further their personal interest, confidential information acquired by them in the course of their official duties. A specific example of this is "insider information", which means the use of information that is gained in the execution of a public official’s office, and is not available to the general public to further or seek to further the member’s private interest.
Outside employment	A public official engages in, solicits, negotiates for, or promises to accept private employment, or render services for private interests or conduct a private business when such employment, service or business creates a conflict with, or impairs the proper discharge of their official duties
Post-employment	It implies that public officials cannot act after they leave public office in such a manner as to take improper advantage of their previous office. This is the problems of "capture" of government officials, particularly in areas of regulation. When "future employment" in such situations emerges, public interest in such examples rises, and public confidence in prior administrative decisions and fairness by such officials is potentially undermined.
Personal conduct	There are two key circumstances: (a) when a public servant’s conduct makes him or her vulnerable to pressure to use his or her public office improperly; and (b) when a public servant’s conduct brings significant discredit to the government or to a particular department and thereby undermines public trust in public officials.

*Source: Esadze, L. (2013)*

System of indicators can help public officials and managers in public administration to implement most effective strategy for managing conflict of interest by implementing guidelines for identifying the source of conflict and the complexity of conflict-of-interest situation. Transparency International Hrvatska and Transparency International Bugarska (2012: 37-40) described indicators of conflict-of-interest situation or so called “red flags” that include indicators of pecuniary interest, indicators of non-pecuniary interests, and indicators of conflict of interest in the public procurement procedures. Effective management of conflict of interest is not limited to personal responsibility of public official to identify and reveal actual, apparent or potential conflict of interest. It also includes implementation of adequate strategies by public sector managers and internal control. The examples of the indicators of pecuniary interest and non-pecuniary interest is when public officials or members of their families own shares or have stakes in the winning contractor or there is a close relationship between the public official and the representative or the employee of the bidder that was awarded a contract. Some of the indicators of conflict of interest in the public procurement procedures are disclosure of information to the participants of tender about the requirements before the beginning of tender process, withholding information that can help bidders in adjusting their bids, submitting uncompetitive bids, tender with only one bidder, selection criteria that benefit specific bidder, unjustified rejection of a tender as a qualified bid, modification of the criteria or requirements to reduce the possibility of participation in the tender, changing the original tender documents, the awarded contract contains additional workload that was not included in the tender document or awarding the contract without required documents and based on oral agreement, etc. Modification of the procurement contract presents a red flag because such contract must be implemented in full accordance with the requirements, the technical specifications and the time frame set in the call for tender, while only slight amendment to the contract is foreseen under special circumstances (European Commission, 2013).

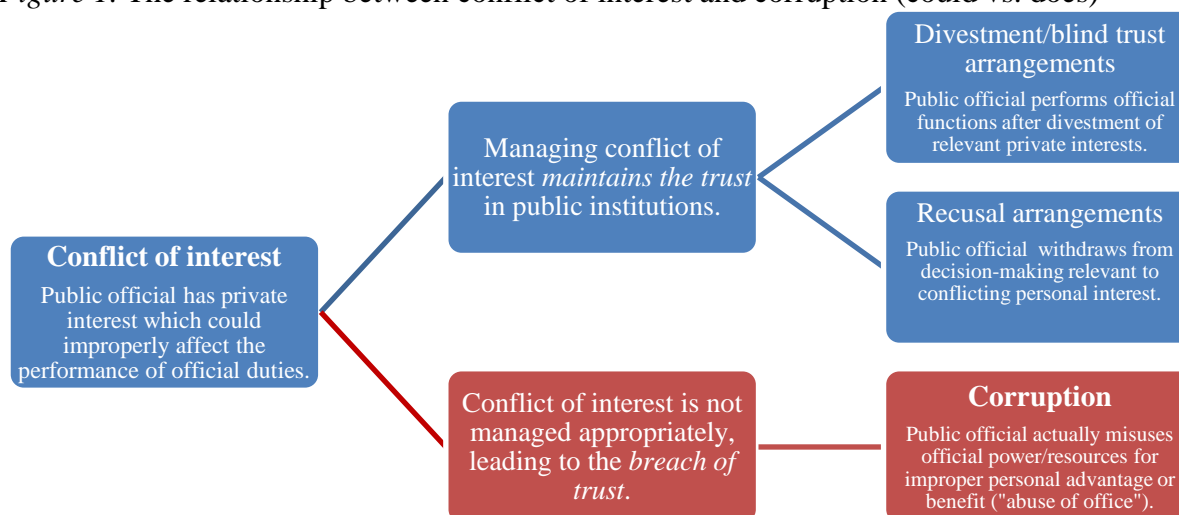
## **The relationship between conflict of interest and corruption**

The more conflicts of interests are present in a certain public sector institution, the greater the chances that corruption will arise (Romanian Academic Society, 2013). Although the conflict of interest and corruption are related concepts, they should not be confused. It is inevitable that a public official will face situations where his/her private interest will conflict with public interest. However, a conflict of interest is a situation, not an action, and a public official may find him or herself in such a situation without actually behaving corruptly (Reed, 2008: 8). Therefore, the concept of conflict of interest refers to the potential to engage in wrongdoing and does not mean actual wrongdoing (Speck, 2008: 67). The situation where a private interest has actually compromised the proper performance of a public official's duties can be regarded as an instance of misconduct or “abuse of office”, or even an instance of corruption, rather than as a “conflict of interest” (OECD, 2003: 25). The World Bank (1997: 8) defines corruption as “the abuse of public office for private gain”. Bearing in mind this World Bank's definition, corruption indicates there was a conflict of interest that was not controlled.

There is increasing recognition that situations where the conflicts between the private-capacity interests and public duties of public officials are not effectively managed can result in corruption (OECD, 2005). Corruption presents “a serious threat to the rule of law, democracy, human rights, equity and social justice, it hinders economic development and endangers the stability of democratic institutions and the moral foundations of society” (Council of Europe, 2000: 5). The relationship between citizens and public officials should be

based on trust that the public official will serve the public interest. Managing conflict of interest should secure that the citizens believe in the integrity of public sector institutions. In this context, integrity refers to “honesty” or “trustworthiness” in the discharge of official duties, serving as an antithesis to “corruption” or “the abuse of office” (Armstrong, 2005: 1). If the conflict of interest is managed effectively that trust will be conserved. In other cases, when the public official’s private interest has indeed influenced the performance of his public duty, the conflict of interest can lead to corruptive behaviour that undermines public confidence in the government. The figure 1 shows the relationship between conflict of interest and corruption as described by OECD (2005: 14-20).

*Figure 1. The relationship between conflict of interest and corruption (could vs. does)*



*Source: authors according to OECD (2005).*

The figure stresses the importance of managing conflict of interest in the public sector to avoid the misuse of official power and the breach of citizens’ trust in government institutions. “Corruption rests on a substantiated conflict of interest whose outcome is that the private interest prevails over the public interest with the ensuing damage to the public office or public affairs” (Romanian Academic Society, 2013: 3). The public official holds an official position to exercise state powers and perform functions lawfully, affecting the rights and interests of private citizens. In this context the term public official is more generically used to refer to public servants, civil servants, public employees, or elected officials, or any other kind of official who performs public functions or duties on behalf of the State, a government, or a government organisation, where the exercise of lawful power is involved (OECD, 2005: 15). Both the citizens and the State are entitled to believe that the State’s employees will provide professional service. However, the public official is also the citizen who has private rights and interest. If official’s private interest could improperly affect the performance of official duties, such situation should be resolved appropriately to maintain the trust. The public official can divest of relevant private interest or withdraw from performing official functions because of continuing ownership/control of relevant private interest. When the public official has taken advantage of his/her public position to give an improper advantage or benefit to themselves or to another private interest, it is a case of corruption. Such situation involves a breach of the entrusted responsibility of public official not to misuse official power for improper private-capacity gain (OECD, 2005).

Although the figure 1 shows two different way of managing conflict of interest, there are other available options or strategies for managing the identified conflict of interest. Although

the circumstances of each case should be examined individually, New South Wales' Independent Commission Against Corruption and Queensland's Crime and Misconduct Commission, promote the six-stage process (ICAC, 2012). The process is composed of six following steps ("six Rs"): record (or register), restrict, recruit, remove, relinquish, and resign. All conflicts of interest should be formally registered, and it can even be sufficient in some low-risk situations to maintain transparency. However, if the disclosure of the conflict of interest is not enough to resolve the conflict, the next step is for the public officer to restrict his/her involvement in the matter if they can be effectively withdrawn from the decision-making process. If the conflict of interest is likely to arise frequently, then recruitment of impartial third party to oversee all or part of the decision-making process, or to vouch for the integrity of the process seems more suitable (Integrity Commission, 2012). This strategy should be implemented when the public official's expertise is necessary and cannot be easily replaced. This is usually the case in small or isolated communities, where it is not desirable or feasible to remove public official from the process. If the conflict of interest is serious and ongoing, the restriction and recruitment of independent third party may not be appropriate, the suggested strategy is to remove the public official completely from the process. In the situation where the commitment to public duty outweighs attachment to the private interest, the public official can relinquish the interest creating the conflict. The ultimate option, considering that none of the above mentioned strategies work, is for the public official to resign from his/her position.

## **Regulatory framework for managing conflict of interest**

The United Nations Convention Against Corruption (2004) does not address conflict of interest in a separate article, but it deals with conflicts of interest in Articles 7 (4) and 8 (5) regarding rules on the public sector. It demands that states establish systems that promote transparency, prevent conflict of interest, and require public officials to make declarations to appropriate authorities regarding, inter alia, their outside activities, employment, investments, assets and substantial gifts or benefits from which a conflict of interest may result with respect to their functions as public officials. Despite being a backbone for anti-corruption legislation around the world, the Convention makes only cursory reference to conflicts of interests (Catchick, 2014: 1). The OECD Guidelines on managing conflict of interest in the public service (2003) aim primarily to help member countries at central government level, but also present the standard accepted by other international organizations and countries as a basis for their regulatory regimes (Zibold, 2013: 2).

The European Union (EU) has established conflict of interest provisions relating to the conduct of its own staff in the European institutions which tend to be more stringently regulated than their national equivalents (Oldfield, 2017: 5). The regulatory framework and the foreseen sanctions regarding the conflict of interest varies among the EU member states. The majority of EU countries regulate conflict of interest in national legislation, some use administrative codes and some practice both. The breaking of conflict-of-interest rules usually presents an administrative offence, while some countries refer to it as a criminal offence (Oldfield, 2017: 5). The EU provided Directive for member states to comply with rules regarding public procurement and Code of conduct for public officials. The Article 24 of Directive 2014/24/EU (OJ L 94, 28.3.2014), on public procurement, states that: "The concept of conflicts of interest shall at least cover any situation where staff members of the contracting authority or of a procurement service provider acting on behalf of the contracting authority who are involved in the conduct of the procurement procedure or may influence the outcome

of that procedure have, directly or indirectly, a financial, economic or other personal interest which might be perceived to compromise their impartiality and independence in the context of the procurement procedure.” According to the Article 13 (3) of the Code of conduct for public officials, adopted by the Committee of Ministers of the Council of Europe (2000: 10), the public official “has a personal responsibility to be alert to any potential or actual conflict of interest; to take steps to avoid such conflict; to disclose to his or her supervisor any such conflict as soon as he or she becomes aware of it; and to comply with any final decision to withdraw from the situation or to divest himself or herself of the advantage causing the conflict.” The Article 14 states that: “The public official who occupies a position in which his or her personal or private interests are likely to be affected by his or her official duties should, as lawfully required, declare upon appointment, at regular intervals thereafter and whenever any changes occur, the nature and extent of those interests.” This Code of conduct for public officials refers to persons employed by a public authority and it does not include publicly elected representatives, members of the government, and holders of judicial office. Although the general provisions on conflict of interest often apply to all levels of government, different rules can be applied to government ministers, parliamentarians, and civil service staff (Oldfield, 2017). Reed (2008) stresses the need to regulate different types of officials differently due to the specific nature of their positions and suggests regulating the elected officials less strictly than professional civil servants, and applying generally stricter regulations to government ministers. Some EU countries combine criminal and administrative penalties for breaking the rules, depending on the type of official (Oldfield, 2017: 7).

Adequate arrangement for managing conflicts of interest is the key to combating corruption effectively as conflicts of interest are easier to identify, document and adjudicate within the democratic legal procedures (Romanian Academic Society, 2013). The real challenge for regulation in the public and political sphere is to prevent conflicts of interest from morphing into corruption (Reed, 2008). The government and the civil society mostly use institutional mechanisms to prevent pursuing public official’s personal interests at the expense of the public (Bačić, 2012: 185). According to OECD (2011: 15) “too-strict approach to controlling private interests may conflict with other rights or deter experienced and competent potential candidates from entering public office or public service”. Therefore, a modern approach seeks to strike a balance by identifying risks to the integrity of public sector, prohibiting unacceptable forms of private interest, raising awareness of the circumstances in which conflicts can arise, and ensuring effective procedures to resolve conflict-of-interest situations (OECD, 2011).

The conflict of interest regulation in practice has the following objectives (Reed, 2008: 10): to prevent conflict of interest situations arising, to the extent that this is possible and practical; to establish rules that address conflict of interest situations where they do arise; and to provide guidance to public officials and enable them to protect themselves more easily. The Figure 2. shows basic mechanisms used to tackle conflicts-of-interest situation according to the objective of regulation.

*Figure 2. The objectives and basic types of conflict-of-interest regulation*

To prevent conflict of interest situations arising	• Prohibition on activities and positions deemed to be incompatible with the proper performance of public duties.
To establish rules that address conflict-of-interest situations where they do arise	• Establishment of duties of public officials to declare interests they have, either generally or in specific cases.
To provide guidance to public officials and enable them to protect themselves more easily	• Establishment of clear conflict-of-interest resolution procedures.

*Source: according to Reed (2008) and Jenkins (2015).*

Provisions may prohibit public official from holding another position in a different branch of government, private sector employment including contractual relations, holding ownership stake in a private legal entity where the state holds shares or conducting business with government, accepting certain employment within a specified time period after leaving public service, etc. (Reed, 2008: 13). Certain officials and members of government should be obliged to regularly declare their past and present financial and other interests, as well as the interests, holdings and liabilities of their spouses and children (Jenkins, 2015). OECD (2011) outlines three key aims of an asset disclosure system: conflict of interest prevention and resolution, increasing transparency and the trust of citizens in public administration, and verification of the legitimacy of wealth. Although asset disclosure requirements tend to cover the leadership of the executive, legislative and judiciary branches of government, as well as senior level officials working in government civil service, there is still no international standard or agreement on the breadth and depth of asset declarations (Transparency International, 2014). Reed (2008: 14) sees declarations of interests as the single most important component of a framework for managing conflicts of interest as they ensure transparency, provide an incentive for officials to disclose their affairs, and serve as a necessary condition for other components of the regulatory framework to work. Resolution procedures could involve previously mentioned options like recusal arrangements, divestment or liquidation of the interest by the public official, restriction of official's access to particular information, transfer of the public official to another duty, re-arrangement of the public official's duties and responsibilities, assignment of the conflicting interest in a genuinely "blind trust" arrangement, resignation of the public official from the conflicting private-capacity function and/or resignation of the public official from their public office (OECD, 2003). National legal frameworks should seek to cover the areas of private financial interest, secondary employment, procurement, movement of public officials between the public and private sector, nepotism and cronyism, sharing confidential information and insider trading, and fraud and bribery (Jenkins, 2015: 5-6). A good regulatory framework with clear policy and procedures for managing conflict of interest creates the necessary conditions for a good anti-corruption policy (Romanian Academic Society, 2013).

## Conclusion

Although several definitions have been recognised, a conflict of interest per se is not a simple and intuitive concept. Even the presence of perceived or potential conflict can jeopardize the trustworthiness of public sector institutions and should be controlled and managed

appropriately. When the actual conflict of interest arises, it only means that there is a possibility of corruption but it does not have to lead to the abuse of public office. There is increasing recognition that the conflict-of-interest situations cannot be completely avoided, emphasizing the need to deal with such situations effectively. Adequate strategies and regulatory framework must be put in place in order to support anti-corruption policy and maintain the trust in public institutions. Three major areas that should be covered by the conflict-of-interest regulation are the prohibition, the declaration of interests, and the resolution of conflicts of interest. There are several different approaches to tackling the conflicts-of-interest situations in line with the objectives of the implemented regulatory regime. Prohibition is only one way of dealing with conflicts of interests directed towards prevention, but other ways are also very important considering the multiple roles of public officials causing the conflict between the public officials' duty and their private-capacity interest. National legal frameworks should regulate the areas prone to conflicts of interest with clear policies and procedures. The effective management of conflict of interest is a powerful tool to close the gateway to corruption and protect the integrity of public sector.

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# SYNCHRONIZATION AND SPILLOVERS OF BUSINESS CYCLES IN THE EUROPEAN UNION

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## Abstract

*This paper analyzes business cycle spillovers and synchronization in the old member states of the European Union. Business cycle spillovers and synchronization are important for the European Union and especially for the Eurozone to avoid asymmetric shocks and problems to the common monetary policy. Using Diebold-Yilmaz spillover index methodology over the sample from 1975 to 2018, we show that business cycle spillovers increased sharply during the period from 2009 to 2015 that coincides with the Great Recession and the sovereign debt crisis in the Eurozone. There is no single country that transmits the majority of shocks, but instead, most of the countries have a nontrivial share in shock transmission. Nevertheless, Italy, France, UK, Belgium, Sweden, Luxembourg, and the Netherlands are the biggest net transmitters of shocks. Our results indicate that business cycle spillovers between the old EU member states are complex. Each member state is typically exposed to business cycle shocks of more than a few other member states. Business cycle spillovers are also related to the level of business cycle synchronization. First, we observe that positive spillovers are related to negative output gaps, e.g., they are high during recessions and low during periods of economic growth. Second, spillover shocks are typically symmetric and affect almost all analyzed countries in the same way. Spillovers are found to be positively correlated with business cycle synchronization, especially after the Great Recession and the sovereign debt crisis in the Eurozone. That finding is important for monetary policy in the Eurozone because synchronized shocks and business cycles make the conduct of monetary policy easier. The main conclusion is that the old member states of the EU are highly integrated and exposed to business cycle shocks from other EU members.*

**Keywords:** business cycle, spillover, synchronization, Eurozone, Vector autoregression, variance decomposition

**JEL classification:** E32, F44, C32, C54

## Introduction

The Great Recession of 2007-2008 showed that the global economy is prone to contagion just like financial markets. The subprime mortgage crisis that started in the US in 2007 had quickly spread to Europe and other developed countries. European Union and Eurozone were exposed to two crises in a short period, the Great Recession in 2007 which was followed by the sovereign debt crisis in 2010.

This paper builds on the international business cycle literature by analyzing business cycles spillovers and synchronization in the fifteen old member states of the EU (EU-15). We

analyze business cycle spillovers from the perspective that countries both transmit and receive shocks from each other. Based on that, we construct net spillovers identifying net shock transmitters and receivers between fifteen old EU member states.

Furthermore, we construct a total spillover index as in Diebold and Yilmaz (2009, 2012). The index allows us to track shock spillovers from 1980-s to 2018 which includes the period of globalization in the 1990-s, the introduction of the Euro in 2002, EU enlargement period in mid-2000-s and the period of the Great Recession and the sovereign debt crisis. Unlike the previous research on business cycle transmission (e.g., Kanda, 2008; Bayoumi and Swiston, 2009), we observe time-varying spillovers which allows us to study important events such as the Great Recession and the sovereign debt crisis and to analyze changes in spillovers over time.

The level of economic integration and business cycle synchronization is of high importance for the EU because of the common monetary policy in the Eurozone. Therefore, it is an important issue both for academia and for policymakers. For the common monetary policy, it is important that all member states are in a similar business cycle phase. Low business cycle synchronization would be a problem for the ECB because the same monetary policy would not fit all Eurozone member states. Therefore, the costs of the common monetary policy would be potentially high. We analyze if shocks spillovers affect all countries in the same way, thus being symmetrical and increasing business cycle synchronization. If business cycle spillovers cause asymmetrical shocks, it would lower business cycle synchronization, and it could be a serious problem for the ECB in conducting monetary policy. Furthermore, we analyze how business cycle spillovers are related to output gaps of individual EU member states.

The literature on business cycle synchronization in the EU is voluminous which reflects the importance of the topic from both the academic and policymakers' perspective. The recent paper by Campos, Fidrmuc, and Korhonen (2017) showed that business cycle synchronization increased in both euro and non-euro countries of the EU according to their meta-analysis of about 3000 business cycle synchronization coefficients. Massmann and Mitchell (2005) also concluded that the business cycle correlation in the Eurozone is increasing, but they showed that it also varies over time with periods of higher and lower synchronization. The number of publications on business cycle synchronization usually increases with the proximity of the Eurozone entrance. For example, Arčabić (2011), Jovančević, Arčabić, and Globan (2012), and Kotarac, Kunovac, and Ravnik (2017) analyzed transmission and synchronization of Croatian business cycles with the Eurozone, and Croatia is the next candidate for the Eurozone.

In the international business cycles literature, a stylized fact is that macroeconomic fluctuations between industrialized countries are more correlated since the 1990-s, which overlaps with the beginning of globalization. Kose, Otrok, and Whiteman (2003) decomposed GDP of 60 countries into the world, regional, and country-specific component. They found that the global and country-specific components are important in explaining business cycles in their sample. The regional component is not important even for the European countries, but their sample ends in 1990, which excludes the period of the intensive integration process in Europe. Canova, Ciccarelli, and Ortega (2007) extended the research showing that world and country-specific components are more synchronized in recessions than in periods of economic growth. These findings suggest that the globalization increases business cycle similarity, but also increases the risk of contagion. The main determinants of international business cycles are productivity, oil prices, and terms of trade, as shown by Crucini, Kose, and Otrok (2011).

Unlike dynamic factor model used in Kose, Otrok, and Whiteman (2003), Diebold and Yilmaz (2009, 2012) spillover index framework allows us to analyze business cycle spillovers, differentiating between idiosyncratic shocks, and international shocks. It is based on a VAR model which includes rich dynamics between countries, so it is superior to simple bivariate measures such as correlation coefficients.

Yilmaz (2009) analyzes the international business cycle spillovers in G-7 countries using this methodology. The spillover index indicates substantial variation in periods of oil shocks in 1970-s and 1980-s, during the dot-com recession in early 2000-s, and especially in the period of the Great Recession in 2007. Yilmaz found that the US and Japan are the biggest transmitters of shocks between the G-7 countries.

Spillover index methodology of Diebold and Yilmaz (2009, 2012) has been used in other areas as well, by observing spillovers between stock and bond returns, volatilities, foreign exchange markets, futures, etc. The seminal paper of Diebold and Yilmaz (2009) applied the spillover methodology on return and volatility series for 19 global stock markets. Diebold and Yilmaz (2012) developed spillover indices for the generalized variance decomposition in VAR models and applied them on the spillovers between bond, exchange, commodities and stock markets in the US. Other recent applications of the spillover methodology are found in Louzis (2013), where the author examined spillovers between return and volatility between bond, exchange rate, stock and money market in the Eurozone. The results indicated that the stock market was a transmitter of volatility to other markets, whilst the money market was the main generator of spillover shocks in the last financial crisis.

Spillovers between different (macro)economic variables were analyzed as well. Dragouni et al. (2013) observed spillovers between the index of industrial production and number of tourist arrivals in developed European countries, in order to test for tourism-led growth hypothesis or the growth-led tourism; Tungsong et al. (2018) focus on uncertainty spillovers in the banking system of the European Union, Southeast Asia, and North America.

This paper contributes to the literature by analyzing both business cycle spillovers and how they affect the level of business cycle synchronization in fifteen old EU member states using quarterly data from 1975:1 to 2018:3. We analyze business cycle spillovers from countries that transmit shocks to countries that receive shocks, as well as net spillovers. It allows us to identify net shock transmitters and receivers. We do not find a single country that transmits the majority of shocks. Instead, we find that each country is typically exposed to business cycle shocks from more than a few other member states. The total spillover index measures the share of variation explained by foreign shocks versus the one explained by domestic idiosyncratic shocks in all analyzed countries.

The paper also contributes to the literature on business cycle synchronization. We analyze the correlation between the total spillover index and business cycle synchronization measure. This measure is constructed as a correlation between output gaps of 15 old EU member states and the average output gap. We also analyze if the business cycle spillovers are recessionary or expansionary.

The main findings are as follows. The spillover index confirms that old EU member states are highly integrated and that international spillovers are very important in explaining GDP variations in the group of EU-15, which is especially true after 2007. On average, spillovers explain about 48 percent of the variation in GDP. In the period from 2007 to 2008, over 90 percent of variation can be explained by shock spillovers. Total spillover index is mostly

measuring negative shocks especially the Great Recession and the sovereign debt crisis shocks. Therefore, it is negatively correlated with the output gap, indicating that higher spillovers of shocks are related to recessions. However, business cycle spillovers are affecting all EU-15 member states in a similar way, thus producing symmetrical shocks. This finding depends on the sample length; before the Great Recession and the sovereign debt crisis, shocks spillover were not symmetric.

The paper is organized as follows. Section 2 explains the data and methodology used. Section 3 presents and discusses the results, while section 4 concludes.

## Data and Methodology

### Data

Quarterly real GDP data for 15 old EU member states is taken from the Eurostat and OECD database. The group EU-15 consists of Austria, Belgium, Germany, Denmark, Greece, Spain, Finland, France, Ireland, Italy, Luxembourg, Netherlands, Portugal, Sweden, and UK. All series are seasonally adjusted. Eurostat provides official GDP series, which typically starts from mid-1990-s. For the purpose of this paper, we extend Eurostat GDP using the OECD estimated data. The final dataset is a balanced panel of 15 countries spanning from 1975:1 to 2018:3. We compute growth rates and check the stationary using unit root tests. On the usual levels of significance, all growth rates are stationary (detailed results are available upon request).

### Methodology

The basis for the analysis is a stable VAR( $p$ ) model for  $N$  variables, given in matrix form as:

$$\mathbf{y}_t = \mathbf{v} + \mathbf{A}_1 \mathbf{y}_{t-1} + \mathbf{A}_2 \mathbf{y}_{t-2} + \dots + \mathbf{A}_p \mathbf{y}_{t-p} + \boldsymbol{\varepsilon}_t, \quad (1)$$

where  $\mathbf{y}_t$  is a vector of  $N$  variables, in our case  $N=15$ ,  $\mathbf{A}_i$  are matrices of coefficients of order  $N$ ,  $\mathbf{v}$  is a vector of intercepts in the model and  $\boldsymbol{\varepsilon}_t$  is the vector of white noise processes, where it holds  $E(\boldsymbol{\varepsilon}_t) = \mathbf{0}$ ,  $E(\boldsymbol{\varepsilon}_t \boldsymbol{\varepsilon}_t') = \Sigma_\varepsilon < \infty$  and for  $t \neq s$   $E(\boldsymbol{\varepsilon}_t \boldsymbol{\varepsilon}_s') = 0$ . Stability of the model is defined with the condition  $\det(\mathbf{I}_{Np} - \mathbf{A}\mathbf{z}) \neq 0$  for  $|\mathbf{z}| \leq 1$ , where  $\mathbf{A}$  is matrix in (2). For a more compact form, any VAR( $p$ ) model can be written in a VAR(1) form:

$$\mathbf{Y}_t = \mathbf{v} + \mathbf{A}\mathbf{Y}_{t-1} + \boldsymbol{\varepsilon}_t, \quad (2)$$

where  $\mathbf{Y}_t = [\mathbf{y}_t \quad \mathbf{y}_{t-1} \quad \dots \quad \mathbf{y}_{t-p}]'$ ,  $\mathbf{v} = [\mathbf{v} \quad \mathbf{0} \quad \dots \quad \mathbf{0}]'$ ,  $\mathbf{A} = \begin{bmatrix} \mathbf{A}_1 & \mathbf{A}_2 & \dots & \mathbf{A}_{p-1} & \mathbf{A}_p \\ \mathbf{I}_N & \mathbf{0} & \dots & \mathbf{0} & \mathbf{0} \\ \mathbf{0} & \mathbf{I}_N & & \vdots & \vdots \\ \vdots & & \ddots & \vdots & \vdots \\ \mathbf{0} & \mathbf{0} & \dots & \mathbf{I}_N & \mathbf{0} \end{bmatrix}$  and

$\boldsymbol{\varepsilon}_t = [\boldsymbol{\varepsilon}_t \quad \mathbf{0} \quad \dots \quad \mathbf{0}]'$  An MA( $\infty$ ) representation in order to estimate the impulse response functions (IRF) and the forecast error variance decomposition (FEVD) is:

$$\mathbf{Y}_t = \boldsymbol{\mu} + \sum_{i=1}^{\infty} \mathbf{A}^i \boldsymbol{\varepsilon}_{t-i}, \quad \boldsymbol{\mu} \equiv (\mathbf{I}_{Kp} - \mathbf{A})^{-1} \mathbf{v}. \quad (3)$$

The polynomial form of (3) is given as  $\mathbf{Y}_t = \Phi(L)\boldsymbol{\varepsilon}_t$ , in which  $\Phi(L)$  denotes the polynomial of the lag operator  $L$  and coefficients  $\phi_{jk,i}$  which are the impulse responses of variables in the model. Innovations in  $\boldsymbol{\varepsilon}_t$  are correlated, so the Cholesky decomposition of the variance-

covariance matrix  $\Sigma_\varepsilon$  can be performed such that  $\mathbf{P}^{-1}\boldsymbol{\varepsilon}_t$  is a vector of orthogonalized innovations, with  $E(\mathbf{P}^{-1}\boldsymbol{\varepsilon}_t\mathbf{P}^{-1}\boldsymbol{\varepsilon}_s') = 0$  for  $t \neq s$  and  $E(\mathbf{P}^{-1}\boldsymbol{\varepsilon}_t\mathbf{P}^{-1}\boldsymbol{\varepsilon}_t') = \mathbf{I}_{Np}$ .  $\mathbf{P}^{-1}$  is a lower triangular matrix.

Now, the model in (3) can be written as  $\mathbf{Y}_t = \Phi(L)\mathbf{P}\mathbf{P}^{-1}\boldsymbol{\varepsilon}_t = \Theta(L)\mathbf{u}_t$ , and in this form is used to decompose the variance of the forecasted error in the following  $h$ -steps:

$$\mathbf{Y}_{t+h} - E(\mathbf{Y}_{t+h}) = \sum_{i=0}^{h-1} \Theta_i \mathbf{u}_{t+h-i}, \quad (4)$$

with every element:

$$y_{j,t+h} - E(y_{j,t+h}) = \sum_{i=0}^{h-1} (\theta_{j1,i} u_{1,t+h-i} + \dots + \theta_{jK,i} u_{K,t+h-i}) = \sum_{k=1}^K (\theta_{jk,0} u_{k,t+h} + \dots + \theta_{jk,h-1} u_{k,t+1}), \quad (5)$$

and the mean squared error of (5) being  $E(y_{j,t+h} - E(y_{j,t+h}))^2 = \sum_{k=1}^N (\theta_{jk,0}^2 + \dots + \theta_{jk,h-1}^2)$  and the proportion of the  $h$ -step forecast error variance of variable  $j$  due to shocks in variable  $k$  being the variance decomposition of the element  $j$  in  $\mathbf{Y}_{t+h}$ :

$$\omega_{jk,h} = \sigma_j^{-1} \sum_{i=0}^{h-1} (e_j' \Theta_i e_k)^2 / \sum_{i=0}^{h-1} \sum_{k=1}^N \theta_{jk,i}^2. \quad (6)$$

In expression (6), the numerator is the contribution of variable  $k$  shocks to the forecast error variable  $j$ , and denominator is the mean squared error forecast of variable  $j$ ; with  $e_k$  as the  $k$ -th column of matrix  $\mathbf{I}_{Np}$ . Diebold and Yilmaz (2009, 2011, 2012) defined the spillover index as the ratio between the  $h$ -step ahead forecast error variance of variable  $j$  as a result of shock in variable  $k$  and the total forecast error variance (for all variables and ahead  $h$ -step forecasts):

$$S = 100\% \sum_{\substack{j,k=1 \\ j \neq k}}^N \omega_{jk,h} / \sum_{i=0}^{h-1} \sum_{j,k=1}^N \omega_{jk,i}. \quad (7)$$

Since the Choleski orthogonalization depends upon orderings of variables, Koop et al. (1996) and Pesaran and Shin (1998) proposed a generalized forecast error variance decomposition (GFEVD henceforward), in which the ordering is not important, due to nonlinear impulse response function and its variance decomposition is now:

$$\omega_{jk,h} = \sigma_j^{-1} \sum_{i=0}^{h-1} (e_j' \Phi_i \sum_{\varepsilon} e_k)^2 / e_j' \Phi_i \sum_{\varepsilon} \Phi_i' e_j. \quad (8)$$

This framework is more convenient for the analysis because it neither depends on the ordering of variables nor requires theoretical assumptions for ordering.

Besides the total spillover index in (7), we estimate received spillovers to variable  $j$  from other variables in the model:  $S_{j\Box,h} = 100\% \sum_{\substack{k=1 \\ j \neq k}}^N \omega_{jk,h} / N$ , transmitted spillovers to other variables

from variable  $j$ :  $S_{\Box j,h} = 100\% \sum_{\substack{k=1 \\ j \neq k}}^N \omega_{kj,h} / N$ , and the net spillover ( $S_{j\Box,h} \Box S_{\Box j,h}$ ).

For incorporating dynamics in the analysis, we estimate the rolling spillover indices based upon the estimated VAR model for every sub-period with defined  $h$  step ahead forecast and the length of the rolling window. In this paper, the model is estimated with  $h=12$  quarters (3 years), and the rolling window of 30 quarters. Three years ahead ( $h=12$ ) is common in the literature, see for example Antonakakis, Breitenlechner, and Scharler (2015). Robustness

check of our results is performed by changing the rolling window length to 25 and 35 (Diebold and Yilmaz 2011). For more details on this methodology and full derivations, please refer to Koop et al. (1996), Pesaran and Shin (1998), Lütkepohl (1993, 2006) and Diebold and Yilmaz (2009, 2011, 2012).

In the next step, a VAR(1) model was estimated, and the ARCH multivariate test, as well as the serial correlation multivariate tests, resulted with the conclusion of no multivariate heteroskedasticity and correlation in the model on usual levels of significance. The normality test rejected the null hypothesis; however, this assumption is not necessary for the VAR model (see Lanne and Lütkepohl 2010 or Lütkepohl 2010).

For the business cycle synchronization analysis, we first decompose real GDP into trend and cycle using Hamilton (2017) filter. The cycle represents the output gap. For the quarterly data, Hamilton (2017) uses linear regression of the real GDP eight quarters ahead regressed on a constant and four most recent lags of GDP, or more precisely:

$$x_{t+8} = \gamma + \alpha_0 x_t + \alpha_1 x_{t-1} + \alpha_2 x_{t-2} + \alpha_3 x_{t-3} + c_t \quad (9)$$

where  $x_t$  is a log of real GDP,  $\gamma$  is a constant, coefficients  $\alpha_0$  to  $\alpha_3$  are OLS coefficients. The cyclical component is then equal to residuals  $c_t$ , which approximates the output gap. As a robustness check, we also use very common Hodrick and Prescott (1997) filter (HP) to decompose real GDP series into trend and cycle.

We measure business cycle synchronization as the correlation between output gap of country  $i$  and the weighted average output gap. For the rolling window correlation, we use window length 30 that is the same for the spillover index computation.

## Results on business cycle spillovers and synchronization

In the next section, we present the results of business cycle spillovers. Results of total spillovers, spillovers from countries transmitters and to countries receivers are presented as well as net spillovers. We present the total spillover index based on the rolling window estimation of VAR model. After that, we analyze how total spillovers are related to output gaps and business cycle synchronization.

### *Business cycle spillovers*

Table 1 presents the business cycle spillovers in the full sample. Each column shows the percentage of shocks one country transmits to other countries. In the first column, it can be observed that shocks in the Austrian GDP growth explain 48.28 percent of the forecast error variance of its own growth rate, 5.17 percent error variance of the Belgium growth rate and so on. The second to the last row at the bottom titled “TO OTHERS” presents the average percent of shocks one country transmits to all others.

On the other hand, each row shows the percentage of shocks one country receives from others. Austria receives 5.96 percent of shocks from Belgium and 7.23 percent from Germany. The last column on the right-hand side titled “FROM OTHERS” presents the average percent of shocks one country receives from all others.

Table 1: Business cycle spillovers in the full sample

	AUT	BEL	GER	DEN	GRE	SPA	FIN	FRA	IRE	ITA	LUX	NET	PRT	SWE	UK	<b>FROM OTHERS</b>
AUT	48.28	5.96	7.23	2.21	0.33	2.09	2.03	6.95	0.62	7.46	1.91	5.00	3.81	3.08	3.04	3.45
BEL	5.17	40.39	3.07	2.17	1.92	3.00	1.93	8.96	0.64	10.08	3.26	6.95	4.06	4.87	3.53	3.97
GER	8.25	5.35	43.54	1.57	0.74	1.66	0.94	8.08	0.52	9.99	3.03	6.64	2.66	3.65	3.41	3.76
DEN	2.94	4.25	2.18	62.96	0.54	1.25	2.56	3.98	0.99	4.46	1.73	1.84	2.21	4.12	4.00	2.47
GRE	1.51	6.77	1.12	0.39	61.08	10.75	0.67	4.65	0.90	2.43	1.27	1.64	3.79	1.17	1.88	2.60
SPA	3.09	5.12	0.41	1.10	7.86	42.12	1.24	4.51	2.52	6.09	4.76	3.46	9.22	3.71	4.79	3.86
FIN	1.55	4.82	1.01	0.46	1.40	3.24	48.82	7.06	1.52	5.36	2.91	1.37	1.74	11.67	7.07	3.41
FRA	4.42	8.20	3.66	1.03	1.89	3.71	1.99	32.63	1.16	12.88	4.50	4.59	6.48	4.59	8.28	4.49
IRE	0.24	0.60	0.19	0.42	0.28	3.46	0.42	1.81	82.49	0.68	1.90	0.94	1.45	3.01	2.13	1.17
ITA	3.87	9.71	2.73	0.40	3.19	4.51	1.62	9.82	0.89	40.15	3.96	5.57	4.18	3.86	5.55	3.99
LUX	1.69	5.01	3.11	0.79	1.62	4.28	1.11	3.73	0.42	2.83	65.10	2.44	2.01	2.20	3.66	2.33
NET	5.65	5.86	5.84	2.54	0.95	3.52	1.20	5.21	0.66	4.93	2.13	51.77	4.24	2.42	3.08	3.22
PRT	1.49	4.74	0.78	1.46	3.67	9.76	1.03	10.76	0.95	8.59	2.02	4.45	46.71	1.09	2.50	3.55
SWE	2.80	5.46	3.26	1.79	1.40	2.18	10.52	4.98	1.32	4.37	2.41	0.93	0.47	52.68	5.43	3.15
UK	3.16	2.13	2.96	1.34	1.25	1.75	3.25	5.58	1.24	4.95	2.75	4.91	1.37	5.36	58.02	2.80
<b>TO OTHERS</b>	3.05	4.93	2.50	1.18	1.80	3.68	2.03	5.74	0.96	5.67	2.57	3.38	3.18	3.65	3.89	<b>48.22</b>
<b>NET</b>	-0.39	0.96	-1.26	-1.29	-0.79	-0.18	-1.38	1.25	-0.21	1.68	0.24	0.17	-0.38	0.50	1.09	

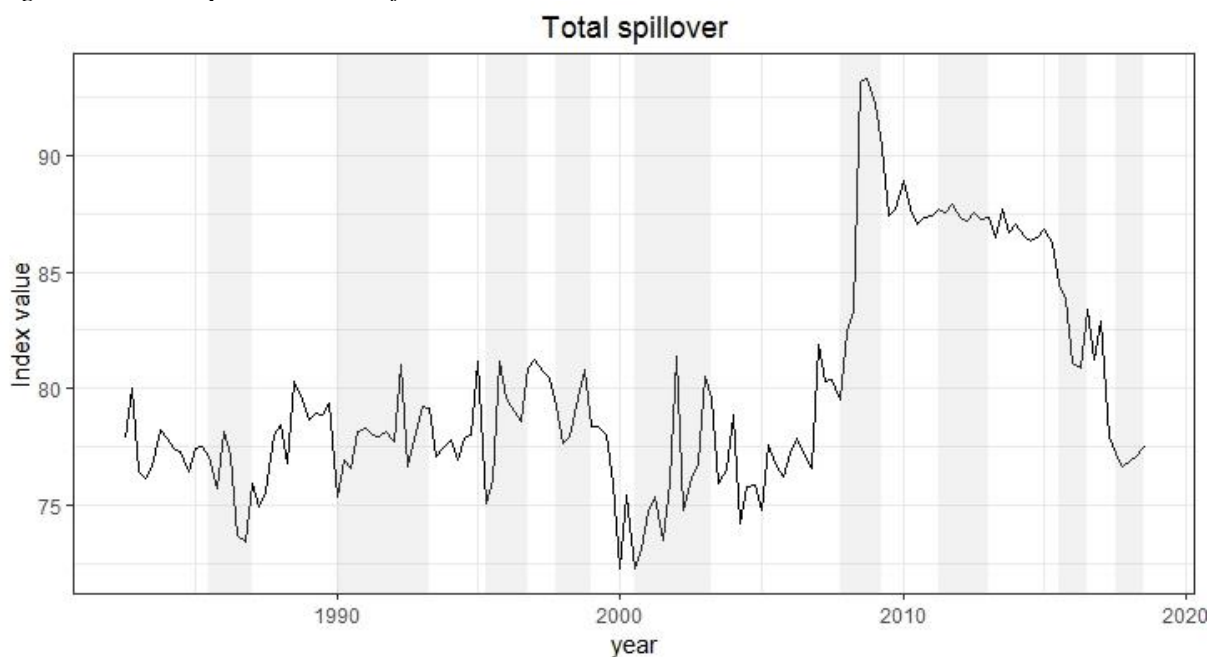


The net shock receivers in the whole period were: Austria, Germany, Denmark, Greece, Spain, Finland, Ireland and Portugal (having the negative value of net index), whereas Belgium, France, Italy, Luxembourg, Netherlands, Sweden, and UK were net transmitters of shocks to others. The net transmitters and receivers of shocks can be observed in the last row titled “NET” which represents the difference between TO OTHERS and FROM OTHERS. There is no major shock transmitter or receiver between EU-15 countries, but all of them receive and transmit shocks similarly. The table also shows that EU-15 member states are highly integrated. Total spillover is 48.22 percent suggesting that almost half of the variation in EU-15 GDP can be explained by foreign shocks, which highlights the importance of international spillovers in explaining GDP variations in the group of EU-15.

Table 1 reveals that countries typically have stronger bonds with a smaller subset of countries. For example, Portugal receives the most shocks from three countries: Spain (9.76), France (10.76), and Italy (8.59). Other countries have a smaller share in explaining the variation of Portugal’s GDP. This smaller subset of countries is usually expected because of geographical proximity or intensive international trade between countries. For example, France receives the most shocks from Belgium, Italy, and the UK; Sweden receives the most shocks from Finland. Similar patterns can be found for other countries as well.

Shock spillovers increased substantially during the Great Recession and the sovereign debt crisis. Shock spillovers could explain over 90% of the variation in EU-15 GDP in a period from 2007 to 2008, which indicates an economic contagion. Figure 1 shows the estimated total spillover index. The index is constructed by a rolling window estimation of a VAR model with the window length of 30 quarters. Shaded areas represent recession periods in the EU. The index shows that even before the Great Recession, spillovers were very important, explaining on average between 75 and 80 percent of the variation in EU-15 GDP. This finding additionally confirms a high level of integration between the EU-15 group of countries.

*Figure 1: Total spillover index for the EU-15*



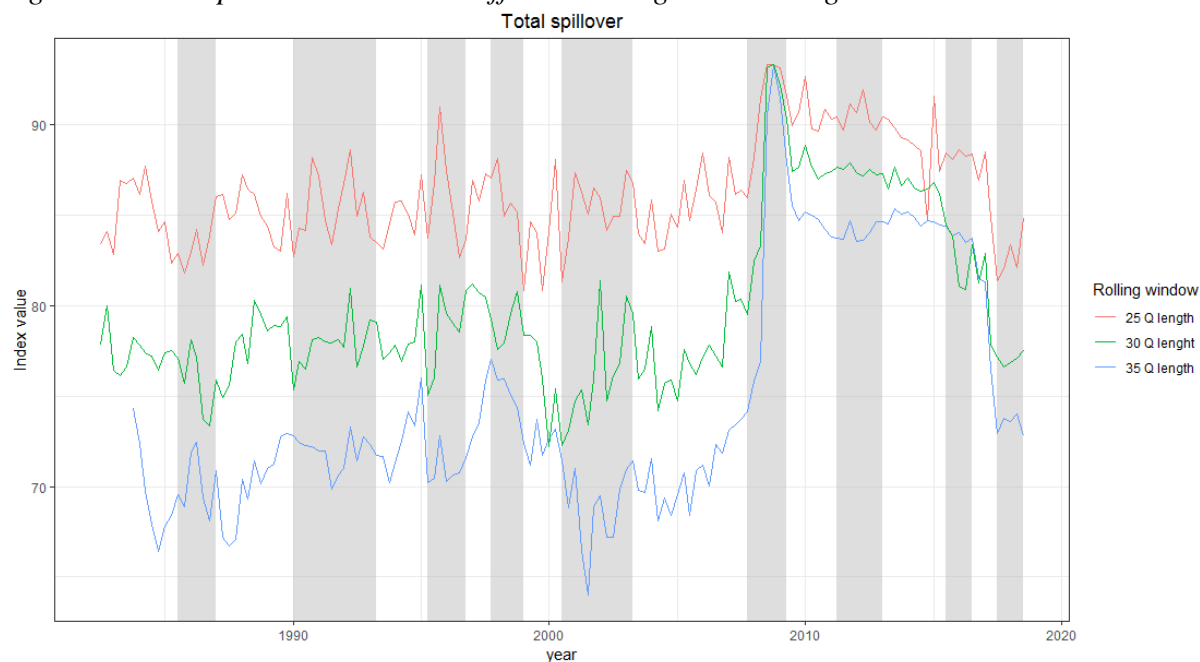
Note: Shaded areas represent EU recessions (OECD estimation)

However, the value of the index jumped to over 90 percent in 2007 and 2008 and stayed well above the average during the period of the Great Recession and the sovereign debt crisis. In the most recent period of 2018, the index returned to the average value between 75 and 80 percent. The period between 2008 and 2015 was marked with two big crises and slow recovery. From Figure 1, it is clear that both crises had elements of contagion for the old member states of the EU. During that period over 85 percent of the variation in GDP was due to shock spillovers from other countries. Four countries contribute the most in shock transmission: Spain, Ireland, UK, and Italy. These countries were the biggest shock transmitters in the period from 2007 to 2010. We do not report the results of net spillovers over time to conserve space, but the results are available upon request.

To summarize, our findings confirm that EU-15 countries are highly integrated and exposed to shocks from other EU-15 countries. We show that on average 48 percent of GDP variation can be explained by shock spillovers, and over 90 percent during the Great Recession and the sovereign debt crisis, which indicates the economic contagion. Also, we do not find countries that are typical shock transmitters, but all countries are equally exposed to foreign shocks, typically from a smaller subset of countries determined by geographical proximity or intensive international trade.

We check the robustness of the results regarding spillover index by changing the window length in the rolling window estimation of the VAR model. The results are shown in Figure 2. Changing the window length to 25 and 35 does not substantially change our conclusion. In general, shorter window length is associated with the higher value of the index, but it is also less persistent. The longer window length is the opposite, showing higher persistence, and a somewhat lower level of the index. Nevertheless, in all three cases, it is clear that the index increased substantially in a period 2007-2008.

*Figure 2: Total spillover index with different rolling window lengths*



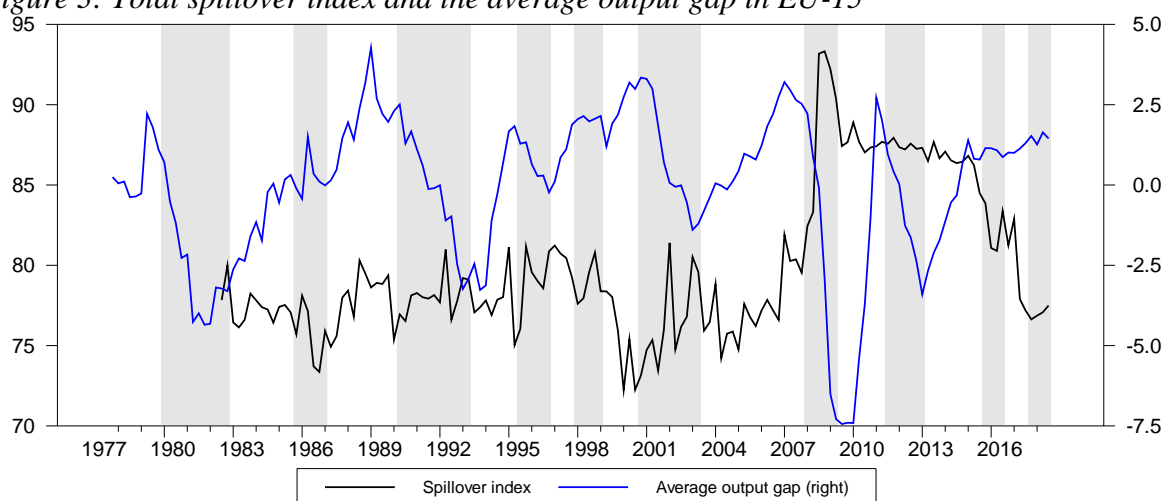
Note: Shaded areas represent EU recessions (OECD estimation)

## Business cycle synchronization

We use the total spillover index from Figure 1 to analyze how it is related to business cycle synchronization of EU-15 member states as well as with their output gaps.

There seems to be a negative relationship between total spillovers and the output gap of EU-15. Therefore, shocks spillovers in the EU-15 tend to be recessionary. In Figure 3 we plot the total spillover index together with the weighted average output gap of EU-15. Weights are equal to shares of each country's GDP in the total GDP of EU-15. The output gap is calculated as a cyclical component from Hamilton's (2017) filter. Spillovers tend to be higher in recessions when the output gap is low or negative. This is especially the case during the Great Recession and the sovereign debt crisis. Indeed, the correlation coefficient for the full sample is  $-0.45$  suggesting a moderately strong negative relationship.

Figure 3: Total spillover index and the average output gap in EU-15



Note: Shaded areas represent EU recessions (OECD estimation)

The conclusion that spillovers in EU-15 are recessionary holds on the individual country level, as shown in Table 2. However, the conclusion is not completely robust. The biggest recessionary spillovers were during the Great Recession and the sovereign debt crisis period, but before that period spillovers were not much recessionary. In Table 2 we show a correlation coefficient between total spillovers and individual country's output gaps in columns (1), (2), and (3). In column (1) the output gap is calculated using Hamilton's (2017) filter for the full sample. The estimated correlation coefficient is negative and statistically significant for all countries except Germany. The correlation is typically around  $-0.4$  suggesting a moderately strong negative relationship.

However, this conclusion does not completely pass the robustness check. In column (2) we use Hodrick and Prescott (1997) filter (HP) for output gap calculation. The correlation between total spillovers and output gaps is still negative, but it is much weaker, and coefficients are not statistically significant anymore except in the case of Denmark, Ireland, and Sweden. Average correlation is  $-0.11$ . HP filter is probably the most commonly used method to decompose trend and cycle of a time series, but it is also criticized that produces spurious cycles (see Hamilton 2017 and Kamber, Morley, and Wong 2017).

Column (3) presents the results which are not affected by the Great Recession and the sovereign debt crisis. Column (3) contains correlation coefficients between total spillovers and Hamilton's (2017) output gaps for the subsample 1975:1-2006:4. The Great Recession was a big shock, and it substantially affected total spillovers. We wish to examine the robustness of our results when this turbulent period is excluded. As shown in Table 2, column (3), correlation is negative but much weaker than in the full sample, on average  $-0.09$ . It is only statistically significant for Denmark, Italy, Luxembourg, and Sweden. We can conclude that prior to the Great Recession, spillovers were not recessionary or at most weakly recessionary. The Great Recession and the sovereign debt crisis were two big negative shocks with strong recessionary spillovers, which affect the full sample results.

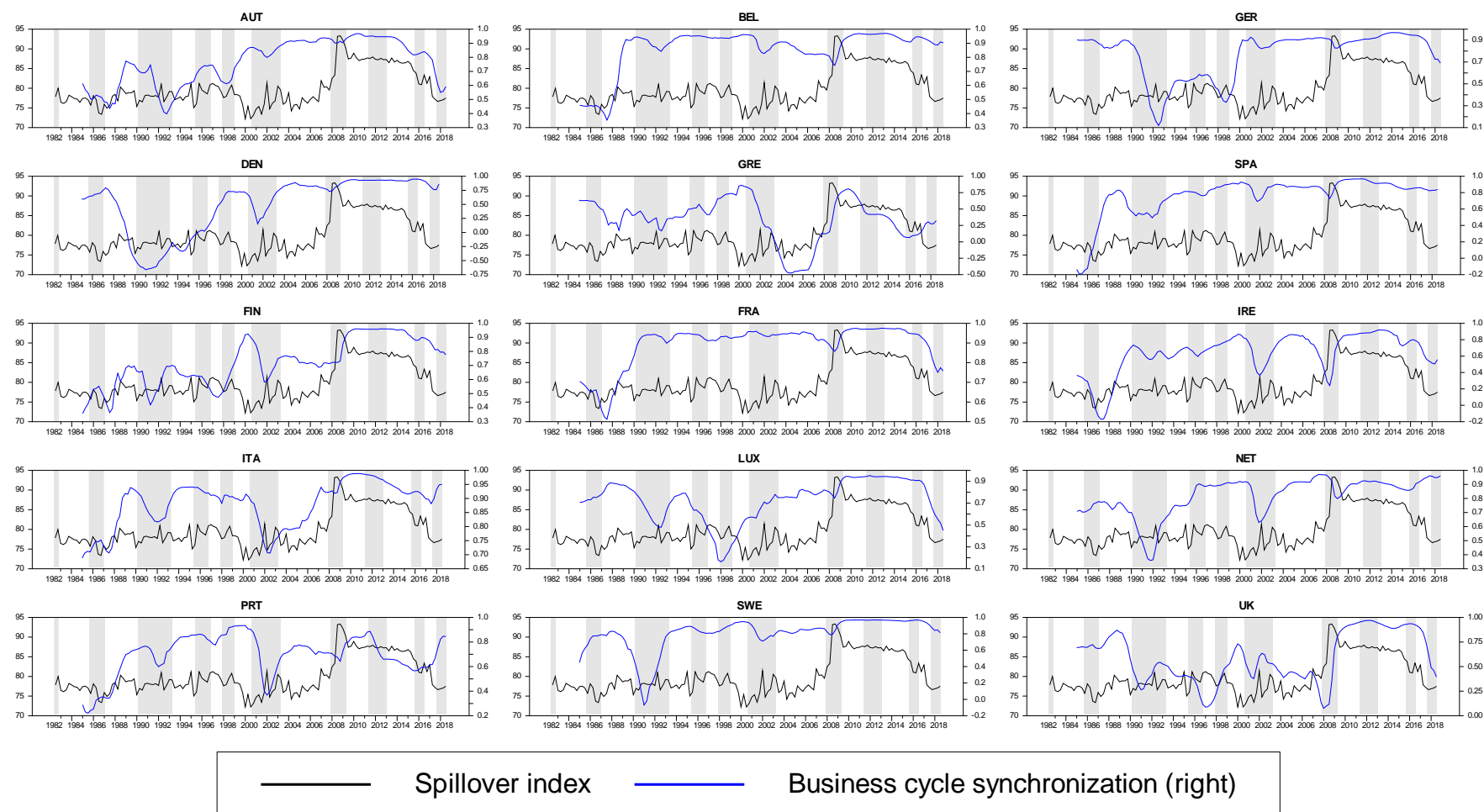
*Table 2: Correlation of the total spillover index with output gaps and business cycle synchronization*

	Correlation with output gaps			Correlation with business cycle synchronization		
Country	Hamilton's filter	HP filter	Subsample 1975-2006	Hamilton's filter	HP filter	Subsample 1975-2006
	(1)	(2)	(3)	(4)	(5)	(6)
<b>AUT</b>	-0.410*	-0.133	-0.064	0.494*	0.490*	-0.176*
<b>BEL</b>	-0.336*	-0.095	-0.064	0.288*	0.407*	0.191*
<b>GER</b>	-0.129	-0.107	-0.056	0.239*	0.374*	-0.423*
<b>DEN</b>	-0.457*	-0.189*	-0.189*	0.363*	0.434*	-0.295*
<b>GRE</b>	-0.397*	0.034	-0.064	0.122	-0.115	-0.007
<b>SPA</b>	-0.451*	-0.062	-0.136	0.342*	0.178*	0.082
<b>FIN</b>	-0.279*	-0.090	-0.148	0.557*	0.593*	-0.316*
<b>FRA</b>	-0.365*	-0.153	-0.119	0.335*	0.321*	0.091
<b>IRE</b>	-0.277*	-0.174*	0.129	0.325*	0.345*	0.055
<b>ITA</b>	-0.540*	-0.139	-0.182*	0.589*	0.641*	0.260*
<b>LUX</b>	-0.413*	-0.127	-0.216*	0.483*	0.487*	-0.184*
<b>NET</b>	-0.406*	-0.067	-0.030	0.273*	0.344*	-0.108
<b>PRT</b>	-0.288*	-0.007	0.057	0.116	0.162*	0.150
<b>SWE</b>	-0.351*	-0.170*	-0.178*	0.341*	0.579*	-0.129
<b>UK</b>	-0.392*	-0.132	-0.089	0.415*	0.522*	-0.266*

Note: \* represents statistical significance at 5% level. The table shows the correlation of the total spillover index with output gaps (columns 1 to 3) and business cycle synchronization (columns 4 to 6). Business cycle synchronization is equal to the correlation between output gap of each country and the weighted average. Columns (2) and (5) present results when the output gap is calculated using Hodrick and Prescott (1997) filter. Columns (3) and (6) present results of the subsample 1975:1-2006:4 when the period of the Great Recession and the sovereign debt crisis are excluded.

Even though the spillovers tend to be recessionary, shock spillovers affect most countries similarly meaning they are symmetrical and they are positively related to the business cycle synchronization. We measure the business cycle synchronization as a rolling window correlation between the output gap of each country and the weighted average output gap. Rolling window length is set to 30 quarters. Figure 4 presents the results for the EU-15 member states. The business cycle synchronization is increasing from 1990-s, and especially after 2000 except for Greece and the UK. The correlation coefficient is high and above 0.7 in most cases. This indicates that the level of synchronization in EU-15 is high, as shown in Campos, Fidrmuc, and Korhonen (2017).

Figure 4: Total spillover index and business cycle synchronization with Germany



Note: Business cycle synchronization is calculated as a rolling window correlation between the output gap of each country and the weighted average output gap. Window length is set to 30 quarters. Shaded areas represent EU recessions.

Some recessions tend to be asymmetric, like the one between 2001 and 2002 where the correlation coefficient temporarily decreases. However, the Great Recession and the sovereign debt crisis had symmetric effects on old EU member states which is clear from the high correlation coefficient during that period. This coincidence with very high shock spillovers measured by the total spillovers index. We can casually observe that there is a positive relationship between business cycle synchronization and shock spillovers.

Correlation coefficients between the total spillover index and the measure of business cycle synchronization are presented in the second part of Table 2 in columns (4) to (6). Again, for the robustness check we use Hamilton's (2017) filter, HP filter, and subsample from 1975:1 to 2006:4, respectively.

Column (4) suggests that shock spillovers are symmetrical in the EU-15 because they are positively correlated with the business cycle synchronization. This is an important finding for the ECB because asymmetric shocks would impose a big challenge in conducting common monetary policy. Correlation is moderately strong and statistically significant for all countries except Greece and Portugal. This finding is confirmed when the HP filter is used for output gap measurement (column 5). It is known that different filtering methods should not substantially affect results on business cycle synchronization as shown in Massmann and Mitchell (2004).

However, before the Great Recession, shock spillovers used to be mildly asymmetric, which is confirmed by the low and negative correlation coefficient between shock spillovers and business cycle synchronization in column (6). Column (6) in Table 2 presents results for the subsample 1975:1-2006:4. The most correlation coefficients are close to zero, suggesting that shock spillovers did not have any relationship with the business cycle synchronization. For six countries, shocks spillovers were mildly asymmetric: Austria, Denmark, Germany, Finland, Luxembourg, and the UK. On the other hand, for Belgium and Italy, spillovers were symmetric. Again, we confirm that the Great Recession was a big negative shock, which affected almost all EU-15 countries in the same way. Therefore, the Great Recession actually increased business cycle synchronization, which is in line with the conclusions of Canova, Ciccarelli, and Ortega (2007) who argue that business cycles are more synchronized in recessions than in periods of economic growth.

## Conclusions

This paper analyzes business cycle spillovers and synchronization in the old EU member states. For the shocks spillover analysis, Diebold and Yilmaz (2009, 2012) spillover index methodology is used. For the synchronization analysis, rolling window correlation on output gaps is used, where output gaps are estimated as cyclical components from Hamilton (2017) and Hodrick and Prescott (1997) filter.

We show that EU-15 member states are highly integrated and sensitive to shocks from other EU countries because around half of the variation in EU-15 GDP can be explained by foreign shocks. International spillovers have an important role in explaining GDP variations in the group of EU-15. Business cycle spillovers between the EU-15 group are complex because countries are typically highly exposed to business cycle shocks from a smaller subset of other countries. This smaller subset of countries can be related to geographical proximity or intensive international trade.

Spillovers increased substantially between 2007 and 2015 during the period of the Great Recession and the sovereign debt crisis, indicating an economic contagion. Shock spillovers explain over 90 percent of the variation in EU-15 GDP in that period. Spain, Ireland, the UK, and Italy were the biggest transmitters of shocks spillovers. Such a high share of shocks spillovers in explaining the variation in GDP confirms that the Great Recession and the sovereign debt crisis resulted in the contagion between EU-15 member states.

We conclude that shocks spillovers in the EU-15 tend to be recessionary, because of a negative correlation between total spillovers and the output gap of the EU-15. However, that was not the case before the Great Recession.

Most importantly, shock spillovers affect most countries similarly which means they are symmetrical and they are positively related to the business cycle synchronization. That was not the case before the Great Recession and the sovereign debt crisis, which confirms the conclusion that international business cycles are more synchronized in recessions than in periods of economic growth.

The biggest concern regarding shocks spillovers and the monetary policy in the Eurozone is how these shock spillovers affect Eurozone member states. The Great Recession was a big symmetric shock which affected almost all countries in a similar way. In that regard, it was easier for the ECB to implement a common monetary policy. The question is what would be the ECB's response to a big asymmetric shock which would affect Eurozone member states in a different way.

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# REGIONAL HEALTH AND ECONOMY IN RELATION TO HEALTH CONSCIOUSNESS

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## **Abstract**

*Health behavior appears to be one of the key factors in prevention, which also affects the health economy. Maintaining health care puts increasing pressure on Hungarian society due to the growing aging. Healthy lifestyle and health consciousness provide effective help in maintaining a good level and longtime of quality of life. The impact of health behaviors in the health economy on financing means an increasingly important social problem. In Hungary, health behavior is low compared to European nations. The reduction of economic factors can be achieved by prevention, health improvement and years of health. The professional basis of this research are given by the individual image of health and the individual and social health behavior which are supported by the healthcare/health economy. Our research examines local health behavior and satisfaction with health care, in which we analyze the results in comparison with regional environmental conditions compare with the European health behavior research. The correlation between health economic factors and health behavior was revealed by secondary research, while the method of our empirical study is a questionnaire survey that presents health image, local health opportunities and relationships in several age groups. Based on the results of our survey, it became evident that the results of the Hungarian health behavior were the same in the central settlement of the western region of the country, where the economic indicators show a higher proportion than the national average. The low level of health consciousness and the low level of health behavior did not show significance, as is the case in European countries, in terms of higher health image and higher economic factors. On the other hand, in terms of educational attainment, there was a higher level of health awareness. Health as an economic factor plays a key role in employment, as healthy employees participate in the maintenance of the nation as an economic factor*

**Keywords:** health image, health behavior, health economy, prevention, life living standard

## **Introduction**

The macro-level analysis of health shows that health plays a significant role in economic growth. The one-year increase in life expectancy will increase the GDP by 4%. (Bloom et al., 2004) Health is a type of capital element, which is a major economic factor besides knowledge capital, technology capital, physical capital, social capital. In the time series analysis conducted in Great Britain between 1790 and 1980, the focus of health has been demonstrated, and as a consequence, economic growth can be attributed to the improvement of nutritional conditions and the consequent increase in individual load capacity and performance, as in the context of health and economy one hundred years earlier significantly reduced performance. Lifestyle factors still play a decisive role in the manifestation of healthy life (Kollányi & Imecs, 2007). The European Union Health Survey is carried out every five years (European Parliament, Council 1338/2008 / EC). In Hungary, the Central Statistical Office (HCSO) has been carrying out public health examinations since 2009. The determinants of the individual's state of health have been determined on the basis of the proposal of Lalonde (1974), which is the element of genetic heritage, lifestyle, environment and health care. In the Lalonde model, one of the most important roles in health behavior is lifestyle (lifestyle 43%, genetic conditions 27%, environmental factors 19%, and health care 11%). The spatial determinant of economic differences is the gross domestic product (GDP) per capita, on the basis of which Central Hungary represents a particularly high value, followed by Western Hungary and Central Transdanubia on the podium. Determining of health behavior is an essential aspect of analysis. The patterns of action that promote the development of health appear in the preventive application of health problems. In the negative definition, risk elements of health problems can be mentioned, which have an adverse effect on health. These include unhealthy eating, smoking, or for example alcohol consumption. The distribution of the regional health picture in Hungary reflects the tendency for economically more developed regions and those with higher education to have optimum health behavior. According to the data of the regional health picture, in the area of mental health the picture is the most favorable in the Western Transdanubia region, while in Northern Hungary it is the worst. In regions with favorable values, the proportion of people suffering from chronic anxiety, depression or other psychiatric illnesses is lower than national. One of the factors in the health economy is the level of absenteeism in the workplace, as lack of workplace causes loss of income. In the regional study of absenteeism in the region, the average absence is between 5-7 days in the Central, Northern Hungary and Southern Great Plain, while in the other regions it is between 9 and 14 days. One of the most important health determinants is obesity. By region, the proportion of obese people in the western regions is lower than average (16-19%) and higher in the eastern regions (20-23%). Controlling body weight is effective only on a healthy diet. Health conscious nutrition is 23-25% nationally, and the regional variation is less typical. In terms of smoking habits, Western Transdanubia is the most successful region, and Central Transdanubia also has favorable ratios compared to other regions (Ambrus & Varsányi, 2011).

## **Health, sports and company relationship as an economic factor**

In the prevention processes, the active attitude of the population is decisive, in which health preservation and development is demonstrated (Konczos et al, 2010; Konczos & Szakály, 2007). The Hungarian population does not pay enough attention to the rich lifestyle that is characteristic of the rest of the civilized world (Gösi, 2018). Professionals consider the early stages of sports socialization to be of paramount importance for the development of sports

attitudes and behavior. The primary factors influencing the socialization of sport are the family, educational institutions, contemporary groups, and the media (Faragó, 2015). Sport is not only an economic benefit for society, but also an effective tool for reducing the stereotypical perception of women and women's sport (Béki, 2017). Health and sports are an effective tool for dealing with gender and other social differences and are also suitable for the integration of minority groups (Faragó, 2014). The effect of sport on the healthy lifestyle of the nation is reflected in its social appearance, national identity, the successful nation increases national identity, influences the athlete's headcount, athletes (Győri Szabó, 2012). As part of a healthy lifestyle, the development of sporting facilities requires the establishment of leisure sports, healthy lifestyle facilities, their operation, strengthening the sports economy (outdoor sports grounds, riding areas, golf courses, jogging trails, fishing areas, free beaches) (Gyömörei, 2014). International companies on the global market consider the impact of culture on the region as a competitive advantage, in which sport as a social phenomenon has an impact on society and the national economy (Faragó et al., 2018). The health image of corporate culture has an impact on the labor market and economic performance. Knowledge, learning, knowledge transfer elements (Konczosné, 2014) have emerged in the research on corporate efficiency, which we must not miss in the field of health and sport if we want to achieve development in the economic, social or individual fields. Research in the field of sport and health also covers the labor market, as the economic efficiency of health behavior is evident in this area. One of the most important directions of the research is the assessment of prospective professionals (Szakály et al., 2016), as persons trained in the field of health and sport play a decisive role in the correct development of health behavior and lifestyle. The improvement of lifestyle results in an increase in life expectancy, which is a motivating factor for self-development and self-education.

## **Aim of the research**

As part of a healthy lifestyle, the development of sporting facilities requires the establishment of leisure sports, healthy lifestyle facilities, their operation, strengthening the sports economy (outdoor sports grounds, riding areas, golf courses, jogging trails, fishing areas, free beaches) (Gyömörei, 2014). International companies on the global market consider the impact of culture on the region as a competitive advantage, in which sport as a social phenomenon has an impact on society and the national economy (Faragó et al., 2018). The health image of corporate culture has an impact on the labor market and economic performance. Knowledge, learning, knowledge transfer elements (Konczosné, 2014) have emerged in the research on corporate efficiency, which we must not miss in the field of health and sport if we want to achieve development in the economic, social or individual fields. Research in the field of sport and health also covers the labor market, as the economic efficiency of health behavior is evident in this area. One of the most important directions of the research is the assessment of prospective professionals (Szakály et al., 2016), as persons trained in the field of health and sport play a decisive role in the correct development of health behavior and lifestyle. The improvement of lifestyle results in an increase in life expectancy, which is a motivating factor for self-development and self-education.

## **Material and methods**

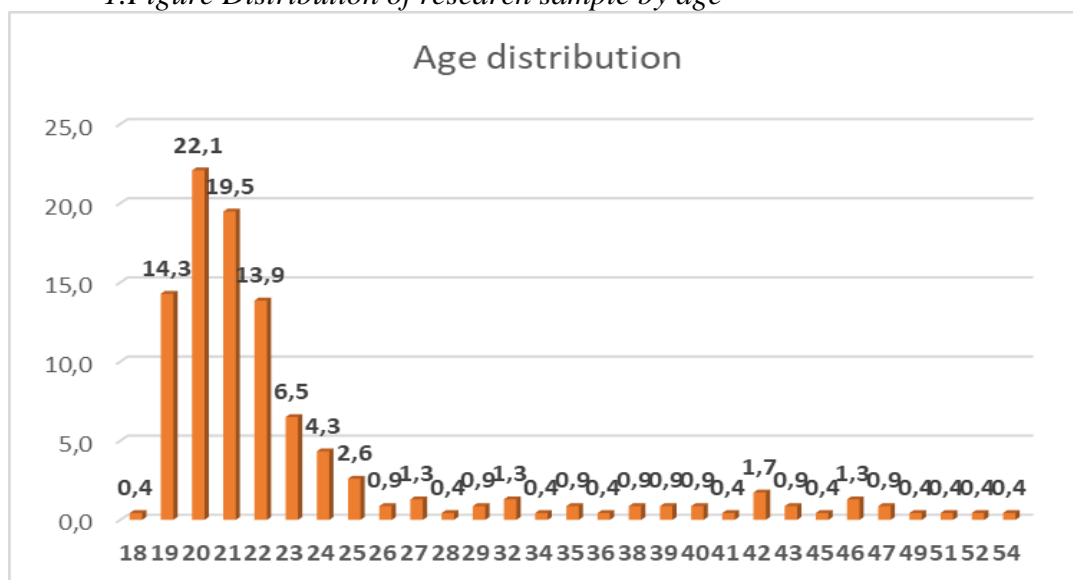
In our research, we included 18-54 years of age, the element number was 231 (N = 231). Typically, an 18-24 year old sample was measured, but we also included an older age group in our study. The method of our primary study was questionnaire survey. The selection of the sample was disseminated among students studying health and sports sciences and the active

group of employees was measured from the employee group. The areas covered by the questionnaire covered health behavior as a determinant of health. The main areas of the questioners were about the health behavior, health care, health condition, way of life, physical activity, screening, diseases.

## Results

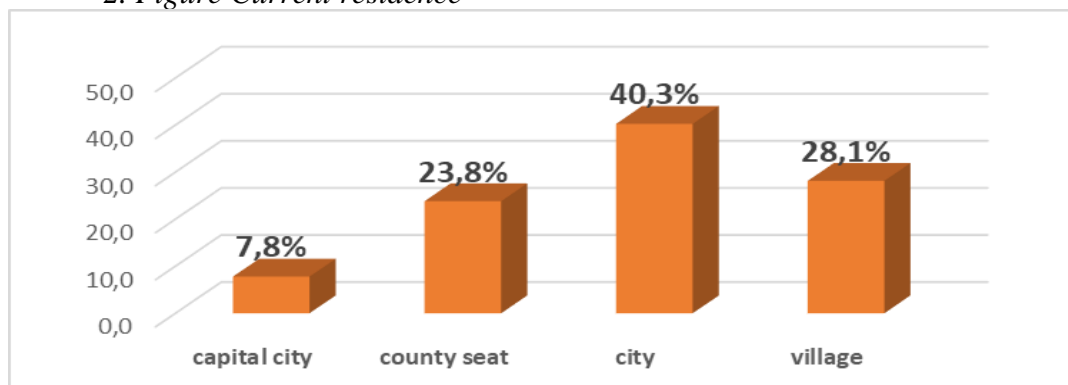
Some of the local results of the Health Behavior Study are presented in the study. In the sample examined, 68.4% of men and 31.6% of women participated. The age distribution of the sample is shown in Figure 1. In the distribution of the sample according to the place of residence, a significant issue was the change of the current place of residence and the place of childhood. According to the results, there was no higher rate of change between childhood and current residence. Typically the respondents living in the urban residents in research, 40.3% and in the smaller settlements are 28.1%. (Figure 2)

1. Figure Distribution of research sample by age



Source: own editing

2. Figure Current residence

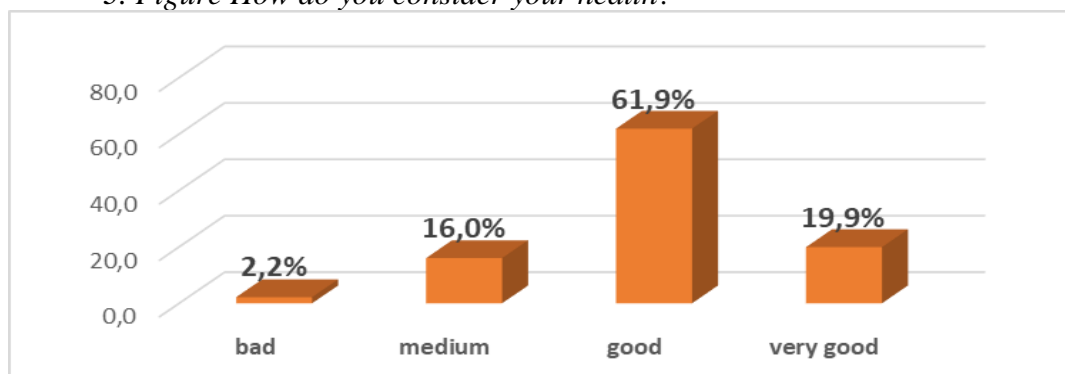


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In the field of health, the respondents considered themselves in good health. With respect to age distribution, this result is not surprising (Figure 3). On the basis of the health picture by

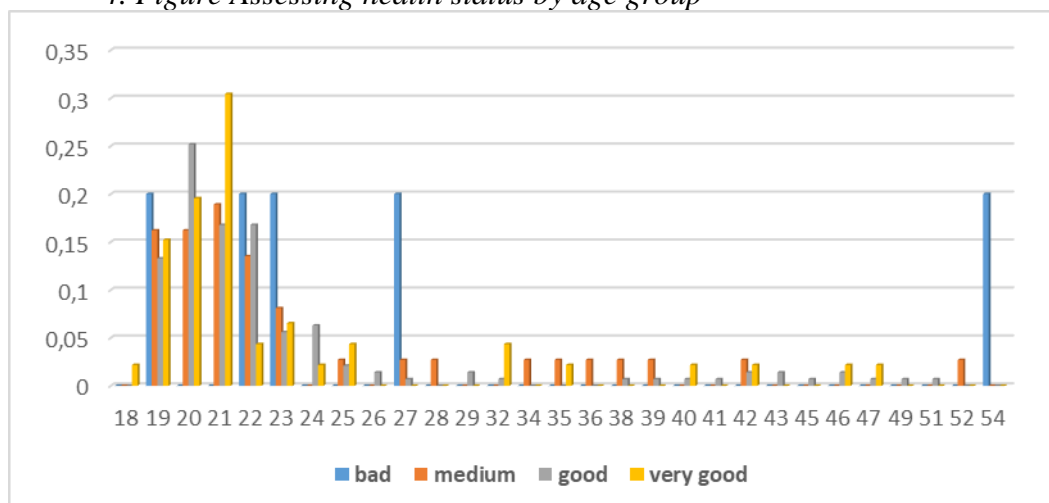
age group, it can be seen that the health picture of young people shows varying values, and the judgment of "good" health is definitely displayed. If we look at health behaviors, health awareness among young people, and the health features of the age group, the "good" health picture is expected to have a "very good" value. The older age group also represents a "good" result in terms of health image, which shows a positive trend in health awareness (Figure 4).

3. Figure How do you consider your health?



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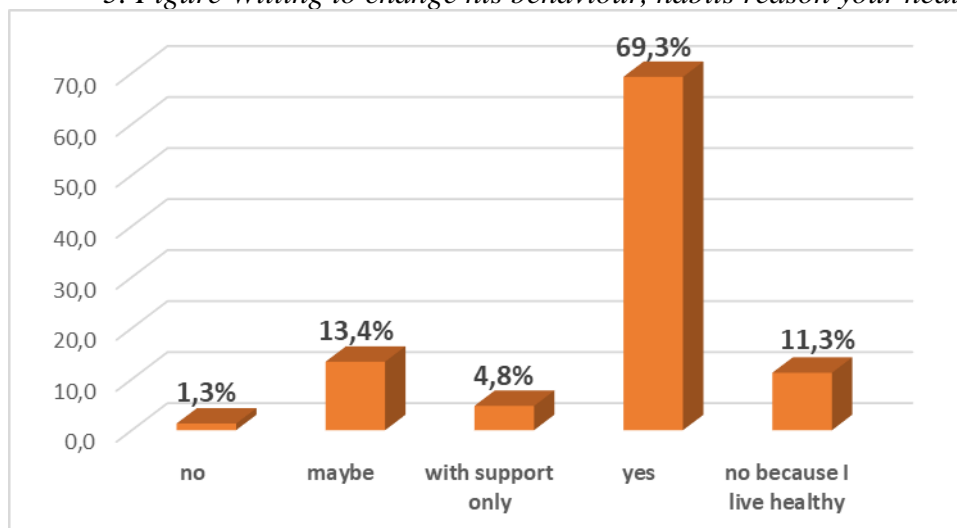
4. Figure Assessing health status by age group



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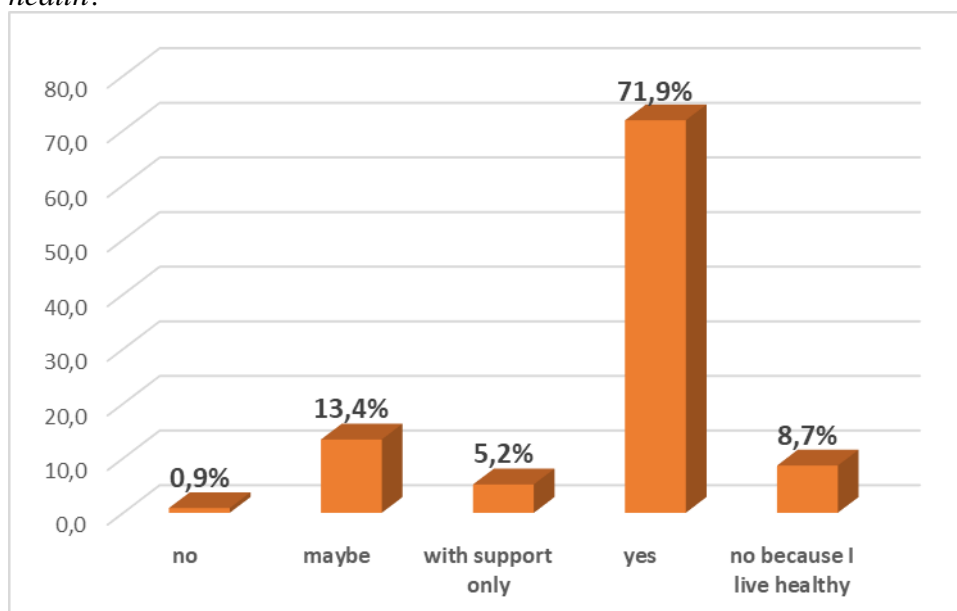
The use of factors of health consciousness and health behavior is decisive in the development of a healthy lifestyle and lifestyle. Essential aspects of improving living standards, such as healthy nutrition, fluid intake, neglect of passion, sedentary lifestyle, physical activity, mental fitness, social well-being, material security, spiritual, psychological well-being, 8 hours of sleep, social connection. The highest proportion of respondents was considered to be "very important", on average 60%. The sedentary lifestyle was not considered significant for health. In prevention, how important is the population motivated for a healthy lifestyle, is it willing to do for health? We examined the motivation for maintaining and maintaining health. Respondents are almost 70% willing improve to do their health (Figure 5). Similar results have been obtained with regard to motivation for health development, in which, in this respect, nearly 72% are willing to develop their health. (Figure 6).

5. Figure Willing to change his behaviour, habits reason your health?



Source: own editing

6. Figure Willing to change your behaviour, habits reason development of your health?



Source: own editing

We also examined the situation of territorial health facilities and their quality. The quality of change in health, sports, and services in the home has been measured among respondents over the past 10 years. The rating of health care was described as "stagnation" in 46.3%, but 30.3% reported improvement. In terms of health advice, stagnation status was set at the highest rate of 53.2%, but the 25.5% rate of the unanswered response shows that many are unaware of the appearance of the service. There is a tendency to improve in terms of sporting opportunities, with 64.5% of the respondents reporting an "improved" response. The proportion of young people in the sample also determines interest, so knowledge of the area has greatly contributed to the positive ratio. It also had a similarly good proportion in the judgment of recreational opportunities, although the stagnation was similar (41-42%). Changes in community life over the past 10 years have been seen as an improvement on respondents, which can have a positive impact on quality of life. The "stagnated" response to free screening is the most common 45%, but the uncertain factor is significant, the "don't know"

answer is 32%. In the case of paid screening tests, a similar result was obtained, and this area was significantly influenced by the lack of background information similar to the previous group of questions (42.4% -36.4%).

## Discussion and conclusions

In our research on health behavior, despite the broad age spectrum, the young adult age group was mainly examined, and the number of elements was significant in the 18-24 age group. Analyzing the links between health economic factors and health behavior, we found in the literature that a healthy lifestyle has an impact on economic development. Territorial differences show the economic characteristics of the area and its health implications, leading to the development and development of a healthy lifestyle in more developed regions, which are reflected in the growth of years spent in health. In our study, the segments of local health behavior were presented, on the basis of which the appearance of the health consciousness of the examined sample could be characterized. Typically, in the sample of urban residents, health behavior shows a positive trend, which coincides with the results of the national representative survey, where it has been clearly demonstrated that the health picture of the population is better proportional to the economic development of the Western Transdanubian region. Typically, the age group 18-24 belongs to the active age group, they are ready to do their health, know and recognize the essential elements of health awareness and apply them. Further health promotion opportunities are still open to the region to make prevention screening, sports and recreational opportunities more accessible at local level. From the economic point of view, the health care system is responsible for developing prevention, as well as ensuring its widespread appearance, ensuring its use, and raising awareness of its importance. In health behavior studies, continuous follow-up is needed, as well as broader coverage, in order to understand the health attitudes and development points of the population.

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# MULTILATERAL GOVERNANCE OF FOREIGN DIRECT INVESTMENTS IN THE DIGITAL ECONOMY

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## Abstract

*Liberalization process has resulted in significant changes in global flows, namely movement of capital, labour, goods and services. As technological development progressed, trade and investment became more complex and interconnected. What is more, today we can discuss about wider trade-investment-services-intellectual property linkage in the digital economy. Development of digital technologies has changed the way people, society and the overall economy perform and has contributed to the creation of a new form of digital economy. Digitalization can increase productivity, it can be the source of new business opportunities and enable easier market access. Given the new global developments, rapid diffusion of digital technologies and the rise of digital economy, there is an urging need to better understand and regulate global flows of trade, investments, services and data. Digital economy makes policy choices even more complex on every level. A revised multilateral regulatory framework is necessary due to the fact that national borders are less important when taking into account digital flows and more participants in the global market. The aim of the paper is to analyse and discuss the relevance of foreign direct investments in the new global environment steered by the emergence of digital economy. The paper also discusses how digitalization is changing global environment and emphasizes the need to adjust and reform current regulatory framework for international investments.*

**Keywords:** FDI, digital economy, policy framework

**JEL classification:** F21

## Introduction

Liberalization process has resulted in significant changes in global flows, namely movement of capital, labour, goods and services. This is important since foreign direct investments (FDI) and trade are generally accepted as two growth engines. However, both investment and trade flows were much simpler in the past. As technological development progressed trade and investment became more complex and interconnected. Information and communication technologies have internationalized supply chains which have made a tight supply side linkage between trade and FDI (World Economic Forum, 2013). What is more, today we can

discuss about wider trade-investment-services-intellectual property linkage and international exchange comprised of a two-way flows of goods, services, people, ideas and investment in human, physical and knowledge capital. The new digital economy that has emerged is considered to be another driver of growth and development because it can increase productivity and give rise to new business opportunities and easier market access.

Trade and investment nexus was an important element of development policies during the last century. The attitudes towards trade and FDI have changed over different time periods. After the World War II, many countries turned to trade protectionism but welcomed FDI as they perceived it as a means of generating local value added production. From 1950s to 1970s, many developing countries sought their development opportunities in isolating themselves from international flows, that is, being opposed to trade, FDI and international lending. The 1980s were marked by a slow change in growth and development strategies as developing countries started to liberalize their markets. Strategies to support exports, FDI and a market economy were institutionalized in the form of new agreements resulting from the Uruguay round of negotiations under the World Trade Organization. After more than two decades of liberalization efforts, the global crisis of 2008 has triggered a new wave of protectionism. It has revived old concerns about the loss of control over FDI and produced new scepticism about the rise of state-owned enterprises (World Economic Forum, 2013).

Given the new developments, rapid diffusion of digital technologies and the rise of digital economy, there is an urging need to better understand and regulate global flows of trade, investments, services and data. All types of global flows can boost productivity growth, and data flows additionally appear to increase the amount of labour and capital used in the economy. Countries that participate in global flows have access to ideas, research, technologies, talent, and best practices from around the world. The most open and connected economies can draw on these flows to enhance their own competitiveness, innovation and efficiency and take advantage of growth opportunities on global markets. However, countries also need to have supporting institutions and policies in place to realize this potential (Manyka et al., 2016). Digital globalization makes policy choices more complex on every level. A revised multilateral regulatory framework is necessary due to the fact that national borders are less important when taking into account digital flows and more participants on the global market.

The aim of the paper is to analyse and discuss the relevance of foreign direct investment in the new global environment steered by the emergence of digital economy. The paper also discusses how digitalization is changing global environment and emphasizes the need to adjust and reform current regulatory framework for international investments.

## **Foreign direct investment as a driver of economic growth**

Generally, foreign direct investment may have a direct or indirect effect on the host country. FDI is often viewed as a solution to the problem of capital deficiencies since it represents a source of fresh foreign capital necessary for country's growth and development. On the other hand, foreign direct investment can indirectly improve economic growth through positive spillovers arising from the transfer of technology, knowledge and skills or through the introduction of new production processes. The inflow of foreign direct investment is of particular importance to the less developed and developing countries, since they are scarce with capital, new technology, new knowledge and skills.

Economic growth and foreign direct investment nexus occupies an important place in theoretical and empirical research. According to the neoclassical theory, long-term economic growth is the result of an increase in exogenous factors such as increased labor force or technological advancement. The emergence of new theoretical models that emphasize the importance of endogenous factors for economic growth has enabled the inclusion of foreign direct investment into the model as one of growth determinants.

Empirical research results on FDI effects on growth are mixed, depending on the methodology, time frame and the research sample applied. Studies have highlighted different conditions and factors that influence the relationship and impact of FDI on economic growth. Thus, in the early research Singer (1950) and Prebisch (1968) argued that host countries have little benefit from foreign direct investment. They argued that although FDI may increase the overall level of investment in the country, investment productivity and domestic consumption, such investments reduce the growth rate due to price distortions or misallocation of resources. Saltz (1992) also came to the conclusion that there is no positive link between foreign direct investment and growth. Lyroudi, Papanastasiou and Vamvakidis (2004) studied the relationship between FDI and economic growth on a sample of European transition countries. Based on the analysis conducted, they came to the conclusion that there is no significant link between FDI and the economic growth of transition countries. Dritsaki and Stiakakis (2014) have been studying the relationship among foreign investment, exports and growth on the example of Croatia and came to the conclusion that there is a two-way long-term and short-term causality between exports and growth. Tang (2015) researched the effects of FDI inflows on the economic growth of the EU countries during the period 1987 - 2012 and came to conclusion that the increase in FDI inflows does not contribute to economic growth.

In contrast, Borensztein, De Gregorio and Lee (1998) empirically tested effects of foreign direct investment on economic growth in a cross-country regression framework, utilizing data on FDI flows from industrial countries to 69 developing countries and concluded that there is a positive relationship, but only if certain conditions are met. Their conclusion was that FDI would positively influence the growth of host countries through technology transfer and in a situation where countries have necessary human capital. Nair-Reichert and Weinhold (2000) have empirically researched the relationship between inward FDI and economic growth by applying a panel data analysis on the sample of 24 developing countries in the period 1971-1995. Authors came to the conclusion that FDI efficiency in boosting economic growth is higher in more open countries. Using a linear regression model Agrawal and Khan (2011) examined the influence of FDI on economic growth of China and India. The results of the empirical analysis have shown that economic growth in India was less influenced by FDI inflows than economic growth in China. This indicates that China has made better use of and directed the inflows of FDI. Agrawal (2015) studied the relationship between FDI and economic growth on a sample of the BRICS group of countries in the period from 1989 to 2012 and came to the conclusion that FDI and economic growth are cointegrated at the panel level, indicating a long-term balance between the observed two variables. Franc (2017) examined the statistical relationship among exports, foreign direct investment inflow and economic growth on the example of the Republic of Croatia for the period 2000-2016. The results of her research have revealed statistically significant relationship between the analysed variables. Carbonell and Wrener (2018) researched whether FDI has enhanced growth in Spain, one of the largest receivers of FDI, whose gross domestic product growth was above average but has escaped scrutiny. During the observation period 1984–2010, FDI rose significantly, and Spain offered ideal conditions for FDI to unfold its hypothesized positive effects on growth. The results are robust and clear: The favourable Spanish circumstances

yield no evidence for FDI to stimulate economic growth. The Spanish EU and euro entry are also found to have had no positive effect on growth. The findings call for a fundamental rethinking of methodology in economics.

Buckley, Clegg and Wang (2002) argue that the impact of FDI on economic growth depends on economic and social conditions of the host country. Countries with a higher level of savings, open market regimes and a higher degree of technological development will benefit more from FDI inflows than countries with opposite characteristics. Bengoa and Sanchez-Robles (2003) argue that FDI will have a positive impact on economic growth only if the host country has adequate human capital, sufficient infrastructure and if the country has a stable economic environment and an open market. Hermes and Lensink (2003) reported that FDI is an insignificant determinant of growth and can only exert a positive effect when the domestic financial system has developed enough, suggesting that FDI should be more beneficial to developed economies.

## **The emergence of the digital economy**

Digitalization refers to changes induced by the development, expansion and increased use of digital technologies that create, process, share and convey information and knowledge. Digitalization does not rely solely on one innovation but on a range of technologies including telecommunication networks (fixed or mobile), computer technology (laptops, wireless devices, tablets), software engineering (operating systems, machine learning, artificial intelligence) and spillovers from the use of digital technologies (Katz, 2017).

Digitalization process has several stages. It encompasses two simultaneous processes: (1) technological development through innovation, research and development, (2) implementation of technology by enterprises, government and consumers. Technological development precedes the diffusion of technology, meaning that a significant time lag is possible from product creation to its final effect (Katz, 2017).

Digitalization affects productivity, competitiveness and growth. The Internet and the use of information and communication technologies (ICTs) have made the exchange simpler, cheaper and faster. Moreover, ICTs have facilitated the exchange of information and knowledge among countries, making access to these technologies an important part of achieving economic and social progress. Digital technologies enable business automation, which increases efficiency and reduces transaction costs. Digitalization can be the source of new jobs and new skills. It enables better provision of public services, especially in healthcare and education, and improves the interaction between government and citizens. Digital technologies also offer new solutions to various social challenges, ranging from health, transportation systems and security to the demographic challenges.

Development of digital technologies has changed the way people, society and the overall economy perform and has contributed to the creation of a new form of digital economy. In such an economy, new business networking models are being developed and data is the resource of the utmost importance for creating value. The development of the digital economy also contributes to global platforms that enable implementation or development of technologies globally, including social networks, greater mobility, cloud computing, Big Data Analysis and the like.

Digital economy is creating new business opportunities, ICT firms and new ways of doing business that affect firms of all sizes and in all sectors. It can best be characterised by three key features: mobility, network effects, and use of data (European Commission, 2014). The digital economy creates opportunities for micromultinationals (Mettler and Williams, 2011) and born global firms. Manufacturing in the digital economy will be increasingly flexible, customised, low volume, and web-based (Eden, 2016). Moreover, in the digital economy, trade in goods is intertwined with international production through global value chains and both are facilitated by different services. Digitalization reduces governance costs within the multinational enterprise (MNE) network, since MNEs now have better ability to collect and share information, monitor offshore production locations, and target products and services to customer requirements on a global basis (Eden, 2016). Digital MNEs make about 70% of their sales abroad, with only 40% of their assets based outside home countries. This results in the creation of fewer jobs directly in host countries. However, investments from digital MNEs can increase competitiveness and contribute to digital development (UNCTAD, 2017).

Digital economy is based on digital platforms. Generally, a platform is a set of digital procedures whose algorithms serve to organize and structure economic and social activities (Kenney and Zysman, 2016). In other words, platforms are virtual places where algorithms can act independently, interact or perform transactions (Zysman and Kenney, 2016). Transactions can be organized in many different ways, depending on whether they are more targeted to social or market functions or are of technical nature (Mikolaj and Piskorski, 2014). Platforms represent a new way of solving the fundamental problem of economic organization, more precisely, problem of coordinating supply and demand with incomplete information.

The platform economy or digital platform economy, as some call it, encompasses a growing number of digital activities in business, politics and social relationships (Kenney and Zysman, 2016). For a better understanding of the platform economy, a comparison of a country in the era of industrialization and in the modern digital era can be applied. Namely, economies at the time of industrialization were organized around factories, and modern economies are organized around digital platforms.

As mentioned, platform economy implies the development of new business models that do not create value through the production of goods or services, but by allowing producers and consumers direct communication via electronic media (Radcliffe Institute for Advanced Study, 2016). It refers to the growing proportion of people employed on a specific task for a defined time, as compared to those holding a regular job. New platform-based business models, as well as the ecosystems that arise around them, have led to major changes in the global macroeconomic environment. Moreover, platform ecosystem is the foundation for creating new values in the digital economy. Firms that adapt and accept this trend can take advantage of numerous opportunities for growth, development and change of business modes. On a strategic level, many countries have formulated digital development strategies in support of digital economy but other strategies and policies need to be aligned and modified as well.

Digitalization is also transforming global finance. Digital fundraiser platforms create new financial market platforms and allow for more direct financing, including cross-border financing, without traditional intermediation. Furthermore, blockchain with its decentralized distributed digital ledger can challenge traditional financing by making cross-border financing quicker, cheaper, and more secure (Elkjaer and Damgaard, 2018). Digital economy changes the role of foreign investments but they are still seen as a potential source of financing digital development. Developing countries have to catch-up with these new trends and thus enabling policies that close the digital divide in global investment are needed.

## **Governance of foreign direct investment in the digital economy**

The spread of global supply chains has created a more complex and interconnected set of cross-border flows, including a linkage between trade and FDI. Many aspects of trade and FDI are regulated on a bilateral or regional level. However, with the rise of digital economy, policies and rules that regulate trade and investment flows need to be modified and expanded. Investment regulations and investment promotion policies should also consider the new cross-border operating models of multinational enterprises.

Digitalization of information enables more effective identification of risks and management of global supply chains since large volumes of data are needed to meet the growing demands for monitoring and traceability of products across international borders. Because trade is more complex it demands for renewed and holistic policies that underpin flows in goods, services, investments and intellectual property. Governments have a responsible task to create and modify regulatory and tax framework and policies in order to adapt to changes caused by digitalization and digital trade. It is necessary to find solutions for the problem of data transfer security, data privacy protection and Internet governance. Each country should develop initiatives, policies and measures that fit its priorities and national goals (UNCTAD, 2017). On a multilateral level, new regulatory framework is also necessary. Although e-commerce was introduced in the World Trade Organization (WTO) agreements at the end of the 1990s, no one could imagine the speed of digital technology development and growth in digital trade volume. Hence, while the WTO has certain rules for governing the ICT products market, these rules are not adapted to rapid technological development and a wide range of newly developed goods and services is not covered by existing trade rules. Having in mind the difficulties in distinguishing between digital products and services it can be said that different set of trade rules affect different aspects of digital trade.

The situation for multilateral agreements on FDI is similar to that for trade. Historically, there have been several attempts to govern FDI at the multilateral level. First, the Havana Charter, proposed by John Maynard Keynes in 1945, was to establish the International Trade Organization and a financial institution called the International Clearing Union (ICU), as well as a new international currency. The Havana Charter set out the basic rules for international trade and other international economic issues. However, it never came to force. Organization for Economic Cooperation and Development conducted a four year negotiations (1995-1998) in attempt to draft a multilateral agreement on investment. This draft was also suspended due to widespread criticism of developing countries and civil society. The Uruguay Round of trade negotiations and the creation of the World Trade Organization (WTO) in the mid-1990s resulted in three multilateral agreements that touched upon investment issues. Another attempt to multilaterally regulate investment flows was under the WTO and the Doha Round of negotiations that have started in 2001. Needs and differential treatment of the developing countries were the core reasons of negotiations. The major factors discussed include trade facilitation, services, rules of origin and dispute settlement. The negotiations did not show desired results so far.

These repeated failures to consolidate a multilateral investment regime have left in place an irregular, overlapping and complex “spaghetti bowl” of over 3000 agreements (World Economic Forum, 2013). Some of the most important active multilateral agreements that cover some areas of FDI are nor comprehensive nor complementary. Those include

Agreement on Trade-Related Investment Measures (TRIMs), General Agreement on Trade in Services (GATS) and the Agreement on Subsidies and Countervailing Measures (SCM). TRIMs was negotiated during the Uruguay Round and applies only to measures that affect trade in goods. Recognizing that certain investment measures can have trade-restrictive and distorting effects, it states that no Member shall apply a measure that is prohibited by the provisions of national treatment and quantitative restrictions. GATS was one of the landmark achievements of the Uruguay Round, whose results entered into force in January 1995. It covers FDI in services and defines FDI as one of the four way of trade in services. Finally, Agreement on SCM addresses two separate but closely related topics: multilateral disciplines regulating the provision of subsidies, and the use of countervailing measures to offset injury caused by subsidized imports.

As stated in the World Economic Forum report (2013), there are several reasons for drafting a new multilateral agreement on investment. The rise of global value chains sharpens the need for global and holistic regulations that underpin international flows in goods, services, investment and intellectual property. Since bilateral investment agreements and regional agreements resulted in significant differences in rules and lack of coherence in their implementation, a multilateral framework could serve as comprehensive single guidelines. Many developing countries have a large interest in protecting the investments of their own MNEs through a rules-based approach. Increased global competition in FDI sets forth the need for ensuring that conditions in the global marketplace remain equitable and do not give rise to national security concerns.

UNCTAD (2015) argues that there is a need for systematic reform of the global international investment agreement (IIA) regime, reform that would shift the investor-state balance toward the nation-state and its policy goals. It emphasizes sustainable development as an important element that should be included in policies. The report argues there are five main challenges that need to be addressed by IIA reform:

1. Safeguarding the state's right to regulate in the public interest
2. Reforming investment dispute settlement mechanisms
3. Promoting and facilitating FDI
4. Ensuring responsible FDI that maximises its positive and minimises its negative effects on home and host countries
5. Enhancing the systematic consistency and coherence of the IIA regime.

Similarly, Eden (2016) states the following policy recommendations:

- creating stable macroeconomic environment, in which both domestic and foreign firms would feel comfortable to invest
- reducing the costs of firms and households engaging in cross-border transactions
- ensure intellectual property rights
- generating data regarding the digital economy
- focus on trade in services
- infrastructure, institutions, and policies designed to encourage participation in the digital economy
- sustainable development as a central element of policies.

In conclusion, different policy modifications and considerations are required at different levels. At the strategic level, considering shifting patterns of international investment and changing investment determinants policymakers need to formulate appropriate policy responses. This means that attracting international investment in a digital economy relies less

on some factors, such as low-cost labour, and more on others, such as infrastructure, skills and low-cost energy which requires new competitive advantages. At the national level, policymakers need to assess how new modes of investment and changing investment impacts affect existing rules, which may be general investment regulations or, more likely, sectoral restrictions (UNCTAD, 2017).

## Conclusion

The process of liberalization denotes deregulation and facilitation of international flows. This includes removing excessive regulation and designing efficient policies that support open market economy. Advancements in information and communication technology also support liberalization process and international exchange. Foreign direct investments are considered to be a desirable form of international capital flows due to potential positive effects on the host economy. However, those positive effects are not automatic. Certain preconditions need to be fulfilled, including stable macroeconomic, political and business environment. Governments are responsible for creating effective and reliable regulatory framework and promotion policies that attract quality foreign investments.

Following the process of liberalization in developing countries, trade and FDI flows grew significantly during the last few decades until the global financial crisis of 2008, after which trade and FDI volume decreased. However, there was a surge in data flows and, in fact, data became one of the most valuable resource. This marked the beginning of the new era of digital economy. In the digital economy, economic activities, commercial transactions and other interactions are based on the use of digital technologies. Global diffusion of knowledge and technology can generate positive network effects and enable technology-receiving countries to advance their development. Considering these new trends, it is obvious that strategies and policies that have regulated trade and investment in the past are no longer suitable because they do not include a large number of newly developed goods and service nor they include new trends in data flow and digitization. Many countries have resorted to bilateral investment treaties or regional trade and investment agreements to complement the international regime of foreign investor protection. However, more comprehensive and updated multilateral regulatory framework is needed in order to facilitate investment and encourage FDI, especially in developing countries. Investment facilitation can also be recognised as guidelines for reforming domestic institutions and processes and embedding principles such as transparency, publicity, inclusion and digitalization.

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# ALLOWED REVENUE OF NETWORK SYSTEM OPERATORS IN THE CROATIAN ENERGY SECTOR AND INTEREST RATE CHANGES ON THE CROATIAN CAPITAL MARKET

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## Abstract

*The energy sector is characterized by market and monopoly activities. Monopoly activities include network activities, transmission and distribution of electricity, and transport and distribution of natural gas. For this reason, the revenue of the network activities is defined as allowed income, and it is under the control of the national energy regulator. In Croatia, this is the Croatian Energy Regulatory Agency. The allowed revenues of the network system operator in the Croatian energy sector are defined by the methodologies for individual network activities, which are based on the method of eligible costs. Network activities are usually capital-intensive activities. Capital cost is an element of the eligible cost method and is accounted for as a weighted average cost of capital (WACC). WACC affects the allowed revenue of the network system operator and the network tariff. It depends on the interest rates on debt capital, the risk-free rate, the market risk premium and the corporate tax rate. Changing the interest rate on the capital market, which also depends on the credit risk of the country, affects both the change in WACC and the change of tariffs for transport / transmission of energy. Amortization and operating expenses of the network operator, approved by the energy regulator, also have a significant impact on allowed revenues. The impact of the WACC change on the allowed revenue and network tariffs of network system operators has a different impact on the network tariffs, which depends on the structure of the eligible costs of a particular network system operator. Changing WACC affects the changes in tariffs of the network system operator. The aim of the paper is to determine how an interest rate change affects the WACC and how the change in WACC affects the change in the allowed revenue and the network tariff of the gas transport operator and the transmission of electricity in Croatia. The paper will analyse the tariffs of electricity transmission and natural gas transport in Croatia and compare them with those in the European Union.*

**Keywords:** WACC, interest rate, network system operator, allowed revenue, network tariff

**JEL classification:** D42, G32, L51

## Introduction

Energy infrastructure operators are characterized by capital intensity and long periods of return on investment. In order for the price of use of the infrastructure to be within a reasonable frame, the regulatory framework should define appropriate and efficient methods of economic regulation. Thus, it should cover reasonable and justifiable cost of operations. The goal is to secure uninterrupted supply and quality of service and reasonable return on investment. At the same time, the regulatory framework also aims at the optimization of investment costs where the outcome is a moderate tariff for access and use of infrastructure, which balances interests of owners and users of infrastructure (Gelo et al., 2018). The EU decided to make a legal framework and operation conditions of natural monopolies in the energy sector. Thus, the regulation of energy activities was introduced with the goal to protect consumer and investor interests by protecting the invested capital, as well as obtaining the framework that is common in completely open market competition. At the same time, to obtain independency and transparency of the processes, the states organize regulatory bodies that define relationships among all participating parties in a non-discriminatory and transparent way (Gelo, Štritof, 2005). Through its legislation (directives), the EU initiated the process of opening its electricity and gas market to competition in 1996. The Directive consisted of common rules for the EU internal market in electricity and natural gas. The process was continued with new directives in 2003 and 2009. The aim of the directives was to create a competitive integrated market in electricity and natural gas in the EU. Further development of the market continued in 2016 with the adoption of a new package of various measures (Clean Energy for All Europeans), thereby completing the establishment of the integrated market and creating the Energy Union (Beus et al., 2018). The regulation of monopoly activities in electricity and gas sector in Croatia was introduced in 2001, when the first set of energy laws was passed, and furthermore in 2002, when the national regulatory authority was established. The national regulatory authority was in charge of regulating transmission and distribution activities in both sectors (Družić et al., 2012). Energy sector regulation is established with the aim to ensure the functioning and improvement of the energy sector, and it is based on the principles of independency, transparency and the protection of customers and investors in the energy sectors. The regulation of energy activities is implemented pursuant to the Act on the Regulation of Energy Activities, and it is in accordance with the EU directives (Directive 2009/72/EC of the European Parliament and of the Council concerning common rules for the internal market in electricity (SL. L 211, 14. 8. 2009.), Directive 2009/73/EC of the European Parliament and of the Council concerning common rules for the internal market in natural gas (SL. L 211, 14. 8. 2009.)). The operating body for implementing the regulation in the energy sector is the national regulator – Croatian Energy Regulatory Agency (HERA). The directives determine the aims, and national laws determine the organization and responsibility for meeting the aims. Therefore, the regulators' roles are determined by national laws. The role of the regulator in the EU member states varies, taking into consideration market specificities and the initial state at the time when market principles were introduced. HERA's roles and activities, according to the Act on the Regulation of Energy Activities, can be divided into:

- administrative (issuing previous orders for preferential energy producers, issuing orders on acquiring preferential producer status, issuing licenses for performing energy activities)
- advisory (providing opinions and proposals for improving acts which determine market functioning, consumer protection)

- regulatory (enacting methodologies, tariff stances, tariff amounts for regulated activities, resolving complaints for connection conditions, analysing work of regulated energy companies, approving investment plans)

Basic tasks of the regulator are defining tariff systems which include the following:

1. the determination of the regulatory method which then leads to the determination and control of costs,
2. the determination of tariff items which are a result of allocation of costs to customers.

The paper analyses the Methodology for determining the amounts of tariff items for gas transport and the Methodology for determining amounts of tariff items for electricity transmission. The methodology for determining the amounts of tariff items for gas transport refers to the energy company in charge of gas transport, which is Plinacro. The methodology for determining the amounts of tariff items for electricity transmission refers to the energy company in charge of energy transmission, which is the Croatian Transmission System Operator (HOPS). Natural gas transport is a regulated energy-related activity performed as a public service. PLINACRO Zagreb is the transport system operator in Croatia, and it is owned by the Croatian state. Plinacro is in charge of the supervision, maintenance, development and construction of the entire gas transmission system, and of other activities necessary for the technical functioning of the system. Plinacro operates 2700 km of high-pressure gas pipelines (HERA, 2016). Electricity transmission is a regulated energy activity performed as a public service. In Croatia, Croatian Transmission System Operator (abbreviated HOPS) provides the public service of electricity transmission and is responsible for the operation, management, maintenance, development and construction of the transmission network and cross-border transmission lines, as well as for ensuring the long-term capability of the network to satisfy reasonable requirements for the transmission of electricity. HOPS is the sole electricity transmission system operator in the Republic of Croatia and the owner of the entire Croatian transmission network. It is owned by Hrvatska elektroprivreda, national energy company, which deals with the generation, distribution and supply of electricity. HOPS operates 7700 km of transmission network (HERA, 2016).

## **Regulation methodology of network system operators**

With the aim to ensure energy market functioning, national regulators establish and implement regulatory policies through their activities, i.e. through enacting methodologies and tariffs. The methodologies determine the regulation model, i.e. the model of allocating costs and revenues to the network operator. Methodologies are based on a regulatory approach, i.e. the method, and they can be (Gelo and Štritof, 2005):

- rate of return regulation (Cost plus / Rate of return)
- incentive regulation (which can have three forms):
  - maximum price (Price cap)
  - maximum revenue (Revenue cap)
  - hybrid model (Price cap / Revenue cap)

With the rate-of-return method, the system operator is allowed all eligible operating expenses increased by the margin which reflects the corresponding return on invested capital. This method is also called cost-of-service or cost-plus regulation. The allowed revenue of the operator consists of eligible operating expenses (OPEX) and eligible capital expenditure (CAPEX). Allowed revenues and tariffs are determined for a regulation period which, as a rule, is one, or sometimes two years, after which an audit is carried out, and all elements for the following year are determined. Taking into consideration certain flaws of this method, a

new method (Joskow, 2007) was developed – incentive regulation. The primary advantage of the incentive regulation with regard to the rate-of-return regulation is incentivising more efficient business performance of regulated companies, whereby the regulator seeks to approximate the price of use of infrastructure to optimal operating expenses in the long run. With the price cap method, the basic modern method of the incentive regulation is the revenue cap method. The price cap method determines the maximum price, i.e. the tariff, which the operator is allowed to apply during the regulation period which most commonly lasts from three to five years, and sometimes even longer. The revenue cap method determines the maximum revenue which the operator is allowed to generate during the regulation period. In addition to the mentioned methods, a series of hybrid models which combine basic regulation models is also applied in the regulatory practice. Apart from the mentioned regulation methods, there are many various instruments for service quality regulation which regulators also apply (Pérez-Arriaga, 2013), but this is not the subject of this analysis.

Selecting the regulation method is based on the regulatory approach which takes into consideration specificities and the development level of the energy market in a regulatory area. Therefore, the methods vary from country to country in the EU. The cost-plus method is used for energy transmission in Belgium. The incentive-based method is used by the Czech Republic, France, Germany and the Netherlands. The revenue cap or price cap method is mostly used by eastern EU countries, Poland, Romania, Slovakia, but also Sweden. A method combination is used by Finland, Greece, Italy, Spain, Switzerland and the UK, whereas the cost-plus method is used in Croatia. For gas transport, the revenue cap method is used by the Czech Republic, Finland, Hungary, Luxembourg, the Netherlands, SE and Slovenia, whereas the price cap method is used by Latvia and Lithuania. The rate-of-return method is used by Greece and Estonia, whereas other countries use a combination of methods. Croatia uses a revenue cap method based on incentive regulation.

This paper analyses two similar energy network activities, gas transport and electricity transmission, i.e. the allowed revenue of the gas transport system operator (Plinacro) and the electricity transmission system operator (HOPS). The analysis is based on the adopted methodologies which are the base for determining the allowed revenue and tariff. Taking into account the complexity of methodologies, as well as numerous elements defined with them, the analysis is directed at a very important element where energy companies have no impact. These are interest rates which are a result of trends and conditions on the capital market of the Republic of Croatia, i.e. the credit rating of the Republic of Croatia, and which are a reflection of the Croatian economy. Since network energy activities are capital intensive, the impact of the change in interest rates on the financial market is significant.

### ***1.1. Regulation methodology of gas transport system***

The methodology for determining the amounts of tariff items for gas transport is based on the incentive regulation model. The planned allowed revenue  $AR^P_t$  is determined for a year according to the formula:

$$DP^P_t = OPEX^P_t + A^P_t + PRO^P_t + PV\delta_t - (P_{PRIK}^P_t + P_{NU}^P_t + P_{OST}^P_t)$$

where:

- $DP^P_t$  – is the planned allowed revenue in a regulation year t (HRK),
- $OPEX^P_t$  – are the planned operating expenses in a regulation year t (HRK),
- $A^P_t$  – is the planned amortisation of regulated funds in a regulation year t (HRK),
- $PRO^P_t$  – is the planned return on regulated funds in a regulation year t (HRK),
- $PV\delta_t$  – is a part of the difference between the revised allowed revenues and the generated revenues in the year T-1 and in the previous years of the regulation period expressed in a regulation year t (HRK),

$P_{PRIK}^P$  – is the planned revenue from the connection fee and the increase in connection capacity in a regulation year t (HRK),

$P_{NU}^P$  – is the planned revenue from non-standard services in a regulation year t (HRK),

$P_{OST}^P$  – is the planned other operating revenue which does not refer to the core business of the transport system operator (hereinafter: planned other operating revenue), in a regulation year t (HRK).

For the purpose of this analysis, the variables which vary from year to year, i.e.  $PV\delta_t$ ,  $P_{PRIK}^P$ ,  $P_{NU}^P$  and  $P_{OST}^P$ , are zero. These variables do not have a significant impact on the allowed revenue, and the change in interest rates does not affect their change. Thus, we obtain a simplified model for further analysis.

The planned revenue from regulated funds is:

$$PRO_t^P = RO_{pros}^P \times WACC$$

where:

$PRO_t^P$  – is the planned return on regulated funds in a regulation year t (HRK),

$RO_{pros}^P$  – is the planned average amount of regulated funds in a regulation year t (HRK),

WACC – is the WACC amount for the regulation period (%).

WACC is a variable which affects the planned allowed revenue of the transport system operator.

For the purpose of calculating tariff items, a simplified equation will be used for the reference tariff item of working energy for all customers which uses the total revenue in the ratio with the total transmitted energy in the system operator. Thus, we avoid the tariff item breakdown for each customer category, and the simplified model illustrates the average reference item:

$$TS_p = \frac{DP_t^P}{E}$$

where:

$DP_t^P$  – is the planned allowed revenue in a regulation year t (HRK),

E – is the parameter which will be shown, in this simplified model, as the energy transmitted through the system (MWh)

## ***1.2. Regulation methodology of electricity transmission system***

The methodology for determining the amounts of tariff items for electricity transmission is based on the basic principle that the revenue should cover total expenses which are based on total eligible expenses and generated revenue.

The total expenses UTP are determined for a year according to the formula:

$$UTP = TP_{pos} + TP_{kap} - TR_{nsu} - TR_{ppk}$$

where:

$TP_{pos}$  – are the operating expenses (OPEX)

$TP_{kap}$  – are the capital expenditure (CAPEX)

$TR_{nsu}$  – are the expenses of providing non-standard services

$TR_{ppk}$  – are the revenues from allocating cross-border capacities

For the purpose of this analysis, the variables which vary from year to year, i.e.  $TR_{nsu}$  and  $TR_{ppk}$ , are zero. These variables do not have a significant impact on the total operating expenses. Thus, we obtain a simplified model for further analysis.

Capital expenditure equal to:

$$TP_{kap} = PR_{im} + A$$

where:

$PR_{im}$  – is the return on regulatory assets

A – is the amortisation

The return on regulatory assets  $PR_{im}$  equals to:

$$PR_{im} = \frac{WACC}{100} * RI$$

where:

WACC – is the weighted average cost of capital

RI – is the average value of the regulatory assets

From the methodology elements, it is noticeable that WACC is a variable which affects the level of operating expenses, as well as the revenue, i.e. tariffs, of the transmission system operator.

For the purpose of calculating tariff items, a simplified equation is used for the reference tariff item of working energy for all customers which uses the total revenue in the ratio with the total transmitted energy in the system operator. A simplified model illustrates the average reference item:

$$Ts = \frac{UTP}{E}$$

where:

UTP – are the total operating expenses

E – is the parameter which will be shown, in this simplified model, as the energy transmitted through the system (MWh)

## Weighted average cost of capital – WACC

The most widely used approach for estimating the cost of equity is the Capital Asset Pricing Model (CAPM) (Frontier Economics). CAPM revolutionized modern finance. Developed in the early 1960s by William Sharpe, Jack Treynor, John Lintner and Jan Mossin, the model provided the first coherent framework for relating the required return on an investment to the risk of that investment (Perold, 2004). It displays the relationship between risk and expected return for a company's assets. The capital asset pricing model provides a theoretical structure for the pricing of assets with uncertain returns (Bollerslev et al., 1988). This model is used throughout financing for calculating expected returns for assets while including risk and cost of capital. The attraction of CAPM is that it offers powerful and intuitively pleasing predictions about how to measure risk and the relation between expected return and risk (Fama and French, 2004). The CAPM model is based on the assumption of a perfect and fully efficient market, which, of course, does not exist in practice. However, CAPM is still widely used in applications, such as estimating the cost of equity capital for (energy) companies and evaluating the performance of managed portfolios.

The cost of capital is one of the most important factors that energy regulators, and companies, have to estimate. With the regulatory assets values of the Croatian transmission and gas networks approaching 1 billion EUR, even small changes in the allowed return on asset base can have a significant impact on customers' bills. Estimating the overall cost of capital using CAPM involves the following steps (Crew and Parker, 2006): first, the risk-free interest rate is estimated. The second step involves estimating the company-specific debt premium. The third step then involves estimating the markets' valuation of equity risk – the equity risk premium. The fourth step is to estimate the risk associated with the specific regulated activity. The fifth step involves weighting together the cost of debt and the cost of equity to produce an overall weighted average cost of capital (WACC). Finally, it is necessary to decide whether to set the cost of capital on pre-tax or capital gains taxes.

### WACC calculation



For calculating the cost of equity, the most widely used regulatory approach is chosen, as elaborated in (Brounen et al., 2004). In the methodologies, WACC is calculated according to the formula:

$$WACC = \frac{r_e}{(1-p_d)} * \frac{E}{E+D} + r_d * \frac{D}{E+D}$$

where:

E – is the total debt

D – is the total equity

$r_e$  – is the cost of equity (%)

$r_d$  – is the cost of debt (%), and

$p_d$  – is the corporate tax rate (%)

The cost of debt is defined as the average interest rate on liabilities. However, a very common approach in estimating the cost of debt is estimating the risk-free rate on which country-specific debt premium is added (Ajodhia and Hakvoort, 2005). A Croatian methodology defines the post-tax WACC.

The cost of equity or yield on equity after taxation is determined:

$$r_e = r_f + (r_m - r_f) \cdot \beta$$

where:

$r_f$  – is the risk-free rate

$r_m$  – is the expected return on the market

$(r_m - r_f)$  – is the market risk premium

$\beta$  – is the measure of the relative (or non-diversifiable) risk of the company or industry

The risk-free investments and the return obtained from them exist only as a theoretical abstraction. In practice, such investments with minimum risks are investments in government securities. The market risk premium implies that any additional risk taken by an investor should be rewarded with an interest rate higher than the risk-free rate. The difference between the market return and the risk-free rate of return is a risk premium. Risk premiums may be calculated for a particular security, a class of securities, or a market. The equity  $\beta$  (beta) coefficient is essentially a measure of price volatility of a company's shares in comparison to the market index. In case of a high beta, the company's share prices will tend to oscillate more than the market index ( $\beta$  is greater than 1), and in case of a low beta, the company's share prices will tend to oscillate less than the market index ( $\beta$  is lower than 1). A standard procedure for estimating betas is to regress share returns against market returns. The slope of the regression corresponds to the beta of the share and measures the riskiness of the share (Štritof et al., 2009). The beta is very often estimated by using relatively straightforward statistical parameters:

$$\beta = \frac{\text{cov}_{s,m}}{\text{var}_m}$$

where  $\text{cov}_{s,m}$  is the covariance of the company's share prices with the market prices and  $\text{var}_m$  is the variance of the market prices.

In essence, funding through the owner's capital would be possible in case when the profitability of a regulated entity is sufficient to cover risk-free rates of return and the individual risk premium based on the market risk. This is secured by using CAPM. However, when a regulated company is not listed on a liquid market, direct estimation of the  $\beta$  coefficient is not possible. Thus, regulators often use comparisons to similar companies in other markets and other regulatory regimes. For example, in Argentina this is recognized through the legal framework, which defines the rate of return on regulatory assets. The estimation has to be based on comparison with other sectors with similar risk within the country and internationally. In addition, in regulatory practice, the  $\beta$  coefficient and other

WACC elements are determined in a reverse procedure, as a result of an acceptable WACC level. (Pardina et al., 2008; Družić et al., 2012)

The weighted average cost of capital is a variable which depends on the interest rates on the capital market, variability coefficient of shares and regulatory approach related to the equity and debt capital. Interest rates are different for each state, debt-to-equity ratios are different for each regulatory area, variability coefficient of shares depends on the company activity type, i.e. the risk, so the  $\beta$  is different for the gas transport system operator and the electricity transmission system operator. From the elements of WACC calculation, a different WACC amount can be expected for different states and different activities.

A comparative review of WACC calculation elements and the WACC amount for gas transport system operators of chosen EU member states is shown in Table 1.

*Table 1 WACC comparison for different EU natural gas transporters*

Parameter	Croatia	Germany	Poland	Finland	Czech R.	France	Slovakia	average
Risk-free rate $r_f$	2.75%	3.80%	5.42%	1.82%	4.60%	2.00%	4.01%	3.49%
Market risk premium ( $r_m - r_f$ )	4.80%	4.55%	4.80%	5.00%	6.40%	5.00%	3.00%	4.79%
Variability coefficient of energy company shares $\beta$	0.54	0.32	0.4	0.3	0.4	0.58	0.3	0.41
Cost of equity $r_e$	5.34%	9.05%	8.73%	6.80%	8.54%	10.40%	6.00%	7.84%
Cost of debt capital $r_d$	3.92%	3.80%	6.42%	3.62%	4.91%	2.60%	5.13%	4.34%
Equity in total capital $E/(E+D)$	50.00%	40.00%	58.00%	80.00%	60.00%	50.00%	40.00%	54.00%
Debt in total capital $D/(E+D)$	50.00%	60.00%	42.00%	20.00%	40.00%	50.00%	60.00%	46.00%
Corporate tax rate $p_d$	18.00%	15.82%	19.00%	26.00%	19.00%	34.43%	20.00%	21.75%
WACC Weighted average cost of capital before tax	<b>5.22%</b>	<b>5.90%</b>	<b>8.95%</b>	<b>5.99%</b>	<b>8.29%</b>	<b>6.50%</b>	<b>6.04%</b>	6.70%

*Source: Mapping power and utilities regulation in Europe; HERA 2018.*

The average WACC for gas transport system is 6.7%, and it varies from country to country. Croatia has the lowest WACC (5.22%), and Poland (8.95%) has the highest. WACC calculation is determined by various parameters shown in the table. Parameters which are defined with financial characteristics of a certain financial market have different ranges. Interest rates on loans vary from 3.62% to 6.42%, the risk-free interest rate varies from 1.82% to 5.42%, and the market risk premium from 3.00% to 6.40%. The variability coefficient of shares is in the range between 0.3 and 0.58, and the corporate tax rate between 15.82% and 34.43%. The parameter which is determined by the regulator is the debt-to-equity ratio. The ratio is in the range between 80% : 20% and 40% : 60%.

If the debt capital could also change with respect to a decrease in interest rates, which depends on the indebtedness of the energy company, the weighted average cost of capital would also change, and the return on the allowed revenue would decrease as well, which would eventually lead to a decreased allowed revenue and the average tariff item.

The same analysis was carried out for calculating WACC and the WACC amount for electricity transmission system operators in the same countries (Table 2).

*Table 2 WACC comparison for different EU electricity transmission system operators*

Parameter	Croatia	Germany	Poland	Finland	Czech R.	France	Slovakia	average
Risk-free rate $r_f$	2.75%	3.80%	5.42%	1.82%	4.60%	4.20%	4.01%	3.80%
Market risk premium ( $r_m - r_f$ )	3.75%	4.55%	4.80%	5.00%	6.40%	4.50%	3.00%	4.57%
Variability coefficient of energy company shares $\beta$	0.38	0.32	0.4	0.4	0.35	0.33	0.3	0.35
Cost of equity $r_e$	4.13%	9.05%	8.73%	5.59%	8.05%	10.92%	6.00%	7.50%
Cost of debt capital $r_d$	3.36%	3.80%	6.42%	1.82%	4.91%	4.80%	5.13%	4.32%
Equity in total capital $E/(E+D)$	40.00%	40.00%	58.00%	40.00%	60.00%	40.00%	40.00%	45.43%
Debt in total capital $D/(E+D)$	60.00%	60.00%	42.00%	60.00%	40.00%	60.00%	60.00%	54.57%

Corporate tax rate $p_d$	18.00%	15.82%	19.00%	24.50%	19.00%	34.43%	20.00%	21.54%
WACC Weighted average cost of capital before tax	<b>4.03%</b>	<b>5.90%</b>	<b>8.95%</b>	<b>3.06%</b>	<b>7.92%</b>	<b>7.25%</b>	<b>6.04%</b>	6.16%

*Source: Mapping power and utilities regulation in Europe; HERA 2018b.*

WACC for electricity transmission system ranges from 3.06% to 8.95%. The parameters vary from country to country. Interest rates on loans vary from 1.82% (Finland) to 5.42% (Poland). The risk-free interest rate varies from 1.82% to 5.42%, and the market risk premium from 3.00% to 6.40%. The variability coefficient of shares ranges between 0.3 and 0.38, and the corporate tax rate between 15.82% and 34.43%. The debt-to-equity ratio allowed by the regulator ranges between 60% : 40% and 40% : 60%.

WACC varies depending on the activity and the characteristics of the regulatory area, i.e. the state, and influencing parameters are from financial markets and regulatory.

### *The analysis of the impact of the financial market condition on the WACC change*

The condition on financial markets affects the changes in interest rates. In addition, it can be expected that Croatia's entrance into the European Monetary Union (EMU) and the acceptance of euro as a single currency will reduce the interest rate because the risk premium is one of the basic determinants of interest rates. With the entrance into the EMU, a country's risk is inevitably reduced due to the country's increased credibility because it is now supported by the European Central Bank (ECB) (Gospodarstvo Hrvatske, 2016). The change in interest rates affects the expected return on the market, i.e. the cost of equity and the debt interest, i.e. the cost of debt capital, which are elements for calculating WACC. Since the expected return on the market is the basis for calculating equity, and the interest at which companies were indebted is the basis for calculating debt capital, the assumption is that they change in the same proportions as the changes in interest rates on a capital market. The impact of the change in the expected return on the market and the cost of debt capital on WACC will be analysed in continuation, as a consequence of changes in interest rates on the Croatian financial market.

The impact of the expected return on the market changes on WACC

The impact of the change in the expected return on the market on equity is observed with the assumption that the change in the expected return on the market has no influence on the debt capital, i.e. that the company has no new debts, that it does not refinance its existing bank debts, and that it has debts with a fixed interest rate. The analysis was carried out with the change impact in the range of +/- 10%, i.e. +/- 20%. The gas transport analysis was carried out first (Table 3).

*Table 3 The impact of the expected return on the market changes on WACC for gas transport*

Parameter	WACC - 20	WACC - 10	Value	WACC +10	WACC +20
Risk-free rate $r_f$	2.75%	2.75%	<b>2.75%</b>	2.75%	2.75%
Expected return on the market $r_m$	6.04%	6.80%	<b>7.55%</b>	8.31%	9.06%
Market risk premium ( $r_m - r_f$ )	3.29%	4.05%	<b>4.80%</b>	5.56%	6.31%
Variability coefficient of energy company shares $\beta$	0.54	0.54	<b>0.54</b>	0.54	0.54
Cost of equity $r_e$	4.53%	4.93%	<b>5.34%</b>	5.75%	6.16%
Cost of debt capital $r_d$	3.92%	3.92%	<b>3.92%</b>	3.92%	3.92%
Equity in total capital $E/(E+D)$	50.00%	50.00%	<b>50.00%</b>	50.00%	50.00%
Debt in total capital $D/(E+D)$	50.00%	50.00%	<b>50.00%</b>	50.00%	50.00%
Corporate tax rate $p_d$	18.00%	18.00%	<b>18.00%</b>	18.00%	18.00%

WACC Weighted average cost of capital before tax	<b>4.72%</b>	<b>4.97%</b>	<b>5.22%</b>	<b>5.47%</b>	<b>5.71%</b>
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Source: authors' calculation

The increase in the expected return on the market of 10% and 20%, results in the increase in WACC for gas transport from 5.22% to 5.47%, and 5.71%, whereas the decrease in the expected return on the market of 10% and 20%, results in the decrease in WACC for gas transport from 5.22% to 4.97%, and 4.72%, i.e. the relative increase/decrease in the expected return on the market of 10% and 20% results in the increase/decrease in WACC of 4.7%, i.e. 9.5%.

The same analysis for electricity transmission was carried out in the continuation, with the same sensitivity analysis of the change (Table 4)

*Table 4 The impact of the expected return on the market changes on WACC for electricity transmission system operators*

Parameter	WACC - 20	WACC - 10	Value	WACC +10	WACC +20
Risk-free rate $r_f$	2.70%	2.70%	<b>2.70%</b>	2.70%	2.70%
Expected return on the market $r_m$	5.16%	5.81%	<b>6.45%</b>	7.10%	7.74%
Market risk premium ( $r_m - r_f$ )	2.46%	3.11%	<b>3.75%</b>	4.40%	5.04%
Variability coefficient of energy company shares $\beta$	0.38	0.38	<b>0.38</b>	0.38	0.38
Cost of equity $r_e$	3.63%	3.88%	<b>4.13%</b>	4.37%	4.62%
Cost of debt capital $r_d$	3.36%	3.36%	<b>3.36%</b>	3.36%	3.36%
Equity in total capital $E/(E+D)$	40.00%	40.00%	<b>40.00%</b>	40.00%	40.00%
Debt in total capital $D/(E+D)$	60.00%	60.00%	<b>60.00%</b>	60.00%	60.00%
Corporate tax rate $p_d$	18.00%	18.00%	<b>18.00%</b>	18.00%	18.00%
WACC Weighted average cost of capital before tax	<b>3.79%</b>	<b>3.91%</b>	<b>4.03%</b>	<b>4.15%</b>	<b>4.27%</b>

Source: authors' calculation

The increase in the expected return on the market of 10% and 20%, results in the increase in WACC for electricity transmission from 4.03% to 4.15%, and 4.27%, whereas the decrease in the expected return on the market of 10% and 20%, results in the decrease in WACC for electricity transmission from 4.03% to 3.91%, and 3.79%, i.e. the relative increase/decrease in the expected return on the market of 10% and 20% results in the increase/decrease in WACC of 2.9%, i.e. 5.8%.

The impact of the change in the cost of debt capital on WACC

The impact of the change in the cost of debt capital will be observed with the assumption that the changes in interest rates on the market have no impact on equity, i.e. the analysis is carried out only with the aim to determine the partial impact of the change in the cost of debt capital on WACC. The analysis was carried out with the change impact in the range of +/- 10%, i.e. +/- 20%. The gas transport analysis was carried out first (Table 5).

*Table 5 The impact of the change in the cost of debt capital on WACC for gas transport*

Parameter	WACC - 20	WACC - 10	Value	WACC +10	WACC +20
Risk-free rate $r_f$	2.75%	2.75%	<b>2.75%</b>	2.75%	2.75%
Expected return on the market $r_m$	7.55%	7.55%	<b>7.55%</b>	7.55%	7.55%
Market risk premium ( $r_m - r_f$ )	4.80%	4.80%	<b>4.80%</b>	4.80%	4.80%
Variability coefficient of energy company shares $\beta$	0.54	0.54	<b>0.54</b>	0.54	0.54
Cost of equity $r_e$	5.34%	5.34%	<b>5.34%</b>	5.34%	5.34%

Cost of debt capital $r_d$	3.14%	3.53%	<b>3.92%</b>	4.31%	4.70%
Equity in total capital $E/(E+D)$	50.00%	50.00%	<b>50.00%</b>	50.00%	50.00%
Debt in total capital $D/(E+D)$	50.00%	50.00%	<b>50.00%</b>	50.00%	50.00%
Corporate tax rate $p_d$	18.00%	18.00%	<b>18.00%</b>	18.00%	18.00%
WACC Weighted average cost of capital before tax	<b>4.83%</b>	<b>5.02%</b>	<b>5.22%</b>	<b>5.41%</b>	<b>5.61%</b>

Source: authors' calculation

The increase in the cost of debt capital of 10%, i.e. 20%, results in the increase in WACC for gas transport from 5.22% to 5.41%, and 5.61%, whereas the decrease in the cost of debt capital of 10% and 20% results in the decrease in WACC for gas transport from 5.22% to 5.02%, and 4.83%, the relative increase/decrease in the cost of debt capital of 10% and 20% results in the increase/decrease in WACC of 3.8% and 7.5%.

The same analysis for electricity transmission was carried out in the continuation, with the same sensitivity analysis of the changes (Table 6).

Table 6 The impact of the change in the cost of debt capital on WACC for electricity transmission

Parameter	WACC - 20	WACC - 10	Value	WACC +10	WACC +20
Risk-free rate $r_f$	2.70%	2.70%	<b>2.70%</b>	2.70%	2.70%
Expected return on the market $r_m$	6.45%	6.45%	<b>6.45%</b>	6.45%	6.45%
Market risk premium ( $r_m - r_f$ )	3.75%	3.75%	<b>3.75%</b>	3.75%	3.75%
Variability coefficient of energy company shares $\beta$	0.38	0.38	<b>0.38</b>	0.38	0.38
Cost of equity $r_e$	4.13%	4.13%	<b>4.13%</b>	4.13%	4.13%
Cost of debt capital $r_d$	2.69%	3.02%	<b>3.36%</b>	3.70%	4.03%
Equity in total capital $E/(E+D)$	40.00%	40.00%	<b>40.00%</b>	40.00%	40.00%
Debt in total capital $D/(E+D)$	60.00%	60.00%	<b>60.00%</b>	60.00%	60.00%
Corporate tax rate $p_d$	18.00%	18.00%	<b>18.00%</b>	18.00%	18.00%
WACC Weighted average cost of capital before tax	<b>3.62%</b>	<b>3.83%</b>	<b>4.03%</b>	<b>4.23%</b>	<b>4.43%</b>

Source: authors' calculation

The increase in the cost of debt capital, i.e. the reference interest rate on CNB loans of 10% and 20%, results in the increase in WACC for electricity transmission from 4.03% to 4.23%, and 4.43%, whereas the decrease in the cost of debt capital of 10% and 20% results in the decrease in WACC for electricity transmission from 4.03% to 3.83%, and 3.62%, the relative increase/decrease in the cost of debt capital of 10% and 20% results in the increase/decrease in WACC of 4.9% and 9.8%.

It is evident that the changes in expected return on the market, as well as the cost of debt capital in the same amount of +/-10%, i.e. +/-20%, result in different changes of WACC for the gas transport system and the electricity transmission system. The impact of the change in the expected return on the market is larger on the gas system operator, whereas the change in the cost of debt capital is larger on the electricity system operator.

The differences in WACC change arise from economic and regulatory differences in parameters for calculating tariffs for gas transport and electricity transmission.

The differences in economic parameters arise from the differences in the times when the tariffs were established because the tariffs were not established at the same time, and financial markets had different conditions at the moments when the tariffs were established. Regulatory differences are a consequence of regulatory approach for gas transport and electricity distribution in the amount of the interest rate at which the companies were indebted and debt-to-equity ratio. The debt-to-equity ratio of 50% : 50% was accepted for the gas transport

system, whereas the debt-to-equity ratio of 40% : 60% was accepted for electricity transmission.

By analysing the amounts of the impact of the changes in the expected return on the market, as well as the cost of debt capital on WACC, it is evident that the impact of the change in the cost of debt capital is more significant in comparison to the impact of the change in the expected return on the market.

The change in the cost of debt capital simultaneously affects both equity and debt capital, i.e. the expected return on the market and the cost of debt capital, therefore, they should be observed together.

If the interest rates on the financial market are decreasing, the regulator should react and decrease the expected return on the market which decreases the return on equity. The cost of debt capital is a result either of the real interest rate on a loan, or the reference interest rates on the Croatian National Bank (CNB) debts in case if the energy company has a higher interest rate on debts than the CNB reference rate. This motivates the energy company to become indebted under the most favourable conditions on the financial market. If the interest rates on the financial market are increasing, energy companies should react and ask for the increase in the expected return on the market, i.e. the return on equity, and the increase in the interest rate on debts referring to the increase in the reference interest rate on the CNB debts.

The simultaneous impact of the change in the expected return on the market, as well as in the cost of debt capital on total (equity and debt) capital results in:

- The increase in the expected return on the market, as well as in the cost of debt capital of 10% and 20% results in the increase in WACC for gas transport from 5.22% to 5.66%, and 6.11%, whereas the decrease in the expected return on the market, as well as in the cost of debt capital of 10% and 20% results in the decrease in WACC for gas transport from 5.22% to 4.77%, and 4.33%.
- The increase in the expected return on the market, as well as in the cost of debt capital of 10% and 20% results in the increase in WACC for electricity transmission from 4.03% to 4.35%, and 4.67%, whereas the decrease in the expected return on the market, as well as in the cost of debt capital of 10% and 20%, results in the decrease in WACC for electricity transmission from 4.03% to 3.71%, and 3.39%.

## Comparative analysis of the allowed revenue

The change in the expected return on the market and in the cost of debt capital caused the change in WACC on the total capital, and the change in WACC caused the change in the revenue on regulatory assets, i.e. capital expenses and allowed revenues for the gas transport system and total operating expenses for electricity transmission, i.e. the change in average tariff items.

The impact of the change in the expected return on the market and in the cost of debt capital of +/-10%, i.e. +/-20% on WACC, the return on regulatory assets ( $PRI = A_t^P + PRO_t^P$ ), allowed revenues and the average tariff item for gas transport is shown in Table 7.

*Table 7 The impact of WACC changes on allowed revenues and the average gas transport tariff (mil HRK)*

$\Delta r_m + \Delta r_d$	$OPEX_t^P$	$A_t^P$	$ROpros_t^P$	WACC	$\Delta WACC$	PRI	$\Delta PRI$	$DP_t^P$	$\Delta DP_t^P$	TS	$\Delta TS$
-20%	158,058	112,256	2,327,471	4.33%	-17.04%	212,992	-8.86%	483,306	-4.11%	0.01790	-4.11%
-10%	158,058	112,256	2,327,471	4.77%	-8.52%	223,340	-4.43%	493,654	-2.05%	0.01828	-2.05%
<b>Value</b>	<b>158,058</b>	<b>112,256</b>	<b>2,327,471</b>	<b>5.22%</b>	<b>0.00%</b>	<b>233,688</b>	<b>0.00%</b>	<b>504,002</b>	<b>0.00%</b>	<b>0.01867</b>	<b>0.00%</b>
+10%	158,058	112,256	2,327,471	5.66%	8.52%	244,035	4.43%	514,349	2.05%	0.01905	2.05%

+20%	158,058	112,256	2,327,471	6.11%	17.04%	254,383	8.86%	524,697	4.11%	0.01943	4.11%
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Source: authors' calculation (HERA, 2018)

The change in the expected return on the market and in the cost of debt capital of -20% and -10%, i.e. 10% and 20% on the capital market results in the change in WACC for gas transport of -17.04%, -8.52%, 8.52% and 17.04%, with the change in the revenue on regulatory assets of -8.86, -4.43%, 4.43% and 8.86% of allowed revenues and average tariff items of -4.11%, -2.05%, 2.05% and 4.11.

The impact of the change in the expected return on the market and in the cost of debt capital of +/-10% and +/-20% on WACC, the return on regulatory assets, allowed operating expenses and the average tariff item for electricity transmission is shown in Table 8.

Table 8 The impact of WACC changes on allowed revenues and the average electricity transmission tariff (mil HRK)

$\Delta r_m + \Delta r_d$	TPpos	Amort.	regulatory assets	WACC	$\Delta$ WACC	TPkap	$\Delta$ TPkap	UTP	$\Delta$ UTP	TS	$\Delta$ TS
-20%	1,215,536	345,167	4,840,000	3.39%	-15.95%	509,043	-5.76%	1,724,579	-1.77%	0.10145	-1.77%
-10%	1,215,536	345,167	4,840,000	3.71%	-7.97%	524,587	-2.88%	1,740,123	0.89%	0.10236	0.89%
<b>Value</b>	<b>1,215,536</b>	<b>345,167</b>	<b>4,840,000</b>	<b>4.03%</b>	<b>0.00%</b>	<b>540,132</b>	<b>0.00%</b>	<b>1,755,668</b>	<b>0.00%</b>	<b>0.10327</b>	<b>0.00%</b>
+10%	1,215,536	345,167	4,840,000	4.35%	7.97%	555,676	2.88%	1,771,212	0.89%	0.10419	0.89%
+20%	1,215,536	345,167	4,840,000	4.67%	15.95%	571,220	5.76%	1,786,756	1.77%	0.10510	1.77%

Source: authors' calculation (HERA, 2018b)

The change in the expected return on the market and in the cost of debt capital of -20% and -10%, i.e. 10% and 20% on the capital market results in the change in WACC for energy transmission of -15.95%, -7.79%, 7.79% and 15.95%, with the decrease in capital expenditure (return on regulatory assets) of -5.76%, -2.88%, 2.88% and 5.76%, and allowed operating expenses and average tariff items of -1.77%, -0.89%, 0.89% and 1.77%.

The impact of the change in the expected return on the market and in the cost of debt capital on WACC is different for the gas transport system and the electricity transmission because the debt-to-asset ratio and the cost of debt capital are different due to the difference in times at which the companies were indebted and in the moments when the tariff items were established by the regulator. The impact is larger on the gas system operator (Plinacro). Therefore, we conclude that the change in the interest rate has a more dominant impact on the change in the equity for observed operators.

The WACC change is not proportional to the change in the allowed revenue on regulatory assets / capital expenditure for the gas transport system and electricity transmission, with is a consequence of a different proportion in the return on regulatory assets and amortisation in the allowed revenue on regulatory assets /capital expenditure for the gas transports system and electricity transmission. A larger impact is on the system operator with a smaller amortisation proportion, and a larger return proportion in the allowed revenue on regulatory assets / capital expenditure.

The change in the allowed revenue on regulatory assets /capital expenditure and the total allowed revenue / average tariff item are not proportional for the gas transport system and electricity transmission due to a different proportion of operating expenses for the gas transport system and the electricity transmission system. A larger impact is on the system operator with a larger proportion of capital expenditure in the allowed revenue / total operating expenses.

## Conclusion

The changes in the expected return on the market and in the cost of debt capital affect the change in WACC, and the WACC amount depends on the debt-to-equity ratio of each system operator analysed. A larger impact is seen in larger equity proportions.

The change in WACC results in the change in the return on regulatory assets / the cost of capital, and the change amount depends on the proportion of amortisation in regulatory assets. The impact is larger when the amortisation and regulatory assets ratio is smaller.

The change in the return on regulatory assets / the cost of capital results in the change in the allowed revenue / total operating expenses and average tariff items, and the change amount depends on the proportion of capital expenditure in the allowed revenue / total operating expenses. The impact is larger when the proportion of capital expenditures in the allowed revenue / total operating expenses is larger.

The change in the interest rates on the capital market will have a different impact on the expected return on the market and the cost of debt capital, which will have a different impact on the regulated companies because the change impact depends on the capital structure of the companies and the level of capital expenditure in the total cost.

The gas transport system operator and the electricity transmission operator have different debt-to-equity ratios, a different amortisation rate and capital expenditure shares in the allowed revenue / total operating costs, thus they have different effects of the changes in the expected return on the market and the cost of debt capital on the allowed revenue / total operating costs and average tariff items.

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# IMPACT OF CHINESE “BELT AND ROAD INITIATIVE” STRATEGY IN CENTRAL AND EASTERN EUROPE (CEE), INSTITUTIONAL INFLUENCE ON SOCIAL INTERACTION GOES BEYOND ECONOMIC ACTIVITIES

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## Abstract

*What is the EU perspective on the “Chinese investments” in Central and Eastern European States (CEE)? Is there any concern for EU considering Chinese economic and institutional activities and investment in the CEE? Is Chinese strategic direction for “One Belt, One Road” strategy purely economically determined, or it goes beyond financial impact and impose social interaction and influence. As indicated by Johannes Hahn, the EU commissioner, there is a valid concern of EU for Chinese investment strategy; the risk of extended investment and commitment in Sino-European Relations lies not solely within the EU, each EU member country carries individual responsibility. This paper examines the perception, influence and interaction of Chinese investment activities labelled as “soft financing” strategy, as well as Chinese social Institutions and organizations as “soft power” in CEE Region and importance of integrated and homogeneous approach of all EU members towards relationship with China. How well Europe will be able to find common strategy towards China, might determine how well will Europe succeed in assuring integration and preservation of strong European Union, as well as stability and independency of the European region.*

**Keywords:** Belt and Road Initiative (BRI), China, EU, FDI, Geostrategy, Geo-economics,

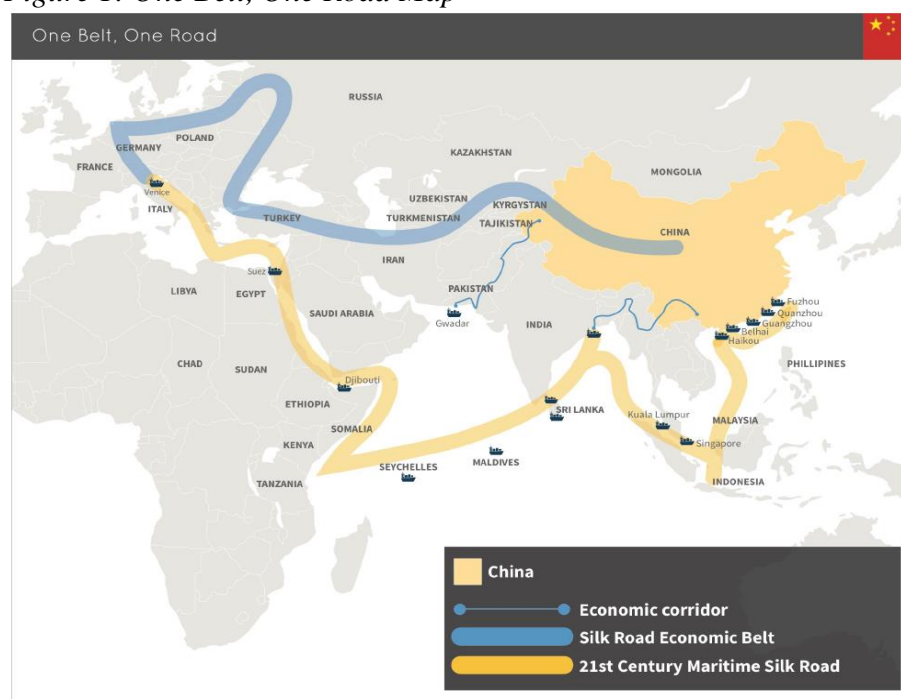
**JEL classification:** F15, F36, F53, F68

## Introduction

This paper examines China’s increasing economic interest and social interaction and influence within Central and Eastern Europe. In the recent years there are increasing economic activities and investment in infrastructure, transportation and energy sector financed and executed by the Chinese banks and companies. Chinese financed investments in infrastructure is part of the Belt and Road Initiative (BRI), with goal to enforce policy dialogue, infrastructure connectivity, tariff reductions, financial support and people-to people exchange across the participating countries (Golley and Ingle, 2018). The initiative centrepiece President Xi Jinping leadership direction on foreign policy received world attention recently. Within World Economic Forum in Davos (2017), Switzerland, President Xi Jinping committed on China’s direction “Addressing problems facing the global and regional economy, creating fresh energy for pursuing interconnected development and making the Belt and Road Initiative

deliver greater benefits to people of countries involved. The Belt and Road Initiative draws inspiration from the ancient Silk Road and aims to help realise the shared dream of people worldwide for peace and development. Shining with the wisdom from the East, it is a plan that China offers the world for seeking common prosperity and development. “

The BRI was originally introduced within the two separate initiatives originated in 2013, “Silk Road Economic Belt” initiative as well as “Twenty-first Century Maritime Silk Road” plan (see Figure 1- One Belt, One Road Map). Even though there is no official definition existing, BRI initiative composes of geographical scope including 65 countries, jointly accounting for almost 60 % of the global Gross Domestic Product (GDP) and 30 % of the world population (Steer Davies Gleave, 2018). The recent development around BRI initiatives, as clearly indicated by Chinese political elite, BRI includes not only policy supporting initiatives, clear outbound investment priorities and business decisions sponsored by the Chinese authorities are gaining formal character with strategic impact on countries, regulatory authorities and social organisations and institutions. By 2016, BRI has received financial support from diverse Chinese financial institutions for around USD 292 billion. Additional commitment has been given by President Xi Jinping recently announcing additional USD 127 billion available in the next years (Steer Davies Gleave, 2018).



*Source: Lowy Institute (Cai, 2017)*

Seeing from the European prospective, BRI gained on focus along the 16 Central and Eastern European states, commonly known as the “16+1 Format” framework. The 16+1 is an initiative by the People’s Republic of China aimed at intensifying and expanding cooperation with 11 EU Member States (Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia) and 5 Balkan countries (Albania, Bosnia and Herzegovina, Macedonia, Montenegro and Serbia). The initiative emphasis diverse collaboration and interaction in the fields of investments, transportation, finance, science, education, and culture. China has officially declared three potential priority areas for economic cooperation: infrastructure, high technologies, and green technologies. The framework is based on annual summits attended by the Prime Ministers of the countries involved (including China), but representatives of the European Commission and the European Investment Bank attended the most recent summit, held in Riga in 2016, as observers (Le Corre, 2017). Croatia is going to host the 16+1 summit in April in 2019, indicating current focus of BRI and 16+1 initiative on South-Eastern Europe. The initiative 16+1 brought China’s new political and economic agenda along the Balkan Silk Road region, originating from the Greek port of Piraeus as China’s maritime gateway to the southern Europe, the first major European container port for ships entering from the Suez Channel, through Mediterranean further to the EU markets. Chinese shipping SOE (State Owned Enterprise) giant Cosco Pacific took over rights for majority of the Piraeus port within 35-year concession. From the port of Piraeus, maritime path is continuing over the sea towards the ports in the north Adriatic Sea, such as Venice and Trieste in Italy, Koper in Slovenia and Rijeka in Croatia. Overall, within a period of ten years, Chinese companies have acquired stakes in 13 ports in Europe. Following the transportation corridor, China forms of “soft power” are traceable along the Balkan road, connecting Central Europe with Aegean Sea via Greece, FYR Macedonia, Serbia and Hungary. Strategic geographic location of the region lies within easy and free access to the EU markets (Free trade agreements have been signed with non-EU members Countries of Western Balkan including FYR Macedonia, Montenegro, Serbia) and link with the rest of Europe through Pan-European corridor X (Pan-European corridor X connects central Europe with Turkey through Austria, Slovenia, Croatia, Serbia FYR Macedonia and Greece) connecting central Europe with Turkey, Pan-European corridor VII (Pan-European corridor VII passing through Bulgaria, FYR Macedonia and Albania and connects Black Sea with the Ionian Sea) connecting Black Sea with Ionian Sea and Pan-European corridor Vc (Pan-European corridor Vc connecting central Europe with the Adriatic Sea over Hungary, Croatia and Bosnia and Herzegovina) connecting central Europe with the Adriatic Sea.

For the whole region, trade integration, improvement of the transportation infrastructure as well as technological upgrade and exploitation of the region’s energy resources shared common goal for development and sustainable stability of the region, shared commonly by the CEE member countries as well as EU and China. However, there are certain regional disparities like for example differences in macroeconomic stability (in terms of unemployment level, poverty level, financial stability and non-efficient banking system with high level of non-performing loans) as well as governance, corruption and political stability. Most of the non-EU member states of the CEE region are undergoing reforms for preparation for EU membership and have, either, already initiated negotiations for EU membership accession or are under the prospect of joining. West Balkans candidates’ countries Albania and North Macedonia are waiting for negotiation to start; Montenegro and Serbia are under negotiations status, whereas Bosnia and Herzegovina and Kosovo were promised the prospect

of joining when they are ready ([https://ec.europa.eu/neighbourhood-enlargement/instruments/overview\\_en](https://ec.europa.eu/neighbourhood-enlargement/instruments/overview_en)).

Even though CEE members of the 16+1 initiative shared common communist past, there are substantial differences in political sovereignty of the countries, including both countries that are member of EU (Croatia joined EU on 1 July 2013) and NATO and those that are not. Further diversity lies on how certain countries perceive and manage relationship with Russia, another influential player between EU and China. Question raising among EU is why China is grouping together those 16 countries? What geopolitical and geostrategic agenda Beijing counts for? Is it intent to influence EU over a set of soft tools and with this to influence on the long run favourable policies of EU towards China? CEE is indeed a doorkeeper, a sort of security officer and bridge to Europe. In geographical scope, initiative promote physical connectivity and economic integration between China and Europe. On the other hand, it is still evident that China has stronger exchange and bilateral relationship with the non-CEE EU members, higher investment flow and economic exchange than with CEE countries. Nevertheless, soft power influence of China in the region, as well as respond of EU and Russia towards Chinese relationship with CEE countries, represent severe components for stability of the CEE region, especially Balkan countries. Only mutual effort of EU and China may contribute sustainable economic recovery and development of the CEE region. In order to protect technical and legislative standards, EU has valid concerns about economic, security and policy implications on CEE relationship with China. Still, recent initiatives between EU and China indicate willingness to cooperate and develop common strategic development plan for the region, as well as the alignment of the EU's and China's development policies towards CEE. Clear indication for this is that China joined European Bank for Reconstruction and Development (EBRD) and committed to Brussel investment platform for supporting "Juncker Plan" for sustained economic recovery in Europe, whereas most of EU member countries become recently a member of The Asian Infrastructure Investment Bank (AIIB).

### ***The new Silk Route initiative so called "The Belt and Road Initiative" BRI - opportunities and challenges for EU***

European Parliament initiated research on opportunities and challenges for the new Silk Route (Steer Davies Gleave, 2018). Observation indicated following comments on the BRI initiative:

- BRI has no official or generally accepted definition. "It involves a significant amount of communication and branding, with multiple projects labelled as BRI projects simply because they fall within its geographical scope"
- BRI is "not subject to a clearly-defined development plan, programme or budget, and there is no clear list of projects that it intends to include"
- BRI "has no clear geographic or economic boundaries – the Initiative appears to have evolved in response to individual countries' engagement with China rather than in line with an overarching strategy."

According to the research, there is valid indication that BRI "supports Chinese exports of products and equipment, as well as its engineering and construction capabilities and technologies; ambition of controlling logistics chains to support Chinese trade with Europe; encouraging economic convergence and more balanced development across China; providing a mechanism for increasing the use of the Renminbi (RMB), China's national currency, as a

mean of international payment; and creating alternative overland energy routes to supply oil and gas from Central Asia, Southeast Asia, and Pakistan” (Steer Davies Gleave, 2018). According to the study and interviews conducted within the experts, “Chinese companies might not always be familiar with, or comply with, EU legislation, processes and technical standards”. (Steer Davies Gleave, 2018). Another challenge indicated by the survey is that Chinese parties may subsidise either the products or transportation costs to the EU, potentially creating an unfair advantage. Still, the problem related to the subsidy lies within the scope of multilateral trade agreements, rather than the effects of the BRI. Besides, additional challenges (EU TRAN Committee: The new Silk Route - opportunities and challenges for EU transport) were identified, like for example, if project investment not coordinated and harmonised with EU, wasted and misdirected investment might occur. New investment in transit countries requires coordination between EU and China in order to avoid bottlenecks on rail and on TEN-T.

### ***“The Belt and Road Initiative” in Central and Eastern European (CEE)***

The portfolio of Chinese infrastructure and development projects, equity investments, and acquisitions in the region is growing (Pavličević, 2016). There are multiple funding sources for BRI-related projects, including Chinese financial institutions providing loans and Chinese companies providing equity. Among original Financial Institution, following organisations are providing Chinese financial funding: Silk Road Fund, Asian Infrastructure Investment Bank, New Development Bank, Export-Import Bank of China and China Development Bank (Steer Davies Gleave, 2018).

The 16+1 summit 2016 in Riga (Latvia) provided further confirmation of an increasing focus on BRI-related projects and initiatives. At the closure of the summit, participants declared that they would make concerted efforts to develop synergies between the BRI and relevant EU initiatives such as the Trans-European Transport Network (TEN-T - TEN-T Core Network Corridors are strategic transport corridors in the EU and they play a key role in the coordinated implementation of the TEN-T European policy; there are nine Core Network Corridors which were selected in 2013 based on three pillars: enhancing cross-border connections and removing bottlenecks, integrating different transport modes, and promoting technical interoperability. ), New Eurasian Land Bridge, committed to improving the international supply chain and border crossing rules on key transport corridors and the connection from the Port of Bar (Montenegro) to the railway network in Central and Eastern Europe.

Now the question rises on the EU side regarding the stability and integrity of the region. How valid is concern of EU observing Chinese economic and socio-political activities in CEE countries. What is the impact of increasing Chinese portfolio investments on integration and participation of these countries, especially the countries of Western Balkan undergoing currently the process of negotiation rounds and receiving Pre-Association Assistance in preparation for EU membership? The focus here is given to the countries belonging to Western Balkans, Albania, Bosnia and Herzegovina, FYR Macedonia, Kosovo, Montenegro and Serbia.

In order to assess the risk of this extended investment and commitment in Sino-European Relations we provide here the overview on macroeconomic indicators and Pre-Association Assistance aid portfolio to assess status on integration and financial aid (as illustrated in Table

1: Instrument for Pre-Accession Assistance 2014-20. € million). One of the major risks identified within the countries in focus are related to the financial sector fragility, linked to high level of public, private and external debt (see Table 2: Main macroeconomic indicators %, Western Balkan countries including Croatia). To put in other words, some countries are exceeded borrowing threshold in order to pay for infrastructure and facing the risk of long-term liquidity. In general, China uses its foreign reserves for soft loans, conflicting security and political goals of hosting countries and related regions. Level of Chinese investments in the region of Western countries, under umbrella of Initiative 16+1, investment in projects on the borders of the EU are currently estimated to be around €6.3 billion. The value does not contains investment projects in Albania, as information are not available (see Table 3: Chinese investment and projects in CEE Region, Western Balkan countries).

Table 1: Instrument for Pre-Accession Assistance 2014-20. € million

<b>TOTAL</b>	<b>Albania</b>	<b>Bosnia and Herzegovina</b>	<b>Kosovo</b>	<b>Montenegro</b>	<b>North Macedonia</b>	<b>Serbia</b>
<b>2014-2020</b>						
<b>(EUR million)</b>						
Democracy and governance	223.5	106.6	110.4	46.9	122.9	278
Rule of law and fundamental rights	97	116.6	126.2	52.3	83	265
Environment and climate action	68	114.2		37.5	112.9	160
Energy			100			125
Transport	56	41.7		32.1	112.9	175
Competitiveness and innovation	44	99.4	135	21.2	73	105
Education, employment and social policies	69	73.8	94.2	28.1	53.2	190
Agriculture and rural development	92		79.7	52.4	106.3	210
<b>TOTAL</b>	<b>649.4</b>	<b>552.1</b>	<b>645.5</b>	<b>270.5</b>	<b>664.2</b>	<b>1,508.00</b>

Source: “EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS)” ([https://ec.europa.eu/neighbourhood-enlargement/instruments/overview\\_en](https://ec.europa.eu/neighbourhood-enlargement/instruments/overview_en))

Table 2: Main macroeconomic indicators %, Western Balkan countries including Croatia

Main macroeconomic indicators % 2017	Albania	Bosnia and Herzegovina	FYR Macedonia	Kosovo	Montenegro	Serbia	Croatia
GDP growth	3.8	3	0	3.7	4.7	2	2.9
Inflation (average)	2	1.2	1.4	1.5	2.4	3	1.1
Government balance/GDP	-1.4	2.1	-2.7	-1.2	-7	1.2	0.8
Current account balance/GDP	-6.9	-4.8	-1.3	-6.6	-16.3	-5.2	3.9
Net FDI/GDP (neg.sign = inflows)	-8.4	-2.1	-2.3	-4	-11.4	-6.2	-2.4
External debt/GDP	63.2	61	77.1	32.6	160.2	69.5	81.8
Gross reverses/GDP	27.1	35.7	24.3	n.a.	n.a.	25.4	32.1
Credit to private sector/GDP	32.2	55.8	48	38.6	51.4	43	57.7

Source: “EBRD The Transition Report 2018-19 “ (<https://www.ebrd.com/news/publications/transition-report/transition-report-201819.html>)



Table 3: Chinese investment and projects in CEE Region, Western Balkan countries

Country	Project title	Parties engaged	Project Value (approximate)	Status
Albania	Acquisition of Tirana International Airport	China Everbright and Friedmann Pacific Asset Management	N/A	Completed in 2016
Albania	Completion of Albania Arber motorway to FYROM and Bulgaria	Albanian Government and Export- Import Bank of China (based on MoU)	N/A	Not started
Albania-Montenegro	Construction of the Blue Corridor motorway that will stretch from Trieste (Italy) to Greece via Croatia, Montenegro and Albania	Albanian Government, Montenegro's Government and Pacific Construction Group (based on MoU)	N/A	Not started
Bosnia and Herzegovina	Motorway Banja Luka-Mlinište	Export- Import Bank of China	€1,400 million	Ongoing
FYR Macedonia	Construction of Kicevo-Ohrid and Miladinovci-Stip motorway sections	Export- Import Bank of China	€581 million	Ongoing
Montenegro	Construction of the motorway connection between the port of Bar and Boljare; Smokovac-Uvač- Mateševo section (part of European Motorway XI)	Export- Import Bank of China, Government of Montenegro	€807 million	Ongoing
Romania-Serbia-Montenegro	Construction of highway corridor sections from Timisoara (Romania) to Bar (Montenegro), via Belgrade (Serbia) (part of European Motorway X)	Export- Import Bank of China	€1,028 million	Ongoing
Serbia	Corridor XI, Motorway E-763 Belgrade- Southern Adriatic (Obrenovac-Ub and Lajkovac-Ljig sections)	Export- Import Bank of China	€600 million	Ongoing
Serbia	Pupin bridge in Belgrade	Export- Import Bank of China	€216 million	Completed in 2014
Serbia-Hungary	Belgrade-Budapest high-speed railway link	Export- Import Bank of China	€1,711 million	Not started

Source: (Steer Davies Gleave, 2018)

Figure 2: TEN-T Core Network Corridors, Nine Core Network Corridors



Source: European Commission (2013)

### ***Increasing role of Confucius Institutes and other Chinese institutions activities in CEE- “Soft Power” support***

Taking a size of a Chinese economy, old civilisation heritage and the position as the world’s most populous country, under the umbrella of the BRI initiative, China has been signalling clearly a desire to step in as an important international player. Since 2014, China is increasing importance on national identity and giving emphasis on soft power, a measure of a country’s international attractiveness and its ability to influence other countries and publics. Xi Jinping, said in 2014, “We should increase China’s soft power, give a good Chinese narrative, and better communicate China’s message to the world,” calling for an effort to increase national popularity and attempting to spread its model to development; “Chinese model”, which has lifted hundreds of millions of its people out of poverty.

The BRI has been used by Chinese leaders as a main promotor for soft power and building the network of regional connectivity. For persuading financial soft power for accompanying BRI international projects, China has contributed up to 30 billion USD to the Asian Infrastructure Investment Bank upon its founding. During a bilateral meeting in Beijing with Russian President Vladimir Putin, Chinese President Xi Jinping pledged “\$124 billion for his new Silk Road plan to forge a path of peace, inclusiveness and free trade, and called for the abandonment of old models based on rivalry and diplomatic power games” (Reuters, 2017). Beijing’s leaders also put emphasis on the traditional tools of soft power, while promoting Chinese language, educational exchanges, media expansion, and pop culture icons. There are diverse non- financial institutions supporting BRI initiative and acting as a “soft power” agency organisation. Among most relevant organisations, to name some are Chinese Xinhua News Agency, “Inframation” (Acuris Company Group specialising in providing information on infrastructure transactions <https://www.inframationnews.com>), Acuris Company Group specialising in providing information on infrastructure transactions, the “Center for Strategic and International Studies” ((CSIS) is a (<https://reconnectingasia.csis.org/database/projects>)). a non-profit policy research organisation which also developed a database of investment projects in Asia. The most influential are probably Hanban, a Confucius Institute Headquarters ([http://english.hanban.org/node\\_7719.htm](http://english.hanban.org/node_7719.htm)), a public institution affiliated with the Chinese Ministry of Education, committed to provide Chinese language and cultural teaching resources and services worldwide, contributing to the development of multiculturalism and the building of a harmonious world.

To demonstrate, it is evident that the influence of Confucius Institute in East Europe has been gaining on activities supporting BRI soft power in 16+1 Initiative countries. Currently, the Confucius Institute Headquarters (Hanban) has established 30 Confucius Institutes and 36 Confucius Classrooms in Central and Eastern Europe with approximately 40,000 registered students. This joint conference has reinforced the contacts among the Confucius Institutes in Central and Eastern Europe and influence of the Confucius Institutes in this region.

There is evident influence and interaction of Confucius Institutes acting as Chinese “soft power” in CEE Region, bridging and supporting Chinese companies and managers to integrate the business relationship throughout diverse working groups, forums and business networking. Several forums and round tables were organised recently to support the BRI initiative. For example, Diplomatic Relations between China and Hungary Greet 70th Anniversary at the Confucius Institute (Confucius Institute at University of Szeged, Hungary 2019-03-12; [http://english.hanban.org/article/2019-03/12/content\\_765860.htm](http://english.hanban.org/article/2019-03/12/content_765860.htm)) was celebration with the political and business elite, bringing together influential people from Ministry of Foreign Affairs and Trade of Hungary, Managing directors from local entities and Hungarian National Bank, as well as Chinese diplomatic elite and business representatives. The celebration was promoted with the key messages emphasising “the importance for maintaining friendly relations between Hungary and China in economy, education and other sectors, as well as mutual assistance between China and Hungary and the exchanges in fields such as politics, economy, education, culture, tourism and art. Hungary, as a bridge linking the East and the West, would play an increasingly important role in the Belt and Road Initiative. The cooperation development trend between Hungary and China is sound, which could be seen from many aspects, for example, the rise of China’s ranking in the list of Hungary’s trade partners, constant investment growth of Chinese enterprises in Hungary, rapid rise of the number of Chinese people living in Hungary, significantly enhanced higher educational connection, and Hungarian National Bank’s efforts to promote RMB’s internationalization.” The evidence of a strong collaboration between the two countries and investment activities for BRI scope is evident with Serbia-Hungary Rail project initiated as

Belgrade-Budapest high-speed railway link financed by the Export-Import Bank of China with €1,711 million investment (The Budapest-Belgrade high-speed railway serves to demonstrate some of the issues arising from Chinese investment within the EU and/or crossing the EU's borders. The European Commission investigated the project to determine whether it complied with EU legislation on tendering (Financial Times, 2017).

Further example of importance of Confucius Institute in promoting BRI initiative is a Joint Conference of Confucius Institutes in Central and Eastern Europe held at Confucius Institute in Sofia in November 2018 (Confucius Institute in Sofia, Bulgaria, 2018-11-05; [http://english.hanban.org/article/2018-11/05/content\\_754377.htm](http://english.hanban.org/article/2018-11/05/content_754377.htm)). The conference was sponsored by Confucius Institute Headquarters (Hanban) and organized by the Confucius Institute in Sofia, Bulgaria. 55 Chinese and foreign representatives from 30 Confucius Institutes and 4 Confucius Classrooms in 16 countries across central and eastern Europe attended the occasion. "Confucius Institutes serve the Belt and Road Initiative" working forum was initiated. "Through support of and collaboration between the Confucius Institute Headquarters (Hanban) and various Chinese and foreign institutions, Confucius Institutes will better play its role as a cultural bridge and push forward in-depth cooperation and exchanges in various fields between China and Central and Eastern Europe". The conference brought together experts from different fields of disciplines to elaborate on cultural and soft power bridges between China and CEE countries. Chinese investment in Bulgaria is targeted on the Chernomorie motorway that will link the Black Sea cities of Varna and Burgas, building a tunnel under the Balkan peak Shipka, as well as in the construction of the Ruse-Svilengrad motorway (north-south corridor), (Levitin, Milatovic and Sanfey, 2016).

Similar initiatives are organised among many CEE countries. In Croatia, Chinese Ambassador to Croatia Hu Zhaoming joined "Happy Spring Festival". The key note was promotion of year 2019 as a milestone year for China and Croatia relationship. "Croatia is going to host the 16+1 summit in April 2019, and this is also the year of cultural and tourism cooperation between two countries ([http://www.china-ceec.org/eng/sbhz\\_1/t1638941.htm](http://www.china-ceec.org/eng/sbhz_1/t1638941.htm))".

Another source of "soft power" acting as economic ambassador and influential body within the CEE region is the organisation established for promoting economic and financial cooperation between China and the countries of South-Eastern Europe, the Chinese Southeast European Business Association (CSEBA). CSEBA was established with a mission to provide the basis for economic and financial cooperation between China and the countries of South-Eastern Europe, including: Croatia, Bosnia and Herzegovina, Serbia, Slovenia, Montenegro, FYR Macedonia, Kosovo, Romania, Bulgaria, Albania, Greece, Turkey, Ukraine, Moldova, Belarus, as well as the countries of: Georgia, Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Turkmenistan and Russia. Located in Zagreb, capital city of Croatia, where all the relevant information from all the countries mentioned above is collected, assessed, selected and evaluated by professional managers. "CSEBA is cooperating with independent consultants, professionals in various sectors, government officials and law firms in all Southeast European countries - which forms a consulting mechanism working on the principle of the client's requirement that is able to provide operative support (information, legal support, logistics, business strategy) at the local level in each country (<http://www.cseba.eu/about-us/>)."

### ***Conclusion- EU Perspective on Chinese Investment in CEE***

In order to mitigate risk connecting with the BRI led Chinese investment in Europe and CEE countries, European Commission is struggling to assure enforcement of public procurement transparency and legislative compliance with EU law. As indicated by Johannes Hahn, the EU

commissioner, there is a valid concern of EU for Chinese soft financing strategy, as some countries exceeded borrowing threshold in order to pay for infrastructure and facing the risk of long-term liquidity. In general, China uses its foreign reserves for soft loans, conflicting security and political goals of hosting countries and related regions.

The institutions of the EU promote the context of broader EU policy towards China set out in the “Elements for a new EU Strategy on China” (EC, 2016) and the “Council Conclusions on EU Strategy on China” (Council of the European Union, 2016). According to these two documents, relations between the EU and China must be governed by principles of reciprocity and fair competition. An objective of the strategy is to improve infrastructure, trading, digital and people-to-people connectivity to deliver benefits for all EU Member States as well as for China. Further to this, a Comprehensive Agreement on Investment (EC, 2017) has been negotiated with China, for promoting international standards that can prevent imports to the EU of Chinese products that do not conform to EU requirements.

In order to protect critical technology and infrastructure, EU introduced the FDI EU Screening Regulation. European Parliament approved European wide framework for the screening of foreign direct investments into the EU (the Regulation) (<https://www.loyensloeff.com/en-us/news-events/news/european-parliament-approves-framework-for-screening-of-foreign-direct-investments-into-the-eu>). The Regulation imposes minimum requirements that EU Member States' screening mechanisms must apply (i.e., transparency, non-discrimination and the possibility for foreign investors to avail of judicial redress).

The milestone for cooperation between EU and China has been agreement to set up a “Connectivity Platform”, a forum for coordinating EU and Chinese infrastructure investment relating to TEN-T and the BRI. This forum should ensure that investment takes place within a framework of fair and undistorted competition based on regulatory convergence, while promoting cooperation in areas such as technology, engineering, construction and the development of standards (Steer Davies Gleave, 2018). An Expert Group on Investment and Financing has been established to review a list of potential TEN-T-related projects proposed by participating countries with a view to exploring sources of finance, together with Chinese initiative.

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# SHIFT TO THE EAST? HUNGARY'S FOREIGN POLICY IN CENTRAL ASIA UNDER VIKTOR ORBÁN

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## Abstract

*"In the west they consider us as the most western country of the east, but we too see ourselves that way."*

*(Hungarian Prime Minister Viktor Orbán 2018 in Kyrgyzstan)*

*In recent years, Hungarian foreign policy seems to have looked more and more to the east than to the west. The cited statement by Viktor Orbán is part of a larger strategy that includes bilateral talks of Hungarian government officials with central Asian politicians about joint economic projects and the participation of the Hungarian government in multilateral central Asian initiatives. As an example of the latter, one can name the attendance of high-ranking Hungarian politicians at the annual meeting of The Cooperation Council of the Turkic Speaking States in September 2018. The Hungarian government seems very keen on establishing economic connections between its country and central Asia, with Kazakhstan in particular.*

*This re-orientation towards Asia might be regarded as quite surprising, if one remembers that Hungary was the first country of the Eastern Bloc that opened its borders to the west, when Hungarian border guards cut the iron fence, which had cut off the country from the west for more than four decades, in September 1989. Moreover, Hungary was also among the first post communist states to join NATO in 1999 and the EU in 2004.*

*This paper describes Hungary's shift to the east in recent years with a constructivist approach that focuses on the views of political leaders and of the public in Hungary on historical tradition and national identity that would shape political strategies. (Keohane/Goldstein 1993). In this context, Viktor Orbán's political vision of an "illiberal democracy" will be connected to his foreign policy as well, since it shows a remarkable affection for despotic rule in Asian countries. Furthermore, the paper will also take into account the economic impact of the government's newly found political direction. Is it a serious attempt to rebuild Hungary's economy and politics in a changing world order that will soon be shaped/dominated from the East? As Prime Minister Orbán once said, Hungary is sailing under a western flag, but the wind comes from the east. Is Hungary discovering a formidable alternative for the economically struggling western countries? Or is it just bald marketing that tries to distract the public from the government's troubles with the EU?*

*To judge the economic effects of Hungary's shift to the East, the economic relations to Kazakhstan will be compared with those to Poland and the Czech Republic. The comparison will focus on the extent of trade between Hungary and Kazakhstan on the one hand, and of the Czech Republic and Poland to Kazakhstan on the other hand, in order to assess, whether Hungary's shift to the east renders considerable economic benefit to Hungary, or whether it is a losing bargain for the country. In this context, the paper will also take a closer and critical look at the make up of the traded goods between the European and the Asian partner.*

*Based on the findings, the final chapter of the paper will formulate a preliminary answer to the question if Hungary's shift to the east is a real deal, or just a mean of public relations of the government.*

### **Keywords**

Central Asia, Hungary, foreign policy

**JEL classification:** F21, F13

## **Introduction**

Hungary was one of the foremost western oriented countries of central Europe since its border guards had cut the Iron Curtain as the first one in the Eastern Bloc in September 1989. There had been a broad consensus throughout the public as well as the political elite about the western orientation of the country. Thus, not surprisingly, Hungary joined NATO in 1999 and the EU in 2004.

But the tone has changed recently with Viktor Orbán's ascendance to power. The Hungarian Prime Minister confronts the core values of the European Union and its policies on several topics. He fiercely opposes migration and questions common decisions considering the settlement of migrants. He attacks western European countries and their governments in Hungarian media and is under attack from institutions of the European Union for damaging the rule of law and separation of power at home. Orbán also puts his ideology of the illiberal state forth and relies for his conceptions on Asian states as a model. Whereas media and political science had very often dealt with changes in Hungarian policy, the foreign policy regarding Asia remained almost undescribed. Does Hungary undergo a shift from the West to the East? This paper tries to give an answer to this question.

Taking a closer look at Hungary's foreign policy, it is striking how the government tries to build stronger relations to Central Asian countries. Especially Kazakhstan is in the focus of bilateral agreements but the participation in the strengthening of multilateral Asian cooperation is one of the country's goals as well.

This paper considers the field of Hungarian foreign policy and will investigate the country's foreign policy in Central Asia. This particular issue has rarely been studied. The paper follows a constructivist approach. This is rather a heuristic method than a sophisticated theory (Ulbert, 2005). It considers the views of political leaders and the public on issues like identity and historical tradition as something that shapes foreign policy and policy in general (Keohane/Goldstein, 1993).

Thus, it considers foreign policy in the field of culture and economics alike, since the two are interweaved in Hungary's foreign policy anyway. Does the government use the historical roots of the Hungarian people in Asia successfully to generate economic benefit?

To judge the effect of the Hungarian government's politics, the country's economic ties to Central Asian countries will be compared with those of two other Visegrád countries, Poland and the Czech Republic.

## **Hungary becomes part of the West (1990-2010)**

In the years that came after the transition from communism to democracy and capitalism, one can take a look at Hungarian foreign policy in the context of the Visegrád countries. The desire for integration in the institutions of NATO and the EC, later the EU, was the most



important guideline of these countries. By articulating their aim of inclusion, the Visegrád countries were the ones that initiated the joining of the former communist states of Europe to the European Union. They exerted pressure on the EU because the Union had not expressed an invitation to that point. But after articulating the purpose to join, the western countries had to react and formulated criteria for potential new members, that had to be met (Poole, 2003: 67). The Visegrád Group had been established two years earlier to eliminate the legacy of the communist regimes and to coordinate the approximation of the three (later four) countries to the European Community. In 1997 Poland, the Czech Republic, Estonia and Cyprus were officially invited to become members of the EU. The desire for foreign investment may have played an essential role in this process (Poole, 2003: 70).

There was a certain pressure to adapt, that laid on the countries that wished to join, because joining the Union had become the most important purpose of their foreign policy (Grabbe 2006: 96). And the EU didn't even tap the full potential of influencing the future member states. They didn't do it, due to an unclear structure and a deficient ability to articulate their aims. Nevertheless, the EU found opportunities to exercise its influence through money, counselling, gate-keeping and benchmarking. The road map of the integration asked for the overtaking of all of the *acquis communautaire* by the new members. In addition, the European Commission insisted on the consolidation of particular institutions like independent central banks and anti-corruption authorities (Grabbe, 2006: 77).

The benchmarking was regulated by the Commission through its progress reports. These reports could however sometimes lack clarity (Grabbe, 2006: 83). The Gate Keeping was controlled by the EU through a hierarchic sequence of integration steps that documented the intermediate results from privileged trade partnerships through an association contract, the beginning of concrete negotiations to the signing of a treaty and its ratification in the parliaments of the member states.

These concrete documentations of the progress also played vital roles in the politics of the countries. Prime Minister Vladimir Meciar for example lost the elections in Slovakia 1998 after he had come under sharp criticism by the EU (Grabbe, 2006: 88). When troubles occurred between the EU and the nation states, the public usually supported the EU and not its own government. Thus, the Czech, the Slovak and the Hungarian government were all three very keen on avoiding any obstruction towards the EU. Solely the Polish government negotiated harder, in awareness of the very size of the country, which has twice the population of the Czech Republic and Hungary together (Grabbe, 2006: 193). Anyway, most of the requirements of the European Commission complied with the then neoliberal *Zeitgeist*, whereby criticism remained rare. The EU earned however a Pyrrhic victory in the negotiations because the future members copied regulations that would become a burden for them and led to a cooling of the relations with the EU (Grabbe, 2006: 204).

In Hungary the approval for the integration process was neither questioned by the political parties, nor in the media, nor by the voters. The first freely elected government under the conservative Prime Minister József Antall defined the integration in the western institutions and a complete turning away from the Soviet Union as major goals of his government.

As other three main goals, Antall defined the perpetuation of peace in Europe through the preservation and strengthening of NATO, the connection of Hungary with the European Community and other European institutions and the creation of good relations with the nations in Hungary's neighborhood. For the latter, the problems of the Hungarian minorities in the neighboring states had to be sorted out (Józsa, 1994: 22). After the voting out of the conservative government the new postcommunist socialist-liberal coalition under Gyula Horn cleaved to the purpose of integration with the west (Keresztes, 1995).

Altogether four administrations propelled Hungary's way forward to the western institutions (Szekfü 2004: 159). All four parliamentary parties voted for integration. Even the non-parliamentary (communist) Workers' Party (*Munkáspárt*) supported the process under certain

conditions. Only the extremist rightwing party *MIÉP* with its president, the author István Csurka, opposed the process (Szekfü, 2004: 160). Viktor Orbán who was then in his first term as Prime Minister had publicly stated a comment that there is life outside the Union. Nevertheless, he advocated integration in the EU (Szekfü, 2004: 161).

Anything else but joining the EU would have been surprising, if one considers Hungary's interdependence with western Europe: In the 1990s 80% of the Hungarian exports went to the EU and 75% of the imports came from there (Kiss, 2006).

The referendum about joining the EU brought a decisive victory for those supporting it with 84% of the vote (Szekfü, 2004: 159). The media almost entirely accompanied the integration with benevolence: three of the four national newspapers clearly supported an EU membership, only the rightwing *Magyar Nemzet* (Hungarian Nation) published both supportive and critical articles about a possible membership. The yellow press and local newspapers supported membership and so did political magazines, except the radical right magazine *Demokrata* (Democrat) (Szekfü, 2004: 161). The only drop of bitterness for EU enthusiasts was the low turnout of the plebiscite – 45%. Szekfü saw the reason for this for example in the lack of emotion during the campaign. Despite the great amounts of printed information about the EU, only few events touched the voters. One notable exception according to Szekfü was a pedestrian bridge built over the Danube. Although there were already 15 bridges across the Danube, the new one, that should symbolize the link to Europe, attracted thousands of people from the countryside to participate in that symbolic act of connecting Hungary with Europe. More events like that brought more voters to the ballot boxes, argues Szekfü (Szekfü, 2004: 163).

Leaving the Warsaw Pact and joining NATO was overwhelmingly welcomed throughout the political spectrum. More than one event in Europe demonstrated the importance of belonging to a military alliance. The first one was the dissolving of the Soviet Union and the establishment of a newly independent and politically instable Russia, which seemed to generate a peril in Europe. In addition, the beginning war in Yugoslavia clearly showed, that war has not been banned forever from European soil. Furthermore, armament is an issue, that illustrates that a country can hardly protect itself on its own. It would be too expensive to arm a military to a level where it could master its defense alone. In addition, armament of one country would generate armament in the neighborhood as well. So, there are lots of reasons altogether, why a country can have the will to participate in a military alliance. Thus, there was no hesitation in the Hungarian political elite to look for a way to join NATO. Even the former communist foreign minister Gyula Horn already spoke of the possibility of a NATO membership in 1991 (Keresztes, 1998).

## **The Hungary of Viktor Orbán from 2010 on – the illiberal democracy with Asian ideals**

Viktor Orbán is not the first Hungarian politician to use the terms East and West to articulate different paths of development in Hungary, but he may be the first politician in modern times to appreciate the East more than the West. In contrast, the great Hungarian statesman of the Reform Era, István Széchenyi, for example equated the East with Asia and characterized it as an underdeveloped part of the world. The Hungarian nation that had come from Asia to Europe hundreds of years before should break away from the East and turn to the West, that could serve as an example for the development that the country should undergo (Rác, 2014: 200). The historian Katalin Rác considers Széchenyi as the originator of a self-orientalizing discourse in the Hungarian public (Rác, 2014: 207). Recently the discourse about East and West is still relevant but the tone has changed.

Since taking office in 2010, the rhetoric of the prime minister has become significantly different than it used to be. He caused international stir by using the term “illiberal democracy” in a speech at an ethnic Hungarian summer university in Romania. In this speech he painted the future as one, that would see authoritarian Asian nations, as for example Turkey and Russia, as predominant in the world rather than western democracies. His argument was, that the financial crisis of 2008 represented a paradigm shift to international politics, that one should compare to the downfall of communism or the two world wars. Already two years earlier his speech at the same event in Romania sounded alike, it just got less attention (Szöcs, 2014). And already in 2010 Orbán mentioned an eastern wind, that blew in world economy. In order to persist under such circumstances, one should consider taking extraordinary measures (Magyari, 2010). If one sees the future of the world economy lying in Asia and above all admires Asian despots, as Orbán clearly does, it makes sense to seek possibilities of cooperation with Asian states from Turkey over Central Asia to China.

Actually, there is a noteworthy rapprochement of the Hungarian government to China. That is a modification compared not only to the socialist administration but also to Fidesz’ first one between 1998 and 2002. Dariusz Kalan describes the change of Fidesz’ policy towards China and concludes that one can differentiate between two completely different stages. The first one, between 1998 and 2002, was characterized by a confrontative approach towards China. At that time, Hungarian Prime Minister Orbán received a visit from the Dalai Lama and the Hungarian Consulate in Shanghai was closed. That was not surprising then, if one remembers Orbán’s political biography, which is closely connected with resistance against communism. He had organized a protest against the massacre on Tiananmen square in 1989 and became an important player in Hungarian politics with a speech at the burial of the rebelling communist prime minister Imre Nagy of the revolution of 1956, in which he heavily denounced communism. When he took office for the second time in 2010, he obviously had made up his mind and began to change Hungarian politics towards a close relationship with China. Hungary became, in the words of Dariusz Kalan, the first country of the region with a deliberate China strategy. In Kalan’s opinion the reason for this is the growing distance to the political model of the west on the one hand and the desire to find new sources of foreign money on the other. Yet the government is hardly successful with the latter, because Hungary’s trade doesn’t flourish more than that of other nations of the region, even though the others don’t have this kind of China strategy. One can verify this with the basic economic figures, like the volume of the trade between China and the central European nations. On the other hand, foreign investment seems to be the one notable exception. Hungary, with its smaller population and therefore smaller consumer market, sees more Chinese investments than Poland, which is four times bigger Poland (Kalan, 2012: 67).

Tamás Matura is doubting the economic benefits of Hungary’s shift to the East as well. Although Hungary signed a strategic partnership agreement with China in 2017, only a small amount of capital found its way to Hungary. Matura additionally points to an important point – nobody has reliable figures of the Hungarian-Chinese trade, because the official ones of the government and the Hungarian Central Bank differ significantly (Matura, 2018).

Taking a look at the exports to China, Hungary is ahead of Poland and the Czech Republic. In 2016 Hungary exported goods worth 2,68 bn \$ to China, whilst the Czech Republic and Poland only reached 2,1 bn \$. The main export goods were vehicles and engines (atlas media 2018). Looking at the imports, Hungarians brought goods worth 5,3 bn \$ into their country, while the Czech and the Polish have far more with 17,3 bn \$, respectively 22,8 bn \$. Thus, the Hungarian trade deficit is notably smaller than that of the two neighboring countries.

## Central Asia – an economic perspective

Among Central Asian countries Kazakhstan is in the focus of politicians and investors. Thus, it is also in the focus of this paper. The nation of 18 million citizens isn't the most populated of the region, but its commodities, foremost oil and gas, render it interesting. The economic growth is remarkable as well. Although it has lost drive since 2008, the GDP growth p.a. was still at 4,4% in average between 2010 and 2017. In the years between 2000 and 2010 the growth was over 9% except for one year. But Kazakhstan isn't the only country to have extraordinary growth rates in Central Asia. Uzbekistan, the most populated nation with its 32 million citizens, had a growing economy as well, with an average growth of 7,75% p.a. Turkmenistan's growth between 2010 and 2017 was at 9,3%, that of Kyrgyzstan at 4%.

Although Kazakhstan was overtaken by Uzbekistan and Turkmenistan on the field of GDP-growth, it is still preferred by the Visegrád countries among the Central Asian countries, when it comes to political and economic cooperation. The reason for that has to be seen in its richness of commodities, mostly of oil and gas, as mentioned above. Besides that, the Kazakh government likes to present itself as the political booster of the region (Steiner, 2010). Looking at the political regimes of the region, only Kyrgyzstan is different. After two recent revolutions it is considered by Freedom House as at least "partly free", whereas the other nations are considered to be "not free". A major characteristic of these nations are the very long periods, authoritarian rulers stay in office. Kazakhstan's Nursultan Nazarbayev for example has been in office for almost 30 years now. He even had been the president of the Soviet Republic of Kazakhstan under communist rule before.

In the perspective of Central Asia, the EU is the most important economic partner. In 2014, for example, about half of the Kazakh foreign trade went to the EU (Assenov, 2014). When Kazakh political leaders visit the EU, their foremost purpose is to ensure the access of their companies to the EU market.

## Economic deals and historical narratives – Hungary's foreign policy in Central Asia

In 2014 Hungary and Kazakhstan signed a strategic partnership in Budapest. The English language daily *The Astana Times* from the Kazakh capital reported the visit of members of the Kazakh government like prime minister Karim Massimov in Budapest. The newspaper emphasized that the relations between Kazakhstan and Hungary rely on deep historical and cultural connections and on common commitments. Among the latter they recalled the common endeavor to strengthen Eurasian and global security and stability, democracy and progress, human rights and liberties (Orazgaliyeva, 2014). If one considers the authoritarian rule in Kazakhstan under the first and only president Nazarbayev ever since the country gained its independence in 1990, the commitment for democracy and human rights can only be seen as lip service.

In Budapest Prime Minister Massimov spoke about his wish to lift the cooperation of the two countries to a new level. The new partnership would create the legal frame for that purpose. The Hungarian side, represented, among others by prime minister Viktor Orbán and the president of the Hungarian Parliament László Kövér, emphasized, that Kazakhstan would be Hungary's most important partner among the Community of Independent States and that Hungary would support Kazakhstan's goal of joining the WTO.

The joint declaration lists the following common policies for cooperation: trade in general, cultural and humanitarian cooperation, oil, gas, agriculture, the development of economic facilities beside oil und direct foreign investment. There would be a cooperation on the field

of energy and this cooperation should include renewable energy and nuclear energy in the future. The declaration demands the two nations to look for cooperation in scientific research. The visit of the Kazakh delegation was finished with symbolic gestures. Budapest named a street after Kazakhstan's capital Astana and got a statue of the Kazakh poet and musical composer Abai Kunanbayev which was a gift of the region of East Kazakhstan. This kind of conjunction of culture and history with economy and politics is a typical feature of the Hungarian-Kazakh relations.

One other example is the Hungarian pavilion at the World Exhibition in Astana. The Kazakh undersecretary of economic affairs came by for a visit and a speech. She emphasized Hungary's importance as a partner in Central Europe and the EU. She mentioned the growing trade between the two countries, and she emphasized the common historical roots of Hungary and Kazakhstan, just like the Hungarian government likes to do. The Hungarian pavilion presented these roots. A folklore orchestra from the Hungarian region of *kunság* was presented as bridge between the two countries. The *kunság* was populated in the Middle Ages by a Turkic people, just like the Kazakh are, the Cumans. The Hungarian minister for economic affairs, Mihály Varga, who also attended the event, linked history to economics as well in his speech. In his view, the common past of the two nations could boost the economic cooperation between them (Omirgazy, 2017).

The Hungarian government took the Kazakh Expo very seriously. The country's pavilion was elected as second best by the Kazakh jury on the field of theme development. The main topics were the possibilities of gaining energy from solar power and from plants. The latter endeavor was symbolized by a so-called tree of life. This symbol is well-known in Hungarian and Kazakh culture alike and serves as another example for the Hungarian government's efforts to interweave history with politics.

The Hungarian media on the other hand emphasized the high costs of the Hungarian participation in the Expo rather than the historical and mythical issues. The news magazine *Magyar Narancs* criticized the disproportion of the expansive pavilion on the one hand and the only little amount of trade between the two countries on the other hand. The journalist Márton Gera compared Hungary's trade with Kazakhstan with that of the Czech Republic, Poland and Romania and stated that these countries' trade outnumbers that of Hungary with the Central Asian country. Thus, he doubts the necessity of the expansive Hungarian presence in Astana. Even though the Hungarian pavilion had already 150.000 visitors in the first month, the American had even 400.000 and the Russian 300.000 (Gera, 2017).

Nevertheless, the Hungarian government took the participation in the Expo very seriously. Beside the money that was put into the presence in Astana, the Hungarian ministry of economic affairs had a representative who managed Hungary's organizational aspects. And Prime Minister Orbán emphasized the great value of Kazakhstan as a country with great future perspectives and Astana as a city of the future in a letter addressing the visitors. He even wrote about a genetic relationship between Hungarians and Kazakhs that supposedly had been discovered. Emphasizing the Hungarian roots in Central Asia is a typical characteristic of Orbán's government. A peak of this development was reached at the meeting of the Cooperation Council of Turkic-Speaking States in Kyrgyzstan. There Hungary participated for the first time. At this meeting, Orbán mentioned the alleged connection between Hungarians and the people of Central Asia. Orbán stated (contrary to scientific evidence) that the Hungarian language was similar to the Turkic languages and that Hungarians were descendants of the Huns and therefore kinsmen to the Turkic peoples. He stated, that Hungarians used to be upset when they were called the most eastern nation of the West. But nowadays this would be received as a compliment regarding the political and economic success of the countries in the East. The age when capital and knowledge had flown from the west to the east in order to find cheap labor, is over. The new age would be shaped by the rise of Asia. The Hungarian government introduced 500 scholarships for students from Central

Asia. Besides he mentioned that his country would like to establish a cooperation with Uzbekistan and Kyrgyzstan following the example with Turkey, Azerbaijan and Kazakhstan. The Hungarian Eximbank has created a credit facility of 1,5 bn \$ for the trade between Hungary and the Turkic countries (atv.hu 2018).

But how important is the trade between Kazakhstan and Hungary? In fact, Kazakhstan only imported goods worth 66 million \$ to Hungary. The export consisted almost entirely of commodities – three quarters of crude oil and for one fifth of liquid gas. Hungary's export to the Central Asian country was more versatile and was almost double the size with 108 million \$. Hungary's goods consisted of pharmaceuticals, machines, like gas turbines, office machines, computers and a variety of industrial and agricultural goods. Kazakhstan is only on the 13<sup>th</sup> place among Hungary's Asian trade partners. Hungary's most important Asian partner, China, took the 26 times bigger amount of Hungarian exports. The exports to Turkey were 14 times higher than those to Kazakhstan, to Japan 11 times higher. Even bigger appears the difference to the economies of the EU. The Hungarian export to Germany was 260 times higher (26,5 bn €) than to Kazakhstan and 50 times higher to the neighboring Romania (atlas.media 2018).

Considering the still small trade between Kazakhstan and Hungary, the Astana Times didn't put the Hungarian delegation in the focus of its report of the meeting of the Turkic Council. Instead, the newspaper focused on Kazakhstan's and Nursultan Nazarbayev's personal contribution to the meeting. Besides, the Kazakh media outlet saw the opportunity to pool resources in Central Asia as crucial. The most important outcome they saw was the acceptance of a future common Asian textbook for history classes in schools and the decision to cooperate on the fields of energy, transportation, culture and humanitarian issues. Furthermore, the newspapers stressed Central Asia's central role as a corridor for the trade between East Asia and Europe. They explicitly mentioned the crucial role of the Chinese Belt and Road Initiative. The only country the report focused on, was the new member of the council – Uzbekistan. The fact that Hungarian Prime Minister Orbán had participated and that Hungary gained observer status, were mentioned only briefly (Prokhorov, 2018).

Although the Central Asian public hardly took notice of him, Orbán tried to make the most of his stay there. He visited the World Nomad Games that took place in Kyrgyzstan at that time. Athletes from Central Asia compete in traditional nomadic sports like horse riding, wrestling and archery at this event (Mayer, 2018). This year, a Hungarian delegation participated (magyaridok.hu). Some of the Hungarian participants were radical rightwing activists, like András Zsolt Bíró, who is the organizer of an event in Hungary that is called *kurultaj* and is supposed to bring together Hungarians with people from Asian nations – the supposed Hungarian kinship. Bíró propagates an ideology that is called turanism, that is very popular among the Hungarian (and Turkish) extreme right and that states that Hungarians are relatives of the Turkic peoples (kurultaj.hu).

To come to a conclusion, one can say that Hungary's government is doing a lot to create economic partnerships in Central Asia. The strategy is always to connect economic perspectives with historical arguments. History should pave the way for future economic strategies. To this day however, this strategy is not paying off. The trade with Central Asia is still small.

## **No need for history – Polish and Czech foreign policy in Central Asia**

Hungary isn't the only country to get involved in Central Asia. The Czech Republic and Kazakhstan are connected to each other through 16 bilateral agreements. The President of the lower house of the Czech Parliament, Jan Hamáček, visited the Kazakh capital Astana for example in 2017. He visited Kazakhstan to talk about the country's non-permanent seat in the

Security Council of the UN and to discuss economic issues. At the meeting with the Czech politician the Kazakh minister of energy Bakytzhan Dzhaksaliyev mentioned cars, electric equipment, furniture, glass and pharmaceuticals as important goods from the Czech Republic (Seisembayeva, 2017).

Besides the import, there is also Czech industry on Kazakh soil. Skoda for example produces cars of the model Octavia in Kazakhstan. In total there are 185 Czech-Kazakh Joint Ventures. However, the minister complained at the meeting that the trade between the two countries had shrunk, because of low energy prices and the sanctions of the European Union against Russia (Prokhorov, 2018). Shortly after this visit, Czech President Milos Zeman visited the Expo in Astana to open the Czech pavilion (Willoughby, 2017). The trade of the two countries is small but comparable to the Kazakh-Hungarian trade. The Czech Republic imported goods worth 197 million \$ in 2016 and exported goods worth 205 million \$ (0,13% of the Czech export) (atlas.media.mit.edu).

The Polish trade to Kazakhstan is bigger than the Hungarian and the Czech. In 2016 Poland imported goods for 645 million \$ from Kazakhstan, that equals 0,33% of the Polish imports. In the opposite direction goods for 299 million \$ were traded. The Kazakh goods of the trade are foremost commodities: gas (59%), oil (28%) and hydrogen (5%). Poland on the other hand exports complex industrial goods like blast furnaces, construction machines and engine parts. The Polish trade is substantially bigger than the Czech and Hungarian, even if one takes into account that Poland has a bigger population. The Polish government takes an active role in the evolving trade between the two countries. It holds meetings on the highest level with its Kazakh counterpart just like the Hungarian does. On August the 22<sup>nd</sup> 2016, Kazakh president Nazarbayev visited Warsaw together with 100 Kazakh businessmen. According to the Astana Times the agenda of the meeting consisted solely of economic issues, with a special focus on transportation, logistics, oil, gas and agriculture. Deals for 1 bn \$ were signed and a non-stop flight between the two countries was established. Nazarbayev spoke about the 40 thousand ethnic Poles still living in his country, who had been deported there under Stalin's rule. They could be a bridge between the two countries, he hoped (Orazgaliyeva, 2016).

The Kazakh ambassador to Poland gave an insight to the view of the Kazakh government in an interview with the Astana Times. He considered both countries as economic leaders within their regions. Poland, in his view is one of the most important partners of his country in central and eastern Europe. His country can play a key role for Poland too. 70% of the Polish exports to Central Asia went to Kazakhstan. From 2017, January 1<sup>st</sup>, Polish citizens can travel to Kazakhstan without Visa (The Astana Times 2017, September 1<sup>st</sup>). In addition, both countries, in his view, could play a crucial role in China's one road one belt initiative (Omarov, 2016).

If one looks at Poland, the Czech Republic and Hungary in comparison, it is quite obvious that the Czech Republic and Hungary have about the same size of trade with Kazakhstan. Poland is different. Its trade with the Central Asian country is much bigger, even if one takes the size of the country into account. Although the difference is not huge. That is remarkable because Hungarian political leaders like to suggest that they would have a special relationship with Kazakhstan and Central Asia. Apparently, that doesn't seem to pay off in economic terms.

## Conclusion

Since 2010 Hungary has launched more and more initiatives in Central Asia. Hungary has a strategic partnership with Kazakhstan. Part of this strategic partnership are economic arrangements and cooperation in academia and culture. Hungary's Central Asia-politics is

focused on Kazakhstan but considers Asia as a whole as a major field of world economics. Political and economic agreements are always connected with cultural, historic symbols. One example for this is the meeting of the Turkic Council, that was attended by Orbán. In the meantime Hungarian athletes from the nationalist turanist scene participated at the World Nomad Games and presented Hungary as a country of the East. Orbán created the ideological frame for all this because he tries to present Hungary as a nation of the East that has its relatives in Asia. He is constantly referring to myths and a historical narrative that is very popular in Hungary as a whole and especially among right wing Hungarians.

But the great effort doesn't show much success. That is evident in comparison with Poland and the Czech Republic. Hungary isn't more successful in Central Asia than the Czech Republic and it is less successful than Poland. That is surprising if one follows the Hungarian narrative, which suggests that historical traditions forge economic success. Obviously, the economy does not stick to the Hungarian narrative. Maybe a part of the effort the Hungarian government puts in Central Asia isn't founded in economic reasoning but in Hungarian domestic politics. The Hungarian public shall see an alternative to the EU, which has been presented by Orbán for years as a degenerated foreign rule.

Finally, the shift to Asia can be seen as an expression of the world view of the Hungarian government. Prime Minister Orbán has expressed at several occasions, that global economic future after the financial crisis will be Asian. If that is true, it is reasonable to look for connections to Central Asia. History is a door opener that a small country like Hungary is trying to use.

Finally, one has to think about the term shift. Is there even one? Hungary's economy is still mostly relying on Europe and the West. That has not changed at all. So instead of sailing in the eastern wind, the Hungarian economy puts its sails to the West, despite its government gazing at the riches in the East.

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# DEMAND ELASTICITY IMPACT ON AIRLINE'S PROFITABILITY ON ZAGREB-DUBROVNIK AIRLINE ROUTE

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## Abstract

*Croatia Airlines, a national air carrier in Croatia, faces profitability issues for years. It partly relies on Government subsidies for a minimum daily number of flights between the capital and the other Croatian cities. Since Zagreb and Dubrovnik are the most distant and without fast road route (there is no highway in the Dubrovnik-Neretva county), the number of passengers is significant, as well as the turnover. This paper analyses how revenue management on the Zagreb-Dubrovnik-Zagreb air route could improve Croatia Airlines' profitability. The revenue management analysis is based on the determination of demand function dynamics on the mentioned route. Data required for obtaining this research was taken from Croatia Airlines database, but modified using the authors' formula in order to preserve corporate secret. Profit management analysis on the above mentioned route is based on the analysis of a revenue function. It is because, due to the agreement Croatia Airlines has with Croatian Government, a fixed number of daily flights to Dubrovnik and back fixes the cost component of a profit function. Therefore only revenue function has a dynamics to be analysed, which in turn depends on demand function. Demand function is estimated as a function where the number of daily passengers (quantity, dependant variable) is affected by a corresponding daily average ticket price, and a moving average of a temperature (10 days average) as a deseasoning tool in the time period 2013-2018. Again, knowing that the daily costs are fixed, a maximum daily revenue can be directly related to a unit demand elasticity. The findings show that, applying the pricing policy here suggested, a 7.5% profit increase can be by a good price management. Furthermore, it was shown that the company sets prices mostly in the inelastic zone of demand, showing that the profit rise could be acquired by a smart, non-linear price increase, depending on the season. Finally, an obvious, but very interesting finding was obtained, confirming that the rise of temperature and the fall in prices cause more passengers to travel on this route.*

**Keywords:** Pricing policy, demand elasticity, temperature, revenue management, seasons

**JEL classification:** D22, C32, R41

## Introduction

In this paper the air transport demand dynamics and its elasticity was analysed on the example of Croatia Airlines' line Zagreb-Dubrovnik-Zagreb. Croatia Airlines, a government owned company, struggles in the competing environment, but it does not have only a profit role, but

also a public service role, helping Croatia to stay both well connected to the world and maintain in-land connection between major Croatian cities. The latter two goals are extremely important for a country as small and as strangely shaped as Croatia. Although the profitability goal is not the only one, still a company should strive to be economically self-supporting and rely less on the Government incentives.

In order to provide evidence whether a company is making a profit maximizing decisions, one has to determine its profit function. However, due to the “Public Service Obligation”, an agreement between Croatian Government and Croatia Airlines, the latter has to maintain a fixed number of daily flights on the line Zagreb-Dubrovnik-Zagreb in order to obtain subsidies. In this way, an isolated city of Dubrovnik, was provided with a guaranteed connection to the capital. It makes the analysis simpler since a minimum number of daily flights (22 weekly rotations during winter and 28 during summer) fixes airlines’ costs on this line. The other Croatian cities also have minimum rotations set by PSO which makes not only this specific, but the overall costs as well, rather fixed. Therefore, only dynamics of the revenue determines changes in the profitability.

*Figure 7 - Table of Croatia Airlines timetable*

Winter timetable 2016-2020	Summer timetable 2016-2020
Pula - 6 rotations (via Zadar)	Pula - 11 rotations (via Zadar)
Zadar - 6 rotations	Brač - 2 rotations
Osijek - 6 rotations	Osijek - 6 rotations
Split - 22 rotations	Zadar - 11 rotations
Dubrovnik - 22 rotations	Split - 26 rotations
	Dubrovnik - 28 rotations

*Source: Review of the Air Transport Public Services System within the Republic of Croatia*

As seen in the Table 1 there is a difference of 6 flights during two different periods, which prove the seasonality issue in the Croatian market, meaning that the demand is higher in the summer than in the winter.

Demand for the line Zagreb-Dubrovnik-Zagreb, just as any other demand, except the perfectly inelastic one, depends on the own price. However, when it comes to substitutes, there is only car and bus, but since a travel is long, tedious and costly, it does not show any significant impact on the observed demand. Purchasing power can also be a factor, but in the observed period from 2013 – 2018 a change in the purchasing power has been positive, but not significant, and its further application could be a part of some future studies when a longer trend would be available. However, there is a significant factor that affects demand: time of the year. Since Dubrovnik is a warm sea destination, its visitors tend to visit it more during warm weather, and less when it is cold. However, the limitations in terms of qualitative categories like “preseason”, “high season”, “postseason”, “low season”, would eliminate some important data variability. Therefore a temperature variable is introduced. Its continuous numeric character is beneficial, as opposed to a discrete qualitative categories mentioned

before, and it has two aspects: deseasoning of the time data and season impact on the pricing policy. However, a daily temperature amplitude might be misleading. Hence a time variable here introduced is a moving average of a temperature (MAT) through  $\pm 10$  days.

Using the econometric analysis of a time series a demand function is obtained. The obtained function is then applied to determine daily demand elasticities which, in order to maximize the profit and the revenue, has to be  $|E_d| = 1$  (detailed analysis in the Section 3: Data and Methodology). That information in turn provides the information on i) whether the actual pricing policy has been maximizing the revenues, ii) what would be the optimal price given the circumstances, and iii) a general guideline for the future pricing policy in order to increase revenues under the fixed costs. On top of the previously mentioned, one will try to determine a seasonality of the route and establish a pure price – quantity relation without seasonality impact.

## Literature Overview

An airline pricing policy is one of the most important factors for a successful airline company. Due to that, demand elasticity plays an important role in determining the fare price, because of the fluctuation and seasonality in flight demand (Mandic et al, 2017). Constant demand fluctuations and market competition forced the airlines to constantly predict demand and match fares with passenger needs while keeping the route efficient (Doganis, 2000).

Although some studies have explained air transport elasticity on a particular market (Gallet et al, 2014; Njegovan, 2006), few have shown the individual impact of demand elasticity as a main tool for revenue management analysis and the airlines' profitability increase. Airlines operate in a different market environments, mainly depending on the routes and competition. On some routes airlines have monopoly, while on the others oligopoly. Monopoly on a route means higher tariffs and price discriminations based on the availability of the seats left (Gönenç et al, 2010).

When a competitor arrives on a market, it would, in majority of the cases, immediately decrease prices until the zero-profit point, except in the case if both airlines have some internal agreements or codeshare. Therefore, airlines will look at competitors pricing and in the case of some airline's price decrease, the other airlines would follow in order to keep market share and the amount passengers, just as it is the case in most of the case when monopoly is being transformed into oligopoly (Babic et al, 2018)

Tariff pricing differs by route and type of aircraft used, but in the case of legacy carriers, similar to Croatia Airlines, operating costs can be lower by increasing the network due to economies of scale. On some monopolistic routes, tariffs are higher so as to cover the losses or lower profits on the other routes. In order to keep the legacy carriers, a PSO programmes are introduced, but they change company behaviour. First, a company under PSO has a monopoly on a route for a given period. Secondly, a minimum frequencies or capacity required. By offering and accepting these PSO conditions for a given time-frame air carrier will receive tax money in order to cover these services until zero profit point (Gössling et al, 2017).

## Data and Methodology

Dataset is a time series from 26 October 2013 – 28 February 2018 (1551 observations). It contains the data for the line Zagreb – Dubrovnik (number of passengers,  $Q$ , and total price of a ticket in EUR,  $P$ ). Since Dubrovnik is a tourist destination, a deseasoning is required. Hence

daily temperature was introduced, since one can assume that tourist visit Dubrovnik when the weather is better. However, the weather conditions should not be estimated according to the daily temperature, but according to the average within a few days. Therefore a moving average of a temperature ( $MAT = MA (\pm 10 \text{ days})$ ) was introduced. Independent variables were chosen in order to capture only point-to-point passengers with restrictions on domestic tariffs only, passenger adult type and economy class without business class for better statistical data without outliers.

The following models were estimated using a simple OLS regression:

$$Q = \beta_0 + \beta_1 P + \beta_2 MAT \quad (\text{Linear model}) \quad (1)$$

$$Q = e^{\beta_0} P^{\beta_1} MAT^{\beta_2} \quad (\text{Log model}) \quad (2)$$

After a demand function would be obtained, a profit function would be optimized:

$$\Pi(q(p)) = R(q(p)) - \bar{C} \quad (3)$$

Costs ( $\bar{C}$ ) are deemed fixed due to the “Public service obligation” (PSO), which makes Croatia Airlines obliged to run 22 weekly flights in the winter season and 28 in the summer season, distributing evenly smaller and larger airplanes (on average 290 seats in the winter season and 580 seats in the summer season daily). Therefore the optimal profit would be obtained depending on the variation of the total profit ( $R$ ):

$$\frac{d\Pi}{dq} = \frac{dR}{dq} - 0 = 0 \quad (4)$$

Since  $R(q) = p(q) \cdot q$  then  $\frac{dR}{dq} = \frac{dp}{dq} q + p(q) = 0$  which provides:

$$\frac{dq}{dp} = -\frac{q}{p(q)} \quad (5)$$

Knowing the own price elasticity  $E_d = \frac{p}{q} \frac{dq}{dp}$  and solving for (5) one gets:

$$E_d = \frac{p}{q} \left( -\frac{q}{p} \right) = -1 \quad (\text{unit elastic}) \quad (6)$$

Hence a price that satisfies (6) would render:

$$E_d = \frac{\beta_1 p}{\beta_0 + \beta_1 p + \beta_2 MAT} = -1 \quad (7)$$

Which in turn provides how a daily air fares should be set depending on the mean average temperature, measuring seasonality, in order to maximize profit:

$$p = -\frac{\beta_0}{2\beta_1} - \frac{\beta_2}{2\beta_1} MAT \quad (8)$$

## Findings

Econometric analysis has provided a model where MAT has solved the issue of autocorrelation. All the other required tests have also shown that the model is well defined (P test for the F value is 0.0000), the data is save from heteroscedasticity and both variables are significant (P values are 0.000). The obtained model has provided a following estimate:

$$Q = 365.2103 - 4.200452P + 14.82001MAT \quad (\text{Linear model}) \quad (9)$$

$$\begin{matrix} 0.000 & 0.000 & 0.000 & 0.000 \\ \ln Q = 6.438 - 0.564 \ln P + 0.615 \ln MAT & (\text{Log model}) & (9a) \end{matrix}$$

Although both models are well defined, the latter has a lower explanatory power ( $R^2$  is smaller) and significance of its coefficients are smaller (2 out of 3 t values are below the values in the linear model). It is the reason why a model (9) will be used in further calculations.

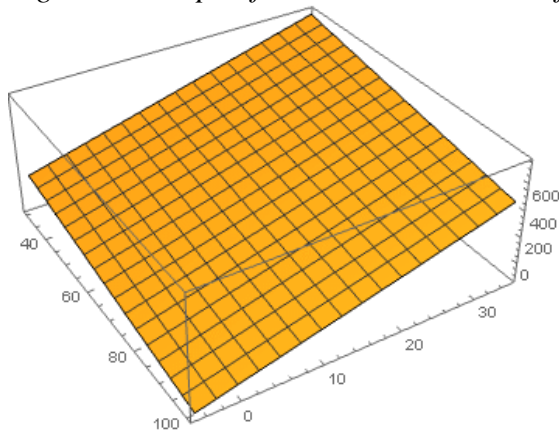
Solving (8) for the obtained coefficient values, the following temperature – price relation is obtained:

$$P = 43,4727 + 1.7641 MAT \quad (10)$$

Applying (10) on the real data on the entire dataset, a list of optimal prices is obtained, which then produced the quantity as well by stubbing it in (9). These data provide the input for calculation of the optimal total revenue. Having the obtained data, an optimal weighted average price is 74.22€, as compared to the weighted average price of the real prices, 57.09€, which is 30.5% higher. In the observed period it would results in the increase of the daily average revenue from 21 055.72€ to 22 642.09€ (on average 1 586.37€ daily, or 7.5% more) under the same costs. In a year it would have resulted with a both profit and revenue increase of 579 025.05€, only on the observed airline.

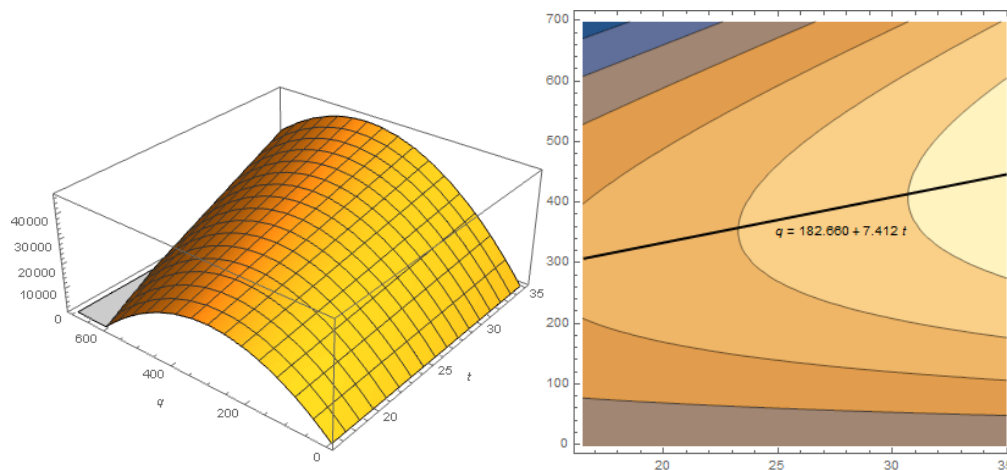
In the observed period the weighted average price elasticity was 0.648, indicating a price increase would be recommended (in the optimum its value is 1). Demand function can be shown on the Figure 1. Its inverse form is  $p = 86.946 - 0.238q + 3,528t$ .

Figure 8 - Graph of the estimated demand function



Estimated total revenue function is  $R(q, t) = p(q) \cdot q = 86.946q - 0.238q^2 + 3,528tq$ , where the maximum total revenue is obtained at  $\frac{\partial R}{\partial q} = 86.946 - 0.476q + 3,528t = 0$  which gives relation of the optimal quantity and temperature:  $q = 182.660 + 7.412t$  showing that the warmer climate (season) attracts more arrivals. For example, at 25°C, on average 368 passengers are expected. Since the average own price elasticity in the observed period was -0.648, it means that at the annual average temperature in Dubrovnik (16,5°C) on average 370 passengers travelled, while 302 passengers could have paid 30% more and ensure 7.5% rise in the revenue.

Figure 9 - Graph and a layer curve of the estimated total revenue function



In the case of the incorporation of the findings of the above presented demand elasticity analysis it is shown that this revenue management technique could bring this company a benefit of almost EUR 0.6 Mill in a year without any additional effort or cost. It shows how important it is to make thorough analysis of pricing policies which might make a difference between a profitable or unprofitable business.

## Conclusion

The main purpose of this research is to prove that by a sole application of the revenue management techniques, a company could earn more profits. It is shown that higher price causes quantity demanded to fall, but the mean average temperature (seasonality) is correlated with the fall in the elasticity, thus enabling the price increase. The reach of this analysis, however, can be directly applied to all companies under PSO regulation since their costs are fixed, which transforms profit maximization problem into revenue maximization problem.

Specifically, this research has shown that the optimal average ticket price is 30.5% higher than the current average and therefore, if implemented, it would bring 7.5% higher revenues and profits.

The limitation of this research is the fact that demand is observed as sum of all individual demands, rather than distinguishing between the economy class (price elastic) and business class (price inelastic). Furthermore, future research could try to find how forward bookings impacts airlines' profitability with regard to the demand elasticity. Information regarding forward bookings is not public and which makes it very difficult to obtain that data. Therefore, this research could be a standpoint for further research of demand elasticity on the set of the airlines companies, considering competition market share on specific routes, forward bookings or type of aircraft and its impact on the airlines' revenues and profitability.

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# WHEN LINDER MEETS GRAVITY MODEL: THE CASE OF USA, GERMANY AND JAPAN

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## Abstract

*This paper brings into conjunction the gravity model of international trade with the Linder hypothesis. Both trade theories are “new trade” theories of international trade established in the 60s and 70s of the last century after the Leontief testing of Heckscher-Ohlin theory. The gravity model of international trade is similar to Isaac Newton's gravity model while Linder hypothesis is a demand based theory. These two concepts are therefore mutually opposite. In order to confront two important theories of international trade, bilateral trade data for imports and manufactured imports specifically for three large World countries (the United States, Germany and Japan) in the period from 2000 to 2016 are collected. Panel regression models are constructed for both the gravity model and the Linder variable representing the Linder effect. The Linder variable is specified as an absolute difference between partner countries GDP's per capita. The results of the analysis have shown that trade data for all three observed countries comport with the gravity model of trade while the Linder effect could not be confirmed.*

**Keywords:** Linder hypothesis, gravity model of international trade, panel data

**JEL classification:** C13, F14

## Introduction

After the neoclassical theory of international trade, namely Heckscher-Ohlin theory or Factor proportions model (Heckscher, 1918 and Ohlin, 1931), and the Leontief test of Heckscher-Ohlin theory in 1950's (Leontief, 1953) new trade theories have emerged. Two important new trade theories which are subject of this paper are the gravity model of international trade (Tinbergen, 1962) and the Linder theory of similar preferences also known as the Linder hypothesis (Linder, 1961). The gravity model of international trade is based on Isaac Newton's theory of gravity. The trade between two countries is proportional to their size and reversely proportional to the distance between them. The augmented gravity model takes into account additional variables such as remoteness, colonial ties, common border, common language and dummy variables representing, for example, membership in WTO or regional trade integrations. On the other hand, according to the Linder hypothesis the greater the similarity between countries' economic structures, the greater the possibility of their mutual trade. These two concepts are therefore mutually opposite. The goal of the paper is confronting and bringing into conjunction these two new theories of international trade by investigating patterns of trade flows (namely imports) for three large world countries (the United States, Germany and Japan). The reason why these countries have been taken into

consideration is the essence of the Linder hypothesis according to which trade occurs between developed countries mostly in manufactured (industrial) products. It is contrary to the pattern of trade in Heckscher-Ohlin theory where trade happens between capital abundant (developed countries) and labour abundant (developing countries).

In this paper analysis will be conducted using panel OLS, fixed effects and random effects regression analysis in the period from 2000 to 2016. An appropriate panel regression model will be chosen with the help of the Hausman test and the redundant fixed-effect (log likelihood) test. In order to decide which theory of international trade is suitable to data, the signs of the regression coefficients for the Linder variable and the GDP of importing country will be calculated and inspected. The paper is structured in five sections. After the introduction, literature review presents and elaborates the theoretical and empirical features of both trade theories. In the third chapter methodology and data are described while in the fourth chapter the results of the econometric analysis are presented and discussed. The final chapter is a conclusion.

## **Literature review**

In his 1961 seminal paper Linder (Linder, 1961) coined the demand-oriented theory of international trade, later named the Linder hypothesis. It was in contrast with supply-oriented classical and neoclassical theories of international trade. According to Linder a country will trade with countries of a similar level of economic development and similar demand structures. The Linder variable catches the difference between countries' gross domestic products, the smaller the difference between them the higher expected trade between them should occur. The Linder theory predicted patterns of trade between highly developed countries in manufactured products (North-North trade) as opposed to trade between developed and developing countries in primary products (North-South trade). The term gravity model of international trade was first coined by Walter Isard (Isard, 1954) but was established into practice by virtue of the efforts of Jan Tinbergen (Tinbergen, 1962). The main critique of gravity model was that it is merely an econometric tool without a proper theoretical basis. Various economists have nonetheless shown that the gravity model can arise from various theories of international trade. According to Bergstrand (1985) gravity model is a direct consequence of the trade model based on monopolistic competition developed by Paul Krugman, Krugman (1980). Eaton and Kortum have shown that the gravity model can be derived from a Ricardian type of model, Eaton and Kortum (2002). Helpman et al (2008) obtained it from the theoretical model of international trade in differentiated goods with firm heterogeneity (World Trade Organization, 2012).

The Linder hypothesis and the gravity model of international trade have often been interconnected and studied simultaneously. In the next section empirical investigations on the Linder hypothesis will be presented and explained. Kennedy and McHugh (1980) tested the Linder hypothesis with the help of an intertemporal approach with results not supporting the Linder hypothesis. Limitation of the study refers to the use of total trade data rather than data on trade in manufactures. Kennedy and McHugh (1983) found no support for the Linder hypothesis for the United States in the years 1963, 1970 and 1974 using correlations analysis. Arnon and Weinblatt (1998) tested the Linder effect in trade generally and in trade between developed and less developed countries. Empirical evidence was provided that the Linder effect can be found for both developed and less developed countries. McPherson, Redfearn and Tieslau (2001) examined the Linder theory in the case of OECD countries using panel

dataset. The validity of the Linder hypothesis was approved for 18 out of 19 countries. Choi (2002) presented a favourable result in support of the Linder hypothesis using a modified gravity model with pooled trade data for 63 countries for various years in the period from 1970 to 1992. It seems that globalization may have strengthened the Linder hypothesis in 1990s as the coefficients of the Linder variable have a tendency to grow over time. The Linder hypothesis was also supported in the case of India, Pakistan and Bangladesh, Bukhari et al. (2005). Bohman and Nilsson (2007) introduced new methodology for testing the Linder effect using the income distribution approach. It identified the common market between trading partner countries by calculating the income overlap. The next step in the analysis was to relate the size of the common market to size of the home market forming the new Linder variable.

Hallak (2010) explained the reason for the failure of the Linder hypothesis in empirical evidence. Using trade data aggregated across sectors is often an inappropriate theoretical benchmark. Hallak proposed a theoretical framework in which product quality plays the central role. Rauh (2010) reaffirmed the Linder hypothesis for Germany in trade with other European countries using country panel and time fixed effects in the period from 2002 to 2007. Jian (2011) applied the gravity model on China-EU trade on a sample of 25 country-pairs and 250 observations with panel data used to disentangle the time invariant country-specific effects. Both the gravity model of trade and the Linder hypothesis seem to hold well in empirical analysis. Bo (2013) found support for the Linder effect in bilateral trade between China and its fourteen trading partners using the panel gravity model under fixed effects estimation. Differential GDP per capita was used as a proxy variable for the Linder effect. Kahram (2014) examined the Linder hypothesis for bilateral trade of Iran. Along with Linder effect factors that mostly affected trade pattern of Iran there were political factors, economic size, distance, common borders and others. Atabay (2015) applied the modified gravity model using panel data analysis on BRIC's countries trade in the period from 1996 to 2010. Countries with smaller GDP per capita difference seem to tend to trade more. Steinbach (2015) investigated the Linder hypothesis for bilateral export trade in agricultural and food products on a sample of 152 countries in the period from 1995 to 2012. He formed a similarity index analysing the estimates of the Linder term. His findings show that the similarity effect is strongest for processed products and weakest for bulk products. Jošić and Metelko (2018) tested the validity of the Linder hypothesis for Croatia using panel regression analysis. The results of the analysis pointed to the rejection of the Linder hypothesis, due to the fact that the pattern of Croatia's trade is in the line with gravity model of international trade.

## Methodology and data

The gravity model is a work-horse of international trade. It was introduced in economics by Walter Isard in 1954 (Isard, 1954) but was established by Jan Tinbergen after his 1962 seminal paper (Tinbergen, 1962). The gravity model of international trade gives the relationship between country size and geographical distance. Equation 1 presents a formulation of the gravity model in multiplicative form:

$$F_{ij} = C \frac{Y_i^\alpha Y_j^\beta}{D_{ij}^\gamma} \quad (1)$$

where  $F_{ij}$  represents trade flows (imports, exports or total trade),  $C$  is a constant,  $Y_i$  and  $Y_j$  are economic sizes of trade partner countries expressed as GDP,  $D_{ij}$  is the distance between

country  $i$  and country  $j$  while  $\alpha$ ,  $\beta$  and  $\gamma$  are regression coefficients. The standard procedure for estimating the gravity model is using natural logarithms of variables:

$$\ln F_{ij} = C + \alpha \ln(GDP_i) + \beta \ln(GDP_j) + \gamma \ln(D_{ij}) + u_{ij} \quad (2)$$

The augmented gravity equation includes other variables such as adjacency, common language, colonial links, remoteness and dummy variables representing membership in WTO or regional trade agreements. The Linder variable is expressed as an absolute difference between trade partner countries  $i$  and  $j$  GDPs per capita.

$$Linder = |GDP_{pc}^i - GDP_{pc}^j| \quad (3)$$

In Equations (5-8) linear relationship between variables is used because there is a problem of trade zeroes in data due to the absence of trade between some countries.

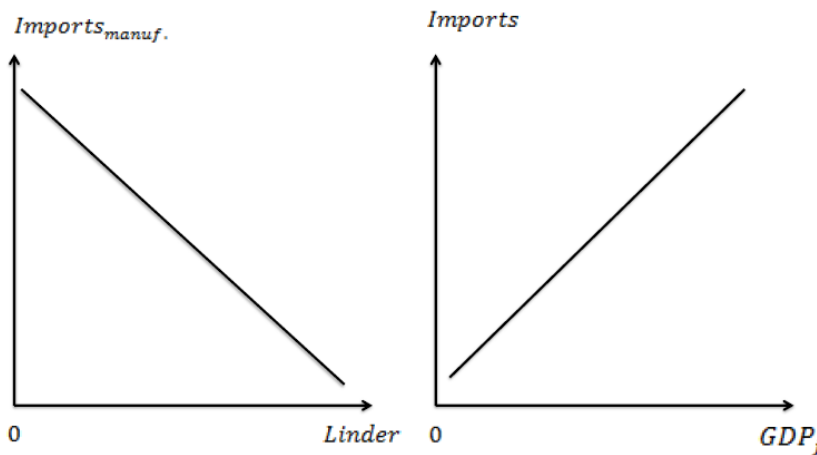
$$Imports_{ijt} = C + \alpha GDP_j + \beta D_{ijt} + u_{ij} \quad (4)$$

$$Imports_{ijt} = C + \alpha Linder + \beta D_{ijt} + u_{ij} \quad (5)$$

$$Imports_{ijt}^{manufactured} = C + \alpha Linder + \beta D_{ijt} + u_{ij} \quad (6)$$

Figure 1 presents the expected theoretical relationship between manufactured imports and the Linder variable and imports and the GDP variable. The larger the difference between countries' GDPs is (the Linder variable), the decrease in manufactured imports should be larger. Furthermore, the larger the GDP of the exporting country  $j$ , the larger the imports from abroad should be. Obviously, these two concepts can be approached only on higher levels of GDP per capita while on lower levels of GDP per capita if the gravity model holds well, the Linder effect should disappear.

Figure 1: Expected relationship Imports vs.  $GDP_j$  and  $Imports_{manufactur.}$  vs. Linder variable



Source: Authors' illustration

Econometric analysis will be conducted using a cross-country panel regression model starting with the pooled OLS regression model presented in Equation 7.

$$Y_{i,t} = \beta_1 + \beta_2 X_{2,i,t} + \dots + \beta_k X_{k,i,t} + \varepsilon_{i,t} \quad (7)$$

where  $Y_i$  is a dependent variable,  $X_i$  is an independent variable,  $\beta_1$  is a constant,  $\beta_2 \dots \beta_k$  are regression coefficients,  $i$  and  $t$  are indices marking individual entities and time periods while  $\varepsilon$  is an error term. In order to take into account heterogeneity in data for different countries fixed and random effects models are also constructed. A fixed effects model is presented in Equation 8.

$$Y_{i,t} = \beta_1 + \gamma_1 \sum_{i=1}^{n-1} \text{Dummy}_i + \beta_2 X_{2,i,t} + \beta_k X_{k,i,t} + \mu_{i,t} \quad (8)$$

A random effects model is shown in Equations (9-11).

$$Y_{i,t} = \beta_{1i} + \beta_2 X_{2,i,t} + \dots + \beta_k X_{k,i,t} + \mu_{i,t} \quad (9)$$

$$Y_{i,t} = \beta_1 + \beta_2 X_{2,i,t} + \dots + \beta_k X_{k,i,t} + \varepsilon_{i,t} + \mu_{i,t} \quad (10)$$

$$Y_{i,t} = \beta_1 + \beta_2 X_{2,i,t} + \dots + \beta_k X_{k,i,t} + \omega_{i,t} \quad (11)$$

The redundant fixed effects test is used in order to differentiate between the pooled OLS and the fixed effects model while the Hausman test is used to differentiate between the fixed effects and the random effects model.

## Results and discussion

Tables 1, 2 and 3 present the descriptive statistics of variables used in regression analysis. Imports and Manufactured imports are dependent variables. GDP, Linder and Distance are independent variables. Regressions are conducted individually for each of three countries, the United States of America, Germany and Japan, in the period from 2000 to 2016.

*Table 1: Descriptive statistics of variables, United States of America, 2000-2016*

	Imports	GDP	Linder	Manufact. imports	Distance
Mean	10470293	2.49E+11	34097.69	7684313	8869.16
Median	394260.2	2.00E+10	36056.53	113686.2	8601.8
Maximum	5.04E+08	1.12E+13	87250.09	4.87E+08	16350.4
Minimum	0	63101272	176.0650	0.000000	742.9
Std. Dev.	40480531	7.64E+11	13291.80	33179668	3582.497
Skewness	7.13	6.891	-0.557423	8.278704	-0.089511
Kurtosis	61.81	69.61	3.034744	89.01290	2.212661
Jarque-Bera	441017.8	557151.0	149.8089	923880.7	78.50590
Sum	3.03E+10	7.19E+14	98542331	2.22E+10	25631893
Sum Sq. Dev.	4.73E+18	1.69E+27	5.10E+11	3.18E+18	3.71E+10
Observations	2890	2890	2890	2890	2890

*Table 2: Descriptive statistics of variables, Germany, 2000-2016*

	Imports	GDP	Linder	Manufact. imports	Distance
Mean	5310339	3.15E+11	26245.51	3693909	6177.21
Median	167058.5	2.00E+10	27152.91	32653.50	6152.5
Maximum	1.18E+08	1.86E+13	94804.92	1.07E+08	18122.9
Minimum	0	63101272	24.93981	0	281.2
Std. Dev.	14477199	1.32E+12	12773.76	10779818	3953.18
Skewness	4.06	9.025760	0.12	4.52	0.46
Kurtosis	21.78	97.97	4.10	28.51	2.87

Jarque-Bera	50440.21	1125485	154.74	88240.79	104.87
Sum	1.53E+10	9.10E+14	75849518	1.07E+10	17852144
Sum Sq. Dev.	6.06E+17	5.01E+27	4.71E+11	3.36E+17	4.51E+10
Observations	2890	2890	2890	2890	2890

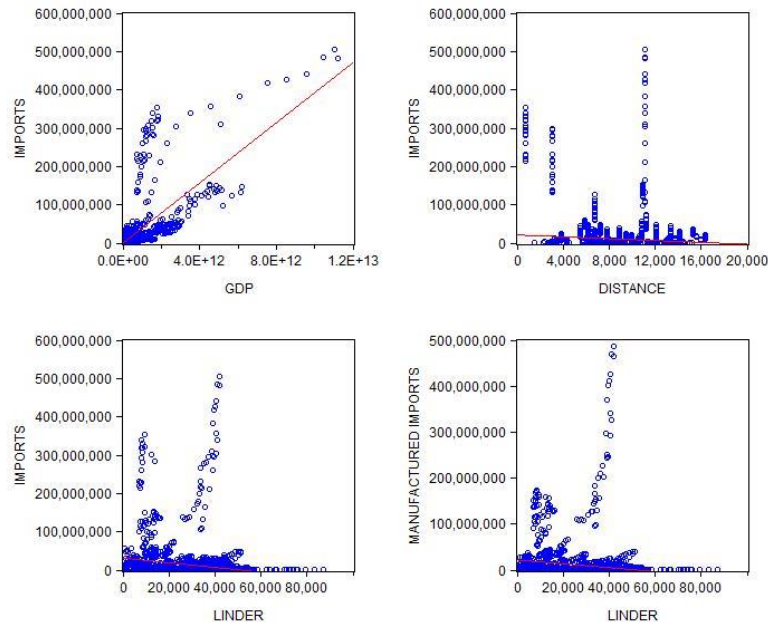
*Table 3: Descriptive statistics of variables, Japan, 2000-2016*

	Imports	GDP	Linder	Manufact. imports	Distance
Mean	3411937	3.06E+11	23506.29	1750598	10058.08
Median	60958.71	2.02E+10	25128.32	4716.321	9583.5
Maximum	1.89E+08	1.86E+13	101063	1.71E+08	18555.1
Minimum	0	63101272	10.09	0	1154.8
Std. Dev.	13015388	1.29E+12	11710.93	10213429	3699.87
Skewness	8.30	9.46	0.67	11.63	-0.195060
Kurtosis	91.88	106.42	7.18	160.64	2.48
Jarque-Bera	978834.2	1323270	2311.24	3039884	50.70
Sum	9.80E+09	8.79E+14	67533585	5.03E+09	28896874
Sum Sq. Dev.	4.87E+17	4.78E+27	3.94E+11	3.00E+17	3.93E+10
Observations	2873	2873	2873	2873	2873

*Source: Authors' calculations*

The number of cross-sections in the analysis for the United States and Germany is 170. San Marino was excluded from analysis for Japan due to data unavailability so there are 169 cross-sections for Japan. Therefore, the total number of observations in the sample for the United States of America and Germany is 2890 and 2873 for Japan. Figures 2, 3 and 4 present scatter plot diagrams illustrating the relationship between dependent and independent variables.

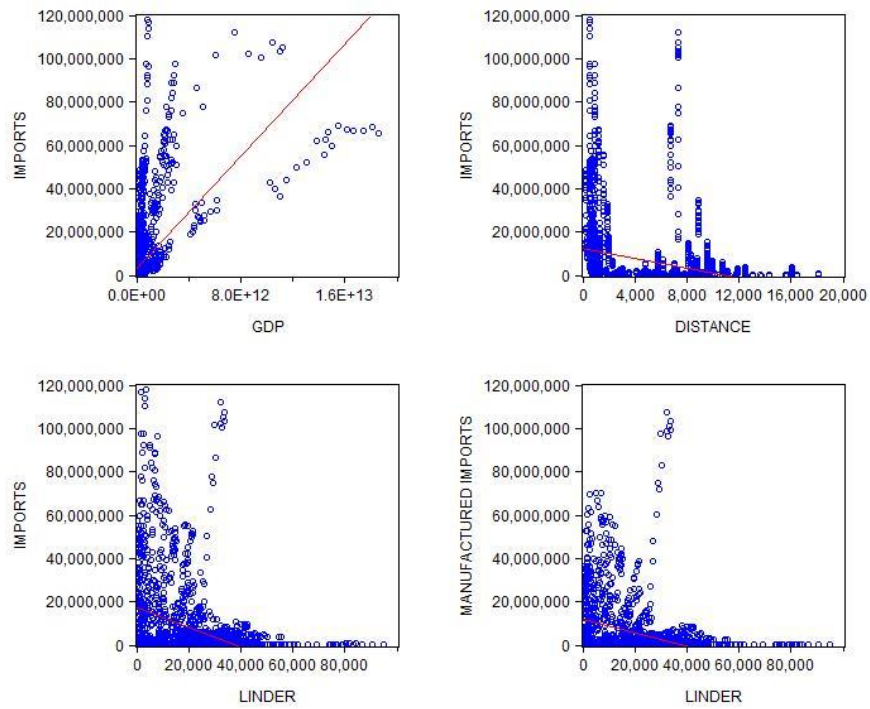
*Figure 2: Scatter plot diagrams for dependent and independent variables, USA, 2000-2016*



*Source: Authors' illustration*

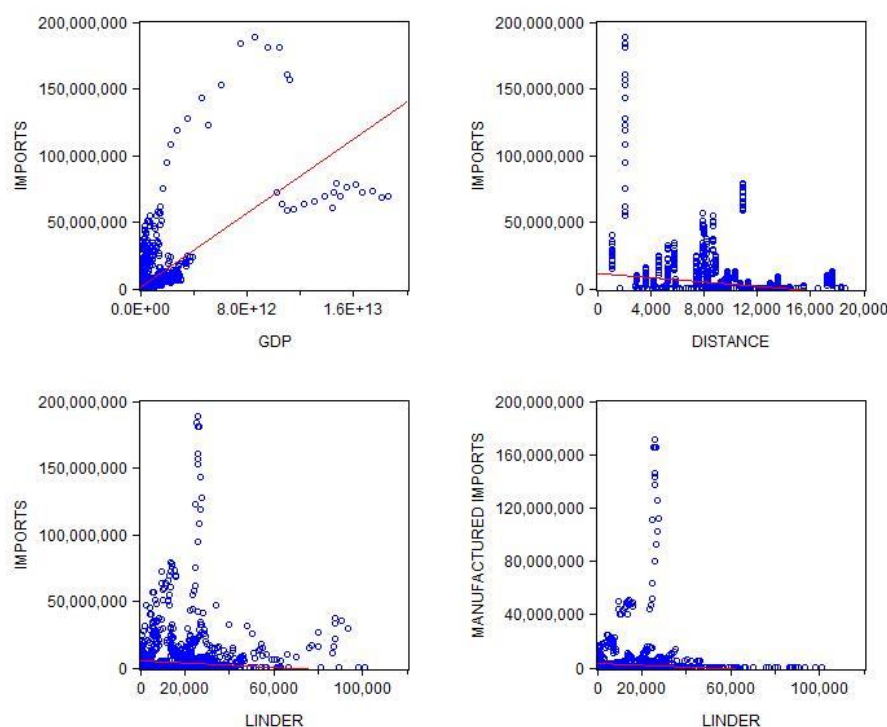


*Figure 3: Scatter plot diagrams for dependent and independent variables, Germany, 2000-2016*



*Source: Authors' illustration*

*Figure 4: Scatter plot diagrams for imports and independent variables, Japan, 2000-2016*



*Source: Authors' illustration*

In the figures 2, 3 and 4 a positive relationship between imports and GDP and a negative relationship between imports and distance can be noticed as it could be expected from the previous studies of the gravity model. The fitted regression line is also showing a negative relationship between imports and the Linder variable suggesting the acceptance of the Linder effect. In order to finally conclude whether the patterns of trade for three large World countries are in accordance with the gravity model of trade or they are similar to the Linder hypothesis, panel regression analysis is conducted.

The results of the cross-country panel regression analysis for the United States of America, Germany and Japan in the period from 2000 to 2016 are displayed in Tables A1-A3 (in Appendix). In order to choose between the pooled OLS, fixed effects and random effects model, the Hausman test and the redundant fixed effects tests are conducted. The redundant fixed effects test (log likelihood test) is used in order to choose between the pooled OLS and fixed effects model. Cross-section F and cross-section Chi-Square statistics probabilities for all models were under 5 percent of probability indicating that the fixed effects model is preferable over the pooled OLS so there existed a heterogeneity in cross-section data. The Hausman test is used to choose between the fixed effects and random effects model. The random effects model is appropriate in all cases for the United States and Germany. The random effects model is acceptable for Japan under 10 percent of probability while in the case of imports of manufactures the fixed effects model was appropriate. GDP is statistically significant independent variable in regression under 1%, 5% and 10% percent of significance showing a positive relationship with the imports variable. The distance variable is statistically significant in the pooled OLS and random effects model with a negative relationship to dependent variable as predicted from the standard gravity model. However, the distance variable was excluded from the fixed effects model due to time invariant characteristics of data. The sign of the Linder variable for imports in Table A2 in the random and fixed effects model is positive indicating refusal of the Linder hypothesis although the pooled OLS model and scatter plot diagrams were suggesting the opposite. Applying the robustness check in

Table A3 by taking only manufactured imports (as suggested in the Linder seminal paper) is also suggesting the refusal of the Linder hypothesis. It can be concluded that the United States, Germany and Japan import trade patterns follow the standard gravity model while the Linder hypothesis cannot be accepted.

## Conclusion

The goal of the paper was to investigate trade patterns for three large World countries (the United States, Germany and Japan). The research question asked was whether trade data better fit the gravity model of trade or the Linder hypothesis. The method applied in the analysis was panel regression analysis consisting of pooled OLS, fixed effects and random effects models. The random effects model was preferable in most cases as most applicable to data. The results of the analysis have shown that trade patterns of bilateral trade for three large countries in the World behave according to the gravity model of trade. On the other hand, the validity of the Linder hypothesis could not be approved because signs of the Linder variable under the random and fixed effects models were positive leading to rejection of the Linder hypothesis. The limitations of the paper are related to the observance of only 3 large countries. Due to the paper length restriction it was optimal to analyse these three countries because there was a large number of observations on bilateral trade for each observed country. Also there was a problem of the distance variable which could not be included in the fixed effects model due to time-invariant characteristics of data. The research conducted can lead to the need for further research by inclusion of other countries into analysis, especially developing countries and countries in development. In that case the theory of gravity model and the Linder hypothesis should be on opposite sides, i.e., the acceptance of one theory should lead to rejection of other.

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## Appendix

*Table A1: Cross-country panel regression analysis for imports, GDP and distance variable, USA, Germany and Japan, 2000-2016*

Dependent variable Total imports	United States of America			Germany			Japan		
Independent variable/Model	Pooled OLS	Fixed effects	Random effects	Pooled OLS	Fixed effects	Random effects	Pooled OLS	Fixed effects	Random effects
Constant	9706496** * (7.181151)	2809552 *** (15.67427)	12082766 ** (2.270519)	9974908 *** (26.25339)	2748243 *** (29.21114)	9407126 *** (6.412133)	7844842 *** (15.74648)	1034206 *** (12.90379)	7389108 *** (3.848555)
GDP	3.92E-05*** (59.69871)	3.08E-05*** (68.81286)	3.10E-05*** (70.19313)	6.40E-06*** (41.62060)	8.14E-06*** (41.74597)	7.97E-06*** (42.83592)	6.83E-06*** (51.65759)	7.77E-06*** (46.36247)	7.68E-06*** (48.00248)
Distance	-1012.818* ** (-7.238431)		-1052.309 * (-1.891985)	-1081.623 *** (-21.10014)		-1069.490 *** (-5.351585)	-648.5661 *** (-14.06483)		-629.0574 *** (-3.514020)
Adjusted R-squared	0.557232	0.965194	0.629606	0.434258	0.929887	0.391700	0.508651	0.935665	0.446909
S.E. of regression	26936061	7552181	7566725	10889145	3833385	3838177	9123301	3301276	3302601
Prob. (F-statistic)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Mean dep. variable	10470293	10470293	738328.3	5310339	5310339	479403	3411937	3411937	317401.6
S.D. dep. variable	40480531	40480531	12433010	14477199	14477199	4921145	13015388	13015388	4440767
Akaike info crit.	37.05687	34.56992		35.24547	33.21374		34.89161	32.91486	
Durbin - Watson	0.029163	0.371706	0.349072	0.029982	0.250684	0.235905	0.053089	0.428641	0.403485
Observations	2890	2890	2890	2890	2890	2890	2873	2873	2873
Hausman test	Chi-Sq. Statistic (12.129), Prob. (0.0005)			Chi-Sq. Statistic (8.222882), Prob. (0.0041)			Chi-Sq. Statistic (3.304931), Prob. (0.0691)		
Redundant fixed effects test	Cross-section F (205.167), Prob. (0.000) Cross-section Chi-Square (7575.263), Prob. (0.000)			Cross-section F (143.010854), Prob. (0.00) Cross-section Chi-Square (6622.174), Prob. (0.00)			Cross-section F (123.374346), Prob. (0.00) Cross-section Chi-Square (6204.6753), Prob. (0.00)		

Source: Authors' calculations

T- statistics in parentheses, \*\*\* significant at 1 percent level, \*\* significant at 5 percent level, \* significant at 1 percent level.

*Table A2: Cross-country panel regression analysis for imports, Linder and distance*

variable, USA, Germany and Japan, 2000-2016

Dependent variable Total imports	United States of America			Germany			Japan		
Independent variable/Model	Pooled OLS	Fixed effects	Random effects	Pooled OLS	Fixed effects	Random effects	Pooled OLS	Fixed effects	Random effects
Constant	36724879*** (14.69057)	4140788*** (2.785302)	16824556** (2.153384)	20653721*** (34.05404)	3362195*** (8.096058)	11156786*** (6.598375)	13343072*** (16.17824)	2168180*** (4.856195)	10465293** (3.874575)
Linder	-571.4125*** (-10.09206)	185.6285*** (4.310266)	158.1352** (3.728400)	-392.7801*** (-20.26503)	74.22770*** (4.807804)	53.67004*** (3.536971)	-79.64710*** (-3.954189)	52.91167*** (2.834403)	45.79309*** (2.511604)
Distance	-763.4016*** (-3.634004)		-1324.398* (-1.638131)	-815.0388*** (-13.01380)		-1174.485*** (-5.181867)	-801.2388*** (-12.56740)		-808.2834*** (-3.246146)
Adjusted R-squared	0.044360	0.905226	0.004839	0.207526	0.885919	0.011917	0.056936	0.884846	0.005115
S.E. of regression	39572493	12462063	12489106	12887746	4889799	4932882	12639434	4416682	4418341
Prob. (F-statistic)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Mean dep. variable	10470293	10470293	838828.2	5310339	5310339	539961.6	3411937	3411937	305228.9
S.D. dep. variable	40480531	40480531	12519434	14477199	14477199	4962539	13015388	13015388	4429685
Akaike info crit.	37.82620	35.57162		35.58249	33.70055		35.54359	33.49702	
Durbin - Watson	0.016669	0.168301	0.157774	0.030212	0.192319	0.177998	0.031672	0.271518	0.255608
Observations	2890	2890	2890	2890	2890	2890	2873	2873	2873
Hausman test	Chi-Sq. Statistic (13.543435), Prob. (0.0002)			Chi-Sq. Statistic (52.096880), Prob. (0.0000)			Chi-Sq. Statistic (3.156579), Prob. (0.0756)		
Redundant fixed effects test	Cross-section F (156.952283), Prob. (0.000) Cross-section Chi-Square (6864.929), Prob. (0.000)			Cross-section F (109.540136), Prob. (0.00) Cross-section Chi-Square (5939.561), Prob. (0.00)			Cross-section F (131.515652), Prob. (0.00) Cross-section Chi-Square (6367.6764), Prob. (0.00)		

Source: Authors' calculations

T- statistics in parenthensess, \*\*\* significant at 1 percent level, \*\* significant at 5 percent level, \* significant at 10 percent level.

*Table A3: Cross-country panel regression analysis for manufactured imports, Linder and distance variable, USA, Germany and Japan, 2000-2016*

Dependent variable Manufactured imports	United States of America			Germany			Japan		
Independent variable/Model	Pooled OLS	Fixed effects	Random effects	Pooled OLS	Fixed effects	Random effects	Pooled OLS	Fixed effects	Random effects
Constant	23601798*** (11.42105)	2558776* (1.915951)	9128432 (1.421697)	13962846* ** (30.17065)	2209195** * (7.157448)	7231681** * (5.559093)	9002395* ** (13.84167)	1182048*** (3.362398)	7027396*** (3.297673)
Linder	-404.3012*** (-8.638094)	150.3192*** (3.885406)	126.2938*** (3.324614)	-273.4162** * (-18.48682)	56.57019* ** (4.929942)	43.01536* ** (3.809655)	-66.76678*** (-4.203423)	24.18712* (1.645537)	19.32191 (1.345778)
Distance	-240.3547 (-1.384100)		-648.3635 (-0.977754)	-500.7099** * (-10.47737)		-755.4755* ** (-4.327512)	-564.9543*** (-11.23704)		-569.7890*** (-2.900271)
Adjusted R-squared	0.027975	0.886156	0.003348	0.167756	0.886339	0.009988	0.047639	0.884063	0.002842
S.E. of regression	32712276	11195080	11213957	9834145	3634274	3661201	9967184	3477626	3478467
Prob. (F-statistic)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Mean dep. variable	7684313	7684313	674381.4	3693909	3693909	362401.9	1750598	1750598	156285.2
S.D. dep. variable	33179668	33179668	11232779	10779818	10779818	3679623	10213429	10213429	3483420
Akaike info crit.	37.44544	35.35719		35.04166	33.10706		35.06854	33.01895	
Durbin - Watson	0.012853	0.109027	0.102331	0.024850	0.164442	0.152661	0.014136	0.121110	0.114031
Observations	2890	2890	2890	2890	2890	2890	2873	2873	2873
Hausman test	Chi-Sq. Statistic (10.744202), Prob. (0.001)			Chi-Sq. Statistic (43.939104), Prob. (0.000)			Chi-Sq. Statistic (2.387618), Prob. (0.1223)		
Redundant fixed effects test	Cross-section F (129.865), Prob. (0.000) Cross-section Chi-Square (6372.93873), Prob. (0.000)			Cross-section F (113.75034), Prob. (0.000) Cross-section Chi-Square (6034.826442), Prob. (0.000)			Cross-section F (130.415225), Prob. (0.000) Cross-section Chi-Square (6346.177313), Prob. (0.000)		

Source:

Authors'

calculations

T- statistics in parenthenss, \*\*\* significant at 1 percent level, \*\* significant at 5 percent level, \* significant at 10 percent level.



# ENHANCING REGIONAL COOPERATION THROUGH CUSTOMS DIGITALIZATION IN CEFTA - 2006

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## Abstract

*The past decade of the existence and functioning of the CEFTA - 2006 has indicated that the performances of its members in regard to regional economic integration and trade liberalization have been unsatisfactory. The statistics point out that within the 12-year period of the creation of the CEFTA - 2006 the integrative process is at a standstill. In July 2017, under the so-called Berlin process, representatives of the CEFTA Parties, met in Trieste and decided to enhance the regional cooperation with the creation of regional economic area – an area which should not only eliminate all trade and non-trade barriers in trade in goods, but should also lead to complete liberalization of trade in services, capital and labor as well as digital integration. In order to achieve this, an Additional Protocol 5 to the Agreement on Amendment of and Accession to the Central European Free Trade Agreement has been signed, while Additional Protocol 6 is also planned to be signed and integrated in the following period.*

*This paper will give a brief overview of the trade liberalization achieved within the CEFTA-2006, and the obstacles that were detected which prevented further regional integration. It will then focus on the Additional Protocol 5 and the further requirements on trade facilitation provided therein and will particularly focus on the process of digitalization with the aim of deeper regional economic integration.*

**Key words:** CEFTA-2006, Additional Protocol 5, Regional Economic Area, trade facilitation, digitalization

**JEL Classification:** F10, F13, F15

## **Introduction**

The Central European Free Trade Agreement of 2006 (CEFTA-2006) is a trade agreement between countries from Southeastern Europe which are not part of the European Union (EU) but are aspiring to become members in near future. CEFTA-2006 has been in force since 2007, yet in the past decade of its existence and functioning statistics and the measurement of economic indicators showed fluctuations, from which it is evident that the integrative process among the member-states is not progressing as envisaged. Even though the goal of CEFTA-2006 is an achievement of a regional integration of high level, the facts show that CEFTA Parties have achieved higher trade integration with countries from the EU, rather than among themselves. Looking at the trade of goods alone, on average 40% - 60% of the total exchange of goods of the CEFTA Parties is with EU trading partners.

There are a number of factors as to why the performance of the member-states has not reached a satisfactory level: weak economic structure of the countries in the region; low level of finalization of manufactured goods; low level on integration of the countries from the region and their industries within the supply and value-added chain; competitive instead of complementary structure of exchanged goods; etc. (OECD and CEFTA, 2013).

Additional difficulty for the achievement of deeper integration is the existence of non-trade barriers (NTB's). Although the countries from the area of the Western Balkan were successful in the elimination of the qualitative and quantitative barriers in trade, research shows that the results of this were impaired by the existence of hidden non-trade barriers, which were difficult to discover. In order to overcome them, a monitoring tool was created by the OECD, with identified the barriers categorized them as: technical barriers, sanitary and phytosanitary barriers and administrative barriers (OECD and CEFTA, 2012).

Under the Berlin Process, these impediments were taken into consideration, and during the conference held in Trieste in July 2017 member-states representatives decided that in order to achieve deeper trade liberalization and trade facilitation, the regional cooperation must be improved. It was decided that the regional integration would be taken to a higher level with the creation of a regional economic area, which should provide full liberalization in goods, services, labor and capital and should align with the requirements laid out in WTO Trade Facilitation Agreement. The process should also provide for enhanced cooperation of the Customs administration through full digitalization. In order for these goals to be achieved, the CEFTA-2006 agreement has to be amended, and 2 new protocols incorporated – Protocol 5 which deals with liberalization of trade in goods, and Protocol 6 which deals with liberalization with trade in services.

In this paper we are going to give a brief overview of the achieved economic cooperation, integration and trade facilitation among the member-states within the CEFTA-2006 and the obstacles that prevented a higher level of integration, before turning to the requirements laid down in Protocol 5 for the achievement of deeper trade liberalization, specifically on the provisions that provide for trade facilitation through the process of digitalization.

## **CEFTA-2006 trade exchange of goods in brief**

The CEFTA-2006 Agreement was created with the goal to eliminate all trade obstacles among its signatories. In the very beginning of the creation of CEFTA-2006, upon the elimination of

the quantitative and qualitative barriers in trade, the volume of the total trade of goods increased significantly. As an indicator, in 2006 - prior to the entry in force of the CEFTA Agreement, the exchange of goods of Republic of Macedonia with the other countries from the Western Balkan amounted to 8% of the total exchange of goods. By the end of 2008 the exchange of goods increased to 28%, which clearly points out to the immediate effects upon the elimination of quantitative and qualitative barriers in trade. Such increase in the trade exchange of goods among member-states was evident within the whole region of Western Balkan (Kikerkova, 2013).

However, the trend of rapid increase in the percentage of exchange of goods did not last for very long and was distorted with the occurrence of the economic crisis in the European Union towards the end of 2008. The crisis had negative impact upon CEFTA-2006, causing decrease in the trade exchange of goods. However, even after the exit of the crisis, the exchange of goods remained at a level which was lower than expected.

In the period that followed the decrease in the trade exchange of goods among CEFTA member-states continued. For the Republic of Macedonia, the peak was reached in 2008, and from there onwards there has been a negative trend – in 2013 the trade exchange percentage fell down to 13%, in 2014 to 11.8%, and it is currently around 11% ([transparency.cefta.int](http://transparency.cefta.int)). Despite the negative trend of trade exchange of goods within CEFTA-2006, statistics points out that the trade exchange of goods of the Republic of Macedonia with the EU is in constant inclination. As an indicator, almost 80% of the total export of the country is directed towards the EU ([nbrm.mk](http://nbrm.mk)).

All other member-states have similar trade structure and follow the same trend pattern. Roughly 70% of the total trade exchange of goods of CEFTA-Parties is with non CEFTA trading partners, whereas 40%-60% of their total trade exchange of goods is with the EU ([transparency.cefta.int](http://transparency.cefta.int)). Looking at these statistics, a logical conclusion would follow that the CEFTA Parties do not possess the economic capacity to be focused on regional integration and integration with the EU at the same time. The more focused they are toward integration in the EU, the less they are able to focus on the regional cooperation.

Additional key indicator why the process of the regional integration has been at a standstill is the existence of non-trade barriers. While the member-states had no difficulties to remove the quantitative and qualitative barriers in trade, they faced a major problem in the identification and removal of various non-trade barriers. With the help of the Organization for Economic Co-operation and Development (OECD) a monitoring tool was created for the detection and measurement of the NBT's within the region. The measurements indicated a number of NTB's which were categorized in 3 groups: technical barriers, sanitary and phytosanitary measures and administrative barriers to trade (Kikerkova, 2015).

In regard to the technical barriers to trade (TBT), the reports found that although all member-states are aspiring to the EU, they do not have common entry date, and as a result the process of accession and transposition of EU legislation varies significantly. While the reports indicated that all countries made progress in this field, there is still a wide discrepancy, since some countries like Serbia and Macedonia had higher level of adoption of the EU *acquis* than the others (OECD, 2014)

In regard to the sanitary and phytosanitary measures (SPS), the different stages of alignment of the national legislation with the EU requirements were evident as well. Additionally, the

report found that the institutions in most of the countries are lacking risk management systems, staff and adequate equipment and laboratories. With exception of Republic of Macedonia, the rest of the countries were far from implementation of the EU standards (OECD, 2014).

Concerning the administrative barriers in trade, the OECD monitoring tool provided 9 indicators on existence of such barriers, ranging from establishment of functioning customs web-sites and enquiry all the way to domestic and international agency coordination. By measuring the performance of each member with regard to these indicators, the OECD monitoring tool found that although all member-states made efforts to comply with the international standards, and had taken concrete steps by enacting laws, they failed to provide full implementation (OECD, 2014). Again, only some of the member-states, predominantly Republic of Macedonia and Serbia, have managed to achieve the required level, by complying with the requirements (Kikerkova, 2014).

In total, the distortive economical events as well as the significant number of detected NTB's, showed that the regional economic area is not progressing as expected, and that changes should be made so that a higher regional integration would be achieved.

### **Amended CEFTA-2006 Agreement**

The reports on NTB conducted by the OECD indicated a number of weaknesses that impeded the integrative process of the CEFTA-2006 member-states. The real obstacle that prevented improvement was the fact that the CEFTA-2006 did not possess a mechanism which would force its members to take the necessary corrective measures. Neither the CEFTA Agreement, nor the OECD reports had a binding character upon the countries, and due to their focus towards the integration with the EU, it was difficult to oblige member-states to follow them.

In 2014 the Berlin Process started, under which an initiative was taken towards the future steps of the countries of the Western Balkans, and their integration in the EU. After several conferences, in 2017 governmental representatives of the CEFTA Parties met in Trieste where they discussed the future of the regional integration. It was decided that the integration should be brought to a higher level with the creation of a regional economic area. The regional economic area should enhance the trade liberalization, by complete elimination of all trade and non-trade barriers. Aside from liberalization of trade in goods, it should also provide liberalization of trade in services and free movement of labor and capital within the area. Additionally, it was determined that deeper trade facilitation and enhanced cooperation among customs of the members-states as well as digital integration is necessary.

The start of the process of creation of regional economic area aligns with the entry into force of new Trade Facilitation Agreement (TFA) of the World Trade Organization (WTO), and the functioning of the regional economic area should be in line with the TFA. In order to achieve this, the CEFTA-2006 Agreement needed to be amended with the incorporation of two additional protocols: Protocol 5 which concerns liberalization of trade in goods, and Protocol 6 which concerns liberalization of trade in services. For the moment only Protocol 5 is published, while Protocol 6 is expected to be published in the near future.

It is envisaged that the regional economic area would be fully operational in 2023. In order for this to be achieved Protocol 5 imposes mandatory obligations on the member-states that have

to be fulfilled within a period of three or six months, as well as in one, two, three or five years upon its entry in force. The supervision of the implementation and fulfillment of the provisions of Protocol 5 is assigned to the CEFTA Joint Committee (CEFTA Article 30).

### ***Additional Protocol 5***

The text of Protocol 5 reflects the requirements provided in the WTO's new Trade Facilitation Agreement, and it even goes a step further, imposing stricter obligations upon the member-states. Article 3 of the Protocol sets the general objectives that need to be achieved: reduction of formalities and simplification of inspections to the possible maximum extent; exchange of data between customs authorities; and mutual recognition of national Authorized Economic Operators (AEO). The general objectives are mutually intertwined, as fulfillment of either one is difficult without the fulfillment of the others.

Turning to the requirement on reduction of formalities and simplification of inspections, Protocol 5 requires that each existing formalities and documentation requirements would be reviewed by the CEFTA-parties within one year after the Protocol's entry into force. Based on the results of the review, each CEFTA Party should ensure that the reviewed requirements would lead to rapid release and clearance of the goods and that requirements which are rendered obsolete shall be abolished (Protocol 5, Article 8). CEFTA Parties are encouraged to accept paper or electronic copies of supporting documents required for import export or transit formalities, and even more, when a competent authority of a CEFTA Party holds the original of such documents, any other competent authority of the same CEFTA Party will accept paper or electronic copy from the authority holding the original document (Protocol 5, Article 8). For the purpose of reduction of formalities, in some circumstance, customs authorities may carry out inspections instead of other agencies or state authorities that would be otherwise responsible, conditioned upon receipt of express consent (Protocol 5, Article 24).

In order to speed up movement of goods, Protocol 5 differentiates the process of release of goods from final determination of custom duties, taxes, fees and charges. The Protocol places an obligation on CEFTA Parties to adopt and maintain procedures for release of goods prior to the final determination of customs duties, if such determination is not done prior to, or promptly after the arrival of the goods. The CEFTA Party, however, reserves the right to require a guarantee in the form of a deposit, or another appropriate instrument (Protocol 5, Article 20). In line with the objective of expediting the release of goods and decrease of the traffic on the frontiers, the Protocol places an obligation of the parties to focus on post-clearance audit as a mechanism for compliance.

In order to monitor the efficiency of the process and to detect bottlenecks, CEFTA Parties are also required to measure and publish their average time release of goods using the Time Release Study of the World Customs Organization. CEFTA Parties are required to confirm in writing with the CEFTA Committee of Trade Facilitation the scope and methodology of their average release time measurements (Protocol 5, Article 22).

In order to reduce formalities related to import or transit of goods, the Protocol places a binding obligation upon CEFTA Parties to recognize legislation and procedures related to the inspections carried out and the documents drawn up by competent authorities of other CEFTA Parties if those procedures are fully in line with the procedures of the country of export and with the relevant EU *acquis*. The recognition of the procedures and documents however,

would become possible after a process of validation conducted in accordance with validation procedures which would be adopted by the CEFTA Joint Committee (Protocol 5 Article 24.3). If a party wishes to introduce a new inspection or formality, it must inform the other members at least 60 days prior to the introduction, and it must ensure that such a measure would not hinder other measures taken to facilitate trade (Protocol 5 Article 28).

The Protocol places significant importance on freedom of transit, emphasizing the need for speeding up the process of transit on goods and reduction of formalities. Consequently, CEFTA Parties should differentiate between import goods, and transiting goods. Article 12 provides that goods in transit cannot be subjected to the same requirements as importing goods. In particular, documentation requirements and customs controls would be directed only towards identification of the goods and the fulfillment of transit requirements.

In regard to the goal for enhanced level of data exchanged, the obligations arising from Protocol 5 are twofold: at national and at international level, between customs authorities and competent authorities involved in clearance of goods.

At national level, Protocol 5 requires intensified cooperation, coordination and information exchange among all competent authorities within a CEFTA Party dealing with importation, exportation and transit of goods (Protocol 5, Article 24.1). In order to fulfill the objective of trade facilitation, customs authorities and all other institutions involved are encouraged to align working hours, to align procedures and formalities, develop and share common facilities, perform joint controls and establish one stop border control (Protocol 5, Article 4). CEFTA Parties should confirm within 6 months of the date of entry of the Protocol, that Memoranda for Understanding (MoU) have been signed between their competent authorities allowing paper and electronic copies of documents necessary for import/export/transit to be submitted *in lieu* of the original (Protocol 5, Article 8.4). Annex II of Protocol 5 contains a Matrix of Memoranda which needs to be signed between competent authorities.

The biggest advancement in Protocol 5 concerning the higher level of cooperation between customs authorities from different CEFTA Parties is regarding the need to exchange data electronically among themselves with the aim of establishment of common framework for risk management, and joint risk management system. Article 5 places an obligation for each CEFTA Party to design and apply risk management, and accordingly to concentrate customs controls on high-risk consignments and expedite release of low-risk consignments. The risk assessment is to be conducted on the basis of selectivity criteria which may include: nature and description of the goods, country of origin, country of shipment, value of the goods, compliance records of traders, and type of means of transport. CEFTA Parties are obliged to exchange among themselves, statistical data regarding the performance of the application of the risk analysis and the results of the conducted inspections (Protocol 5, Article 5.6). Additionally, within 3 years of the entry in force of Protocol 5, each CEFTA Party should confirm with the CEFTA Committee of Trade Facilitation the competent authorities involved in the clearance of goods; establishment of a team tasked with designing, reviewing and updating the risk management systems; contact points within each competent authority responsible for risk management; and establishment of common or compatible risk management system for the entire customs territory (Protocol 5, Article 5.7).

Finally Protocol 5, places a great emphasis on the status and mutual recognition of the Authorized Economic Operators (AEO). National AEO's Programs shall be mutually recognized in each CEFTA Party if they are fully in line with the relevant EU *acquis*. From a

practical perspective, if traders fulfill the requirements in their home country and gain the status of AEO, such status would be enjoyed in the other CEFTA Parties as well which would ultimately lead to faster release and less formalities in the clearance of goods. For the purpose of identification and recognition of the AEO, CEFTA Parties are due to regularly inform each other on the identities of their AEO's (Protocol 5, Article 26)

In addition to Protocol 5, Annex III regulates the status of the Authorized Economic Operator. Annex III provides for the facilitations that are to be enjoyed by AEO, it sets forth the conditions for recognition of the AEO, and the rules for the suspension, revocation, rejection and annulment of their status (Protocol 5, Annex III). The status of AEO can consist in authorization for customs simplifications (AEOC-Customs simplifications), and authorization which entitles its holder for facilitation relating to security and safety (AEOS – Security and safety). The two types of authorizations may be held at the same time as they are not mutually exclusive. Article 2.1 of Annex III provides criteria on granting the status of AEO: absence of infringement of custom and tax rules, no record of serious economic offences relating to the economic activity; high level of control of the applicant's activities and management of commercial and transport records, which would allow appropriate customs control; and appropriate standards on professional competence or security and safety standards, depending of the type of authorization sought.

### ***Digitalization of CEFTA-2006 under the regime of Protocol 5***

The most crucial and the most advanced requirements within the Protocol 5 are the requirements for higher level of regional integration through digitalization. Even though the process of digitalization is not outset as one of the general objectives of the Protocol 5, it is evident from its wording that CEFTA Parties should make considerable efforts in making digital progress and integration. Right from the outset, in the preamble of the Protocol, it is set forth that its signatories “*acknowledge the need for exchange of data through electronic instruments, and the necessity of investment on information and communication technologies to facilitate electronic exchange of documents among themselves*” (Protocol 5, Preamble) In addition, in the preamble an emphasis is put on the importance of a complete review which needs to be undertaken by the CEFTA Parties to confirm their readiness of their information and communication technology infrastructure for the implementation of the provisions requiring electronic exchange of data.

One very important aspect in the Protocol is the requirement that all relevant information relating to customs formalities has to be electronically available, not only in the language of the concerned CEFTA Party, but also in English. Admittedly, this is something that CEFTA Parties have been required to do in the past, however, Protocol 5 places a binding obligation upon the parties. In particular it requires that information on all fees and charges and notifications for enhanced controls or inspections have to be electronically available in the websites of the competent authorities and they have to be in English as well (Protocol 5, Article 7.2 & 6.2). Another very important aspect is the possibility for electronic payment. Article 19 of the Protocol explicitly provides that each CEFTA Party has to adopt and maintain procedures allowing electronic payment of duties, taxes, fees and charges collected by the customs authorities.

Without trying to undermine in any way the importance of the rest of the provisions in Protocol 5, regarding the achievement of higher regional integration, the requirements on

digitalization and data exchange are certainly the most important. Article 13 is the core article concerning data exchange, obliging CEFTA Parties to exchange data between customs and competent authorities at national and international level. Additionally, it requires data exchange infrastructure which should be adopted and used by CEFTA Parties, has to be in accordance with Annex I. Annex I contains detailed provisions concerning the proper functioning of the systems for electronic data exchange. In particular, it defines the institutions that should exchange data, the types of documents that should be exchanged between CEFTA Parties, and the relevant standard/model that should be used by the relevant authorities. Annex I incorporates models for various certificates that should be required, which are to be mutually accepted for the purpose of creating common regional databases.

Regarding the systems for electronic data exchange, CEFTA Parties are obliged to provide security of the systems using safe internet connection by applying Systematic Electronic Exchange of Data (SEED)/ Virtual Private Network (VPN) (Protocol 5, Article 14). Data exchange among CEFTA Parties is confidential and it cannot be transferred to other CEFTA Parties without the express consent of the party which provides it (Protocol 5, Article 17). The exchanged data will enjoy enhanced level of protection which extends to professional secrecy and data protection, pursuant to the legislation applicable in the territory of the recipient CEFTA Party (Protocol 5, Article 27).

Another important aspect is that CEFTA Parties are also due to adopt systems for advanced lodging, which would allow economic operators, and traders the possibility for the submission of import documentation and other required information prior to the arrival of the goods with the aim of expediting the release of the goods upon arrival. For this purpose, each CEFTA Party is obliged to provide documents in electronic format for their pre-arrival processing (Protocol 5, Article 13.4 & 13.5).

The establishment of risk management system, the possibility for advanced lodging and the post-clearance audit work in conjunction. The goal of these requirements is to allow faster flow of goods through the frontiers without decreasing the legitimate expectations of the CEFTA Parties of security of trade, protection and safety of the society and the public health.

## **Conclusion**

The reached consensus among CEFTA Parties and their expressed will with regards to the need of creating a regional economic area is a significant shift towards complete trade liberalization in the region, not only in trade of goods, but also trade in services, and movement of labor and capital. The adoption of Protocol 5 is the first step towards the goal of full trade liberalization. In order to oblige CEFTA Parties to fulfill the necessary requirements, it contains mandatory provisions which have to be implemented by CEFTA Parties within 5 years at the latest. The achievement of the goals set out in Protocol 5 should make the regional economic area fully operational at the latest by 2023.

Within that time frame, CEFTA Parties are obliged to reduce the formalities and simplify inspections, by decreasing the number of physical examinations of the goods and by effective implementation of risk management systems - focus only on high-risk consignments. Parties are also due to decrease the number of documents required relating to customs formalities, accept electronic copies, and most importantly implement systems for advanced lodging of documents that allow traders to submit documents prior to the arrival of the goods. In line



with the requirement of reduction of formalities, Parties are also required to enhance the level of data exchanged among customs authorities and other agencies. Another key aspect of Protocol 5 is the need of national implementation of the concept of Authorized Economic Operator (AEO) which subject to certain requirements would enjoy benefits in the clearance of the goods. CEFTA Parties are due to mutually recognize the nationally gained status of AEO.

Although the Additional Protocol 5 is a positive step towards further trade liberalization, its successful implementation is dependent on improvements in the infrastructure and in the organization of customs authorities and other agencies. It also requires implementation and maintenance of advanced software and hardware systems for exchange of data by all CEFTA Parties. The software systems have to be mutually compatible so that the electronic platform for exchange of information would be operational. Bearing in mind the budget constraints in all CEFTA Parties, the successful adoption of these requirements and deeper regional integration should be in line and will depend on the availability and accessibility to additional funds and external institutional support.

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# TEMPORARY EMPLOYMENT: WORRISOME MYTH OR THE REALITY OF THE EU LABOUR MARKET?

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## Abstract

*Temporary employees represent a significant portion of the EU-28 labour force with a share of 14.3% in the total number of employees in 2017. Temporary employment typically has a negative connotation due to job insecurity and lower pay of temporary employees compared to permanent employees. Certain groups of workers, less educated and young employees for example, are much more likely to be temporary employed. Some other groups like women exhibit higher temporary employment rates compared to men, though these differences are minor and decreasing. This paper focuses on describing and analysing key trends related to temporary employment in the EU-28 countries within the 2002-2017 period. After identifying groups of employees most affected by temporary employment, it aims to provide explanations and reasons behind differences in temporary employment rates amongst different demographic groups.*

**Keywords:** precarious employment, temporary employees, atypical jobs, education level, EU-28

**JEL classification:** J21, J41, J71, J81

## Introduction

Favourable positive trends in growing technological development and knowledge dissemination are continuously changing the labour market. Deep and historically tremendous structural changes also led to significant changes in the employment structure, working conditions and qualification skills, pushing to more labour market flexibility. Financial crisis has resulted in the rising unemployment rates and the rise of non-standard employment (NSE) forms, which have become a contemporary feature of labour markets around the world. Today the term “precarious employment” is used to describe different forms of non-standard employment but the two terms are not synonymous. “Precarious employment” describes a multidimensional set of unfavourable work/employment characteristics that may be experienced in various degrees by workers, the growing segmentation of permanent workers and temporary workers (Kalleberg, 2009) and the motivations for accepting NSE arrangements (Lopes & Chambel, 2014; Underthun & Aasland, 2018; Koranyi, et al., 2018, p. 341).

One important type of the aforementioned precarious employment is temporary employment, whose main characteristic is that workers are employed for a fixed and specific period of time. During the 2002-2017 period, the share of temporary employees in the total number of employees in the EU slowly increased from 12.4% in 2002 to 14.3% in 2017 for the age group 15-64 (Eurostat, 2019a). During the same period, the percentage of involuntary temporary employees (i.e. workers employed temporarily because they could not find a permanent job) increased from 37.3% of all temporary employees to 53.9% (Eurostat, 2019b). In other words, careers and working lives of some 14.6 million people in the EU are shaped and influenced by the characteristics of temporary contracts, which are often labelled as “insecure” due to the fact temporary employees are relatively easily replaceable from the employer’s point of view. Moreover, in the literature temporary contracts are often associated with low pay and unskilled labour.

The focus of this paper is on examining the trend of increasing temporary employment in the EU, as well as analysing some specific characteristics of temporary employees. To investigate this issue five main research questions are designed. The research relies on the analysis of existing researches and empirical part of the paper which concentrates on the descriptive statistical analysis. The literature review focuses on several key aspects of temporary employment, mainly the average pay of temporary employees in comparison with employees working on standard contracts, their skill level, education and occupation areas of temporary employees, differences between male and female temporary employment rates and differences between temporary employment rates in various age groups. The analysis of the descriptive statistics is used in order to present key statistics related to temporary employment in the EU-28, along with possible explanations of the presented data. The data are collected from the Eurostat database. The conclusion and the bibliography are provided at the end of the paper.

## **Theoretical Background**

### ***Research Objective and Definitions***

The main objective of this paper is to present the main temporary employment trends in the European member countries emphasizing the role of age, gender, occupation and educational structure of the temporary employees compared to the overall workforce. This paper mostly focuses on one specific form of non-standard work, temporary employment. The purpose of this paper is to provide a better understanding of non-standard employment and precarious employment as a special type of temporary employment. The paper furthermore elaborates the status of temporary employees during last economic recession and in the period afterwards.

The examination is designed to address the following research questions:

R1: Are there significant differences between EU countries regarding temporary employment?

R2: Are young people mostly affected by temporary contracts?

R3: Are women more represented in non-standard forms of work than men?

R4: Does educational attainment of employees influence a share of temporary employment?

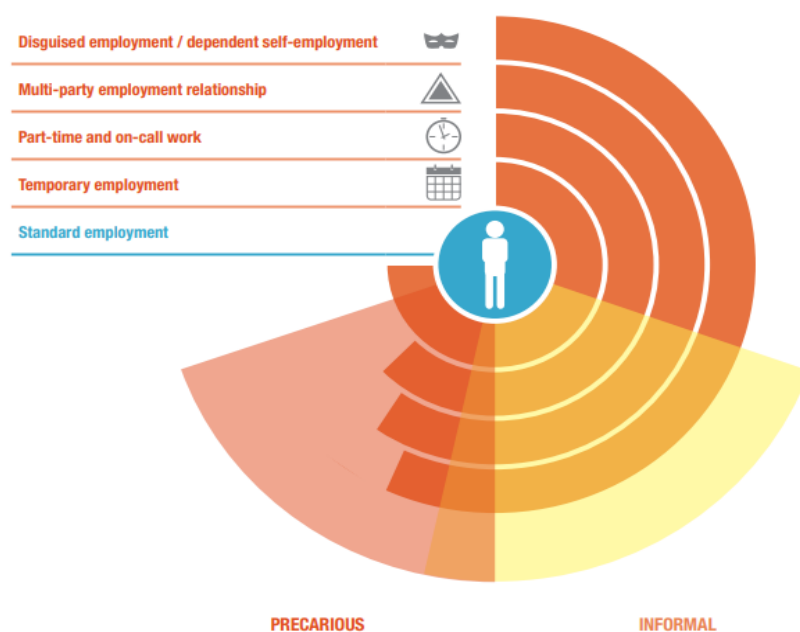
R5: Are non-standard employees (under temporary contracts) discriminated in terms of pay?

There is no internationally accepted definition of precarious and non-standard employment, however ILO definition constructs are mainly used for that purpose. Although a precarious

job can have many faces, it is usually defined by “uncertainty as to the duration of employment, multiple possible employers or a disguised or ambiguous employment relationship, a lack of access to social protection and benefits usually associated with employment, low pay, and substantial legal and practical obstacles to joining a trade union and bargaining collectively”, (ILO, 2012, p. 27).

A defining characteristic of precariousness is that the worker bears the risks associated with the job, rather than the business that is hiring the worker (Kalleberg and Hewison, 2013). Certain sectors (for example, tourism (Obadić, Pehar, 2016)) are also more commonly associated with precarious work, reflecting, in part, different degrees of regulation that govern various sectors, including the presence – or absence – of trade union representation and collective bargaining (Fudge and McCann, 2015). Like informality, precariousness can be found within both standard and non-standard jobs (Kountouris, 2013), as illustrated in Figure 1. Many “standard” jobs, and many workers in “standard” jobs may end up in a precarious situation, for example, if their wages are at the poverty level, if continuity of their jobs is uncertain, or if the job exposes the worker to occupational hazards. However, just as standard jobs can be precarious, it is also the case that non-standard jobs are not necessarily precarious – the two are not synonymous (ILO, 2016, p. 18). Non-standard refers to the contractual form, whereas precariousness refers to the attributes of the job. Nonetheless, both “reflect changing employment conditions and the loss of conditions held or aspired for” (Kalleberg and Hewison, 2013, p. 274).

Figure 1: Overlap of non-standard employment with informality and precariousness



Source: ILO (2016, p. 16).

Workers on temporary contracts of various durations, be they directly employed or hired through an agency, may benefit from a job in the short term, but live with uncertainty as to whether their contract will be extended (ILO, 2012, p. 27). Temporary contracts also often provide a lower wage, and do not always confer the same benefits, which often accrue with time and are directly linked to the length and status of the employment relationship. The result is a condition in which workers cannot plan for their future, and lack the security of certain

forms of social protection (ILO, 2012, p. 27).

According to the International Labour Organization (ILO), non-standard forms of employment include several employment arrangements that differ from standard employment. These forms include temporary employment, part time and on-call work, temporary agency work and other multiparty employment relationships, as well as disguised employment and dependent self-employment (ILO, 2019a). Temporary employment in specific refers to workers engaged only for a specific period of time, which includes fixed-term, project and task based contracts, as well as seasonal or casual work. Fixed-term contracts provide flexibility to enterprises to respond to changes in demand, to replace temporarily absent workers, or to evaluate newly hired employees before offering them an open-ended contract. However, when fixed-term employment is involuntary, the arrangement is often of inferior quality compared to indefinite-term contracts (ILO, 2019b).

### *Literature Review*

From the microeconomic perspective, the most important goal of an individual firm is profit maximisation. While firms also seek to accomplish other goals besides profit maximisation, the assumption firms maximise profit results in predictions of firm behaviour in line with the empirical evidence (Jehle & Reny, 2011). One important aspect of this profit maximising behaviour is cost minimization, both in the short run and the long run. In order to maximise profits, it is necessary for a firm to choose the least costly production plan for a desired level of output (Jehle & Reny, 2011). For the point of view of a firm seeking to minimize costs, temporary workers might be viewed both as a relatively cheap and flexible way of organizing production. Examining the data for Netherlands, Gielen and Schils found a connection between higher incidence of low-paid jobs in a certain occupation and a higher incidence of atypical jobs in that occupation (Gielen and Schils, 2015). The authors define “disadvantageous” types of atypical work as positions which are typically not in the advantage of the worker (e.g. fixed term contracts and involuntary part-time jobs). Disadvantageous types of atypical work are dominantly found among elementary and low-skilled jobs. The temporary employment concerns mostly lower status employees: in most EU countries the incidence of limited duration contracts is the smallest in the case of managers (Artner, & Sörg, 2018, p. 82). In those jobs, the share of temporary employment and the incidence of low pay are highest, while the average tenure is the shortest (Gielen & Schils, 2015). Temporary employment is associated with low pay in the highly regulated French labour market as well. French minimum wage is one of the most generous in the world, while French governments have subsidised low-wage employment massively since the early 1990s (Françon and Marx, 2015). According to Venn (2009) as cited in Françon & Marx (2015), France has one of the strictest regulations of temporary employment. For instance, temporary workers are granted an “insecurity bonus” of 10% of their total salary in case their contract is not transformed into a permanent one. Françon and Marx found that temporary contracts (Fixed-Term Contracts and agency work) are in general positively correlated with low-wage incidence in a certain occupation (Françon and Marx, 2015).

Spain is particularly interesting when it comes to temporary employment due to the very high share of temporary employees in the total number of employees. Namely, the share of temporary employees in Spain for the 15-64 age group stood at 26.8% in 2017 and was the highest amongst the EU member states (Eurostat, 2019a). Unsurprisingly, non-standard employment relates to low pay in Spain as well. Molina & López-Roldán (2015) point

towards several studies which have shown how part-time but also fixed-term contracts are generally associated with lower hourly wage levels in comparison with regular contracts, also holding true after controlling for characteristics like gender or economic sector. According to Recio (2001) as cited in Molina & López-Roldán (2015), precarious jobs are insecure not only because of the nature of the contract itself but also because of the working conditions, wage in particular. While the average gross annual wage of a worker on an open-ended contract in Spain was €22,341 in late 2005, the same wage of a temporary worker was €13,499. The conclusions differ very little in the case of Italy. By analysing the data from the Italian Labour Force Survey for 2011, it has been shown that the share of non-standard work arrangements in a certain occupation strongly correlates with the share of low-pay work in the respective occupation (Berton, Richiardi and Sacchi, 2015). Low-pay work is defined as the share of workers whose hourly wage is less than two-thirds of the overall median.

From the education point of view, temporary jobs are typically associated with lower education levels. Examining the data for the Netherlands, Gielen and Schils have concluded that the growth of temporary jobs between 1994 and 2008 was most notable for people with low or medium education levels (Gielen and Schils, 2015). For example, in 1994 7.8% of workers with only primary school worked on temporary jobs, while in 2008 this percentage stood at 43.6%. During the same period, the share of highly educated workers in temporary jobs has somewhat declined (Gielen and Schils, 2015). According to the authors, one possible explanation for these developments is skill specificity related to a certain job, which means the firms might want to offer more favourable working conditions to those workers who are harder to replace due to the fact they possess more specific information and skills (Gielen and Schils, 2015). While skill specificity is hard to measure, education might serve as a good proxy. Similar conclusions were reached by Berton, Richiardi and Sacchi analysing the Italian Labour Force Survey, who state that “workers employed in elementary occupations consistently face the highest probabilities of holding a non-standard contract, of working part-time and of being low paid in every single specification” (Berton, Richiardi and Sacchi, 2015, 163). Using the data from the UK EU-Labour Force Survey, Koslowski and McLean have shown that those employees with supervisory responsibilities are much less likely to be employed on temporary contracts. Employees with no formal education faced a higher probability compared to other educational groups to work on temporary contracts (Koslowski and McLean, 2015). Analysing transitions from unemployment into employment in 2011, the authors found that those workers who were unemployed in 2010 survey and employed in 2011 survey were much more likely to be in temporary contracts compared to the general population of employees (Koslowski and McLean, 2015).

Analysing employment insecurity throughout Europe, Chung (2015) cites several studies done by Erlinghagen (2008), Näswall and De Witte (2003) and Schaufeli (1992) which have shown that those workers with lower education (these authors connect lower education with lack of skills and knowledge) are more vulnerable in the labour market and face higher probability of experiencing employment insecurity. One possible explanation is that it is generally harder to find skilled workers, meaning the chances that skilled workers will lose their jobs are lower compared to more replaceable low-skilled workers (Haskel & Martin, 1993, as cited in Chung, 2015). Analysing upward mobility from a temporary job in period  $t$  into a permanent job in period  $t+1$  for European countries using a logit model, Muffels points out that the 2008 crisis seems to have especially reduced upward mobility chances of workers in lower level occupations, that is in services and elementary occupations (Muffels, 2015). Moreover, the author states that the results confirm that temporary contracts are overrepresented in agricultural, service and sales occupations and especially in elementary occupations.

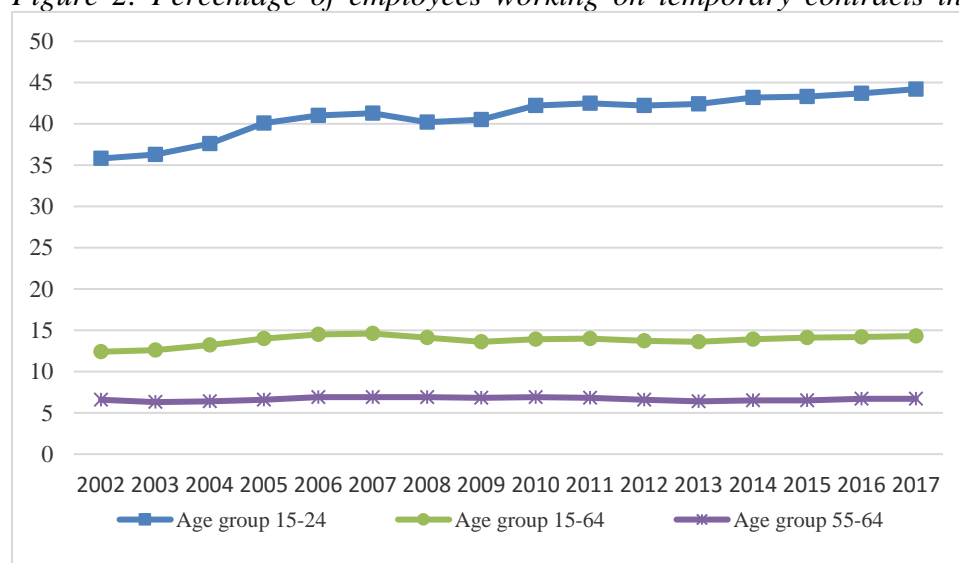
In Italy, fixed-term contracts were implemented in order to help young workers enter the labour market during the period of high youth unemployment rates, which were around 30% in the mid-1990s (Berton, Richiardi and Sacchi, 2015). While the youth unemployment rates did decrease in the subsequent period, the implementation of fixed-term contracts came with a high measure of persistence of this type of contracts (Berton et al, 2012, as cited in Berton, Richiardi & Sacchi, 2015).

Berton, Richiardi and Sacchi have shown examining the Italian Labour Force Survey that women participating in the Italian labour market face a 41% higher probability of holding a non-standard job compared to men, as well as 54% higher probability of being low paid compared to men (Berton, Richiardi and Sacchi, 2015). Women in the Danish labour market also record higher shares of temporary contracts in total work contracts compared to men, although there has been a convergence of the shares in 2010 when the shares were almost identical (Madsen, 2015).

## Statistical Analysis

As mentioned previously, the share of temporary employees in the total number of employees (age group 15-64) in the EU slowly increased during the 2002-2017 period (Eurostat, 2019a). Figure 2 depicts these developments, as well as showing the trends for different age groups.

*Figure 2: Percentage of employees working on temporary contracts in EU-28, 2002-2017*



*Source: Eurostat (2019a).*

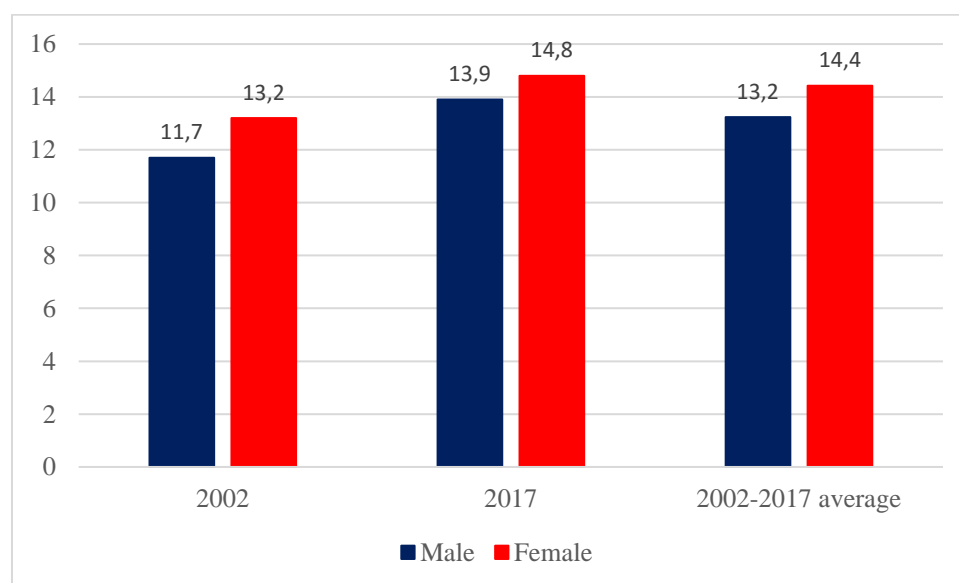
Disaggregated analysis show that the share of temporary employees in the 55-64 age group increased only slightly in the aforementioned period, while the share of temporary employees in the 15-24 group increased by almost 10 percentage points. Therefore, it could be concluded that temporary contracts are by far the most represented within the 15-24 age group of workers, giving a positive answer to the second research question (R2).

This unusually high percentage can be explained by two different factors. Firstly, 35.2% of the total number of temporary employees in the 15-24 age group reported “In education or training” as the main reason for working on a temporary job (average for the analysed period), which is significantly higher compared to the 15.7% of all temporary workers in the entire 15-

64 age group (Eurostat, 2019b). This obviously means education and training programmes are often carried out using temporary employment contracts. Secondly, young people in this age group change jobs relatively often and in many occasions do not plan to stay within the same firm for too long. In the *2018 Deloitte Millennial Survey*, which included 10,455 millennials from 36 countries (including numerous EU countries), 43% of all millennials reported they expect to leave their current employer within 2 years if they had a choice to join a new organization or do something different (Deloitte 2018). This means temporary contracts might represent a flexible and cheaper alternative for the employer without resulting in the highly unwanted job insecurity from the worker's perspective, mainly because some young people might not care significantly about job security in the first place. This by no means implies an ideal situation without young people who would prefer a permanent position and higher job security, which is confirmed by the EU average of 31.3% of the 15-24 group reporting "Could not find permanent job" as the main reason for working on a temporary job in the 2002-2017 period (Eurostat, 2019b).

As far as the gender is concerned, differences between temporary employment shares for male and female workers are relatively small. For instance, male temporary employment share was 1.2% points lower on average compared to the female temporary employment share in the 2002-2017 period for the 15-64 age group (Eurostat, 2019a). While female workers do experience higher temporary employment rates, the difference in comparison with male workers is decreasing in the last fifteen years. For instance, this difference amounted to 1.5% point in 2002, while in 2017 the difference stood at 0.9% points (Eurostat, 2019a) confirming that women are slightly more represented in non-standard forms of works (third research question (R3)). These differences are shown in Figure 3.

*Figure 3: Percentage of male and female employees working on temporary contracts in EU-28, age group 15-64, 2002, 2017 and 2002-2017 average*

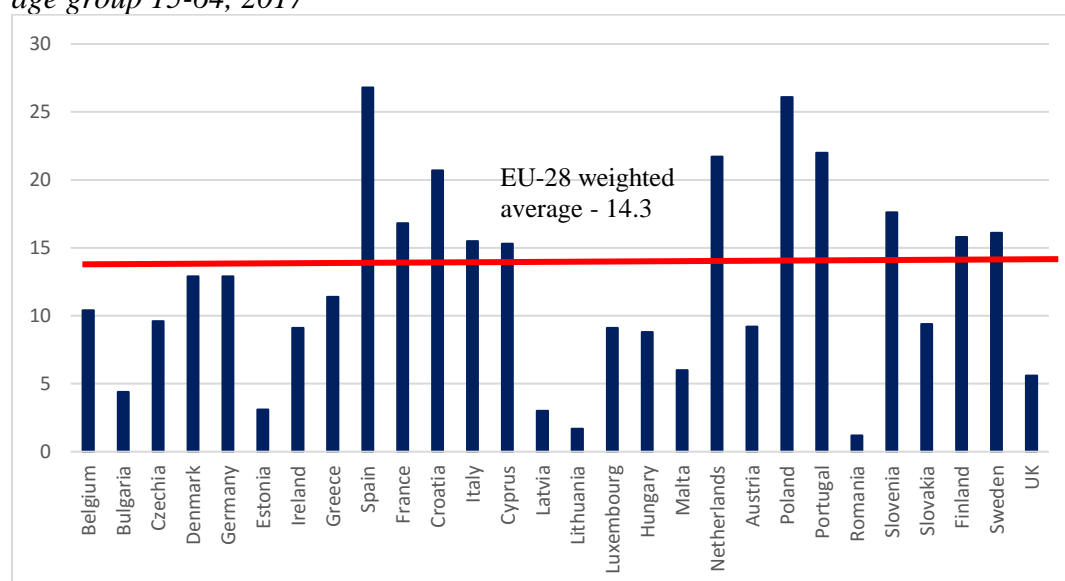


*Source: Eurostat (2019a).*

On the other hand, the weighted average for the EU-28 does not correctly represent the picture of temporary employment shares in individual member states due to significant deviations from this average. Figure 4 presents the percentages of employees working on temporary contracts for each member state in 2017.



*Figure 4: Percentage of employees working on temporary contracts in the EU-28 countries, age group 15-64, 2017*

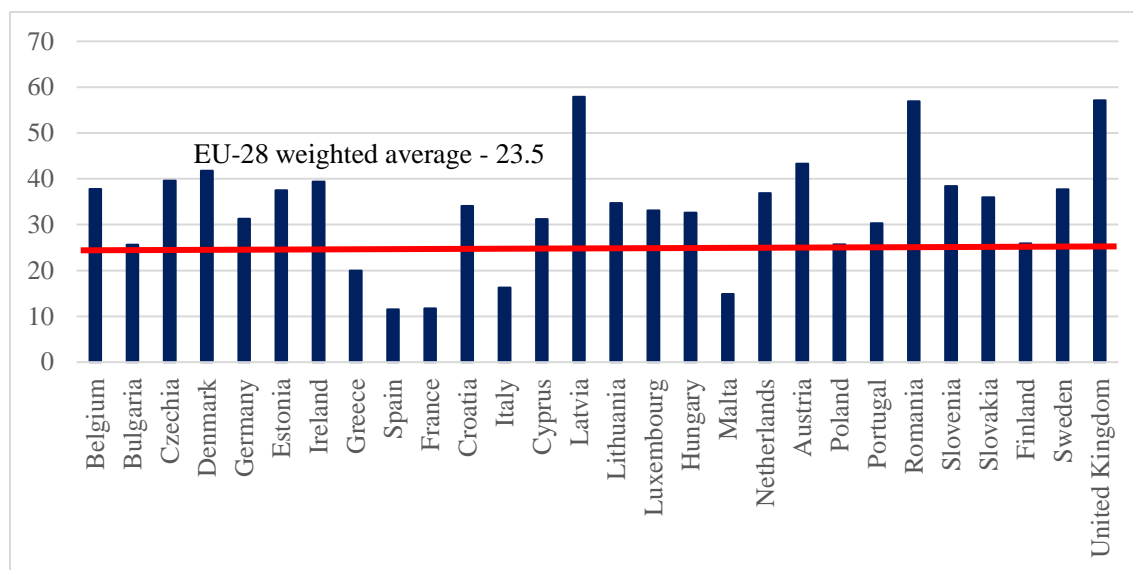


*Source: Eurostat (2019a).*

Five countries recorded unusually low temporary unemployment rates. Romania, Lithuania, Latvia, Estonia and Bulgaria recorded rates under 5%, with only 1.2% of employees working on a temporary contract in Romania in 2017. On the other hand, five countries recorded rates higher than 20%: Spain, Poland, Portugal, Netherlands and Croatia. The share of temporary employees was the highest in Spain amounting 26.8% in 2017. This analysis shows rather significant differences between each member state regarding the share of temporary employment (R1). The volatility of labour market is directly linked to the duality of the labour market, which involves workers transiting between labour markets (primary – characterised by mainly permanent contracts vs. secondary – characterised mainly by temporary ones).

According to the Eurostat estimates based on the EU-SILC (The European Union Statistics on Income and Living Conditions) (The European Union Statistics on Income and Living Conditions (EU-SILC) is an instrument aiming at collecting timely and comparable cross-sectional and longitudinal multidimensional microdata on income, poverty, social exclusion and living conditions. Retrieved from: <https://ec.europa.eu/eurostat/web/microdata/european-union-statistics-on-income-and-living-conditions>), the percentage of labour transitions from temporary to permanent contracts slightly decreased in the EU-28 from 2010 to 2017 (Eurostat, 2019c). Namely, this indicator refers to the 3-year average percentage of persons aged 16-64 having a temporary contract who shifted to a permanent contract between two consecutive years (for example, the figure for 2017 is calculated by averaging the percentage of temporary employees who transitioned from a temporary to a permanent contract between 2016 and 2017, 2015 and 2016 and 2014 and 2015), and this percentage fell from 25.6% in 2010 to 23.4% in 2017 (Eurostat, 2019c). During the 2010-2017 period, this percentage was on average 0.8% points higher for male workers compared to female workers (Eurostat, 2019c). However, these average figures hide significant variation in transitions from temporary to permanent contracts on an individual country basis. Figure 5 shows the transition between two types of employment contract for all EU-28 countries in 2017.

Figure 5: Labour transitions from temporary to permanent contracts in 2017, percentage, 3-year average, EU-28, age group 16-64



Source: Eurostat (2019c).

Note: Due to unavailability of the 2017 data for several countries, 2015 figures were used for Ireland and Malta and 2016 figures were used for Latvia, Slovakia, Finland and United Kingdom.

As visible in Figure 5, some EU countries show significant deviation from the EU-28 average. Five countries recorded relatively low percentages of workers who transitioned from temporary to permanent contracts, while three countries recorded unusually high percentages. Spain, France and Malta are the three countries with the lowest percentages, with Spain's percentage as low as 11.5%. On the other side of the spectrum, Latvia, Romania and UK recorded the highest percentage of labour transitions, with 57.9% of temporary employees in Latvia transitioning to a permanent employee in 2017, expressed as a 3-year average (Eurostat, 2019c).

Looking at the educational attainment levels of temporary employees, an unambiguous conclusion that less educated workers are more likely to work on temporary contracts can be assumed (see Table 1). In 2017, out of the 189.4 million employees in the EU-28, 31.6 million (16.7%) were categorized into the "Less than primary, primary and lower secondary education" group according to the ISCED (ISCED - the International Standard Classification of Education ) 2011 (Eurostat, 2019d). Out of the 27.1 million temporary employees, 7.1 million (26.1%) belonged to the same group, which is a difference in shares of almost 10% points (Eurostat, 2019e). On the other hand, 34.6% of all employees belonged to the "Tertiary education" group, while the share of employees with tertiary education in the total number of temporary employees amounted to a significantly lower 28.4%. Therefore, employees with higher education attainment levels are less likely to work on a temporary contract compared to the employees with lower education attainment levels. Such conclusion shows that educational attainment of employees influences a share of temporary employment (fourth research question (R4)). Differences between educational attainment levels for temporary employees and all employees are presented in Table 1.

*Table 1: Educational attainment levels of all employees and temporary employees in the EU-28, 2017, 15-64 age group*

	All employees (thousands)	% share in total	Temporary employees (thousands)	% share in total	Share difference (pps)
Total	189,409	100%	27,104	100%	
Less than primary, primary and lower secondary education (0-2)	31,624	16.7%	7,065	26.1%	-9.4%
Upper secondary and post-secondary non-tertiary education (3 and 4)	91,792	48.5%	12,260	45.2%	3.2%
Tertiary education (5-8)	65,530	34.6%	7,699	28.4%	6.2%

*Source: Eurostat (2019d and 2019e).*

*Note: the percentages do not add up to 100% due to the fact the “No response” category is not included in the table.*

Several possible explanations of these results were already presented in the literature review part of the research. It is reasonable to assume that jobs linked to lower education are much less specific and knowledge intense in nature compared to those jobs which require tertiary education, for example. While skill level of a worker might be difficult to measure, education can be used as a proxy for skill level for obvious reasons. From the employer’s point of view, temporary contracts offer a great deal of flexibility to respond to the changes in demand. However, this flexibility undoubtedly influences the worker’s motivation and loyalty to the firm. It is very likely that temporary employees are less committed to the firm’s goals simply because they believe they might not be a part of that firm in the long run. Therefore, temporary contracts are in general much more suitable for positions requiring relatively low skills and education. Firms get the desired flexibility in organising some aspects of their production processes, while the (potential) cost of having a less motivated and less loyal worker is not very high simply because that worker is relatively easily replaceable in the first place. On the other hand, if the assumption that workers with higher education also possess a higher level of skills is true, firms will be less willing to offer temporary contracts to these workers due to the fact that this group of workers is much harder to replace. It should be pointed out that this explanation likely does not explain all of these differences. Numerous factors influencing particular countries should be taken into account and analysed in order to gain a deeper understanding of specificities related to temporary employment.

In order to provide an answer to the fifth and last research question (R5), the data from the latest available Structure of earnings survey (2014) is presented in Table 2 below.

*Table 2: Mean monthly earnings in the EU-28 for permanent contracts and temporary contracts except apprentice and trainee, 2014, euro*

Country	Permanent contracts	Temporary contracts	Earnings ratio	Country	Permanent contracts	Temporary contracts	Earnings ratio
EU-28	2,637	1,883	1.40	Latvia	804	849	0.95
Belgium	3,292	2,631	1.25	Lithuania	712	607	1.17
Bulgaria	436	382	1.14	Luxembourg	4,372	2,702	1.62

Czechia	984	724	1.36	Hungary	821	632	1.30
Denmark	4,263	3,576	1.19	Malta	1,749	1,485	1.18
Germany	3,248	2,403	1.35	Netherlands	3,309	2,236	1.48
Estonia	1,063	1,112	0.96	Austria	2,901	2,525	1.15
Ireland	3,784	2,694	1.40	Poland	1,091	705	1.55
Greece	1,611	1,160	1.39	Portugal	1,375	887	1.55
Spain	2,070	1,652	1.25	Romania	523	460	1.14
France	2,862	2,298	1.25	Slovenia	1,677	1,238	1.35
Croatia	1,118	729	1.53	Slovakia	965	762	1.27
Italy	2,534	2,036	1.24	Finland	3,312	2,729	1.21
Cyprus	1,873	1,569	1.19	UK	3,217	2,608	1.23

*Source: Eurostat (2019f).*

*Note: Earnings for Sweden are not shown in the table due to data unavailability. Classification - Industry, construction and services (except public administration, defense, compulsory social security). The data refers to firms with 10 or more employees.*

On the EU-28 level, workers with permanent contracts recorded 40% higher mean monthly earnings in 2014. Out of the 28 countries, only Estonia and Latvia recorded slightly higher earnings of workers with temporary duration contracts. The biggest difference between the two groups of contracts is recorded in Luxembourg, Poland and Portugal. Therefore, the answer to the fifth research question (R5) is unambiguously positive indicating that employees who work on temporary duration contracts are paid less in comparison with employees who work on permanent duration contracts.

## Conclusion

The data presented emphasizes the importance and characteristics of temporary employees in the EU labour market. The share of temporary employees has been relatively stable in the 2002-2017 period, although it shows a slightly upward trend. Comparing different age groups, young people are by far the most exposed to temporary contracts. Differences between male and female share of temporary employed workers, although minor, show that female workers are more likely to work on a temporary contract. However, these differences have decreased during the aforementioned period. The data shows that less educated workers are much more likely to be employed on a temporary contract compared to workers with higher levels of education. The share of temporary employees in total employment is not uniform within the EU-28 countries and there are significant differences between some of them. For example, Spain and Poland record very high shares of temporary employed workers compared to countries like Romania and Lithuania. On average, only one third of EU-28 temporary employees transitioned from temporary into a permanent contract in 2017. Combined with the fact that most of temporary employees work on a temporary contract due to the fact they could not find a permanent position, millions of people in the EU labour market are exposed to the uncertainty and risks related to this type of work contracts. The conclusions for individual countries presented in the literature review show that temporary employees face lower wages compared to permanent employees, what is also confirmed in presented analysis in 2014 for all EU member countries except Estonia and Latvia. Overall, it is clear that temporary contracts have their own specific characteristic and that they represent a worse option for the employee compared to permanent contracts. On the other hand, this does not mean that temporary contracts should be thought of as having a strictly negative connotation.

For example, it is without a doubt better for the worker to have temporary contract compared to not having a work contract at all. It is reasonable to assume this type of situations is more prominent during recession periods.

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# TERRITORIAL DIFFERENCES IN COMPANIES' FINANCIAL PERFORMANCE IN THE CASE OF HUNGARIAN LARGE CITIES

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## Abstract

*The purpose of this study is to investigate whether there are regional differences in the financial situation of businesses. The research is multidisciplinary, as regional science deals with spatial differences, territorial competitiveness and cities, while the corporate finance field examines the performance of companies. In addition, a management approach is included in the research, which examines further factors in the successful financial performance of companies (size, age, industry). The first part of the study is a theoretical review of the topics mentioned above. In the empirical analysis, we investigated the companies' financial performance at the level of large Hungarian cities. We examined cities with more than one hundred thousand inhabitants, which, due to their economic strength and institutional provision, can be considered as regional centres (Debrecen, Szeged, Miskolc, Pécs, Győr, Nyíregyháza, Kecskemét and Székesfehérvár), but Budapest was not analysed due to the distorting effects of the capital. In the sample, we have data of the TOP 500 companies (by sales revenue) per city, and variables of operational and financial data (industry, age, headcount, sales, earnings). We have examined with Variance-analysis, whether there is a discrepancy between the financial indicators of the companies in each city and what other factors influence the success of the companies. We calculated data from the average of the 2010-2014 business years, to reduce the impact of the possible different performance of a year. Dependent variables were the location (company headquarters) and the following corporate indicators: age, size category (large, medium-sized, small, micro-enterprise) and industry. Independent variables were the net sales, income before taxes and net income. In addition, we calculated other financial ratios, for example, ROS (return on sales), return on employee, as well as net income per employee. The results indicate significant differences in the financial performance of the companies in each city, but other factors play an even more significant role.*

**Keywords:** companies' competitiveness, territorial competitiveness, financial performance, SME's

**JEL classification:** G30, R10, R12

## Introduction

Territorial competitiveness as a concept has become public in the 1990s, we can get to know its interpretation thoroughly from many types of research and literature summaries, either Hungarian (Benko, 1999; Farkas & Lengyel, 2000; Horváth, 2001; Lengyel, 2003; Lengyel & Rechnitzer, 2004; Lukovics, 2008), or from international authors (Krugman, 1995; Camagni, 2002; Chesire, 2003; Capello & Nijkamp, 2009; Nijkamp & Abreu, 2009).

However, regional competition is already emerging in the works of early-regional authors of the economy (Isard, 1956; Pred, 1967). Corporate competitiveness is analysed by Hungarian (Chikán, 2005, 2006; Chikán & Czakó, 2005; Szerb et al., 2014) or international (Barney, 1991; Porter, 2000) analyses of enterprise economics. The concept of competition and competitiveness is one of the essential pillars of economics.

In the analysis of regional competitiveness, researchers employ only company-level indicators in very few cases and vice versa. Research that analyses the success of companies adds less space to spatial data. The researches about the competitiveness of nations, regions and cities have a common, complex indicator system to measure the different dimensions of competitiveness. It is often divided into economic, social, environmental, infrastructural, cultural, innovation and relational factors. Most of the corporate competitiveness studies distinguish internal (company size, financial structure, strategy) and external, industrial factors (suppliers, customers, environment, competitors). Territorial researches often apply quantitative, but aggregated indicators of companies, for example, the number of companies in the given region, total revenue, the ratio of export revenue. Furthermore, they involve qualitative, soft indicators into the research, for example, survey data about companies' relations, innovation and strategy. Corporate competitiveness studies often do not consider spatial aspects. The role of the space is commonly used only by investigating location theory and international marketing strategy. The overlap of regional and corporate competitiveness is not frequently investigated topic yet. (Poreisz, 2018)

The investigated Hungarian cities, Győr and Kecskemét are well-known by their automotive industry (Győr – Audi factory, Kecskemét – Mercedes factory). Debrecen, Szeged and Pécs are traditional higher education centres. Székesfehérvár has a significant electronic and machinery industry. Miskolc and Nyíregyháza are located in less developed regions of Hungary. All investigated cities have a significant economic role, population over 100.000 people and institutional centres. The transportation availability of these cities are excellent (i.e. highways, railways and for some cities local airport or harbour).

## **Profitability and financial position of companies**

The competitiveness of companies has been studied with financial indicators for a long time. Ballantine et al. (1988) say that the pursuit of profitability leads companies to compete. Neoclassical economics determines that companies strive to maximise profit in a competitive environment. Ballantine et al. (1988) examined the differences in profitability between industries and company sizes. For companies, profit or loss refers to the performance achieved in competition. However, company-specific data can only be used indirectly to determine industry performance. Profitability and return on sales were used to measure profitability. We can interpret the competitiveness of industry and companies in two approaches:

- industry-to-industry analysis: the relationship between profitability and sales with the degree of industry concentration (or the dominance of a large company), the openness of the industry (or the presence of many small companies) and the extent of the industrial loss. (Banker et al., 1993; Tucci, 2005),
- intra-industry analysis: the amount of profit or loss by company size. (Ballantine et al., 1988; Chowdhury & Chowdhury, 2010; Czapiewski, 2013; Katits & Szalka, 2014; Guo & Wang, 2015)



The analysis of corporate profitability is examined by indicators (i.e. ROA, ROI, financial indicators), and in most cases, they are used as independent variables in the models, and the size and ownership structure are chosen as dependent variables. The methods used range from simple descriptive statistics to multivariate regression models. Several types of research do not rely solely on the financial statements, but also use a questionnaire, which can be subjective, especially for exploring the company's internal factors, internal structure and strategy. Research shows that in general, the size and ownership structure of a company has an impact on market performance and profitability.

*Table 1 Indicators and methods used to measure corporate profitability*

Author	Topic	Variables	Results
Banker et. al. (1993)	Profitability of telecommunication companies in the USA	ROI	Profitability was divided into four factors: profitability change rate, rate of productivity change, rate of change in price, change in capacity utilisation
Tucci. (2005)	The role of export in profitability (India)	Company data: revenue, purchases, employment, investments, R&D, expenditures, ownership, industry	Export activity is related to imports, and companies that export are more likely to import mainly because of quality and business relationships. Foreign trade relations significantly increase companies' performance.
Talaja (2012)	Large and medium-sized enterprises' innovation capacity, profitability and ownership structure (Croatia)	Revenue, Increase in Sales, Profitability, Market Share, Increase Market Share Dependent variable: size	Size shows a weak positive correlation with revenue growth and market share; medium-sized companies perform better. Product development and the introduction of new products have been linked to the ownership structure, with foreign-owned companies performing slightly better.
Chowdhury & Chowdhury (2010)	The impact of capital structure on corporate value (Bangladesh)	Dependent variable: share price, independent variable: size, profitability, ownership structure, dividend, asset and operational efficiency	The price showed a strong correlation with earnings per share, book value, return on fixed assets, inventory turnover, growth and sales.
Czapiewski (2013)	Limitations on market risk assessment through examples of companies listed on the Polish stock exchange	40 corporate financial indicators (i.e. EBIT, ROA, ROE, ROS, sales revenue, total assets, equity ratio, debt, liquidity)	The largest differences in the assessment of CAPM are due to the following factors: profit, company size, working capital strategy, profitability, growth
Katits & Szalka (2014)	The growth paths and effectiveness of the Hungarian TOP 100	Profitability rates, Profit and Cash Based Hedge Analysis, Liquidity Rates, Debt and Credit Ratio, Efficiency Rate, Financing Force Index, and Growth Rate	The most important industries (i.e. energy, wholesale, automotive, electronics, services, retail, machinery) have been separated and separated from key industries.
Guo & Wang (2015)	Fortune 1000 - Relationship between size, growth rate, and ranked position (USA)	Fortune 1000 Company List, Sales, Balance Sheet Total, Employment, Founding Year, Location, Industry, Ranking	Fortune 1000 is a dynamically changing list that is influenced by industry, company size and capital.

*Source: Own editing*

## The effect of the location

It is undisputed that the location has an impact on the operation of a company. Perhaps the most important of the strategic decisions of location theory selection have been paralleled with the characteristics and performance of companies, as the interest is directed to where the operation is more profitable. The literature on location theory is widespread, but the present thesis does not aim to present classical deployment factors well known in regional economics. In addition, we may assume that companies do not necessarily make the best choice for their location because of the lack of information, but what appears to be the most advantageous based on the information in their possession (Pred, 1967). According to McCann & Mudambi (2004), the location selection of multinational companies is not only influenced by classical deployment factors but also plays a significant role in regional characteristics and industry clusters alongside FDI.

In particular, earlier studies used descriptive statistics and distribution ratios (Daniels, 1977; Keeble & Tyler, 1995; Scott, 2002), while recent studies usually analyse the issue with regression models (Weterings, 2014; Karahasan, 2015). Almost all studies use corporate capabilities (size, location, industry, number of employees, sales), but some research has environmental or regional indicators such as population, GDP, rents, crimes. (Keeble & Tyler, 1995; Weterings, 2014; Karahasan, 2015). The location of the company undoubtedly affects its operation and processes, but this effect can be interpreted back and forth. For example, the spatial correlation of company performance can be grasped in the urban-rural context, in which urban and rural settlements can benefit companies. In addition to rural sites, production companies in cities are facing higher wage costs, rents and land pricing, which makes their spending higher. Therefore, rural areas can be a priority when choosing new sites for investment. (Fothergill et al., 1984) Furthermore, companies are typically located in urban areas in rural areas where many environmental factors are more advantageous to them (Keeble & Tyler, 1995).

Although work and capital are concentrated in cities, for example, the impact of urbanisation levels on site selection can be observed (Daniels, 1977). Another important impact beyond the urban-rural relationship is the impact of industry on how proximity, concentration and cluster membership are in the financial position of the company. (Scott, 2002; Almazan et al., 2010). Furthermore, it can be shown that the region's capabilities have an impact on the presence of companies, as companies move to an area where the quality of services and quality of life is appropriate (Weterings, 2014). We can also reveal relational relations with regional development, for example, regional disparities, differences in economic development can be felt in the performance of companies (Csete & Szabó, 2014; Karahasan, 2015).

*Table 2: Researches in the topic of location theory and company profitability*

Author	Topic	Variables	Results
Daniels (1977)	Examining the location of offices in terms of employment and commuting (UK)	Suburban settlement, number of employees per job, office area, commuter movement	The relationship between residential suburbanisation and the location of office buildings in the suburbs
Fothergill et al. (1984)	The relationship between profitability and location of companies. (UK)	Employment data, location, industry, profitability indicators	companies are setting up their production units in the countryside, resulting in higher levels of profitability
Keeble & Tyler (1995)	Urban-urban distribution of companies	Company location, establishment, industry, innovation, employment data, environmental characteristics,	Companies are typically deployed from urban areas to rural areas, where many environmental factors

Author	Topic	Variables	Results
	(UK)	i.e. marketing opportunity, ordering environment, rent and conditions,	benefit them .
Scott (2002)	Features and Territorial Characteristics of the California Textile Industry	Number of employees, size of companies, sales, company locations	The California textile industry is in transition. Separate industrial districts and high-end fashion spatial locations can be located in Los Angeles
Almazan et al. (2010)	The relationship between location and financial decisions in US software production	Corporate data: revenue, EBITDA, tangible assets, research and development ratio, the ratio of funds equity ratio, average stock, cash flow, leverage, the degree of indebtedness, dividend, the age of the company, number of employees, corporate acquisition	Positioning in an industry cluster increases the possibility of an acquisition, reduces the likelihood of indebtedness and assumes a greater financial balance. The research also revealed that the company is in a better financial position if it is located in a more developed city.
Weterings (2014)	The role of the environment in the change of location between 1999 and 2006 among small businesses in the Netherlands	Enterprise control variables: business location (and its change) employment, activity, size, growth, age. Environmental variables: the population of the district, population density, cafes per thousand people, number of restaurants and shops, number of crimes, the order of the neighbourhood	The number of crimes is statistically related to the site change. Company size and population density also play a role in site selection. The biggest impact is the presence of services (cafe, restaurant, business) in terms of the environment, where the number is higher, and businesses prefer to move there.
Csete & Szabó (2014)	NUTS2 regional distribution of Hungarian top 500 companies (by turnover) in terms of their impact on regional development	Several companies in the region, income from export activities, regional distribution. Examining the relationship between export earnings and unemployment	It has been shown that higher levels of export sales are accompanied by lower unemployment rates. A strong positive correlation was found between export revenue and net income. The analysis showed that the top 500 companies are export-oriented and concentrated in higher-developed regions.
Karahasan (2015)	Regional characteristics of new companies in Turkey between 1997 and 2006 at NUTS 3 level	Enterprise-level data: employment, company formation. Regional level data: GDP, demand, employment level	Regional factors greatly determine whether a company is located in a given region. As a result, regional inequalities can be detected in Turkey in proportion to socio-economic

*Source: Own editing*

## Investigating the connection between companies' performance and location

In this chapter, we examine the spatial characteristics of large cities. One of the main research questions of the paper is to find out whether there is a correlation between financial performance and the location of big cities. Using variance analysis, we examine the relationship between company performance and location.

### ***Methodology and database***

The effect of location on financial performance was analysed by variance analysis, which is a multivariate statistical analysis method for examining the relationship between nominal and

scale variables. The analysis compares whether the averages of the dependent variables differ from one another in different cases of the independent variable.

The main goal of the empirical research is, whether there is a difference Variance of financial performance between cities. Dependent variables were financial indicators, and we used the location, industry, age and size of the firm as independent variables.

In the context of statistical analysis, we were confronted with a research problem, dealing with outliers. Outliers can distort results in the sample, resulting in abnormal distributions (peaks, skews). Managing outstanding values is the researcher's decision (Sajtos & Mitev, 2007). It is often used to ignore the upper and lower 15% of the sample, or one of the outliers. However, due to the special nature of the sample (companies of cities), we did not take out the outliers from the sample, as omitting these values would have distorted the image of the cities. Excluding the top 15% for each city would have resulted in large companies being ignored. For example, leaving an outlier would have caused Audi to ignore it in Győr city, which company is the largest employee (with more than 11.000 employees) and most important automotive factory in the region. While it is an interesting research question, for example, to examine the performance of the companies in Győr without the most important company, but it goes beyond the scope of this paper. Therefore, we chose to perform the analysis of the entire sample instead of excluding outliers.

In the Variance analysis, the homogeneity of dispersion can be tested using the Levene test (a value above 0.05 significance level can be accepted, which means that the dispersions are different). Due to the outliers in the sample, the condition of homogeneity of dispersion was generally not fulfilment. "For many models, especially for the sake of simplicity, they assume the equivalence of deviations of the different groups, categories, and variables. This rarely covers the reality, but it is a convenient assumption, usually simplifying the structure of the model, such as estimation, testing too. The assumption of equal scattering is homoscedasticity, it is not a natural assumption but artificial (similarly to the concept of stationary time series analysis). Hence, heteroscedasticity is not an error (as discussed in many books) but an opening to reality." (Hunyadi, 2006: 76) The less sensitive, Brown-Forsythe and Welch tests are also suitable for examining the applicability of Variance analysis if the two statistics show a similarly significant value. (Huzsvai, 2000) This study was also used in our research. In the case of variance analysis, the ANOVA table shows the means between-groups and within-groups, while the significance level below 0.05 shows a statistically significant correlation. The strength of the connection is measured by eta2 (with values between 0-1).

In the research, we performed the analysis on the sample of the top 500 companies in the city (n = 4000). We calculated from the average of the 2010-2014 business years, in order to reduce the impact of the possible different performance of a year. The dependent variables that we run the analysis for are:

- territorial variable (company headquarters)
- age (pre-1990, 1990-1999, 2000-2009, founded after 2010)
- size category (large, medium-sized, small, micro-enterprise)
- industry

For territorial variables, the analysis was performed on the following groups to reduce the impact of outliers: total sample (n = 4000), large enterprises (employers over 250), medium-sized enterprises (50 to 249 employees), small businesses (10 to 49 employees) and micro-enterprises (under 10 employees). An independent variable was the number of net sales,

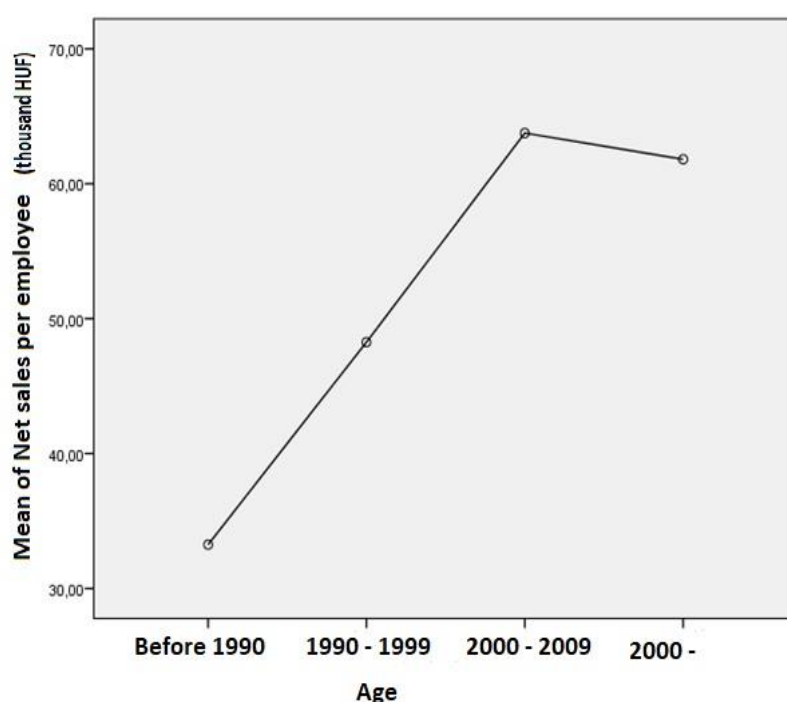
earnings before taxes and net income. In addition, we calculated the following indicators: ROS (return on sales), net sales per employee and as well as earnings before taxes per employee.

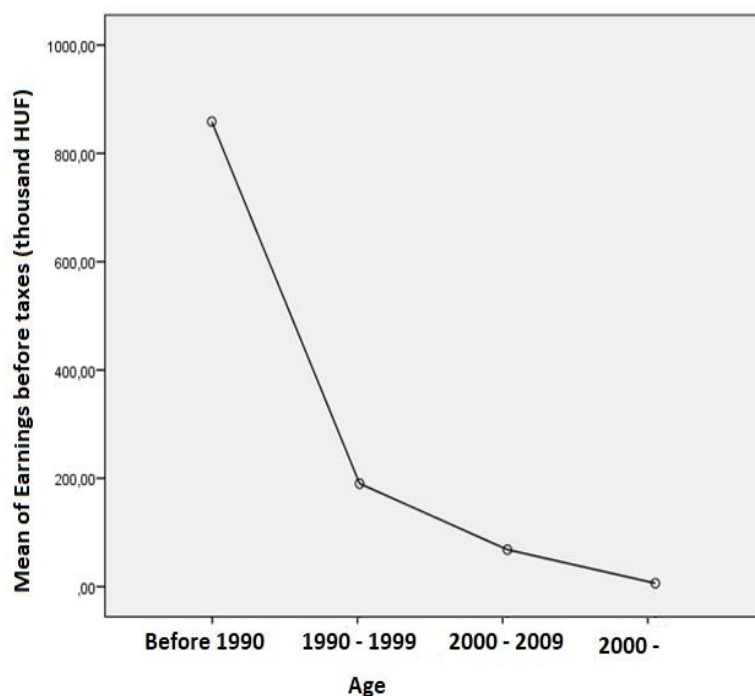
## Results

The age of the company has a significant impact on earnings before taxes (sig.:0012, Welch: 0.001, BF: 0.024), net income (sig.:0013, Welch: 0.00, BF: 0.023) and net sales per employee (sig.0.002, Welch: 0.00, BF: 0.001). Interestingly, while sales and earnings are growing at the age of the company, companies founded after the turn of the millennium are better off in terms of profitability. (Figure 1)

Except the ROS indicator, the size of the company has a significant impact on the results of the companies for each independent variable (sig: 0.000, Welch: 0.000, B-F: 0.000). As the number of employees increases, average sales and earnings increase. There is a significant difference, especially for large companies. The ROS indicator was the highest in small companies (10%) and the lowest in large companies (2%). The sales and earnings per employee were by micro-enterprises the favourable. The values of small, medium and large companies were similar, but the values of medium-sized companies proved to be disadvantageous.

*Figure 1: Mean of Net sales per employee and Mean of earnings before interest (thousand HUF) by companies' age*





Source: Own editing, SPSS output

We cannot ignore the different performance of industries. There was a significant difference for each of the examined indicators (sig: 0.000, Welch: 0.000, B-F: 0.000) in each industry. While sales and earnings levels were high in the plastic and chemical industries, in the metal industry and the energy sector, the average revenue-proportionate result was less favourable in the energy sector. The profitability of services is high (20%), but only half of this value is in the public services and information communication industries. In the metal industry, construction and the primary sector, on average, ten per cent of sales are realised as profits. We can state that corporate indicators such as age, number of employees and industry have a definite impact on financial performance.

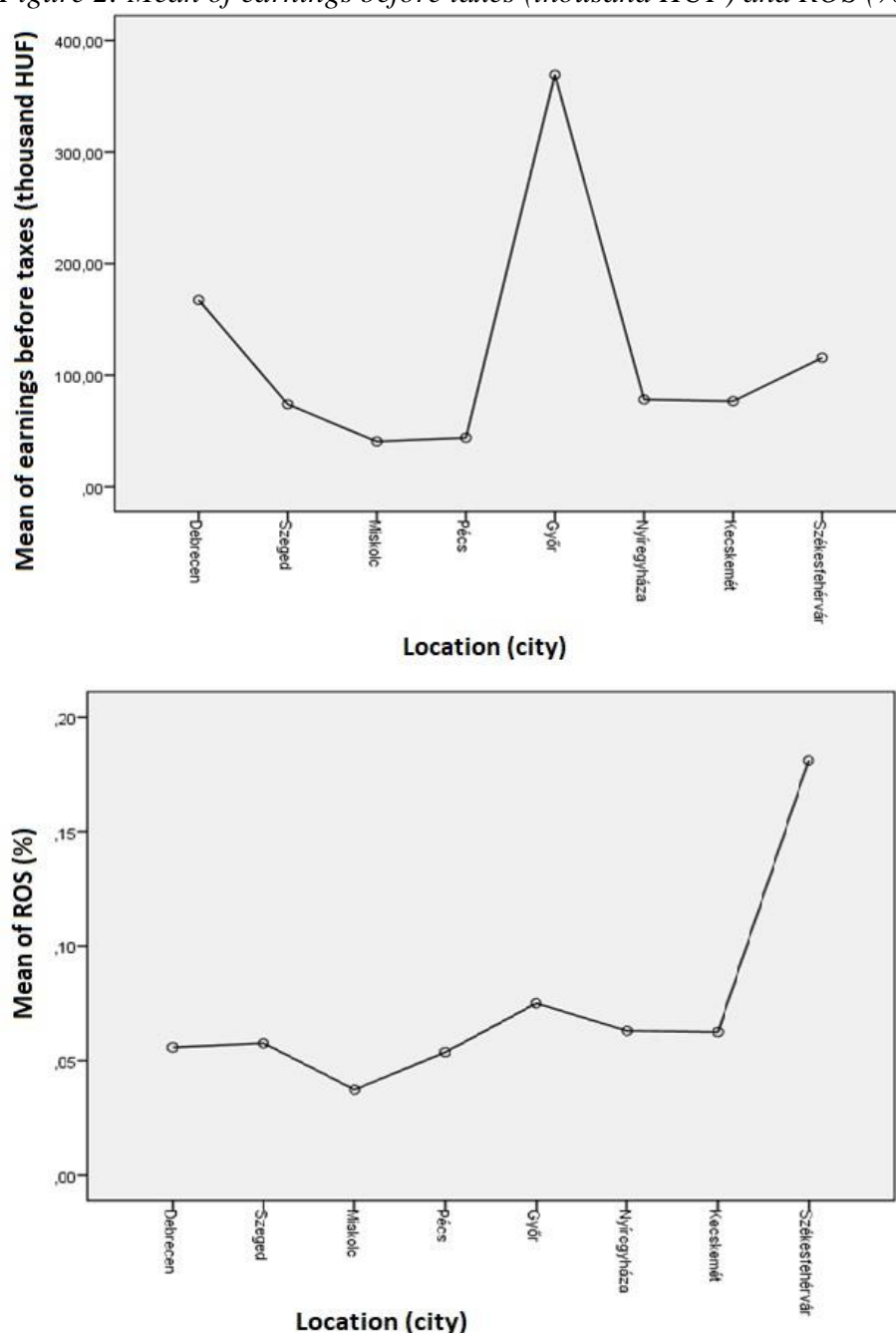
The analysis of the *impact of the location* was carried out on the whole sample and the different company size categories. On the whole sample we found a significant correlation between the location of the headquarter and the ROS indicator (sig: 0.068, Welch: 0.010, BF: 0.070) and net sales per employee (sig: 0.000, Welch: 0.000, BF: 0.000) and earnings before taxes. (sig: 0.004, Welch: 0.029, BF: 0.004). (Figure 2)

In terms of net sales and earnings before taxation, the city of Győr is outstanding, while Pécs and Miskolc are among the worst performers. The ROS indicator is the highest in Székesfehérvár (20%), in other cities, it is between 4-7%, the worst is Miskolc, and the best is Győr. Debrecen performs best in terms of sales and earnings per employee and Miskolc is the worst. Despite high ROS in Székesfehérvár, sales per capita are low. In terms of earnings per employee, Győr, Kecskemét and Székesfehérvár can also be highlighted.

The variance analysis was also performed for different company size categories. There was no significant difference between large companies and small companies. In the case of medium-sized companies, a significant difference was found between the averages of the cities in the case of ROS (sig: 0.01, Welch: 0.053, B-F: 0.016). In the sample of micro-enterprises, except the ROS indicator, there was a discrepancy between the cities of each of the independent variables examined. In the case of medium-sized companies, the ROS indicator proved to be

the most favourable (0.75%) in Győr and the negative value in Miskolc. The pattern of micro-enterprises shows similarities with the analytical results of the whole sample. Although the performance of large companies was not significantly different, we can see the differences by depicting the data by city. In the case of small and medium-sized companies, the companies of the towns of Győr, Székesfehérvár and Debrecen rose positively, and the companies of Miskolc and Pécs turned negative in terms of indicators. In the database of micro-enterprises, the values of Debrecen and Győr rose the most as in the whole sample.

Figure 2: Mean of earnings before taxes (thousand HUF) and ROS (%) by location



Source: Own editing, SPSS output

## Conclusion and further indication

We have examined whether there is a detectable relationship between the performance of companies and their territorial location. Using variance analysis, we tested whether companies' financial indicators differ from one city to another. We found a significant correlation between company performance and spatial location in the database of the top 500 cities per city. It is clear that there are discrepancies between the financial performance of the companies in each city. However, in terms of sales, earnings, ROS and sales and earnings per employee, the impact of location is difficult to detect. The different economic structures of the cities, their historical past and the current level of infrastructure development can be traced back. It can be shown that the smallest companies are more exposed to the economic processes in the region, while the most significant companies tend to be influenced by national and world market trends. Moreover, medium-sized companies are local players, as the main driving force of the local economy and rely heavily on the local economic environment. Furthermore, the size, age and industry of the company determine performance significantly.

The database of the top 500 companies per city was also limited, as it did not contain more detailed financial information than the company name, industry rankings, employee numbers, capital, ownership, revenue and earnings data. One of the constraints on the reliability of the statistical analyses carried out is that the data contained outlining values, but we justified the researcher's decision to strive for a full description of the city's economy rather than to create a non-realistic conditionality. As a further limitation, statistical and financial data allow quantitative analyses, so many factors have not been taken into account during the study (e.g. political environment, city marketing and image, milieu) that affect the competitiveness of a city.

Future possible directions and additions to the research may arise from constraints and the results of the research:

- Supplementation with qualitative methods, such as conducting an expert interview for the eight cities
- Extension of the investigated units, for example to the level of medium-sized cities or a higher territorial level (district, county). Due to the limited availability of enterprise data, the extension of investigated units depends on the availability of data.
- It is also possible to supplement the dominant companies with a single examination or to investigate the embeddedness of companies by case studies. The typing of the dominant companies of each city, the cooperation of the economic actors of the region (higher education institution, local governments).
- Expanding the range of data, including unused other variables for both regional and enterprise data.
- Applying previously unused statistical methods (e.g. regression model).

The research can provide a more complex, more in-depth, exploratory analysis of the competitiveness of Hungarian cities and their companies through the proposed additions and new directions.

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# AN ANALYSIS OF OFFICIALLY PUBLISHED STATISTICS PERTAINING TO POWER SYSTEM GREENIFICATION

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## Abstract

*In this work we try to capture some interdependencies between macro-level statistical variables related to energy system decarbonisation, to explore whether they produce reasonably expected results, or they are not able to capture essence of the phenomena, (probably) due to the lack of detail in underlying data. Our brief calculations on specific macro-level data revealed that they are not good to enable drawing clear conclusions, usable for presentation of energy policy results to the public. They produce sometimes illogical, or at least unexpected, results that call for more elaborated microanalyses. Since the presented statistical analyses were not able to reproduce expected causal relationships between the key macro-variables, any presentation of the policy results based on them could be questioned.*

**Keywords** Official statistics, power system, greenification

**JEL classification:** L50, L94, L98, C10

## Introduction

The EU policies for decarbonization have been exerting a profound influence on various aspects of EU national economies. As implementation of these policies require certain shifts in people's spending habits (basically, to spend more on energy and less on everything else), it is never politically simple to get public approval. As already discussed in many previous works, such as Stern (2006), or Nordhaus (2009), today's generation of people devalues future generation's interest in inheriting clean environment. The bigger the devaluation rate (so called *discount rate of social costs and benefits*, see Hope and Newbery (2008)), the smaller part of actual ecological external costs we are willing to bear now. From a purely ethical standpoint, the discount rate should ideally be zero.

For example, Stern (2006) uses a low estimation of 0.1%, which would add on average €70 per ton of CO<sub>2</sub> emitted from power plants (that is, per approx. 1 MWh of electricity) to the wholesale electricity prices. At the time of writing, Sept. 2017, average wholesale prices in Central Europe were about €40/MWh. For current prices, visit e.g. [www.eex.com](http://www.eex.com). With that money, the society could (ideally) finance mitigation of pollution from electricity plants to a relatively great extent. Discount rate of 0.1% means that we underestimate future generation's pollution-related costs by half only about 700 years in advance. Nordhaus (2009), however, uses the discount rate of 4%, which means that we are now prepared to pay about €6.5 per MWh more for wholesale electricity for the sake of future generations. With the rate of 4%, we devalue future pollution costs by half merely 18 years in advance. Therefore, according to

Nordhaus (2009), we myopically ignore a great portion of our own interests, too, because most of us have still more than 18 years to live.

There are many discussions on people's willingness to pay pollution mitigation (i.e. to give up spending on something else), although it is not easy to conduct a proper econometric analysis of the phenomena. To give an example, one such study was made by Scarpa and Willis (2010), in which they showed that an average British household was not willing to wait more than 3 to 5 years to return of investment in microgeneration technologies (photovoltaic, solar thermal, wind, heat pumps, biomass). At the same time, the life cycles of these technologies span between 10 and 25 years. This result shows that today's people are not ready to redirect spending towards clean technologies more than symbolically, probably because they do not see *immediate* gain for themselves. Note that the study is from the UK, where the citizens are probably better informed and more aware of ecological aspects of energy usage than in most other countries in the World.

Therefore, it is not surprising to see media and the public advocating against increased taxes (or other para-fiscal levies) for subsidies for renewables. On the other hand, success of public policies, even the best ones, critically depends on general public attitudes towards such things as reasonability and profitability of pursuing some political agenda by giving up a part of their income and consumption habits in the name of "greater good". For example, in author's country, Croatia, there has been a huge public opposition against increase of levies on final electricity consumption, imposed purposely for subsidization of renewable sources. The new level, that was increased in Aug. 2017, is €1.4 per kWh of finally consumed electricity, which is about 10% of average final price for households. In response to public pressure, to compensate for the increase of average monthly electricity bill by some €2.7 on average, Croatian Government lowered the VAT on electricity from the general rate of 25% to 13% as from the beginning of 2017.

One of obvious ways to deal with hardships of public acceptance of often costly policy measures is to *make easier for people to understand and see their effects*. Publically gathered statistics can be of use, because statistical bureaus are both trustworthy, and generally trusted, sources of data. Thus, it is interesting to explore how the existing macro-level data reflect what are believed and/or expected results of national and super-national policies. It may be useful to show the citizens that the huge amounts of money invested in implementation of carbon policies actually give the results.

The problem with macro-level data, such as those gathered by Eurostat or national bureaus, is that they are used to describe economic and physical processes that are very complicated and influenced by many different factors, the effects of which are often masked by inevitably coarse and superficial structure of final descriptive data. Naturally, a scientist or professional interested in deeper and more detailed understanding of certain phenomena can always seek more detailed data from whoever produces them (e.g. government agencies, companies involved in energy sector, consultants, etc.). However, too detailed picture can be too complicated to explain to the general public without expert knowledge of the subject in question.

In this work we will try to capture some interdependencies between macro-level statistical variables related to energy system greenification, to explore whether they produce reasonably expected results, or they are not able to capture essence of the phenomena, (probably) due to the lack of detail in underlying data.

## Analysis of basic statistical indicators

Eurostat publishes a number of statistical indicators on macro-level. They comprise data from EU28 countries, augmented by Island and Norway (EU28+2), as well as some other European countries. In this work we used EU28+2 data in time series from 2005 to 2014.

Besides basic statistical analysis, we also ran simple Granger causality tests (Granger, 1969) over certain pairs of variables, to see whether macro-level statistics can reveal relations of causation (or, better to say, time precedence) between them, in a manner one would normally expect. As regards Granger causality tests, they were carried out according to Granger (1969, p. 427). Since all the variables analysed do exhibit trendy behaviour, and thus are not stationary, we first found their respective linear regressions over the ten years period, then subtracted actual values from it, and then performed usual Granger two-way test.

A methodological note:

By de-trending the time series, we forcefully made them “stationary” as regards the deviation from trend. Most of these series exhibit cycling behavior because the underlying quantities are significantly influenced, among other things, by economic cycles. The ten-year time span can cover perhaps one full cycle or so. Due to this fact, one can hardly expect further stationarity tests applied to de-trended series to reject non-stationarity with adequate significance. For example, Dickey-Fuller test cannot be expected to “prove” that cumulative differences in de-trended series on average tend to zero. However, when inspecting graphs of these series, in both original and de-trended variant, one cannot spot tendencies such as increasing (or decreasing) volatility that would imply covariance non-stationarity.

To conclude, although due to the structure of data we cannot really test for non-stationarity (notably because for anything related to renewables, longer time series, that would contain at least several economic cycles, do not exist), graphical representations do not suggest covariance non-stationarity. This is the best estimation we can provide, and therefore, the term “Granger causality” in context of this article must be taken with certain caution.

The Eurostat’s indicators we analysed were:

- Share of RES-generated energy consumption in gross inland electricity consumption (%).
- Gross inland RES-generated energy consumption (thousands of tons of oil equivalent, kTOE).
- Gross inland hydro-generated energy consumption (kTOE).
- Gross inland wind-generated energy consumption (kTOE).
- Gross inland photovoltaic-generated energy consumption (kTOE).
- Gross inland consumption of natural gas (kTOE).
- Total greenhouse gas (GHG) emissions indexed to 1990.
- Total GHG emissions (thousands of tons of CO<sub>2</sub> equivalent, kTCO<sub>2</sub>E).
- Gross inland hard coal consumption (kTOE).
- Energy dependency (import energy divided by gross inland energy consumption, %).
- Implicit tax rate in energy (ratio between energy tax revenues and final energy consumption €/TOE).

- Gross inland energy consumption (kTOE).

We will present only a relatively small part of the results obtained from statistical analyses of these indicators, the ones that yielded most interesting results.

### *Some general descriptive statistics*

First, we shall give a brief outline of most important statistics pertaining to GHG emissions, from European Commission (2016).

Fig. 1. shows total energy consumptions in macro-regions of the World. Note how EU is decreasing total consumption, which is due to increased energy efficiency. On an opposite side, China is rapidly increasing energy usage due to its fast economic development based on dirty energy technology. The same goes to the “Rest of the World”, which is in fact the developing World. It looks that the EU is the only macro-region that is decreasing energy usage, which is a fact that can have many political dimensions and consequences. The picture is analogous when it comes to GHG emissions. The developing countries are increasing emissions in struggle to industrialize themselves and catch connection to the more developed part of the World. The situation can be more precisely viewed by comparing Figs. 1 and 2. The latter shows CO<sub>2</sub> emissions by same macro-regions. Note for example that the USA, although increasing its energy usage, decreases emission. This is a consequence of increased energy efficiency in both households and industry, as well as increased energy production from RES. On the other pole, China, Asia, and Rest of the World, increase CO<sub>2</sub> at very significant pace, indicating increased usage of dirty technology. Naturally, on a more philosophical level, no one can blame people of poor economic status for trying to get better life conditions using more affordable technologies, which were, after all, used by the developed World since the beginning of industrialization, until very recently.

It is interesting to observe what happens with GHG emissions in Europe (see Figs. 3 and 4). The GHG emissions, indexed to 1990, are displayed in Fig. 3. Fig. 4 brings up resulting indexes after 25 years of tracking. Note that in the middle of the distribution mostly countries of developed Western Europe rest. The left wing, the ten countries that reduced carbon pollution the most, all except the UK, belong to post-communist Europe. The reason for that is most probably the economic disaster of transition period, which began in early nineties, when these economies experienced a harsh recession and de-industrialization. As another developing country, and Europe’s “tiger economy”, Turkey dominates the right side of Fig. 4. (Note that Turkey was never a communist country, so it did not go through post-communist economic depression.) Recently, it experiences a lasting and quick economic growth, with 25-year (1992-2016) average growth rate of GDP per capita of 3.11%, and with standard deviation of it of 4.68 percentage points (calculated from World Bank, 2017). This growth increased energy consumption in both residential and industrial parts of the society. Note that Turkey’s emission curve in Fig. 3 is, on average, the far fastest growing one. Even more, it is the only one still steadily growing. One could perhaps put in the same group Ireland, Spain, and Portugal, while Island, Cyprus and Malta, as small islands, each have their own specific circumstances, and they cannot be compared to others without a more detailed analysis.

Figure 1. World energy consumption (MTOE). Source: European Commission (2016, p. 10).

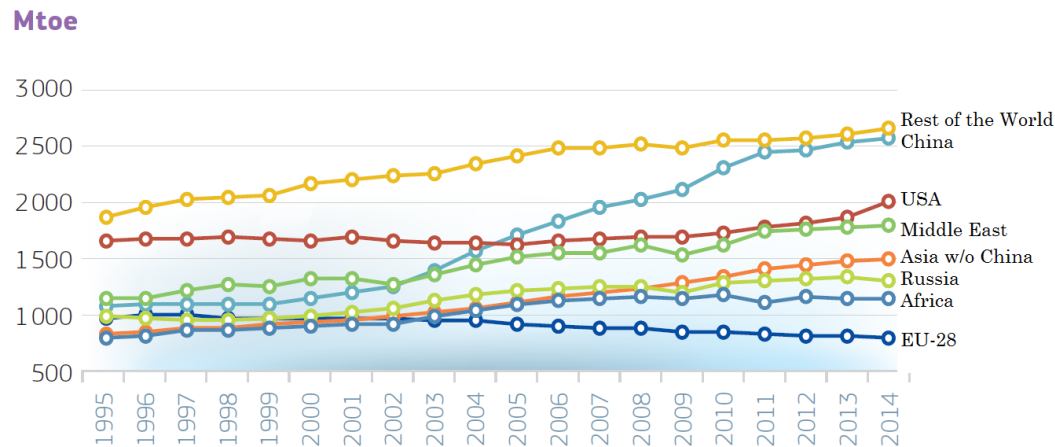
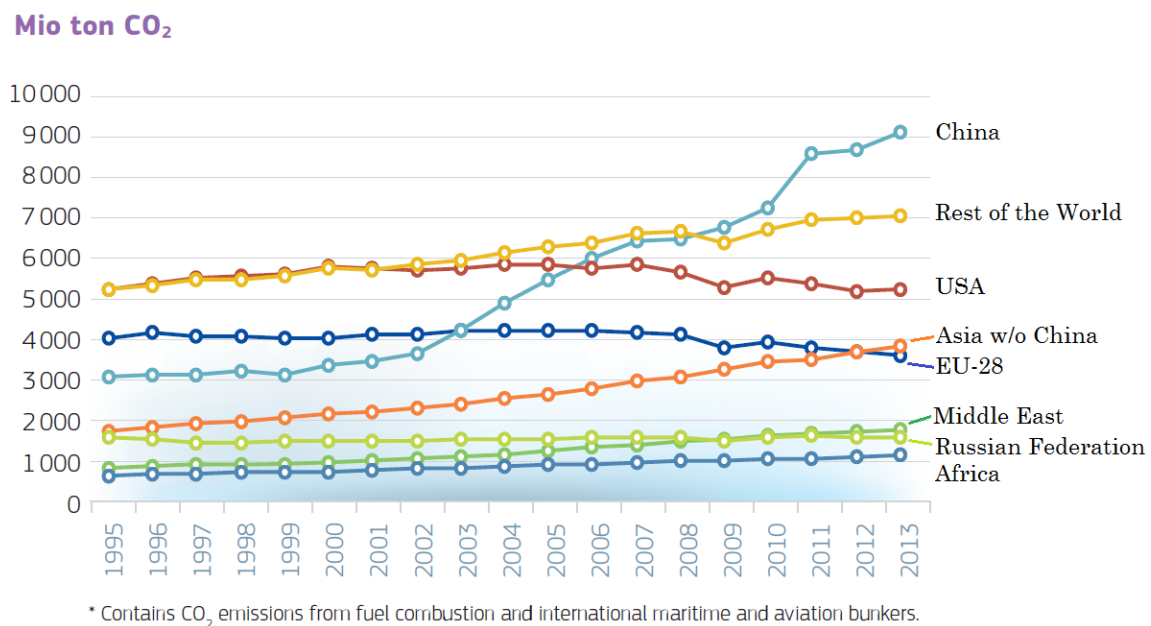


Figure 2. World CO<sub>2</sub> emissions (millions of tons of CO<sub>2</sub>). Source: European Commission (2016, p. 18).



In this regard, Europe differs from the rest of the World: the Europe's developing countries have been contributing to GHG emissions in two very different ways:

- the ones that went through post-communist depression of nineties lowered emissions due to massive de-industrialisation, while
- the others increased emissions in pursuit of industrial development.

The developed countries show moderate decrease in emissions due to increased energy efficiency.

Figure 3. Greenhouse gas emissions in selected countries from Europe since 1990 to 2014 (in millions of tons CO<sub>2</sub> equiv., indexed to 1990). For the same of clarity, some countries were omitted. Source of data: Eurostat.

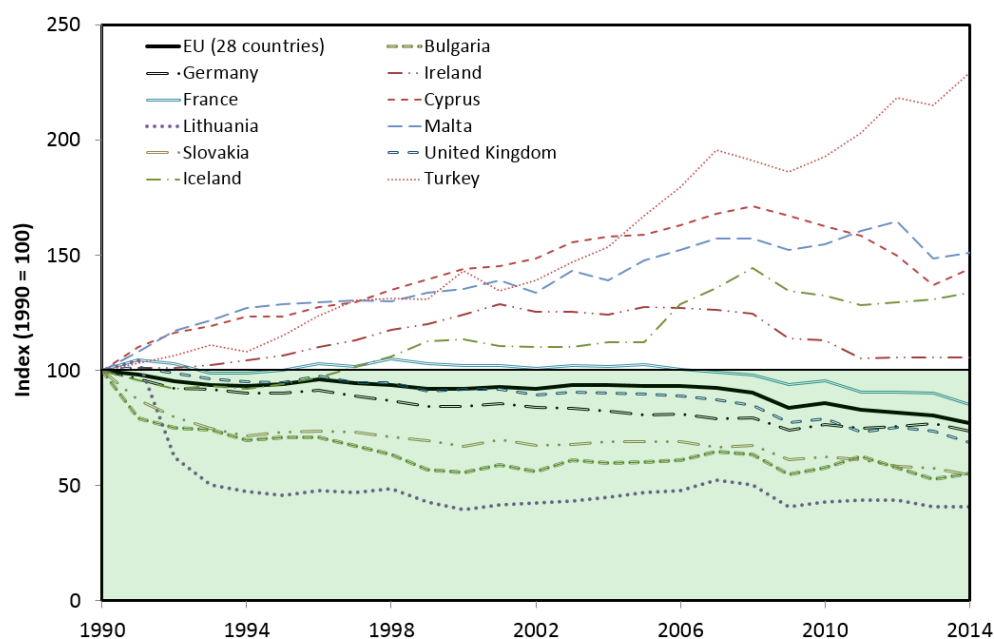
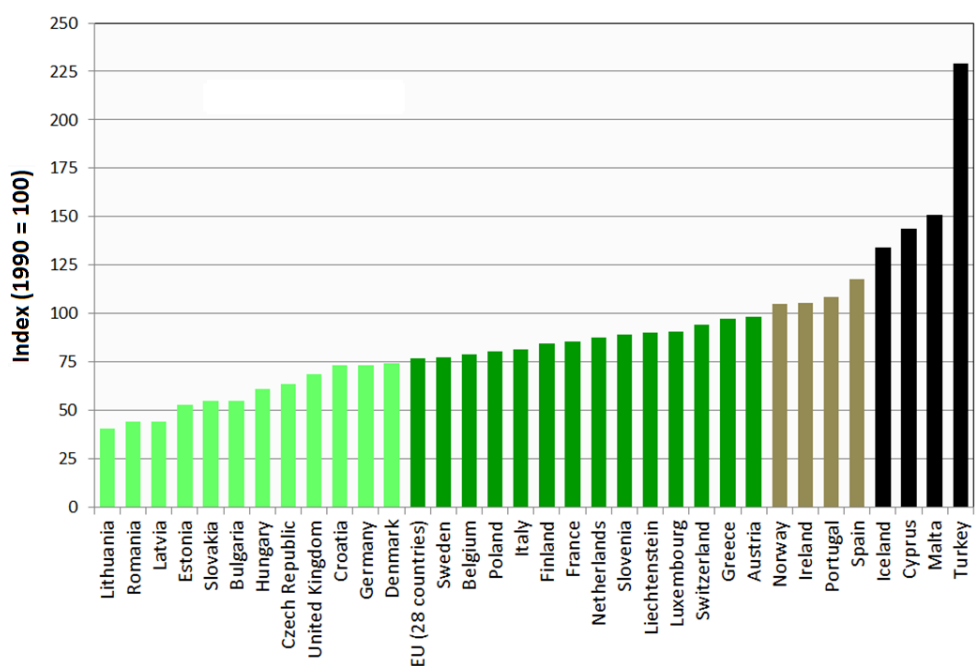


Figure 4. Greenhouse gas emissions in 2014 (in millions of tons CO<sub>2</sub> equiv., indexed to 1990). Source of data: Eurostat.



*Relations between selected variables on macro-level*



## RES share in electricity vs. GHG emission index in EU28+2 from 2005 to 2014

Fig. 5 exhibits relation between RES share in electricity consumption and GHG emissions during the 2005 – 2014 period, indexed to 1990, whereas Fig 6. presents  $R^2$  values (with sign of  $R$ ) for individual countries. As expected, the correlation is negative and quite firm, with  $R^2 = 0.9375$ . As regards individual countries, correlations are in most cases also tight and negative, with notable exceptions of Estonia, Iceland, and Malta. Latvia and Poland have  $R^2$  below 0.5. These exceptions cannot be explained without deeper investigation. Namely, as about one third of GHG emissions come from generators running on fossil fuels, and as replacement of fossil fuel generated electricity with renewable one leads to decrease of fuel consumption in generators, it is only natural to expect relatively firm correlation. Yet, causation is another question, as it is quite possible that both indicators are under firm influence from some other mechanism that cannot surface in a simple regression.

Here are some useful approximate carbon-to-electricity (ton CO<sub>2</sub> to MWh) conversion factors for various generation technologies, during their life cycle, based on Heal (2009):

- |                              |                                    |
|------------------------------|------------------------------------|
| - coal-fired plants          | 0.8-1.1 TCO <sub>2</sub> /MWh;     |
| - combined-cycle gas-turbine | 0.43 TCO <sub>2</sub> /MWh;        |
| - nuclear plants             | 0.006 TCO <sub>2</sub> /MWh;       |
| - hydro plants               | 0.004 TCO <sub>2</sub> /MWh;       |
| - photovoltaic facilities    | 0.06-0.15 TCO <sub>2</sub> /MWh;   |
| - wind plants                | 0.003-0.022 TCO <sub>2</sub> /MWh; |
| - biomass plants             | 1.5 TCO <sub>2</sub> /MWh.         |

To examine what of the two variable changes tend to happen before, we performed a test of Granger causality. Testing the null-hypotheses (in case of two variables, A and B, the hypotheses say that (1) earlier values of A do not Granger-cause today's values of A and/or B, and (2) that earlier values of B do not Granger-cause today's values of B and/or A) revealed the following features of analysed data sets:

- RES share in electricity does not Granger-cause GHG emission index, as all slope coefficients turn out to be zero, with statistical significance of 5% or better. The slopes of RES share past value predictors were also all zero. The whole regression was insignificant (with adjusted  $R^2$  equal to -0.5), and all slope coefficients individually were found insignificant, too. Therefore, this regression could not really tell anything about the temporal precedence in that direction.
- GHG emission index Granger-cause RES share in electricity (i.e., the null-hypothesis cannot be rejected) with time lags of 4, 6, 7, and 9 years, and GHG emission index also may cause itself with time lag of 1 and 5 years.

It is not easy to explain such counter-intuitive results, based on macro-level data only. In this particular case, one can always be suspicious about the 5-year lag, because it pertains to 2009, the peak year of great global economic crisis. However, why GHG emissions would Granger-cause themselves with merely a 1-year lag, must be left for further research.

As macro-level data enable only relatively superficial analyses, because many influential variables with mutually cancelling influences may be hidden inside the “big box”, one can conclude, at that level, that RES deployment does not (or, more precisely, cannot be proved to) drive GHG emission reduction. The GHG index change seem to precede RES deployment a few years ahead (still, with limited known available data). This is counter-intuitive, and deeper research should be performed to learn why the macro-level data exhibit this feature. For, one would normally expect the two variables to have mutual effect, not necessarily one-directional, and probably on a more immediate pace. Therefore, we shall leave this for further research and discussions.

#### Wind-generated electricity consumption vs. GHG emission in EU28+2, 2005-2014

One of quite interesting relations is that between gross inland wind-generated electricity consumption (expressed in kTOE) and gross GHG emissions (expressed in kTCO<sub>2</sub>eq.). As harvesting wind is probably the most prolific technology for RES electricity generation today, and as marginal contribution to GHG emissions from it is near zero, one would expect tight relation between physical quantities of the two. Fig. 7 contains scatter diagram with two types of regression functions (linear, and 6<sup>th</sup> order polynomial) for EU 28. While the linear regression proves to be quite tight on its own, the polynomial one, besides having still better  $R^2$ , may reveal certain periodicity that seems to coincide with economic cycles. (We probably would not point at it was it not there a quite similar trace of periodicity, with about the same period and turning points, in another pair of variables (not presented in this article), the RES share in electricity and hard coal consumption.) Yet, it is only logical: wind accounts for largest *marginal* contribution to RES generation, while coal accounts to a very significant degree for marginal decrease in GHG. Logically, one could expect that burning coal and other fossil fuels for purposes other than electricity generation would follow economic growth more intensely than gross electricity consumption. At the same time, RES electricity production could be expected to respond quite less intensely to GDP, due to the fact that it is exogenous as regards production from existing plants, and that generous subsidies made RES investments less susceptible to immediate influence of general economic conditions. Yet, a ten year period is too short to allow for such far reaching conclusions.

It is interesting to observe how much the wind contributes to RES share in gross inland electricity consumption. Fig. 8 is a scatter diagram of the two variables with the best linear, and exponential, regression functions. Note that both of them are very tight, but the exponential one is somewhat tighter, indicating that wind is still the main contributor to marginal RES increase, as well as that this contribution is still speeding up. That is, wind harvesting technology, although the most mature one of all new RES technologies, is seemingly still in the uptake phase, in spite of gradual decreasing of state subsidies.

Regarding Granger causality between wind-generated electricity consumption and GHG emission, we found the following:

- Wind-generated electricity does not Granger-cause GHG emissions (and it does not cause itself, either). The overall adjusted  $R^2$  equals 0.68, yet,  $t$ -tests of all slope coefficients showed insignificance (that is, they were all worse than 10% threshold).
- GHG emissions seem to precede wind generation of electricity. The non-existence of Granger causation was not rejected for time lags of 2, 3, 5, and 8 years. (It also turned out

that GHG predicts well itself with time lags of 3, 4, 6, and 7 years.) The adjusted  $R^2$  of this regression was as high as 0.93.

Figure 5. RES deployment and GHG emissions in EU28 from 2005 to 2014. Source of data: Eurostat.

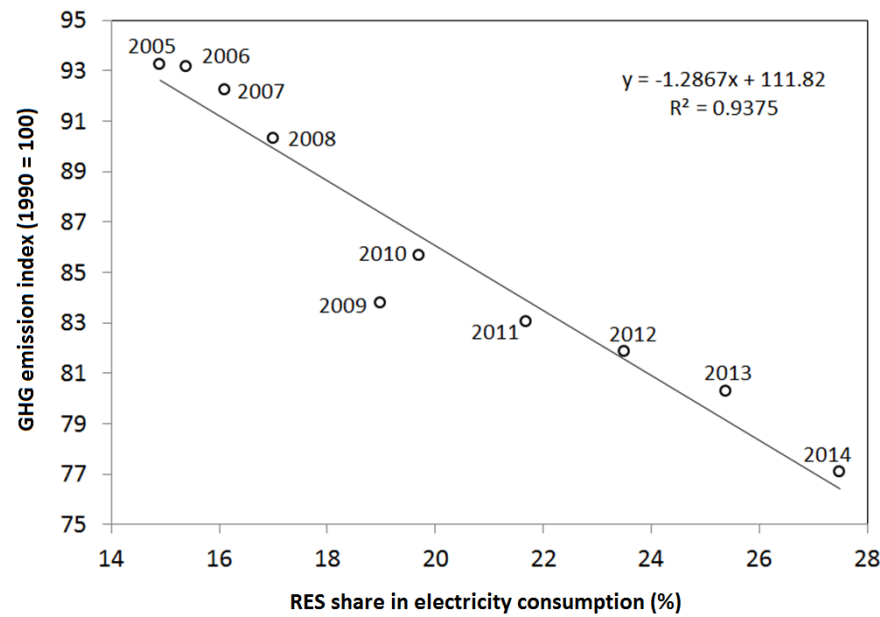


Figure 6.  $R^2$  for individual countries, EU28+2. The quantities shown are:  $R^2 \times \text{sign}(R)$ . Source of data: Eurostat.

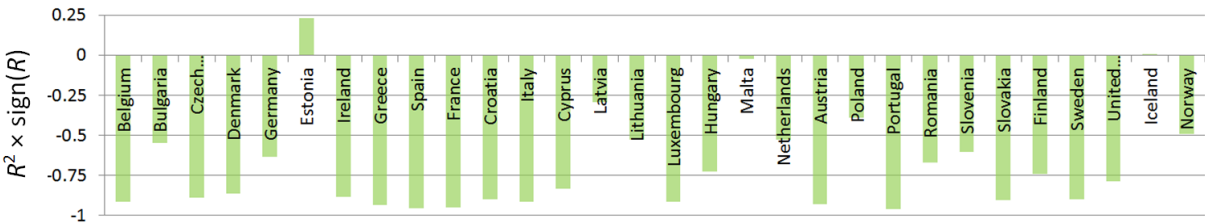


Figure 7. Wind-generated electricity consumption and GHG emissions in EU28 from 2005 to 2014. Source of data: Eurostat.

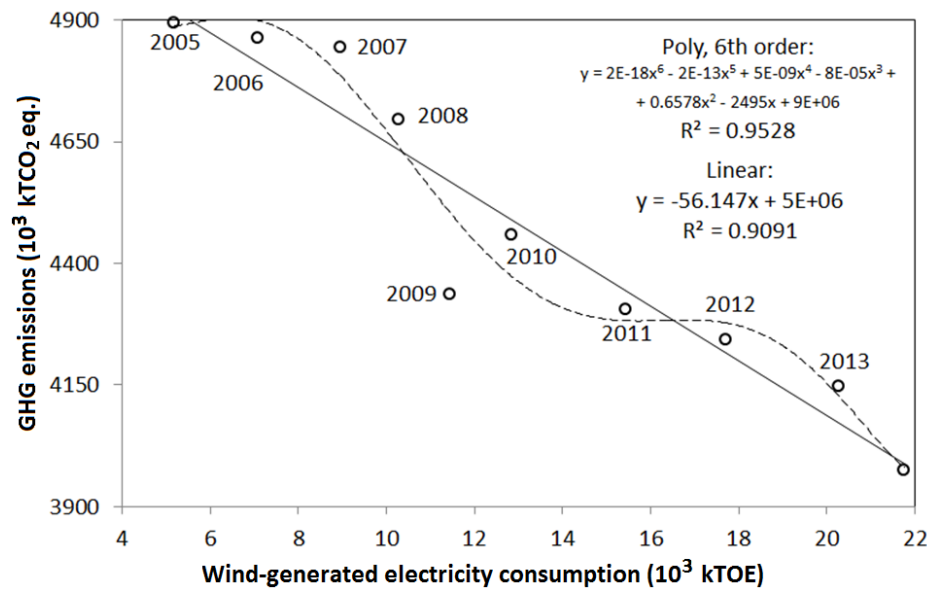


Figure 8. Contribution of wind to RES share in electricity in EU28 from 2005 to 2014. Source of data: Eurostat.

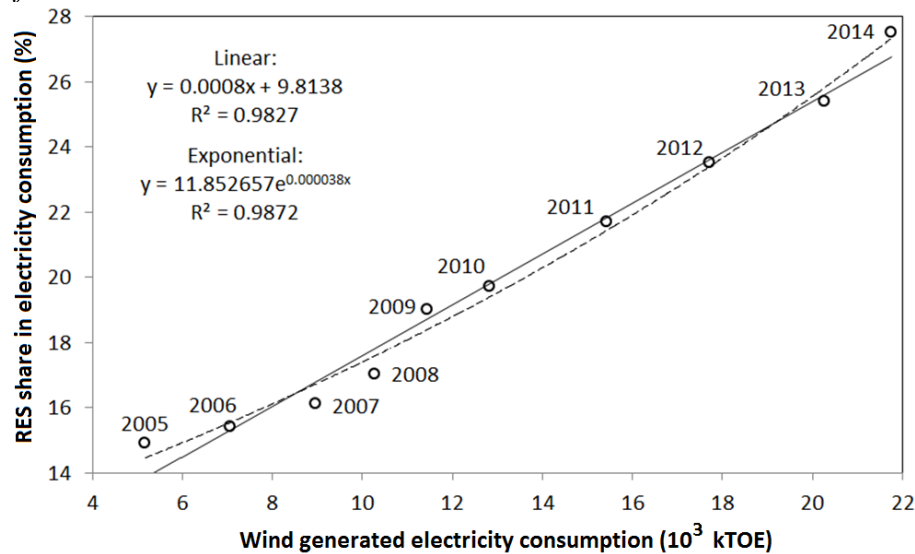
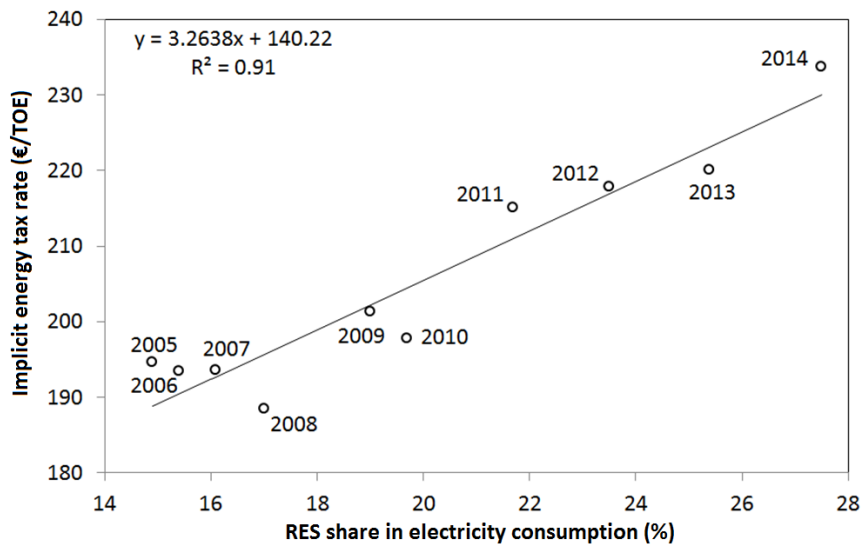


Figure 9. RES share in electricity vs. implicit energy tax rate in EU28 from 2005 to 2014. Source of data: Eurostat.



These results are consistent with findings from Sec. 2.2.1., and are just as much counter-intuitive. Having in mind short time frame of analysis, as well as macroscopic level of data, one can think of GHG decrease as a long-term policy-driven process rather than a process driven by replacement of dirty energy generators by clean ones. In fact, the latter can also be viewed as one of the consequences, or by-products, of this policy. However, more detailed investigations should certainly be conducted.

As regards Granger causality between wind-generated electricity consumption and RES share in electricity consumption, the findings are:

- Wind-generated electricity consumption Granger-causes RES share in electricity consumption with a time lag of one year. Adjusted  $R^2$  is 0.76. It Granger-causes itself, too, with all time lags except 2, 6, and 10 years.
- RES share in electricity Granger-causes wind generation with 2, 4, 5, 6, 7, and 8 years lags, but it does not Granger-cause itself, at all. Adjusted  $R^2$  is 0.89.

It seems that wind generation does drive RES share quite immediately and straightforwardly (one year lag, solely), as theoretically expected. Then, it is no surprise that RES share precedes wind generation, too, but not in the causal sense. It should rather be viewed as a numerical fact originating from still increasingly growing marginal contribution of wind to RES portfolio (recall Fig. 8).

RES share in electricity consumption vs. marginal energy tax rates in EU 28+2,  
2005-2014

Our last example is about relation between RES deployment and tax rates on energy in the EU28+2 space. Fig. 9 establishes rather a firm correlation between the two, which is not a surprise given the fact that in the first phase of RES deployment state subsidies were most important factor in RES project financing. Since 1 TOE equals 11.63 MWh, it follows that, on average, one additional percent of electricity coming from RES requires  $3.2638/11.63 = 0.28$  €/MWh of additional taxes, and this is not the only cost of RES integration. (Take for comparison average electricity wholesale prices, which were near 40 €/MWh during last several years). From the ten year period analysed it is not clear whether the pace of change

speeds up, or slows down. Yet, the RES integration has a prominent influence on public spending.

Regarding Granger causality, our findings from macro-level data are:

- RES share in electricity consumption Granger-causes implicit energy tax rate with time lags of 0, and 2 years. Thus, the effect is rather immediate (without time delay, which is normal for any variation of feed-in or premium system), and the two-year lag can perhaps be associated with political process that needs some time to adapt to newly increased RES generation capacities. The adjusted  $R^2$  is 0.73.
- Implicit energy tax rate Granger-causes RES share in electricity with all time lags but zero, (with 3<sup>rd</sup> slope coefficient being only very slightly less significant than 5%). Adjusted  $R^2$  is 0.64. Since these tax rates are closely related to the money investors can expect in the future from subsidies, such a result was expected.

## Conclusions

Our brief calculations on specific macro-level data pertaining to greenification of economy revealed that they are, basically, not too good to draw clear conclusions usable for presentation of energy policy results to the public. They can merely be used to illustrate some very general trends, but without much meaning in them. They produce sometimes illogical, or at least unexpected, results that call for more elaborated micro-analyses.

Since the implementation measures usually incur additional costs to final consumers of electricity, a failure to convey clear messages to the general public can put them, however smart or good they may be, to a considerable political risk. Statistical indicators can play a role in public presentation of policy results only if their mutual relations are clear and conclusive, which the ones we found in our simplistic analyses apparently are not. Any vagueness about what one can infer from them can undermine credibility.

Since the presented statistical analyses were not able to reproduce expected causal relationships between the key macro-variables, any presentation of the policy results based on them could be rightfully questioned. Conveying honest messages to the general public is more than presenting mere facts. However, if the facts cannot support the political messages, if the citizens cannot see causality between costs they have to pay, and the quantifiable positive outcomes of the policy measures, it should be no surprise to see growing public opposition, or even counteraction.

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# EFFECTS OF THE CONCENTRATION OF MANUFACTURING INDUSTRY ON CROATIAN REGIONAL GROWTH

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## Abstract

*Spatial concentration of economic activity is a phenomenon that has important implications for the development potential of the local, regional and national economy. This statement stems from two facts: first, there is a tendency of people and economic activity to concentrate in major cities and regions; and second, similar and connected companies sometimes agglomerate together at a particular location to take advantages of the external economies. This paper examines the effects of spatial concentration of manufacturing industry on Croatian regional growth. The industrial concentration (especially of the manufacturing sector) improves competitiveness among firms, enhances knowledge spillovers and increases the demand for labor and industrial products, leading ultimately to potentially higher growth rates. To examine the effects of concentration of manufacturing industry on Croatian regional growth, a panel analysis is conducted combining spatial (21 Croatian counties) and time (16 time periods) dimensions. The best way to measure concentration is by using the location formula to calculate location quotients whether on the basis of employment or gross value added. Therefore, the location quotients are independent variables of interest in the model whereas GDP, GDP p.c. and Gross value added of manufacturing sector are dependent variables and they serve as the measures of total output, regional economic prosperity and industrial output, respectively. Based on the results of the panel analysis it can be concluded that manufacturing industry is still an important factor of regional growth in Croatia, although its relative significance in Croatian economy is continuously declining over the last two decades.*

**Keywords:** concentration of manufacturing industry, Croatian regional growth, panel data analysis

**JEL classification:** O14, N90, C23

## Introduction

The issue of regional development gained political and economic significance immediately after the end of the Second World War. The governments of different countries implemented various interventionistic measures to promote equally distributed growth across the entire national territory. Regions participate in growth and have effects on economic performances of national economy. Natural and human resources have tendency of concentrating and



regional possibilities of using local factors, mobilizing resources and developing competitive environment determine development capacity of a region. Given that growth is often deployed to only a few regions within a given country, concentration of economic activity can have long-term effects on national growth. Of all economic activities, the manufacturing has a prominent role. This is the most significant activity in medium-income countries such as Croatia. In the context of the interdependence of industry and regional development, the spatial concentration of the Croatian manufacturing industry and its impact on Croatian regional development is the main topic of this manuscript.

## **Literature review**

Numerous studies have demonstrated that concentration of industrial activity (especially manufacturing) plays decisive role in (regional) development (Wandel, 2009; He, Wei & Pan, 2007; Dinc, 2015; Haraguchi, Fang Ching Cheng & Smeets, 2016; Rosenfeld, 2017).

Geographic concentration is a feature of many industries and is recorded in most countries and at all spatial levels. Known examples of concentrations include high-tech agglomerations such as the Silicon Valley, Boston Route 128, the research triangle park of North Carolina or Sophie Antipolis in France. But the phenomenon is not limited to the previous examples. There are cases related to the "old" industry and include examples such as the carpet industry in Dalton in the United States, the ceramic industry around Stoke-on-Trent in England and the lace industry located in Nottingham (Devereux et al., 2004). Understanding this process has attracted attention of academia and politics for more than a century. The beginning of research in this area is usually attributed to Marshall (1890) who identified three types of positive externalities caused by the geographical concentration of the companies - proximity to suppliers and consumers, flexible and specialized labor markets and knowledge transfer. Relying on Marshall externalities, the main theorist of New economic geography Krugman (1991a) used various variants of the Gini coefficient to measure geographic concentration. According to him, the geographical concentration of production is the consequence of increasing returns. The model (1991b) he proposed is based on the interaction of rising returns, transport costs and demand. Ellison and Glaeser (1997) have developed the theoretical framework for the analysis of geographic concentration using the dartboard metaphor to explain "random" agglomeration. This led them to find two new "natural" indices for measuring industrial localization and relative forces of agglomeration among different industries. Using series of data on US manufacturing industry 1972-1992, Dumais et al. (1997) found out that the geographic concentration of the industry mildly dropped and that the location of industrial agglomeration could change over time. In his paper, Brülhart (1998) provided an extensive classification of seminal papers and models that are used for the explanation of industrial location and concentration. Midelfart Knarvik et al. (2000) have explored changes in industrial locations in Europe over the last few decades and compared them to the US. They concluded that industries with low skilled labor became more concentrated while significant dispersion occurred among medium sized and large technological industries. Devereux, et al. (2004) and Campos (2012) concluded that in the United Kingdom, the geographically most concentrated industries are low-tech industries. Maurel and Sédillot (1999) identified three typed of highly-localized industries in France. The first type refers to industries whose location is determined by access to raw materials and other natural resources (for example mining and quarrying industry); For the traditional industry, such as textiles, the initial location was determined during the industrial revolution, but some later external effects have affected staying at the same location; finally, the third type refers to high-tech industries characterized by significant knowledge spill-over. An interesting conclusion is given by Dekle (2002) who examined the impact of dynamic

externalities at the regional level. The results show that externalities do not exist for manufacturing industry but are present for the finance, services, wholesale and retail. The impact of dynamic externalities on regional manufacturing growth in India was in the focus for Sharma (2017). Similar as Dekle (2002), he concludes that dynamic agglomeration externalities have no effect on the growth on manufacturing productivity.

He, Wei and Pan (2007) examine the geographical concentration of manufacturing industries in China. They conclude that natural advantages, agglomeration economies, and institutional changes together determine the spatial patterns of industries in China. Trejo (2009) examines determinants of the regional concentration of particular industries in Mexico. Data for the period 1988-2003 show that on average the industries have become more dispersed in terms of production and employment. Among the most concentrated industries are those closely related to international markets and are mostly located in traditional industrial regions.

### **Analysis of the effects of concentration of manufacturing industry on Croatian regional growth**

The examination of the effects of the concentration of manufacturing industry on regional economic growth comprises of qualitative and quantitative aspects of analysis. The qualitative aspect relates to the analysis of factors that determine the spatial concentration of the manufacturing industry, their contribution to regional economic growth and the implications they have on economic policy at regional and national level. On the other hand, quantitative analysis refers to the measurement of the spatial concentration index in each region (county) using the location quotient which will attempt to determine the effects of spatial concentration of manufacturing industry on development differences among Croatian regions (counties). The analysis will be carried out using an econometric model with panel data, i.e. the spatial and time dimensions will be combined.

The location quotient as a concentration index is one of the most frequently used measures in the studies on industrial concentration and specialization. It is commonly used in quantifying and comparing industry concentrations in a given area, making it easier to comprehend economic strengths and weakness of a particular area. This is a relative measure used for the comparison of industrial composition of a region to the rest of the country. In other words, if the location quotient is calculated on the basis of the number of employees, the location quotient is a ratio of the shares that specific industry has in regional and national employment, respectively. If the location quotient is greater than one ( $LQ > 1$ ), a region has proportionally more workers in the specific industry than the rest of the country. Location quotient can also be calculated on the basis of gross value added (GVA). In any case, the location formula can be written as follows:

$$LQ = \left( \frac{E_{ij}/E_j}{T_i/T} \right) \quad .1$$

Where:

$E_{ij}$  – employment (or GVA) in industry  $i$  in county  $j$ ;

$E_j$  – total employment (or GVA) in county  $j$ ;

$T_i$  – employment (or GVA) in industry  $i$  in the country;

$T$  – employment (or GVA) in the country;

Models to be constructed in this paper have the primary task to determine whether the concentration of manufacturing industry explains development differences among Croatian regions. Therefore, the focus will be on variables that capture spatial concentration of manufacturing and that is the locational quotient calculated on the basis of the number of employees and gross value added. A total of 6 models will be constructed for the period 2000-2016 with the LQ variable, i.e. location quotient calculated on the basis of the number of employees and gross value added, as a variable of interest. In the first two models, the dependent variable will be GDP of a county which is a measure of county's total output. Other variables such as gross investments in fixed assets and employment will be included as explanatory variables, that is, they are not directly related to the concentration index but have an impact on GDP. Apart from the GDP, impact of the concentration of manufacturing industry on the regional GDP p.c. will also be examined. Therefore, all models will be based on following functions:

$$Y = f\{INV, L, LQ\} \quad .2$$

$$Y_{pc} = f\{INV, L, LQ\} \quad .3$$

Where gross investment in fixed assets (INV), number of employees (L) and the concentration index (LQ) are the function of county's GDP (Y) in the equation 1.2 and county's GDP p.c. (Y<sub>pc</sub>) in the equation 1.3. Both equations can be written in the form of Cobb-Douglas production function:

$$Y = A * INV^{\alpha_1} L^{\alpha_2} LQ^{\alpha_3} \quad .4$$

$$Y_{pc} = A * INV^{\alpha_1} L^{\alpha_2} LQ^{\alpha_3} \quad .5$$

Furthermore, apart from the impact on regional GDP, the effects of the concentration of manufacturing industry on manufacturing output itself will be tested. In that case, the dependent variable will be gross value added (GVAmnfc) of the manufacturing industry, while independent variables are the location quotient (LQ) measured by the employment and gross value added, employment in the manufacturing industry (Lmnfc) and gross investment in fixed assets of manufacturing industry (INVmnfc). The production function of the model can be written:

$$GVAmnfc = f\{INVmnfc, Lmnfc, LQ\} \quad .6$$

The equation 1.6 can also be written in Cobb-Douglas form:

$$GVAmnfc = A * INVmnfc^{\alpha_1} Lmnfc^{\alpha_2} LQ^{\alpha_3} \quad .7$$

Once the models have been constructed in which LQ variable is accepted as an independent variable of interest, the final step is to specify the model using panel data which combines time series data (16 years) and cross-section data (21 county) that will give 294 observations:

$$Y_{it} = \alpha_0 + \alpha_1 INV_{it} + \alpha_2 L_{it} + \alpha_3 LQ_{it} + e_{it} \quad .8$$

$$Ypc_{it} = \alpha_0 + \alpha_1 INV_{it} + \alpha_2 L_{it} + \alpha_3 LQ_{it} + e_{it} \quad .9$$

$$GVAmnfc_{it} = \alpha_0 + \alpha_1 INVmnfc_{it} + \alpha_2 Lmnfc_{it} + \alpha_3 LQ_{it} + e_{it} \quad .10$$

Where:

$i = 1, 2, 3, \dots, 21$  ( $i$  denotes  $i$ -th spatial unit)

$t = 1, 2, 3, \dots, 16$  ( $t$  denotes  $t$ -th time period)

It is expected that all coefficients in the specified models ( $\alpha_1, \alpha_2, \alpha_3$ ) will be positive, meaning that all variables have positive effects on county's GDP, GDP p.c. and manufacturing output. Since each county is observed over the period of 12 years, and data for dependent variables are available for each year, a balanced model will be used (each spatial unit will be combined with each observation of the time series).

Generally, linear panel data can be modeled in three ways (Asteriou and Hall, 2007, 345-348):

1. The Pooled OLS model (with constant regression parameters) assumes there is no difference in data of spatial dimension (N). In other words, the model estimates a common constant for all spatial units (a constant is equal for all counties). The main problem with this type of model is that it does not make differences among counties.
2. The Fixed effects model allows for the existence of heterogeneity or individuality among the counties so that all spatial units have different constants. The essential feature of a Fixed effects model is the ability to capture all effects that are specific to a particular individual or group and which do not vary over time. For example, if there is a panel of countries, fixed effects will capture common characteristics such as geographic factor, natural endowment or any other factor that vary between countries but not over time. Fixed effects model is very useful for smaller samples and in the case of larger datasets where N is a very large number, it is recommended to use the Random effects model.
3. The Random effects method is an alternative method of estimating the model. The main difference to Fixed effects model is that the constants of each individual or a group are not fixed but random parameters. The main disadvantage of the Random effects model is a series of specific assumptions that must be made about the distribution of the random component. Also, if the unobserved effect specific to a group is correlated to the explanatory variable, the estimates are biased and inconsistent.

All suggested models have their advantages and disadvantages. Therefore, it is necessary to determine which model fits the data best. The most convenient way to do that is by using the Hausman test which is statistical tool designed to select between Fixed effects and Random effects model. Hausman test is based on the idea that, under the hypothesis of no correlation ( $H_0$  – no correlation), OLS and GLS are consistent, but OLS is inefficient, while under the

alternative hypothesis, OLS is inconsistent but GLS is not. In the case of panel data, the choice between Fixed and Random effects model consists of testing whether the regressors are correlated with the individual (mostly unobserved) effect. If  $H_0$ , which states that individual effects are not correlated with other regressors, is not discarded, the Random effects model is more appropriate (Asteriou and Hall, 2007, pp. 348-349). In this paper Hausman test will be applied to all models specified above (1.8-1.10).

A summary of the variables used in the models, their explanation and the description is given in Table 1.

*Table 1 Summary of variables, their description and data used in panel models*

Variable	Description	Data
$Y$	Output	GDP at county level in current Croatian kunas for period between 2000 and 2016.
$Y_{pc}$	Development indicator	GDP p.c. at county level in current Croatian kunas for period between 2000 and 2016.
$GVAmnfc$	Output of manufacturing industry	Gross value added at county level in current Croatian kunas for period between 2000 and 2016.
$INV$	Investment	Gross investment in fixed assets at county level in current Croatian kunas for period between 2000 and 2016.
$INVmnfc$	Investment in manufacturing industry	Gross investment in fixed assets in manufacturing industry at county level in current Croatian kunas for period between 2000 and 2016.
$L$	Employment	Persons employed in legal entities at county level for period between 2000 and 2016. Situation as on 31 March.
$Lmnfc$	Employment in manufacturing industry	Persons employed in legal entities at county level in manufacturing industry for period between 2000 and 2016. Situation as on 31 March.
$LQ$	Location quotient	The measure of geographical concentration of industry. It is calculated as the ratio of the shares that manufacturing industry has in regional and national employment (or GVA).

## Results of the panel analysis

In order to examine the effects of the concentration of the manufacturing industry on Croatian regional development panel data set is formulated for 21 cross-sections (Croatian counties) and 16 time periods (2000-2016). All data in this paper were collected from the Croatian Bureau of statistics (DZS) and the software used for the analysis is Stata 13.

The validation of the models has been carried out in several steps. The first step is to examine if there is a multicollinearity problem among independent variables. One of the mostly used diagnoses of multicollinearity is VIF (Variance inflation factor) method. The name derives from the fact that in the case of a high correlation of the independent variable  $x_j$  with other independent variables resulting in a coefficient of determination of nearly one, the variance of  $\beta_j$  increases ("inflates"). A serious problem of multicollinearity is present if  $VIF_j > 5$  (Bahovec and Erjavec, 2009). Another way to detect the multicollinearity problem is by using a correlation matrix which displays the correlation between  $M$  variables in the model. In that case, a symmetrical matrix  $M \times M$  is constructed whose  $ij$ -th element is equal to the correlation coefficient  $r_{ij}$  between  $i$ -th and  $j$ -th variable. The diagonal elements (correlation of the variable to itself) are always 1.00. In this paper, the correlation matrix will be used to spot if

there is a problem of multicollinearity among independent variables. It is expected that this problem will arise, but if the variable of interest (LQ) is not correlated with other independent variables, the multicollinearity problem will not be dealt with. According to Allison (2012), the multicollinearity is not a problem if only control independent variables are mutually correlated. If the variable of interest is correlated to other independent variables in this paper, the problem will be solved by removing the “problematic” control variable that is correlated with the variable of interest (i.e. the LQ variable).

Furthermore, the Breusch-Pagan test is conducted for all models to determine whether there is a problem of heteroscedasticity. The procedure consists of several steps. First, the following model is assumed:

$$Y_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_k X_{ki} + u_i$$

Where  $var(u_i) = \sigma_f^2$ ,  $\hat{u}_i$  are error residuals. Secondly, additional regression is introduced:

$$\hat{u}_i^2 = a_1 + a_2 Z_{2i} + a_3 Z_{3i} + \dots + a_p Z_{pi} + v_i$$

Where  $Z_{ki}$  is a set of variables that determine the error variance. Thirdly, the null and alternative hypotheses are formed where the null hypothesis of homoscedasticity is:

$$H_0: a_1 = a_2 = \dots = a_p = 0$$

Fourthly, LM statistics is calculated, i.e.  $LM = nR^2$  (where  $n$  is the number observation used to estimate additional regressions in the second step, and  $R^2$  is the coefficient of determination). Heteroscedasticity exists if the null hypothesis is rejected, i.e. if the LM statistics is above the critical value. Alternatively, the  $p$ -value is calculated and the null hypothesis is rejected if the  $p$ -value is less than the level of significance  $\alpha$  (usually  $\alpha=0.05$ ) (Asteriou and Hall, 2007).

The Wooldridge test will serve to identify autocorrelation in models. First order autocorrelation will be tested and if the null hypothesis is accepted that means there is no autocorrelation in the model (Drukker, 2003).

Pesaran test is also performed to determine if there is a cross-sectional interdependence in the model. According to Hoyos and Sarafidis (2006) many models that use panel data have this problem and the possible cause is the presence of common shocks and unobserved components. Also, over the last few decades, a growing trend of economic and financial integration among countries implies a strong interdependence between spatial units. In this paper, the focus is on Croatian counties and therefore, it is expected that the interdependence of spatial units exist which will later be confirmed by the Pesaran test. Driscoll and Kraay (1998) suggest a method that simultaneously corrects standard errors but the estimators of Fixed and Random effects models (FE/RE) can still be used. Their estimator can solve problems of spatial interdependence, heteroscedasticity and autocorrelation and is also suitable for balanced and unbalanced panels (Hoechle, 2007).

The first two panel models in this paper refer to the examination of the effects of the concentration of manufacturing industry on county's GDP by using the location quotient (LQ) as the measurement of the concentration. For the model 1, the LQ is calculated on the basis of number of employed whereas for the model 2, the LQ is calculated by using the data on Gross value added (GVA). Model 1 and model 2 can be written as follows:

$$\log(y)_i = B_0 + B_1 \log(inv)_i + B_2 \log(empl)_i + B_3 \log(lqc\_empl)_i + u_i \quad .11$$

$$\log(y)_i = B_0 + B_1 \log(inv)_i + B_2 \log(empl)_i + B_3 \log(lqc\_gva)_i + u_i \quad .12$$

The dependent variable  $y$  represents the logarithmic value of the GDP of a particular county. Control variable  $inv$  represents gross investment in fixed assets in a particular county whereas  $empl\_county$  is also a control variable which stands for total employment in a particular county. The variable of interests  $lqc$  is in the model 1 (eq. 1.11) calculated on the basis of employment, and in the model 2 (eq. 1.12) it is calculated on the basis of GVA. Following the model specification and the required tests to assure the validity of the models, the results of the panel analysis are given in Table 2 and Table 3 with calculated parameter estimates (bold) and standard errors (in brackets).

*Table 2 Results of the panel model 1 with the dependent variable GDP and independent variable of interest LQ calculated on the basis of employment*

		Model 1
<i>constant</i>	$\beta$	3.881
	$\sigma$	<b>2.873</b>
	<i>p-value</i>	(0.192)
<i>inv</i>	$\beta$	0.127
	$\sigma$	<b>0.069</b>
	<i>p-value</i>	(0.080)
<i>empl</i>	$\beta$	1.560
	$\sigma$	<b>0.183</b>
	<i>p-value</i>	(0.000)
<i>lqc_empl</i>	$\beta$	0.155
	$\sigma$	<b>0.082</b>
	<i>p-value</i>	(0.072)
Number of observations	357	
F-statistics	25.71	
Prob (F-staticstics)	0.000	
R <sup>2</sup>	0.6078	

*Source: authors' calculations on DZS (2019) data*

*Table 3 Results of the panel model 2 with the dependent variable GDP and independent variable of interest LQ calculated on the basis of GVA*

		Model 2
<i>constant</i>	$\beta$	4.840
	$\sigma$	<b>2.484</b>
	<i>p-value</i>	(0.066)
<i>inv</i>	$\beta$	0.129
	$\sigma$	<b>0.064</b>
	<i>p-value</i>	(0.058)
<i>empl</i>	$\beta$	1.467
	$\sigma$	<b>0.171</b>

	<i>p-value</i>	(0.000)
<i>lqc_gva</i>	$\beta$	0.167
	$\sigma$	<b>0.032</b>
	<i>p-value</i>	(0.000)
Number of observations	357	
F-statistics	68.05	
Prob (F-staticstics)	0.000	
R <sup>2</sup>	0.6310	

Source: authors' calculations on DZS (2019) data

The results in Tables 2 and 3 show that the concentration of the manufacturing industry as measured by the location quotient calculated both on the basis of employment and GVA has the expected sign but in the Model 1, the variable location quotient calculated on the basis of employment is not statistically significant whereas in the Model 2.

The next two models (Model 3 and Model 4) differ from previous two models (Model 1 and Model 2) so that instead of the GDP as a dependent variable, they use the GDP p.c. For the model 3, the LQ is calculated on the basis of number of employed whereas for the model 4, the LQ is calculated by using the data on Gross value added (GVA). Model 3 and model 4 can be written as follows:

$$\log(y_{pc})_i = B_0 + B_1 \log(inv)_i + B_2 \log(empl)_i + B_3 \log(lqc_{empl})_i + u_i \quad .13$$

$$\log(y_{pc})_i = B_0 + B_1 \log(inv)_i + B_2 \log(empl)_i + B_3 \log(lqc_{gva})_i + u_i \quad .14$$

As for previous models 1 and 2, and here were performed necessary test, namely correlation matrix, Peasaran test of cross-sectional dependence and Wooldridge test for autocorrelation. The results of the panel analysis with the GDP p.c. as dependent variable are presented in Table 4 (where independent variable of interest LQ is calculated on the basis of employment) and Table 5 (where independent variable of interest LQ is calculated on the basis of GVA).

Table 4 Results of the panel model 3 with the dependent variable GDP p.c. and independent variable of interest LQ calculated on the basis of employment

		Model 3
<i>constant</i>	$\beta$	-7.098
	$\sigma$	<b>3.330</b>
	<i>p-value</i>	(0.046)
<i>inv</i>	$\beta$	0.130
	$\sigma$	<b>0.763</b>
	<i>p-value</i>	(0.105)
<i>empl</i>	$\beta$	1.455
	$\sigma$	<b>0.230</b>
	<i>p-value</i>	(0.000)
<i>lqc_empl</i>	$\beta$	0.311
	$\sigma$	<b>0.076</b>
	<i>p-value</i>	(0.001)



Number of observations	357
F-statistics	14.46
Prob (F-staticstics)	0.000
R <sup>2</sup>	0.5257

Source: authors' calculations on DZS (2019) data

Table 5 Results of the panel model 4 with the dependent variable GDP p.c. and independent variable of interest LQ calculated on the basis of GVA

		Model 4
constant	$\beta$	-5.642
	$\sigma$	<b>2.809</b>
	p-value	(0.058)
inv	$\beta$	0.129
	$\sigma$	<b>0.068</b>
	p-value	(0.071)
empl	$\beta$	1.320
	$\sigma$	<b>0.215</b>
	p-value	(0.000)
lqc_gva	$\beta$	0.262
	$\sigma$	<b>0.040</b>
	p-value	(0.000)
Number of observations	357	
F-statistics	170.41	
Prob (F-staticstics)	0.000	
R <sup>2</sup>	0.5732	

Source: authors' calculations on DZS (2019) data

The results in Tables 4 and 5 show that the concentration of the manufacturing industry as measured by the location quotient calculated both on the basis of employment and GVA is statistically significant and has expected sign in both Model 4 and Model 5 which means that higher concentration of manufacturing in a particular county is associated with the higher level of development as measured with GDP p.c.

And finally, panel data models are constructed to examine the effects of the concentration of manufacturing industry on the industrial output itself. Therefore, in Models 5 and 6 a dependent variable is county's industrial output as measured by gross value added of manufacturing industry. For the Model 5, the LQ is calculated on the basis of number of employed whereas for the model 4, the LQ is calculated by using the data on Gross value added (GVA). Model 5 and model 6 can be written as follows:

$$\begin{aligned} \log(gva\_mnfc)_i &= B_0 + B_1 \log(inv\_mnfc)_i \\ &+ B_2 \log(empl\_mnfc)_i + B_3 \log(lqc\_empl)_i + u_i \end{aligned} \quad .15$$

$$\begin{aligned} \ln(gva\_mnfc)_i &= B_0 + B_1 \log(inv\_mnfc)_i + B_2 \log(empl\_mnfc)_i \\ &+ B_3 \log(lqc\_gva)_i + u_i \end{aligned} \quad .16$$

Where *gva\_mnfc* represents gross value added of manufacturing industry (industrial output of a county *i*); *inv\_mnfc* is gross investment in fixed assets of manufacturing sector; *empl\_county\_mnfc* is total employment of manufacturing sector in county *i*). As with previous models here were also performed necessary tests for validation of the analysis, namely correlation matrix, Pesaran test of cross-sectional dependence and Wooldridge test for autocorrelation. The results of the panel analysis with the GVA of county's manufacturing output as dependent variable are presented in Table 6 (where independent variable of interest LQ is calculated on the basis of employment) and Table 7 (where independent variable of interest LQ is calculated on the basis of GVA).

*Table 6 Results of the panel model 5 with the dependent variable GVA of county's manufacturing sector and independent variable of interest LQ calculated on the basis of employment*

		Model 5
<i>constant</i>	$\beta$	24.340
	$\sigma$	<b>3.130</b>
	<i>p-value</i>	(0.000)
<i>inv_mnfc</i>	$\beta$	0.178
	$\sigma$	<b>0.043</b>
	<i>p-value</i>	(0.000)
<i>empl_mnfc</i>	$\beta$	-0.777
	$\sigma$	<b>0.339</b>
	<i>p-value</i>	(0.033)
<i>lqc_empl</i>	$\beta$	1.488
	$\sigma$	<b>0.332</b>
	<i>p-value</i>	(0.000)
Number of observations	294	
F-statistics	17.78	
Prob (F-staticstics)	0.000	
R <sup>2</sup>	0.2355	

*Source: authors' calculations on DZS (2019) data*

*Table 7 Results of the panel model 6 with the dependent variable GVA of county's manufacturing sector and independent variable of interest LQ calculated on the basis of GVA*

		Model 6
<i>constant</i>	$\beta$	22.044
	$\sigma$	<b>1.913</b>
	<i>p-value</i>	(0.000)
<i>inv_mnfc</i>	$\nu$	0.076
	$\Sigma$	<b>0.033</b>
	<i>p-value</i>	(0.032)
<i>empl_mnfc</i>	$\beta$	-0.287
	$\sigma$	<b>0.194</b>
	<i>p-value</i>	(0.154)
<i>lqc_gva</i>	$\beta$	1.151
	$\sigma$	<b>0.081</b>

	<i>p-value</i>	(0.000)
Number of observations	294	
F-statistics	205.48	
Prob (F-staticstics)	0.000	
R <sup>2</sup>	0.7680	

*Source: authors' calculations on DZS (2019) data*

Results in Tables 6 and 7 confirm that manufacturing output as measured by GVA of the manufacturing industry on county level is significantly related to the location quotient which measures concentration of manufacturing industry on a particular area.

## Conclusion

Regional economic inequalities are present in all countries and Croatia on this issue is no exception. The role of the industry in creating and eliminating these inequalities is unquestionable and its contribution to economic development has been reflecting in the increase of output, income, employment and productivity. Industrialization is generally considered essential for the economic growth and long-term poverty reduction. As industry is one of the key factors of regional development, the spatial concentration of the manufacturing industry and its impact on Croatian regional growth was the main topic of this paper. Industrial concentration was measured by the location quotient which is one of the most widely used measures in the studies on industrial concentration and specialization.

The analysis in this paper showed that in the case of using both types of location quotients (calculated on the basis of employment and GVA) there is mostly a positive correlation with the dependent variable, whether it is GDP, GDP p.c. or industrial output (GVA of manufacturing industry). The only exception was the parameter of LQ calculated on the basis of employment in Model 1 which is not statistically significant at common 5% level of significance.

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# IMPACT OF TEXTILE INDUSTRY ON THE ENVIRONMENT AS A CONSEQUENCE OF THE DEVELOPMENT OF SOCIAL NETWORKS

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## Abstract

*Living in the era of social media where influencers dictate fashion trends things change faster than ever. Mainly in the field of clothing, fashion trends are changing almost every week and textile industry needs to follow them. In fact, the amount of clothes bought in the EU per person has increased by 40% in just a few decades and on the contrary, more than 30% of clothes in European wardrobes have not been used for at least a year. Firstly, textile industry pollutes the environment by producing clothes and secondly by throwing them away. Lots of clothes are thrown away and burned in incinerators or end up in a landfill where they release methane. Increasing clothing demand is driven by a decrease in prices and a strong growth of the impact of social networks. This trend is also known as fast fashion. Fast fashion relies on mass production in countries of the Third world, low prices, large volumes of sales and use of lower quality materials. Therefore, this paper examines the impact of new trend of clothing habits on the environment. Without a doubt, increased clothing production has a large environmental footprint due to the water, energy and chemicals used in washing, tumble drying and ironing, as well as because of plastics shed into the environment. Consequently, governments and organizations need to advocate promoting the use of ecological and sustainable raw materials and the re-use and recycling of clothing through all communication channels especially social media. Most of all, social media need to promote slow fashion as opposed to fast fashion and improve collection of textile for re-use, repair and recycling. In order to make sustainable decisions in the field of textile industry, the EU has adopted circular economy package by which it is required from each Member state to ensure that textile which is thrown away by people is collected separately.*

**Keywords:** Social network, textile industry, fast fashion, environmental protection, sustainable fashion

**JEL classification:** K23, K32, L67, M37, Q01

## Introduction

This millennium has brought changes to the global industrial market. Textile industry has shifted to the global leading industry generating €1.5 trillion in annual apparel and footwear revenues in 2016. Textile industry has been a drive for global development employing around 60 million people along its value chain (Pulse of the Fashion Industry, 2017). This work addresses economic, environmental and social problems of expanding textile industry and

explores how the growth of textile industry, in terms of value and volume, is followed by increased environmental and social costs.

Clothing is the fourth largest expenditure item for households in Europe in terms of environmental impacts, after housing, mobility and food. Textile industry creates a huge amount of waste, both in the supply chain, and at the end of clothing life, where it often gets thrown away (WRAP, 2017). In that way, the environmental footprint of such a large amount of clothing is extremely high. The life cycle of clothes includes water and pesticide use when cultivating natural fibres, water and energy use for washing and drying them, and emissions from waste. The planet is already beyond its safe operating space in terms of climate change, waste pollution, changes in land use and biochemical output (EPRS, 2019). This article explores the changes in consumer behaviour toward clothing consumption. The focus of the article is the change in the level of clothing consumption affected by influences through social media and the consequences to environment. In addition to the environmental and social impact areas, there is an ethical facet to sustainable fashion industry.

Social media are a new effective marketing tool which connect fashion industry with its customers. With *fast fashion* as a mainstream business model, clothes consumption has strongly increased, and social networks are an indispensable promotional tool in fashion industry. Fashion industry is one of the businesses where frequent changes occur, and social media are the most convenient and cheapest channel to communicate.

The increasing level of clothing consumption causes environmental footprints by increasing the amount of clothing in household residual waste, but there are lot of opportunities for change. There is awareness that the today's model of economic growth cannot be sustained indefinitely. *Fast fashion* model is grounded in increasing resource use and pollutant emissions. Consumer behaviour towards clothing is changing and new practices can have a strong impact in the field of sustainable textile industry. Furthermore, European governments are focusing on less wasteful practice.

This article identifies the market share and consumption of textile products and estimates the environmental and socioeconomic impacts of textile consumption, taking into account the overall value chain (production, use and disposal) of textile products. Regarding the data, this article is based on EU-28 and where it is possible, the whole EU has been included but in most data reports (WRAP, EPRS) it is focused on Denmark, Italy, Germany, the Netherlands, Belgium, France, Spain, Sweden and the UK. This work explores the level of clothing consumption, the amount of clothing in household residual waste, the environmental footprints of clothing consumed and most importantly, consumer behaviour.

The main objective of this article is to show the impact of textile industry on the environment based on the availability of reliable data sources. Environmental impacts are mainly caused by expanding textile production and consumption. In that way, this article explores the effect of social networks as a type of mass media which influence consumer behaviour.

## **Consumer behaviour**

Consumer behaviour is strongly influenced by marketing and advertising industry in the media. The task of marketing and promotion is to create new desires, to ensure that consumers buy new products. People look towards others because they want to belong to a group - it means that they behave in a manner consistent with prevailing norms in order to establish their status within it (Mortens et al, 2014). Living in the era of social media, everything is offered easily and things come to consumers faster than ever. Clothes purchase is mainly based on buying new clothes owing to low cost of production. This is a business model where greater volumes of production can reduce costs of production (Allwood et al, 2006). The

emergence of social media has transformed the world bringing fashion trends and people closer. Social media include activities, practices and behaviour of people who share information about new fashion trends in the form of words, pictures, videos and audios. Fashion bloggers are leaders who dictate fashion trends and they are the link between target consumers and fashion brands. The results of research show a direct relationship between fashion industry and social media (Ahmad et al, 2015). The role of influencers has a huge impact on fashion industry and the study finds that 41% of young people rely on influencers and bloggers, instead of 20% who rely on store employees. Social media have sped up the development, purchase and disposal cycle because consumers constantly seek the next new thing through social networks (Maloney, 2019).

There are also ethical reflections for textile industry. Textile industry, through social networks, has negative impacts, such as pressuring girls and young women to live up to body ideals that might lead to eating disorders (Pulse of the Fashion Industry, 2017). In that way, social media through fashion bloggers create brand awareness and anticipate the consumer behaviour. The main result is that social media give boost to purchase intent and increase the demand for garments.

The way that consumers buy, use and dispose of their clothing has a strong environmental footprint. Consumer behaviour during the use phase accounts for at least a third of the carbon impacts of clothing. The largest environmental footprints in the life cycle of clothes are consumer use, especially washing and ironing. Some of the efficient ways to reduce the environmental impact of clothes are reducing washing temperature, washing at full load, avoiding tumble-drying, purchasing eco-friendly fibres and donating clothes that are no longer used (EPRS, 2019).

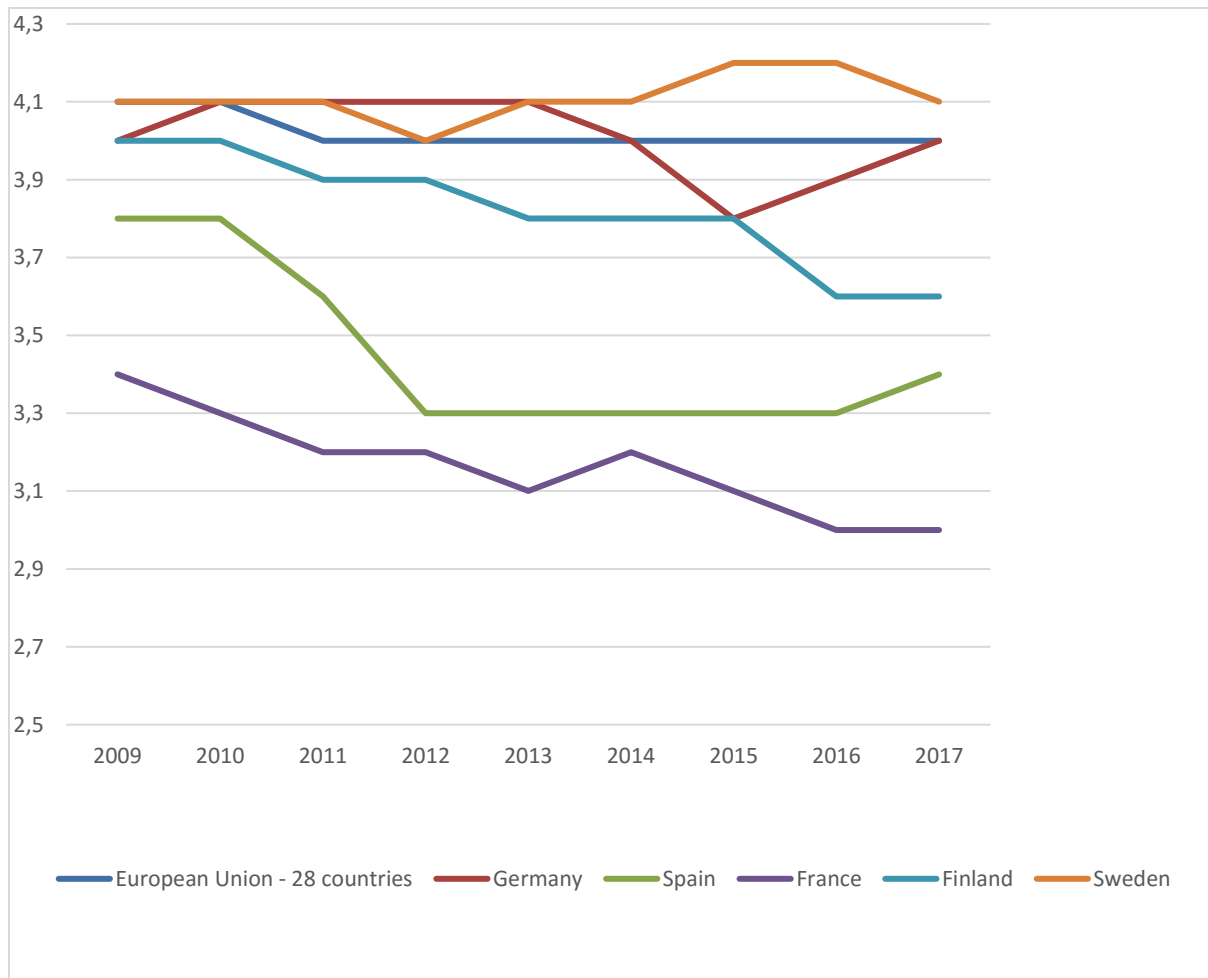
Consequently, knowing the impact of fashion industry to environment, there is a need to strengthen the awareness that the production of garments contaminates the environment. Without a doubt, influencers, especially fashion bloggers, need to put sustainable fashion high on agenda and reduce the impact of the current economic model. The current economic model, also known as *fast fashion*, is based on fast changes of fashion trends, scale economies and low production costs (Mortensen et al, 2014).

One of the possible solutions is enlarging *second-hand* industry. Decisions about whether to source clothes from *second-hand* retailers, rather than throwing them away, are likely to be influenced by price and income variables, despite factors such as the accessibility of collecting bins (Mortensen et al, 2014). In 2015, Denmark had a significant difference compared to other European countries, where more than 8% people were buying *second-hand*, and in terms of longevity, Danish people keep clothing in active use the longest, for 5 years (EPRS, 2019).

Household spending on clothes as the percentage of final consumption is relatively stable in the European Union (EU-28), it slightly varies from 4,1% in 2010 to 4% from 2011 to 2017 (Eurostat, 2018). The situation is similar in all the observed countries, where household spending on clothes as the percentage of final consumption is stable or slowly decreases (Graph 1.) But it does not mean that Europeans buy less clothes. It means that prices are lower and there are strong indications that Europeans today consume substantially more clothing than two decades ago. The strong decrease in clothing prices and consumption volumes can largely be explained by changes in production networks (Mortensen et al, 2014).

*Graph 1: Clothing consumption as a share of final consumption expenditure of households from 2009 to 2017 in the European Union, Germany, Spain, Finland and Sweden*





Source: Eurostat – [www.ec.europa.eu/eurostat/data/database](http://www.ec.europa.eu/eurostat/data/database) - Final consumption expenditure of households by consumption purpose (COICOP 3 digit)

Levels of clothing consumption are affected by consumer behaviour. The longest expected longevity of clothes in Europe (the average active life of clothing) is in Denmark - 5 years. On the other hand, the UK has the lowest expected active life for clothing - 3.3 years.

Consumer behaviour towards fashion and textile industry is shaped mostly by social media. Furthermore, the amount of clothing in household residual waste is increasing. The highest levels of clothing in residual waste is in France, Germany, Italy, and the UK (ECAP is focused on nine countries participating in the project - Denmark, Italy, Germany, Netherlands, Belgium, France, Spain, Sweden and the UK). Italy has the highest level of per capita clothing in residual waste – 440 170 tonnes of clothing going to residual waste in 2014 which means 7.2kg per person (WRAP, 2017).

Consumers need to change the economic model, to buy fewer clothes of better quality clothes and to keep them for a longer period. It means that instead of *fast fashion*, the philosophy needs to be *slow fashion* - small scale production, traditional crafting techniques, local materials and trans-seasonal garments. Consumers need to be more aware of sustainable options, so the EU needs to increase transparency and environmental labelling (EPRS, 2019).

## Environmental footprints of clothing industry

Fashion industry contributes to global warming and climate change. Although not the most obvious contributor, fashion industry is a considerable one. In 2015, fashion industry had an

increase of 63% globally and it caused environmental footprint. Natural resources are exploited and there is a need to address the environmental and social footprint of textile industry (Pulse of the Fashion Industry, 2017). Instead of 65% increase globally, textile industry in EU-28 increased for only 8%, while the manufacture of wearing apparel decreased for 2% in 2015 (Eurostat, 2019).

In 2015, more than six million tonnes of clothing were consumed in the EU. This clothing consumption included the carbon footprint of 195 million tonnes of CO<sub>2</sub> and the water footprint of 46,400 million m<sup>3</sup> (WRAP, 2017). Most textile products are imported, which causes transport, distribution and packing problems because of longer delivery routes. Also, there is a large proportion of products that never reach consumers as the unsold leftovers are thrown away (EPRS, 2019). While most of textile is imported in the EU, manufacturing of textile makes 1.15% of total manufacturing production in EU-28 and manufacturing of wearing apparel industry in EU-28 makes approximately 1% of the total manufacturing production (Table 1).

*Table 1: Production value of manufacturing, manufacturing of textiles and manufacture of wearing apparel in EU-28 (million euro)*

Year	2011	2012	2013	2014	2015	2016	2017
Manufacturing	6.450.000	6.450.000	6.400.000	6.510.000	6.700.000	6.763.295	7.000.000
Manufacture of textiles	80.000	72.000	70.000	74.000	80.000	No data	77.434
Manufacture of wearing apparel	71.819	64.823	63.431	66.992	66.054	66.864	66.100

*Source: Eurostat – [www.ec.europa.eu/eurostat/data/database](http://www.ec.europa.eu/eurostat/data/database) - Annual detailed enterprise statistics for industry (NACE Rev. 2, B-E)*

Textile industry creates environmental impacts through three phases – production, maintenance or storage and disposal or throwing. The environmental impacts at each stage depend on the types of fibres used in production. The first phase is production – depending on the type of material which is produced there are impacts on environment. In that way, cotton accounted for approximately 33% of world apparel fibre consumption in 2010 and in cotton production there is large use of water and land resources. Also, there are synthetic fibres such as polyester and nylon with the share of 60% of global apparel fibre in 2010. Their production includes non-renewable resources and toxic chemicals. These materials have strong environmental impacts in the following phases by influencing the frequency of washing and the possibilities for recycling (Mortensen et al, 2014). The volume of water consumed by fashion industry in 2015 was nearly 79 billion m<sup>3</sup>, while some of the main cotton-producing countries such as China and India are located in areas that are suffering from high levels of water stress. Through cotton production, textile industry is a large user of fertilizers, with cotton consuming 4% of nitrogen fertilizers and phosphorous globally (Pulse of the Fashion Industry, 2017).

There are some initiatives which support environmental sustainability like Extended Producer Responsibility. The Extended Producer Responsibility (EPR) system aims at sustainable resource-efficient economy. France is currently the only country with the active textiles EPR system, and all textile producers contribute fees based on the quantities they place on the market. The funds raised in this way are intended for the recycling and treatment of the resulting textile waste (WRAP, 2018).

## Re-use and recycling of clothing

Reused clothes have strong environmental impacts and offer environmental benefits. Reused clothes or *second-hand* clothing prevents the need for producing new items. These benefits are dependent on the substitution ratio between new clothes and *second-hand* clothes. Still, in the EU, in the context of *fast fashion* and greater purchasing power, consumers are buying new clothes instead of buying *second-hand* clothes (Beton et al, 2014).

In fact, the levels of re-use of clothing in 2015 avoided 6.9 million tonnes of CO<sub>2</sub> pollution, as a result of not producing new clothes. Furthermore, providing 1 tonne of clothing to a textile reclaimer can result in a net saving of 7.5 tonnes of CO<sub>2</sub>. Except the estimated scale of the carbon benefits associated with the re-use of clothing, there are other benefits from re-using clothes like providing clothing for direct re-use and reducing clothes production (WRAP, 2016).

A large amount of clothes consumed in Europe are imported from *the Third-world* countries. In 2015, the European Union imported €195.8 billion of clothes and footwear. Nevertheless, Italy exported clothes and footwear worth €26.6 billion in 2017. This represented 19% of total EU exports of clothes and footwear. This makes Italy the largest EU exporter of clothes and footwear, followed by Germany €22.8 billion and Spain €14.3 billion, ahead of Belgium €12.5 billion and France €12.0 billion (Eurostat, 2018a).

Between a quarter and a half of the clothes bought in Europe are likely to end up in residual waste. Most of clothes thrown away in the EU seem to be burned in incinerators or end up in a landfill where they release methane. By throwing them away, clothes become waste and waste footprints for the whole life cycle of clothing consumed in Europe are 11.1 million tonnes (Eurostat, 2019). Instead of throwing them away, clothes can be collected and re-used as *second-hand* clothes or recycled. The EU policy adopted in 2018 is the circular economy package which requires from Member States to ensure that textiles are collected separately (EPRS, 2019). The proportion of textile waste in total waste in EU-28 is 9%, but varies depending on the country. The Nordic countries are leaders in recycled clothing, and this is also reflected in the share of textiles in total waste (Table 2).

Table 2: Proportion of textile waste in total waste in EU-28

GEO/TIME	2010	2012	2014	2016
European Union - 28 countries	9%	9%	9%	9%
Denmark	1%	9%	2%	10%
Germany	7%	9%	9%	10%
Spain	7%	7%	10%	8%
France	11%	13%	6%	7%
Croatia	56%	10%	24%	19%
Italy	29%	27%	30%	30%
Hungary	16%	13%	10%	15%
Austria	12%	10%	13%	10%
Slovenia	13%	15%	18%	16%
Finland	1%	2%	2%	1%
Sweden	2%	0%	0%	1%
United Kingdom	8%	9%	8%	8%

Source: Eurostat - Generation of waste by waste category, hazardousness and NACE Rev. 2

activity

Textile industry has many sustainability challenges, as well as opportunities for change and needs to be oriented to changing consumer behaviour because the behaviour change amongst consumers can make a big difference to the environmental impact of clothing. The main media for changing the attitude towards fashion are social media like Instagram and Facebook. Social media need to make consumers aware of reusing and recycling clothes. Most textile is made from cotton and cotton has high costs of production - pesticides use and water sources.

Garment construction also produces large amount of fabric waste which can be reused or recycled. France has the EPR system for textile products that make mixed waste management difficult to recycle or generate large waste management costs (WRAP, 2018).

## Conclusion

Textile industry, especially fashion industry, is a fast-changing industry and it looks different than it did 20 years ago. Nowadays, the process of textile production is changing affected by globalisation and the processes that globalisation brings. Fashion industry is closer than ever to its consumers, especially thanks to social media. More than six million tonnes of clothing were consumed in 2015 in the European Union. The key area of this research is environmental pollution caused by textile industry. In addition to environmental pollution, there is also the ethical dimension of the expanding textile industry. The demand for clothing is rising because of trends, and trends, especially *fast fashion* and social media, influence consumer behaviour and attitude towards clothing. In that way, the goal for European and World politics is to change the present fashion trends.

The environmental impact of clothing in Europe is high: carbon emission and water pollution arise during production, processing and use phase. Textile industry will continue to contribute to the negative impacts on the planet. 80% of European textile is made in *the Third-world* countries where working conditions and environmental protection law do not even exist. Social benefits in countries of production could be enhanced if global production-consumption systems promoted the manufacture of clothing in ways that generate less pollution while encouraging decent working conditions and fair pay. While protecting profitability, textile industry can also stop the negative impact and generate a high amount of value for society.

The additional strain of the expanding environmental footprint can be observed by water use, CO<sub>2</sub> emissions, use of chemicals and generation and disposal of waste.

The focus in environmental protection is on reducing clothing in residual waste and less wasteful practices in the supply chain. Quantification of the amount of clothing in residual waste in the observed countries is one of the paths to problem solving. Italy has the largest quantity of clothes in households residual waste - 7,2kg per capita. The situation in textile industry could improve by changing practices. The new Waste Directive requires Member States to set up such schemes by 2025 at the latest. In that way, EU directives can affect consumers to make more sustainable decisions. The European Parliament also promotes ecological and sustainable garment production which means dealing with labour and environmental issues in textile industry in *the Third-world* countries. Also, there are some actions for making consumers aware of adopting more sustainable behaviours dedicated to environmental, social and ethical objectives, which can be developed through social media. There are many initiatives for substantial improvements with the goals of educating consumers.

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# GROSS FIXED CAPITAL FORMATION AND PRODUCTIVITY IN SOUTHEASTERN EUROPE

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## Abstract

*Capital formation is considered to be an important factor of economic growth both in theoretical and empirical literature. It is generally agreed that the main purpose of economic development is to build capital equipment on a sufficient scale to increase productivity in the economy. Therefore, capital formation makes development possible even with increasing productivity. It is also recognized that gross capital formation has a direct, but also an indirect impact on the productivity. Based on an intensive and a comprehensive literature review, the aim of the paper is to examine the impact of fixed capital investments on productivity in the countries of Southeastern Europe in the period from 2000 to 2017. Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Macedonia, Montenegro, Romania, Serbia and Slovenia are part of the analysis, except Kosovo which is not a subject of the study due to a lack of data. Beside Southeastern European countries, the research is done at the European Union level, and Germany and France are also included as a two leading economies in the European Union.*

*The paper starts from the assumption that fixed capital investments determine the marginal labour productivity, which in turn determines the demand for labour and the employment. In other words, greater investments in fixed capital will increase the marginal labour productivity, which will increase the demand for labour and the employment.*

*In the paper, a regression analysis and correlation are implemented in order to determine and predict the impact of fixed asset investments on productivity. Testing of the series of fixed assets investment and productivity is done by applying the Unit Root test using the Augmented Dickey - Fuller test. Also, a cluster analysis is made and the k-mean clustering method is applied.*

*Results of the study show that changes in productivity are largely explained by changes in gross fixed capital formation at European Union level and in Germany and France, and in these countries there is a higher coefficient of correlation between investments in fixed assets and productivity. A high correlation coefficients are also obtained in Southeastern European countries that are members of European Union, primarily Slovenia, Greece and Romania, while in Croatia this coefficient is slightly lower. An only exception from Southeastern European countries that are members of the European Union is Bulgaria, which has a very low coefficient of correlation between investments in fixed assets and productivity. In non-European Union countries of Southeastern Europe (Macedonia, Serbia, Bosnia and Herzegovina, Montenegro and Albania), changes in productivity cannot be generally explained by the changes in fixed capital investments, and in these countries there is a very low correlation coefficient between gross fixed capital formation and productivity.*

*Using the cluster analysis based on the k-mean clustering method, three clusters are defined: Cluster 1: Croatia and Romania; Cluster 2: Albania, Bosnia and Herzegovina, Bulgaria, Macedonia, Montenegro and Serbia; and Cluster 3: France, Germany, Greece Slovenia and*

*the European Union. Cluster analysis shows that in Cluster 3, which is defined with countries that have high GDP per capita, high employment and low unemployment, the impact of gross fixed capital formation on productivity is greater. On the other hand, in Cluster 2, that includes non-European Union countries (exception is Bulgaria, which is a member of European Union), and is defined with lower GDP per capita, low employment rates and high unemployment, gross fixed capital formation has not a significant impact on productivity.*

**Keywords:** cluster analysis, fixed capital investment, productivity, Southeastern Europe

**JEL classification:** J24, E22, E24

## Introduction

Labour productivity is one of the key factors in any economy. Productivity provides a simple, but powerful indicator of the ability of a country to optimally use its resources for having growth, either short term or long term growth. Although the reasons for differences in the level of economic development between countries are numerous, it can be assumed that the differences in economic development are due to the productivity differences and the factors that determine it, such as physical capital, human capital, natural resources and technological knowledge. It is related to the fact that labour productivity depends on the availability and quality of labour resources, applied technologies or capital investments and the most frequent answer for achieving productivity gains is about providing better technology and resources to employees so that job operations become more efficient. Our focus is on the impact of gross fixed capital formation as an economic indicator which is essential for labour productivity growth. It is seen as one of the required variables for predicting productivity and it also influences country's economic welfare.

How important is the rate of productivity growth can be seen from the famous *mathematical rule 70?* (Sharpe 2002, p. 33). According to this rule, if the number 70 is divided by the productivity growth rate (GDP per capita growth), it will be derived years needed for real output per worker to be doubled. Hence, if the productivity growth rate is 1%, it would take 70 years for real output and, hence, real income per worker to double. If the rate of productivity growth is 2%, then the required period halves at 35 years and with a growth rate of 3%, the period is 23.3 years.

Table 1, as it follows, presents the average productivity growth rates in Southeastern European countries for the period 2008-2017.

*Table 1. Average productivity growth rates in Southeastern European countries for period 2008-2017*

<b>Country</b>	<b>Average productivity growth rates</b>
Albania	1.18
Bosnia and Herzegovina	2.07
Bulgaria	2.85
Croatia	0.03
Greece	-1.04
Macedonia	0.33
Montenegro	0.77
Romania	1.53

Serbia	0.29
Slovenia	0.83
Germany	0.17
France	0.47
EU	0.51

*Source: Authors' calculations based on World development indicators*

The average productivity growth rate in Macedonia in the period 2008-2017 is 0.33%, while the average GDP growth rate for the same period is 1.8% (calculated according to the National Bank of Republic of Macedonia, Quarterly report - Statistical appendix I / 2018) and shows that it takes nearly 40 years for GDP to double.

As can be seen from the table, average productivity growth rates in Southeastern European countries are quite low. Moreover, the Southeastern European countries that are members of Western Balkans group have a very low GDP per capita, so they will have to spend a very long period of time not only to double the GDP, but also to reach GDP per capita of the European Union.

Based on thorough literature review and theoretical background, the paper is organized in sections which are focused to answer the research questions: *could gross fixed capital formation be used for predicting productivity in the analyzed countries and what is the direction and nature of their interdependence, and which countries have a greater and stronger relationship between gross fixed capital formation and productivity according to their level of economic development.*

After the introduction section, the second part of the paper presents a review of relevant literature, which examines the aspects of the research that is the subject of this paper. The third part of the paper covers the methodological approach applied to the paper's research and data sources used for Southeastern European countries and European Union. The analysis of the research within the results of the impact of the gross capital formation on the labour productivity in the analyzed countries are presented and explained in the fourth part. Last section covers the conclusion of the research and in the end the literature review is presented.

## **Literature Review**

Economic literature is rich with papers that analyze the productivity, as well as the impact of investments on productivity and economic growth.

Mankiw, Romer, and Weil (1992) used regression methods and concluded that capital accumulation differences explain most of the variation of labour productivity across countries. Artige and Nicolini (2006) studied the productivity performance and its sources in a sample of ten European regions belonging to four countries (France, Germany, Italy and Spain) and showed that, in the leading regions in Europe such as Germany and France, gross fixed capital formation was one of the main determinants of productivity.

Forecasting labour productivity developments in the European Union member states using three approaches, Žmuk et al., (2018) examined labour productivity as output measured per employee and per hour worked and indicated that all three forecasting approaches have shown that labour productivity, measured as average labour productivity of all European Union member states, should increase in the future.



Choudhry (2009) investigated the determinants of labour productivity growth using a cross country panel data set of 45 countries and while testing whether explanatory variables behave differently for the economies at different stage of economic development, he found that gross capital formation is positive for high income economies, but not significant. For rest of all three income groups (upper middle income, lower middle income and lower income economies), he found that its coefficient value is positive and significant.

Inklaar and Timmer (2013) show how the pace of global labour productivity growth has increased in recent decades and how faster capital accumulation per worker in poor countries is the main driver of this development. They found that despite the great disparity in average growth pace between poor and rich countries, the importance of the different sources of growth is fairly similar across the two groups and physical capital accumulation accounts for over half of labour productivity growth.

Trpeski (2018) examines the link between fixed assets investment and labour productivity in Macedonia in the period 2008 - 2017. The results of the study showed that changes in productivity can not be explained by changes in fixed capital investments. However, it is expected for Macedonia if we take into account that in the analyzed period there is a negative average growth rate of fixed assets investments per employee of -0.5% and a negative average growth rate of productivity of -0.16%.

Analyzing the impact of human capital on economic growth in Macedonia, Cvetanoska and Trpeski (2019) found that gross fixed capital formation also has a positive impact on economic growth, i.e. GDP per capita, while estimating the regression model which includes different variables for analyzing the economic growth with a focus on human capital.

The study of Jonkisz-Zacny (2016) analyzes the impact of increases in the value of assets on improvement of labour productivity. She found that labour in an economy saturated with fixed assets is highly productive. In highly developed countries, (with high labour productivity) the share of fixed assets is increasing and amounts to about 70% while the share of labour costs is decreasing to about 30%.

Regarding the essential role of the intensive use of capital in enhancing the productivity, Filip (2016) found that the development of the infrastructure is positively correlated with total factor productivity growth, while the low intensity of capital use is negatively correlated to total factor productivity growth.

According to Onyinye et al., (2017), gross capital formation and economic growth policies if pursued vigorously can be beneficial to Nigerian economy in the long run. They also explain that the accumulation of capital should have a much more dramatic impact on labour productivity in developing countries compared to developed countries.

Mendez-Guerra (2017) studied the cross-section dynamics of the proximate determinants of labour productivity. He found that in the year 2010 differences in physical capital accumulation explain only 14 percent of the differences in labour productivity across countries included in the study. On the other side, according to his paper, differences in aggregate efficiency explain 44 percent of the differences in labour productivity across countries. This finding showed that aggregate efficiency is the main driving force behind the labour productivity.

## **Methodology of the research**

Official data from the World Development Indicators database is used for the analysis of gross fixed capital formation and productivity. The used data is comparable among analyzed countries and it is based on the generally accepted methodology of the International Labor Organization. Annual data is used for both variables, as quarterly or monthly data series are not available for most of the countries. Also, for both data series, we have calculated the change from one to another year and therefore the growth in labour productivity and gross fixed capital are taken in the regression model which is presented in the fourth part of the paper.

In World Bank statistics, using World Development indicators, gross fixed capital formation in constant 2010 US\$ is applied for all countries and productivity is expressed as a gross domestic product per employee throughout the year, and therefore the partial productivity (i.e. labour productivity) is taken into account for the purpose of the analysis in this paper. This approach of determining productivity as an output per employee is acceptable for the following two reasons: *Firstly*, analysis for labour productivity movements for the Southeastern European countries, Germany, France and European Union require longer time series and this methodology is more simplistic to calculate productivity for a longer period of time, which is very important for our study; and *Secondly*, in most of the analyzed countries, and especially in the Western Balkan countries, overtime work in the analyzed period, i.e. overtime working hours, are quite rarely registered and incomplete, which can lead to a distorted picture of productivity among countries.

Moreover, in the paper, labour productivity instead of total factor productivity (TFP) is a subject of measure. Both measures have their place in the analysis of trends in productivity and the choice depend on several factors. TFP is more useful over the long run, whereas labour productivity is more reliable in the short run, when there is doubt about the underlying growth process, or when capital stock data are unreliable (Sargent and Rodriguez, 2000). If the aim is to make an analyse in the economy over a period of less than a decade or so, then labour productivity is a better measure. Therefore, we apply the labour productivity measure as our study analyses short term period for the relationship between gross fixed capital and productivity. Moreover, as we make comparisons between different countries, it is more convenient to use labour productivity because when making cross-country comparisons, the procedures used for dealing with TFP are quite different.

As the focus in the paper is on the gross fixed capital formation and its impact on productivity, it starts from the assumption that fixed capital formation determines the marginal labour productivity, which in terms determines the demand for labor and the employment. In other words, greater gross fixed capital formation will increase the marginal labour productivity, which will increase the demand for labour and employment. Gross fixed capital formation has a direct impact on productivity, as employees have more resources at their disposal and can produce more. Also these investments have quite indirect effects on productivity: *firstly*, new equipment changes the working practice, employees acquire new skills and increase their efficiency; *secondly*, investments cause a transfer of the technology, as well as the knowledge that employees receive using the equipment; and *thirdly*, the embedded technical changes are not included in the market price of the new equipment (Dupuy and Beard, 2008, p. 3.; Till Von Wachter 2001).

A regression analysis, as well as correlation analysis are implemented and World Development Indicators from World Bank database, transformed in growth rates, are used for

all countries included in the analysis, which gives relevance and allows comparability of the obtained results. For each country, a regression analysis for the impact of fixed capital formation on productivity has been carried out. Therefore, the following regression model is formulated for each analyzed country:

$$P_{it} = \beta_0 + \beta_1 C_{it} + \varepsilon$$

where P is productivity, and C is gross fixed capital formation.

For the need of data comparability between Southeastern European countries, a study for the impact of gross fixed capital formation is conducted at the European Union level, as well as in Germany and France, as two leading economies in the European Union. Fixed capital investment and productivity series for the period 2000-2017 are tested by applying the Unit Root test using the Augmented Dickey - Fuller test, before a regression and correlation analysis is conducted.

In order to make relevant conclusions, a cluster analysis is also made and for that objective the k-mean clustering method is employed. The cluster analysis is based on the average annual employment rates and average annual unemployment rates for the period 2000-2017 and the real GDP per capita for 2017. Therefore, three clusters are identified in which the analyzed countries are deployed. In order to calculate the average annual employment and unemployment rates as well as GDP per capita, World Development Indicators are used. On the one hand, the cluster analysis allows to get a better understanding of the relationship between fixed capital formation and productivity, and on the other hand it illustrates the level of country's development expressed by GDP per capita, employment and unemployment.

## Empirical results and discussion

Taking into account the aim of the study, a correlation and regression analysis have been carried out to determine the impact of fixed assets investments on productivity in the Southeastern European countries for the period 2000-2017. The basic assumption for a sound econometric analysis is the stationarity of the time series of data. Standard econometric methodologies of time series analysis examine whether a particular time series is stationary or non-stationary. Therefore, before the regression analysis is made, the stationarity of the variables involved in the regression model is checked.

Testing of gross fixed capital formation and productivity series is done by implementation of the least squares method, using the Augmented Dickey-Fuller Unit Root Test, and the results are presented in Table 2.

*Table 2. Results from Augmented Dickey - Fuller Unit-root test*

Country	Series	Level of differentiation	prob.	t-statistic
Albania	Gross fixed capital formation	0	0.0087	-3.955785
	Productivity	1	0.0143	-3.850155
Bosnia and Herzegovina	Gross fixed capital formation	0	0.0001	-42.99428
	Productivity	0	0.0246	-3.764455
Bulgaria	Gross fixed capital formation	1	0.0019	-4.800610
	Productivity	0	0.0171	-3.614531
Croatia	Gross fixed capital formation	1	0.0063	-4.162162
	Productivity	0	0.0421	-3.144305
Greece	Gross fixed capital formation	1	0.0110	-3.907744
	Productivity	1	0.0037	-4.437734

Macedonia	Gross fixed capital formation	0	0.0138	-3.722164
	Productivity	0	0.0310	-3.307130
Montenegro	Gross fixed capital formation	1	0.0004	-5.798964
	Productivity	1	0.0000	-8.338320
Romania	Gross fixed capital formation	1	0.0020	-4.844756
	Productivity	1	0.0004	-5.625489
Serbia	Gross fixed capital formation	1	0.0008	-5.496117
	Productivity	1	0.0020	-5.031167
Slovenia	Gross fixed capital formation	1	0.0086	-3.997292
	Productivity	0	0.0027	-4.542755
France	Gross fixed capital formation	0	0.0156	-3.660236
	Productivity	0	0.0080	-3.998288
Germany	Gross fixed capital formation	0	0.0172	-3.637226
	Productivity	0	0.0015	-4.847832
EU	Gross fixed capital formation	1	0.0030	-4.622382
	Productivity	0	0.0065	-4,106,330

*Source: Authors' calculations*

The results of the implemented ADF test showed that half of the series are stationary at level, and the other half is not stationary (Table 2). After the differentiation is made, series of all variables are stationary at level and at first level of differentiation and are appropriate for establishing regression and correlation analysis. The results of the estimated regression and correlation analysis are shown in Table 3.

*Table 3. Results of the regression and correlation analysis.*

Country	Regression Model	Std. Error	t-Statistic	Prob.	Adj. R-sq.	Correl.
Albania	$P = \beta_0 + 0.093234 C + \varepsilon$	0.152	-0.615	0.5485	-0.040	0.277467
Bosnia and Herzegovina	$P = \beta_0 - 1.452698 C + \varepsilon$	0.732	-1.984	0.0785	0.227	-0.551643
Bulgaria	$P = \beta_0 + 0.071122 C + \varepsilon$	0.066	1,078	0.2981	0.010	0.260832
Croatia*	$P = \beta_0 + 0.230925 C + \varepsilon$	0.059	3,895	0.0014	0.470	0.418598
Greece*	$P = \beta_0 + 0.120736 C + \varepsilon$	0.041	2,956	0.0093	0.313	0.594267
Macedonia	$P = \beta_0 + 0.083663 C + \varepsilon$	0.071	1,175	0.2573	0.022	0.281672
Montenegro	$P = \beta_0 + 0.057214 C + \varepsilon$	0.041	1,411	0.1801	0.062	0.333601
Romania*	$P = \beta_0 + 0.168068 C + \varepsilon$	0.065	2,573	0.0204	0.248	0.540954
Serbia	$P = \beta_0 + 0.034585 C + \varepsilon$	0.057	0.604	0.5548	-0.041	0.328066
Slovenia*	$P = \beta_0 + 0.216304 C + \varepsilon$	0.062	3,490	0.0030	0.397	0.657478
France*	$P = \beta_0 + 0.190096 C + \varepsilon$	0.088	2,162	0.0462	0.178	0.475414
Germany*	$P = \beta_0 + 0.298887 C + \varepsilon$	0.074	4,061	0.0009	0.477	0.712400
EU*	$P = \beta_0 + 0.230442 C + \varepsilon$	0.051	4,489	0.0004	0.529	0.746675

*Source: Authors' calculations*

Firstly, correlation analysis showed that there is a strong positive linear relationship between gross fixed capital formation and productivity at the European Union level and Germany, moderate to strong positive relationship between these variables in France, Slovenia, Romania and Greece, and moderate to weak positive relationship in Croatia. The gross fixed capital investments have a weak correlation coefficient with productivity in Montenegro and Serbia. For Macedonia, Bulgaria and Albania, the correlation analysis has shown that the relationship

between analyzed macroeconomic variables is very low. Bosnia and Herzegovina is the only country where the relationship between gross fixed capital formation and productivity is negative and moderate.

Furthermore, the regression analysis showed that there is a statistically significant result for the impact of gross fixed capital formation on the productivity at the level of European Union, Germany and France, and in Croatia, Romania, Slovenia and Greece as Southeastern European countries, which are members of the European Union. In these countries the R-squared illustrated that movements in productivity can be largely explained by the movements in gross fixed capital formation. Bulgaria as a member of the European Union is an exception where the p-value is lower than the level of significance of 5% which means that there is no relationship between measured variables and only 7.2% of the variations of productivity can be explained by gross capital investments. The analysis has also shown that fixed capital formation in Macedonia, Serbia, Bosnia and Herzegovina, Montenegro and Albania as non-European Union countries, has not an impact on productivity due to the higher p-value which means insignificant result. The impact of fixed assets investments on the productivity in these countries is very low and accordingly the R-squared value, the productivity cannot be generally predicted by the movements in gross fixed capital formation.

Moreover, [regression analysis](#) is applied in order to tell us not only the signification, but also the nature of relationships between gross fixed capital and labour productivity. From the obtain models, if gross fixed capital formation in Greece rise for 1%, the productivity will increase for 0.12%. In Slovenia, as a country form the same Cluster, a rise in gross fixed capital for one unit increases labour productivity for 0.22%. In France, EU level and Germany, 1% increase in gross fixed capital will lead to a growth in labour productivity for 0.19%, 0.23% and 0.30%, respectively.

If the gross fixed capital formation rise for 1%, labour productivity in Croatia will increase for 0.23% and in Romania it will lead to 0.17% labour productivity growth.

In order to make a prominent interpretation for the relationship between gross fixed capital formation and the level of economic development, a cluster analysis is made using the k-mean clustering method. The cluster analysis is based on the average GDP per capita, annual employment rates and average annual unemployment rates for analyzed countries, and results are presented in Table 4. Annual employment rates and average annual unemployment rates are calculated for period 2000-2017.

*Table 4. Results from cluster analysis*

<b>Cluster 1</b>	<b>Cluster 2</b>	<b>Cluster 3</b>
Croatia Romania	Albania Bosnia and Hercegovina Bulgaria Macedonia Montenegro Serbia	France Germany Greece Slovenia European Union

*Source: Authors' calculations*

As can be seen from table 4, the third cluster includes countries that are members of the European Union, which have high GDP per capita and high employment, i.e. low unemployment. The results of the applied regression and correlation analysis show that

precisely in these countries there is a significant impact of gross fixed capital formation on productivity. Correlation coefficients are also quite high in the countries of Cluster 3. This shows that in countries with higher GDP per capita and higher employment, the impact of fixed capital investments on productivity is greater.

The first cluster is also consisted of European Union member states (Croatia and Romania), but unlike Cluster 3, they have lower GDP per capita, lower employment and higher unemployment. The results from the regression model in these countries are statistically significant and the analysis have shown that fixed capital investments have a positive impact on productivity. But in comparison to Cluster 3 countries, this impact is lower. Also, the correlation coefficients in Croatia and Romania are lower than those of Cluster 3.

Cluster 2 includes Southeastern European countries, members of Western Balkan Group (with the exception of Bulgaria which is a member of the European Union), that have several times lower GDP per capita than the EU average and countries from Cluster 3, and also lower employment and higher unemployment. In these countries, the results of the research are statistically insignificant, i.e. they show that gross fixed capital formation has not an impact on productivity. This shows that countries, where the impact of fixed capital investment on productivity is insignificant, have low GDP per capita, low employment, and high unemployment.

## **Conclusion**

The motivation of this study was to examine the relationship between fixed asset investments and labor productivity in countries with different economic development. Because capital formation makes development possible with increasing productivity, this paper started from the assumption that fixed capital investments determine and predict the marginal labour productivity.

There is a strong positive relationship between gross fixed capital formation and productivity at the European Union level and Germany; moderate to strong positive relationship between these variables in France, Slovenia, Romania and Greece; and moderate to weak positive relationship between these variables in Croatia. The gross fixed capital investments have a weak correlation coefficient with productivity in Montenegro and Serbia. The relationship between analyzed macroeconomic variables in Macedonia, Bulgaria and Albania is very low. Bosnia and Herzegovina is the only country in which the relationship between gross fixed capital formation and productivity is negative and moderate.

According to the regression model for each country, productivity movements at the level of European Union, Germany and France, and in Croatia, Romania, Slovenia and Greece as Southeastern European countries (which are members of the European Union) can be largely explained by the movements in gross fixed capital formation. Bulgaria as a member of the European Union is an exception where there is not relationship between gross capital investments and productivity. The analysis has also shown that gross fixed capital formation in Macedonia, Serbia, Bosnia and Herzegovina, Montenegro and Albania as non-European Union countries, has not an impact on productivity. The impact of fixed assets investments on the productivity in these countries is very low and the productivity cannot be generally predicted by the movements in gross fixed capital formation.

More important, study has shown that the impact of gross fixed capital formation on productivity is greater in countries where GDP per capita is higher, employment is also high, and unemployment is low (primarily European Union Member States). Contrary, fixed capital formation does not have a significant impact on productivity in countries which are characterized by low GDP per capita, low employment and high unemployment rate.

As an objective of future research it would be interesting to extend this analysis for the reasons and sources of these differences between countries regarding their level of economic development and if possible (in the absence of capital stock data) it could be analysed gross fixed capital investments on sectoral level. Possible reasons for the low impact on labour productivity in the countries with less economic development could be the low and insufficient investments in physical capital or the decreased labour supply. Also, social and technological progress, such as modern fixed assets in the specific country could be an issue for a higher or lower impact of fixed capital assets. Furthermore, as certain persistent patterns of relationship between investment level and productivity are detected, predictions and policy implications for less developed countries might be drawn.

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# UNEMPLOYMENT DISTRIBUTION BY EDUCATION LEVEL IN EUROPEAN COUNTRIES: DOES THE LOCATION MATTERS?

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## Abstract

*Cooperation of countries, with similar unemployment and educational level characteristics could be crucial in finding appropriate and fast solution to reduce unemployment in a country. The goal of the paper is to investigate whether neighbouring countries have similar unemployment structure or not. In the paper unemployment structure according to education level is observed for 40 European countries in 2017. For the purpose of the paper four education levels are introduced: less than basic, basic, intermediate and advanced. In order to get reliable results, from the analysis are excluded unemployed persons who could easily continue their formal education. In other words, unemployed persons aged 15-24 are omitted from the analysis. Due to different retirement ages in the observed European countries, in the paper unemployed persons aged 25+ are observed. Descriptive statistics analysis has shown that an average European country has 0.84% unemployed persons with education level lower than the basic one, 25.60% with basic education level, 46.46% with intermediate education level and 26.10% with advanced education level. Quite similar structure of unemployed persons is when they are observed according to the gender. However, there are some differences in unemployment structure if basic education level and advanced education level. Namely, males tend to have more unemployed persons with basic education level in their unemployment structure than females (28.00% and 22.75% respectively). On the other hand, females tend to have more unemployed persons with advanced education level in their unemployment structure than males (30.45% and 22.43% respectively). If European countries individually are observed, it can be concluded that the highest share of unemployed persons with education level lower than the basic one, in its structure, has Turkey (5.90%). The European countries with the highest shares of unemployed persons with basic educational level, intermediate education level and advanced educational level are Malta (66.00%), Lithuania (70.70%) and Russia (48.10%), respectively. In order to group European countries according to their unemployment structures observed by educational level, non-hierarchical cluster analysis was conducted. The K-means clustering approach was used to obtain four clusters of European countries. The cluster analysis has shown that neighbouring countries do not necessary tend to have similar unemployment structure according to the education levels. If the cluster results on overall and gender level are compared, it can be concluded that there are five groups of countries that can be found always together. However, there are no groups with only direct neighbour countries. In addition, it can be found seven countries that are not consistently grouped with other countries. The main limitation of the paper is that the unemployment is observed only by taking into account educational levels and that only data from just one year have been observed. In the future research in the analysis should be included other significant variables that are important in describing achieved unemployment level in a country. Furthermore, in the future research all European countries should be included.*

**Keywords:** education level, European countries, K-means clustering approach, non-hierarchical cluster analysis

**JEL classification:** C38, E24

## Introduction

Unemployment, especially the long-term one, affects directly and indirectly individuals and their families (Nichols, Mitchell and Lindner, 2013). Unemployment can have strong impacts on physical and mental health of unemployed persons (Burgard, Brand and House, 2007). There are even effects on mortality rates (Sullivan and von Wachter, 2009). In addition, the unemployment leads to losses of income, lower consumption, poor financial situation and even bankruptcy (Godofsky, van Horn and Zukin 2010). On that way, the unemployed persons can fast become the burden of society. Therefore, countries and their governments need to react fast and take some corrective actions to reduce the unemployment level as low as possible. However, the process of finding the appropriate solutions can be cumbersome and difficult. Because of that the international cooperation between countries with similar unemployment problems in finding the solutions is desirable and expected.

In order to reduce unemployment, aim of the European Union is to reduce the dropout rates from the educational system and to increase share of population with tertiary education (European Commission, 2010). Mirică (2014) has shown that there is a long-term negative relationship between unemployment and higher education demand in Romania. The analysis of Aden (2017) leads to the conclusion that the probability of being unemployed decreases with a higher level of education. Whereas Aden (2017) observed only Canada, Garrouste, Kozovska and Perez (2010) observed 11 European countries and have brought the same conclusion. The same conclusion seems to be valid in South Africa as well (Mpendulo and Mang'unyi, 2018). The presented papers highlight the relationship between unemployment and education level.

However, education levels cannot be improved in a very short time in a country. Therefore, the need of international cooperation of countries with similar characteristics of unemployment and educational level structure here is especially emphasized. On that track, the European Union emphasizes "... the importance of peer learning between European countries and stakeholder organisations, ..." (European Commission, 2018). However, in the report (European Commission, 2018) the European Union only suggests cooperation between European countries but it does not specify which countries should cooperate together. Because of that the aim of the paper is to find European countries with similar unemployment structures according to achieved education level and to inspect whether geographically close countries tends to have similar unemployment rates or not. Gören (2013) has shown that the degree of cultural diversity in neighbouring countries has positive effects on the growth of the income per capita. Due to vicinity and low costs, neighbouring countries have easy access to tradable goods in those countries (Evenett and Keller, 2002). Not only neighbouring countries have impact on growth and trade, but they have significant impact on productivity, as well (Gamba, 2009). Because of that it makes sense to assume that neighbouring countries could have impact on the education levels in those countries. Consequently, the research hypothesis that neighbouring countries should have similar unemployment structure by educational level is introduced. It is believed that neighbouring countries share some same characteristics and because of that they should have similar unemployment problems. If those countries would

work together and share their experiences and ideas, they could improve labour market situation in all involved countries in shorter term than if they would act solely.

The paper is organized as follows. After the brief introduction, in the second section used data and methodology is described. In order to inspect whether neighbouring countries have similar unemployment structure or not, the non-hierarchical cluster analysis based on K-means clustering approach is conducted in section 3. In the same section descriptive statistics analysis is conducted as well. The final section, section 4, concludes.

## **Data and methodology**

In the analysis data from International Labour Organization (2019) is used. The main variable under the study is Unemployment distribution by education level. Overall four education levels are recognized: less than basic, basic, intermediate and advanced. Those education levels refer to the highest level of education completed. The classification is conducted according to the International Standard Classification of Education (UNESCO Institute for Statistics, 2012). Additional information enabled possibility of observing unemployed persons according to their gender. Therefore, the structure of unemployed persons is going to be observed on total level but also separately for males and females. It has to be emphasized that only unemployed persons of age 25 and older are taken into account. It has been decided to exclude young unemployed persons aged 15-24 because those persons are likely to continue their education in a short term. It is believed that on that way, by omitting persons aged 15-24, more reliable results regards attained education level will be provided. The upper age limit is not exactly specified because not all European countries have defined the same mandatory retirement age (Axelrad and Mahoney, 2017). In addition, mandatory retirement age in a country can be different as well.

The most recent available data from 2017 are used in the analyses. Unfortunately, data about Unemployment distribution by education level was not available for all European countries. Consequently, following 40 European countries are observed: Armenia, Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, the former Yugoslav Republic of Macedonia (FYROM), Malta, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom.

In the first step basic descriptive statistics analysis will be conducted. The main descriptive results will be provided for total level, but for males and for females separately as well. In addition average education level structure among the 40 observed European countries will be provided and discussed.

In order to group the European countries according to their structure of unemployed persons according to achieved education level, non-hierarchical clustering approach will be applied. Due to its ease of implementation, simplicity, efficiency, and empirical success K-means clustering algorithm is going to be used (Jain, 2010). K-means clustering algorithm includes an iterative procedure where objects are allocating between the clusters until there are no objects that change their cluster memberships which means that the variation within each cluster is minimized (Gentle, 2002). In order to get initial cluster centres it has been defined to choose observations to maximize initial between-cluster distances. The number of clusters is

defined according to the following rule of thumb:

$$k = \sqrt{n/2}, \quad (1)$$

where  $k$  is the number of clusters and  $n$  is number of objects (here the number of observed European countries) (Kodinariya and Makwana, 2013). Accordingly, in the analysis the solution with four clusters will be searched.

## Statistical analyses of unemployment distribution by education level and discussion

In this chapter first descriptive statistical analysis of unemployment distribution by education level in the observed 40 European countries will be conducted. Afterwards, the non-hierarchical clustering approach, based on K-means clustering algorithm, is going to be used for identification of countries that have similar structure of unemployed persons according to their achieved education level.

### *Descriptive statistics of unemployment distribution by education level*

In Table 1 are provided the main descriptive statistics results of unemployment distribution by education level in the observed 40 European countries. The structure of unemployed persons is observed according to their education level on overall level and after that according to gender.

The results from Table 1 are suggesting that, in average, in the observed European countries are less than 1% of unemployed persons that have education level lower than the basic one. The average shares of unemployed persons with basic education level and advanced level are quite the same 25.6% and 26.1% respectively. In average, the most unemployed persons have intermediate education level (46.46%).

Quite interesting conclusions can be brought if the average structures of male and of female unemployed persons are compared. According to Table 1, in average, the share of unemployed males with less than basic, basic and intermediate education levels is higher than at unemployed females. On the other hand, the share of unemployed females with advanced education level is higher than at unemployed males.

Coefficient of variation values are suggesting that there are quite high differences in the unemployment distributions when all 40 European countries are observed together. The same conclusion can be brought if the difference between the minimum and the maximum values are observed. In Table 2 European countries with the lowest and the highest values are listed.

*Table 1: Descriptive statistics of unemployment distribution according to achieved education level, unemployed persons 25 years and older, n=40 European countries*

Statistics	Gender	Education level			
		Less than basic	Basic	Intermediate	Advanced
Mean	Overall	0.84	25.60	46.46	26.10
	Male	0.91	28.00	47.55	22.43
	Female	0.74	22.75	45.15	30.48
Standard deviation	Overall	1.37	13.86	14.13	9.80
	Male	1.53	14.78	14.89	9.61

	Female	1.30	13.33	13.68	10.62
Coefficient of variation	Overall	163.16	54.17	30.42	37.53
	Male	167.93	52.77	31.31	42.86
	Female	176.03	58.59	30.31	34.86
Minimum	Overall	0.00	2.40	16.60	10.60
	Male	0.00	2.00	17.80	8.80
	Female	0.00	1.70	14.80	12.30
1st quartile	Overall	0.00	17.80	37.23	18.68
	Male	0.00	18.73	36.63	14.93
	Female	0.00	13.83	36.45	22.73
Median	Overall	0.25	24.15	45.55	25.35
	Male	0.25	27.65	44.95	20.00
	Female	0.00	21.00	44.90	30.80
3rd quartile	Overall	1.03	30.45	55.55	32.30
	Male	1.13	33.95	58.30	29.00
	Female	0.93	31.03	55.28	38.48
Maximum	Overall	5.90	66.00	70.70	48.10
	Male	6.10	66.70	72.70	46.50
	Female	6.00	64.90	67.80	51.70

Source: author

Table 2: List of European countries with the highest and the lowest shares of unemployed persons according to achieved education level, unemployed persons 25 years and older, n=40 European countries

Statistics	Gender	Education level			
		Less than basic	Basic	Intermediate	Advanced
Minimum	Overall	Armenia, Austria, Croatia, Czech Republic, Denmark, Estonia, Finland, Germany, Iceland, Luxembourg, Malta, Moldova, Russia, Slovakia, Slovenia, Sweden	Ukraine	Malta	Hungary
	Male	Armenia, Austria, Croatia, Czech Republic, Denmark, Estonia, Finland, Germany, Iceland, Lithuania, Luxembourg, Malta, Moldova, Montenegro, Russia, Slovakia, Slovenia, Sweden	Ukraine	Malta	Hungary
	Female	Armenia, Austria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Georgia, Germany, Iceland, Ireland, Latvia, Luxembourg, Malta, Moldova, Montenegro, Poland, Russia, Slovakia, Slovenia, Sweden, Ukraine	Georgia	Malta	Hungary
Maximum	Overall	Turkey	Malta	Lithuania	Russia
	Male	Belgium	Malta	Lithuania	Russia
	Female	Turkey	Malta	Lithuania	Ukraine

Source: author

Table 2 shows that there are many European countries that do not have unemployed persons with education level lower than the basic one. On the other hand, Hungary has the lowest share of unemployed persons with advanced education level in its unemployment structure by education levels.

### *Non-hierarchical cluster analysis of unemployment distribution by education level*

The conducted non-hierarchical cluster analysis is based on K-means clustering algorithm.

Based on the number of observed European countries and the rule of thumb, the cluster solution with four clusters is observed. In the analysis the observed education levels are used as input variables. The standardized variables were used for clustering. However, before the contents of clusters are inspected in more details, the successfulness of the clustering processes is observed. Therefore in Table 3 results of conducted analyses of variance are given.

*Table 3: Tables of analysis of variance, unemployed persons 25 years and older, n=40 European countries, g=4 variables*

Gender	Variable	Between	df	Within	df	F	signif.
Overall	Less than basic	30.51164	3	8.48836	36	43.13435	<.00001
	Basic	22.31804	3	16.68196	36	16.05425	<.00001
	Intermediate	27.46750	3	11.53250	36	28.58097	<.00001
	Advanced	26.95924	3	12.04076	36	26.86797	<.00001
Male	Less than basic	30.02732	3	8.97269	36	40.15830	<.00001
	Basic	24.58370	3	14.41630	36	20.46325	<.00001
	Intermediate	30.24479	3	8.75521	36	41.45390	<.00001
	Advanced	24.38539	3	14.61461	36	20.02275	<.00001
Female	Less than basic	29.77023	3	9.22977	36	38.70547	<.00001
	Basic	21.70897	3	17.29103	36	15.06606	<.00001
	Intermediate	28.55883	3	10.44117	36	32.82256	<.00001
	Advanced	25.92697	3	13.07303	36	23.79889	<.00001

*Source: author*

The results from Table 3 are suggesting that the conducted clustering were highly successful. Namely, all variables at all three levels of analysis (overall, male and female) turned out to be highly statistically significant. In other words, those variables were very good at grouping European countries according to their unemployment structure.

In Table 4 members of clusters are shown. The results have shown that the members of clusters are not the same if unemployed persons are observed overall, at male are at female level. However, some European countries tend to be in the same cluster in all three cases. The list of such countries is given in Table 5.

*Table 4: Members of clusters, performed K-means clustering of 40 European countries according to four achieved education level variables, unemployed persons 25 years and older*

Gender	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Overall	Cyprus, Denmark, Finland, Georgia, Greece, Iceland, Ireland, Luxembourg, Netherlands, Norway, Russia, Slovenia, Sweden, Switzerland, Ukraine, United Kingdom	Bulgaria, France, Italy, Malta, Moldova, Portugal, Serbia	Belgium, Spain, Turkey	Armenia, Austria, Croatia, Czech Republic, Estonia, FYROM, Germany, Hungary, Latvia, Lithuania, Montenegro, Poland, Romania, Slovakia
Male	Armenia, Austria, Bulgaria, Croatia, Czech Republic, Estonia, FYROM, Germany, Hungary, Ireland, Luxembourg, Malta, Moldova, Serbia	Cyprus, Denmark, Finland, France, Georgia, Greece, Iceland, Ireland, Luxembourg, Norway, Portugal, Slovenia, Sweden, Switzerland, Ukraine, United Kingdom	Belgium, Portugal, Spain, Turkey	Italy, Malta, Moldova, Serbia

	Latvia, Lithuania, Montenegro, Poland, Romania, Slovakia, Slovenia	Netherlands, Norway, Russia, Sweden, Switzerland, Ukraine, United Kingdom		
Female	Cyprus, Denmark, Finland, FYROM, Georgia, Greece, Iceland, Ireland, Russia, Slovenia, Switzerland, Ukraine, United Kingdom	Armenia, Croatia, Czech Republic, Estonia, Germany, Hungary, Latvia, Lithuania, Montenegro, Poland, Romania, Slovakia	Austria, Italy, Luxembourg, Malta, Moldova, Netherlands, Norway, Portugal, Serbia, Sweden	Belgium, Bulgaria, France, Spain, Turkey

*Source: author*

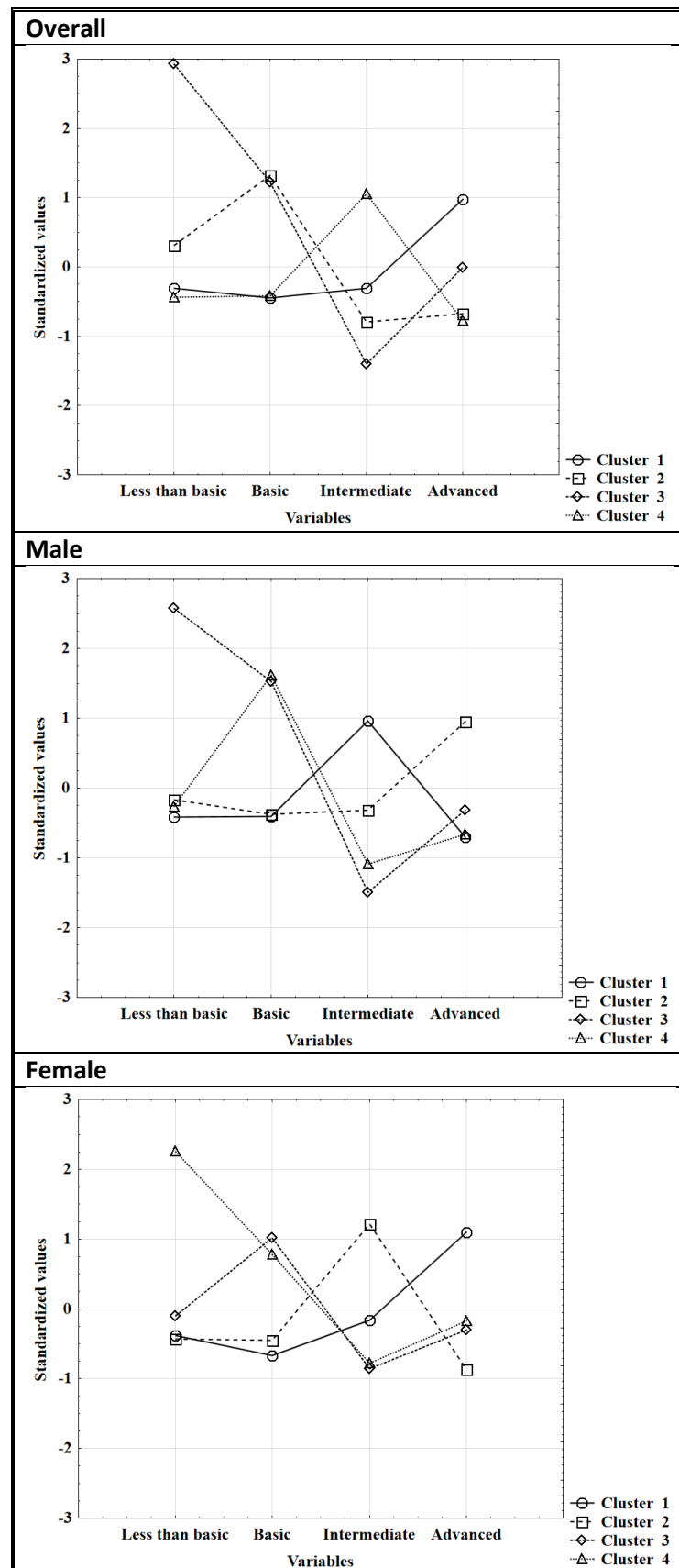
*Table 5: List of European countries that are classified in the same cluster at all three cases (overall, male and female)*

Group	Number of countries	Countries
A	12	Armenia, Croatia, Czech Republic, Estonia, Germany, Hungary, Latvia, Lithuania, Montenegro, Poland, Romania, Slovakia
B	11	Cyprus, Denmark, Finland, Georgia, Greece, Iceland, Ireland, Russia, Switzerland, Ukraine, United Kingdom
C	4	Italy, Malta, Moldova, Serbia
D	3	Belgium, Spain, Turkey
E	3	Luxembourg, Netherlands, Norway

*Source: author*

In Table 5 are shown five groups of European countries that can be found in the same cluster no matter if unemployed persons are observed overall or according to gender. However, there are 7 European countries which do not follow any pattern and are not paired with any other country. Those countries are: Austria, Bulgaria, France, FYROM, Portugal, Slovenia and Sweden.

Figure 1: Plots of clusters' means, standardized values, unemployed persons 25 years and older



Source: author



The clustering results clearly show that unemployment structure is not determined by location of a country. In other words, the neighbouring countries are not necessary classified in the same cluster. There are some neighbouring countries, like Croatia and Hungary, which can be found in the same cluster but together with them in a cluster can be found other countries that are not direct neighbours, like Armenia. Therefore it can be concluded that there are some other factors that have influence on the unemployment structure that are different from location of a country. However, the inspection of those factors is way out of the scope of this paper and because of that in continuation of the paper characteristics of clusters will be inspected. In Figure 1 plots of clusters' means, where standardized values are used, are shown whereas in Table 6 clusters' means, where unstandardized values are used, are given.

*Table 6: Clusters' means, percentages, unemployed persons 25 years and older*

Gender	Variable	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Overall	Cluster size	16	7	3	14
	Less than basic	0.42	1.27	4.87	0.25
	Basic	19.43	43.96	42.50	19.84
	Intermediate	42.08	35.19	26.63	61.36
	Advanced	35.68	19.46	26.03	18.49
Male	Cluster size	16	16	4	4
	Less than basic	0.28	0.66	4.85	0.50
	Basic	22.02	22.41	50.50	51.83
	Intermediate	61.93	42.78	25.28	31.38
	Advanced	15.69	31.54	19.35	16.08
Female	Cluster size	13	12	10	5
	Less than basic	0.24	0.18	0.60	3.68
	Basic	13.88	16.68	36.36	33.16
	Intermediate	42.87	61.83	33.43	34.48
	Advanced	42.18	21.23	27.29	28.60

*Source: author*

The results from Figure 1 and Table 6 show that countries from cluster 3, when unemployed persons on overall and unemployed males are observed, and from cluster 4, when unemployed females are observed, in average have the highest average share of unemployment persons with education level lower than the basic one. According to Table 4 countries in those clusters are Belgium, Spain, Turkey, Portugal (just at male level), Bulgaria (just at female level) and France (just at female level).

On the other hand, countries classified into the cluster 1, when unemployed persons on overall and unemployed females are observed, and into the cluster 2, when unemployed males are observed, in average have the highest average share of unemployment persons with advanced education level. According to Table 4 the list of countries included into those clusters is quite long. At the overall level and at the male level there are included 16 countries whereas at the female level in the clusters are included 13 countries.

## Conclusions

Unemployment is a very difficult problem on an individual and on a country level. It is crucial that unemployment level is held as low as possible or as much close to the natural unemployment level. Previous research has noticed negative relationship between unemployment and education level. Unfortunately, education level cannot be improved in a

short-term. However, it would be a great idea if countries with similar unemployment structure by educational level would share experience and work together in finding common solutions.

In the paper it has been assumed that neighbouring countries should have similar unemployment structure by educational level. The conducted cluster analysis has shown that this research hypothesis cannot be accepted. Namely, the countries classified in the same clusters are not necessarily neighbouring countries. For example, the analysis has shown that, no matter if unemployment is observed on the overall level or on the gender level, in the same cluster it can be found Italy, Malta, Moldova and Serbia whereas in other cluster always together are Belgium, Spain and Turkey.

On that way it can be concluded that unemployment structure does not necessary rely only on geographical position of countries but that there some other important factors are included. Therefore, in the future research the recommendation is to include more significant variables, not only educational levels, which are related to unemployment. Furthermore, in the paper the analysis was conducted on limited number of countries by using data from just one year. In the further studies those limitations should be overridden by observing more countries in some certain time period.

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# EDUCATION

# WILL THE LIKERT SCALE PASS THE FINAL EXAM? A NOVEL, FUZZY-NUMBER-BASED EVALUATION OF SUPERVISORS' PERFORMANCE

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## Abstract

*Due to the problems arising with the application of traditional Likert scales and to the methodological issues when interpreting the results, the concept of fuzzy scales is increasingly applied in service quality context by adding properties to Likert scales with the aim to model human judgement and thinking more precisely and reliably. Following this initiative, the primary aim of this paper is to introduce a fuzzy number based methodology in order to enhance the reliability of traditional Likert scale based evaluations associated with the measurement and evaluation of service quality, particularly in higher education context. The performance of services also varies as time goes which is considered as well when developing this novel methodology.*

*In order to handle these issues, the linguistic variables expressing customers' (i.e. students') satisfaction are considered to be fuzzy sets with sigmoid-shaped membership functions. In our approach, fuzzy numbers are composed of two sigmoid functions, which are conjoined by Dombi's intersection operator. By utilizing the principles of Dombi's Pliant Arithmetics, descriptive statistical analyses can be easily conducted on the collected data. The intersection of two sigmoid functions can also be considered as a membership function expressing the usually strongly nonlinear relationship between service performance and customer satisfaction. In order to be able to perform that the linguistic variables 'completely dissatisfied', 'dissatisfied', 'rather dissatisfied', 'rather satisfied', 'satisfied', 'completely satisfied', which are widely used expressions on traditional Likert scales, are linked to the service performance level of the organization. As a result, the sigmoid-shaped membership function is able to express the truth of the statement that a given level of service performance*

*belongs to a certain linguistic variable expressing human judgement. This property allows the management of service providers to assess how customer satisfaction relates to the offered level of performance and thereby allows the identification of those aspects, where further improvements of performance attributes could enhance customer satisfaction.*

*The practical benefit of the proposed methodology is demonstrated through a higher education example of a student survey applied to evaluate specific service quality issues in the case of project work courses. The Department of Management and Business Economics at the Budapest University of Technology and Economics has introduced a fuzzy number based survey containing altogether 26 statements focusing on service quality attributes associated with the supervision process of project work courses. Students are provided the opportunity to evaluate not only the supervisor's performance on a fuzzy number based scale, but also the importance of each statement is rated as well. In this study, the application of the proposed methodology is demonstrated for five statements in case of which the addressed quality issues have been given the highest importance scores during the previous semesters. After assigning the linguistic terms to the performance level in each of the examined statements, it can be concluded that the distance between the consecutive levels of satisfaction is not the same as assumed when utilizing a Likert scale based evaluation. In addition to that, the performance level where satisfaction reaches its next level is highly dependent on which service quality attribute is to be evaluated; up to the half of the range of performance, however, respondents are usually 'completely dissatisfied' with the perceived performance. These findings demonstrate well how much information is lost or distorted when applying traditional Likert scales to evaluate service quality.*

*Therefore, it is to be demonstrated that fuzzy numbers are able to deal with the uncertainty or ambiguity of human judgement by expressing the variation of performance as time goes on and by being able to characterize the mainly nonlinear relationship between organizational performance levels and degrees of customers' satisfaction even in those cases, where the level of customer satisfaction associated with the experienced level of performance varies when investigating different service quality attributes. The main novelty of the introduced methodology is that fuzzy sets are determined based on customers' (students') expectations, while former studies in the literature have defined previously the parameters of fuzzy sets representing the corresponding linguistic terms.*

**Keywords:** teaching quality, course evaluation, service quality measurement, fuzzy numbers, fuzzy Likert-scales

**JEL classification:** C19, I21, I23

## **Introduction**

Higher education institutions (HEIs) have started to pay more attention to quality issues and organizational excellence (Asif & Searcy, 2014) owing to forces of marketization (Bunce, Baird & Jones, 2017). Adequate measurement and appropriate comprehension of students' expectations and perceptions are fundamental if HEIs seek approaches to evaluate the quality of their services and to ascertain reliably whether the expectations of the stakeholders, primarily that of the students are met (Lupo, 2013). Liou and Chen (2006) argue that satisfaction, perception and attitude are linguistic in nature and as such, undoubtedly somewhat vague, ambiguous and imprecise. Stefano, Casarotto, Barichello & Sohn (2015) also recognize that vagueness, ambiguity and imprecision are not easy to 'measure' due to the

fact that one may be unable to express his or her preferences by quantifying it with an exact numerical value.

The primary aim of this study is to address a challenging problem which is related to how to handle as precisely as possible the inherent uncertainty of human perceptions and how to link the satisfaction of students to the perceived level of service quality. For this purpose, this paper proposes a fuzzy rating scale for end-of-semester evaluation of project work courses. These courses are not involved in the traditional course evaluation framework at the investigated university due to their special features. On the other hand, these project works could be considered as a 'path' towards the final thesis work. That is, these project works have a high impact on students' career opportunities, while the provided support of the assigned supervisor strongly influences the students' satisfaction and quality perception and as such, it should be regularly evaluated and reviewed.

By providing a fuzzy Likert-scale to evaluate the supervising lecturers' performance, not only the uncertainty, the contrasting perceptions and the variability of the lecturers' performance could be taken into account, but the relationship between the supervisor's performance and the satisfaction of students can be characterized as well. Since an accurate and balanced picture of students' satisfaction is crucial to improve service quality and thereby to increase students' commitment in higher education, the fuzzy rating scale introduced in our work may support managerial decisions related to the identification of those areas where further improvement is needed to sustain a higher level of service quality.

## **Literature review**

Based on the original SERVQUAL model and on its various modifications, a couple of methods are proposed in the literature with the purpose of measuring and evaluating service quality and the satisfaction of stakeholders in higher educational context (see e.g. Brochado, 2009; Teeroovengadum, Kamalanabhan & Seebaluck, 2016; Nadiri, Kandampully & Hussain, 2009; Lalla, Facchinetti & Mastroleo, 2005).

The main motivation behind our research is the continuously growing pressure on universities to have effective mechanisms for collecting feedback data (Harvey, 2011). The majority of the works proposed in the literature utilizes the traditional Likert scale to assess service quality despite the fact that many critical factors have appeared recently related to the application of conventional Likert scales. Li (2013) reviews the merits and the limitations of traditional Likert scale based evaluations pointing out that a significant amount of information is either lost or distorted due to the built-in limitations of the underlying method. Chen (2001) argues that these scales force the respondent to reduce his or her perception to a single value. Gil and González-Rodríguez (2012) claim that the variation of the performance, the diversity and the subjectivity associated with and needed for an accurate rating is usually lost, the reason for which is that only a limited number of 'values' are offered to choose from. From the statisticians' point of view, another problem emerges from the nature of these scales (Lubiano, de Sáa, Montenegro, Sinova & Gil, 2016) as Likert scale is considered to be an ordinal level scale, on which the degree of difference between the scale items is unclear because an ordinal scale indicates only the relative position of the scale 'values'. Assuming the same 'distance' between the consecutive scale points is commonly practiced despite the fact that this assumption may lead to the misinterpretation of the information encoded in the responses and as a result, to the distortion of the information collected.

Fuzzy set theory offers an alternative way to handle the limitations of traditional Likert-scales by offering the capability to ‘capture’ vague information, generally described in verbal terms, and then, to convert it into a numeric format (Stefano *et al.*, 2015). Calcagni and Lombardi (2014) propose fuzzy scales to overcome the limitations of standard scales by modelling the imprecision and subjectivity embedded in human rating evaluations. By incorporating fuzzy sets into the traditional forms of qualitative and quantitative analyses in the field of social sciences, a new and powerful mathematical tool has become available, which allows researcher to handle certain problems related to weakly defined measurements (Benoit, 2013; Li, 2013).

Liou and Chen (2016) confirm that fuzzy linguistic assessment of service quality is much closer to human thinking and judgement than the evaluation methods based on crispy numbers. Lin (2010) also discusses the benefits of involving fuzzy sets theory into service quality measurements by proposing a modified importance-performance analysis and argues that if the fuzziness of human judgement is not taken into account, the obtained results could be misleading. Therefore, due to its favourable properties, fuzzy evaluation of service quality has become widely applied recently. Du Plessis, Martin, Roman & Slabbert (2018) evaluated arts festivals with triangular fuzzy numbers, whereas Benítez, Martín & Román, (2007) and in a more recent study, Stefano *et al.*, (2015) utilized fuzzy sets theory in the case of hotel industry. Latter authors applied fuzzy analytic hierarchy process as well to rank their results, which were obtained with a fuzzy SERVQUAL model. In higher educational context, Basaran, Kalaysi & Atay (2011) and Lalla *et al.* (2015) suggested methods for implementing fuzzy logic in student evaluations of teaching performance. Lupo (2013) deals with a fuzzy SERVQUAL based methodology for reliable measurements of teaching quality. Fuzzy logic is also utilized to support academic staff selection (Rouyendegh and Erkan, 2013) or for student evaluation (Hameed, 2011). All of these studies conclude that fuzzy logic incorporates more information and as a result, supports far better managerial decisions than traditional approaches do.

Taking the limitations of traditional Likert scales and the aforementioned favourable properties of fuzzy logic into account, a fuzzy rating scale based evaluation framework has been developed at the Department of Management and Business Economics at the Budapest University of Technology and Economic to collect feedback on supervisors’ performance provided in project work type courses.

## **Project work courses**

At the university under examination, there is a long history of course quality evaluation, the Student Evaluation of Education (SEE) framework has been applied since 1999. The related anonymous electronic survey is filled in by students after having completed the given course and having received a final grade at the end of the semester. Taking part in the course evaluation process is optional for students. The survey measures and evaluates different elements, dimensions of the semester-long education quality that are dependent primarily on the lecturer itself. Though, the investigated project work courses are part of the obligatory curriculum both on bachelor and master level at the Faculty, they have several special features compared to traditional courses. As a result, these courses are not involved in the SEE system, therefore, students are not provided an opportunity to reflect their judgements.



Executing a project work is a complex task, that is, they prepare students to write a successful thesis and help their prosperous entry to the labour market (Finna and Erdei, 2015; Bérces, 2015; Perger and Takács, 2016). In these courses students are to present that they are able to professionally apply the models, methods and tools of different fields of science including mathematics, business, economics, finance, management and marketing. They should also be able to analyse complex business problems in details and provide solutions for a real-life problem. In the beginning of each project work, the supervisor assigned for the student sets different tasks for the semester. Through the semester, students follow these requirements and consult regularly with their supervisors presenting their milestones in different forms (personally, via email, etc.). Students are to carry out a professional work, document their work processes, interpret the results, come to professionally relevant conclusions and suggestions while being aware to those internal and external conditions that have an impact on practical implementation. The output of each semester is a written paper which is evaluated according to specific, quality-related aspects about which students are informed at the beginning of the semester. In BA/BSc programs there are two or three levels of these courses depending on the type of the program, while in MA/MSc programs one semester of project works is to be accomplished before writing the final thesis.

In the case of those programs where there are three consecutive project work courses to be completed, the aims of the different levels are the followings:

- Project work I. – the task is to investigate both the theoretical background of a specific field and the organizational background utilizing the students' professional knowledge.
- Project work II. – students deal with specific organizational issues related to the previous level and define the related issues in details.
- Project work III. – in this semester students implement the results of Project work II. and offer a professionally confirmed solution.

After the students completed and uploaded their project works to the official website, they prepare an oral presentation where both the content of their paper and their presentation skills are evaluated. Students are given a final grade only after successful oral presentation.

The Department of Management and Business Economics under investigation has already tried to collect student feedbacks related to these courses in various ways, but these questionnaires were different in their lengths, forms and content and they were mostly paper-based. Supervisors were informed about the results, but they were not enforced to formally react to them, however, a part of the gathered information was utilized in the internal processes of the department.

## **Survey development**

Taking the aforementioned features of these courses into consideration, a SERVQUAL-based course evaluation questionnaire was developed for collecting and analysing student satisfaction for these special courses. The research related to the application of service quality models in higher education, especially on course level, is quite extensive. Most of the related studies apply a SERVQUAL-based methodology and its dimensions (Mahapatra and Khan, 2007; Stodnick and Rogers, 2008; Yousapronpaiboon, 2014; Teerovengadum *et al.*, 2014; Rodríguez-González & Segarra, 2016).

The quality of the supervision processes related to project work courses is surveyed by a detailed questionnaire in order to gain a deeper knowledge of students' judgement by

customizing the relevant aspects (Surman & Tóth, 2018). The survey invites students to evaluate service quality in two aspects, namely, they rate both the importance and the performance of issues addressed by the statements. The points of the importance scale are meant to reflect the expectations and requirements of students articulating the ‘voice of students’, while performance scores denote how satisfied students are with the various components of the supervision process. The survey consists of 26 statements which is complemented with a question addressing overall satisfaction and with additional inquiries dealing with demographic features and with an optional question providing an opportunity for narrative comments. The statements were developed taking into account the state of the art (Parasuraman, Zeithaml & Berry, 1985; Oldfield & Baron, 2000; Yousapronpaiboon, 2013; Kincsesné, Farkas & Málovics, 2015). The survey has been filled in both by bachelor and master students at different levels of these courses in the last three semesters. Taking the disadvantages of traditional Likert-scales and the encouraging results with fuzzy rating scales into consideration (Jónás, Tóth & Árvai, 2018a), students have been asked to rate the performance of their supervisors on a fuzzy rating scale.

## Methodology

In order to overcome the difficulties associated with traditional Likert-scale-based evaluation, the linguistic variables ‘completely dissatisfied’, ‘dissatisfied’, ‘rather dissatisfied’, ‘rather satisfied’, ‘satisfied’, ‘completely satisfied’ are considered to be fuzzy sets and they are linked to the performance level. The membership function, which expresses the degree to which a given level of performance belongs to a certain fuzzy set, is composed as a Dombi-intersection of two sigmoid-shaped functions.

**Definition 1.** The sigmoid function  $\sigma_a^{(\lambda)}(x)$  with parameter  $a$  and  $\lambda$  is given by

$$\sigma_a^{(\lambda)}(x) = \frac{1}{1 + e^{-\lambda(x-a)}} \quad (1.)$$

where  $x, a, \lambda \in \mathbb{R}$  and  $\lambda$  is nonzero.

For the main properties of the sigmoid function  $\sigma_a^{(\lambda)}(x)$  see Jónás *et al.* (2018a). Let us assume, that we have an increasing sigmoid function  $\sigma_{a_l}^{(\lambda_l)}(x)$  with parameters  $a_l, \lambda_l$  and a decreasing sigmoid function  $\sigma_{a_r}^{(\lambda_r)}(x)$  having the parameters  $a_r$  and  $\lambda_r$ . These two sigmoid functions are conjoined by Dombi’s intersection operator (Dombi, 2009), which results in the following form of the membership function:

$$\sigma_{a_l}^{(\lambda_l)}(x) *_{(D)} \sigma_{a_r}^{(\lambda_r)}(x) = \frac{1}{1 + e^{-\lambda_l(x-a_l)} + e^{-\lambda_r(x-a_r)}} \quad (2.)$$

The parameters  $a$  and  $\lambda$  of the sigmoid function  $\sigma_a^{(\lambda)}$  can be unambiguously given by determining two points of the function curve. In order to be consistent with traditional evaluation and human thinking, the rater should express his or her opinion by the parameter triplet  $l, m, r$ , where:

- $l$  represents the worst possible value which the assessor would give when evaluating the given statement;

- $m$  is the value which seems most likely to express the assessor's judgement in the examined dimension and  $m$  is the only value which can be given on a traditional Likert-scale;
- $r$  denotes the best possible value which the assessor would give when evaluating the given statement, similarly to  $l$ .

The values of  $l$  and  $r$  should be chosen so that they are proportional to the perceived variability of the performance or to the uncertainty or subjectivity of the respondent; the higher the uncertainty in the evaluation or the more variation of performance is experienced, the higher should be the difference between  $l$  and  $r$ . Based on the values  $l$  and  $m$ , the parameters  $a_l$  and  $\lambda_l$  can be determined as:

$$a_l = \frac{l + m}{2} \quad (3.)$$

$$\lambda_l = \frac{2}{m - l} \ln \left( \frac{1 - \varepsilon}{\varepsilon} \right) \quad (4.)$$

The parameters  $a_r$  and  $\lambda_r$  are determined based on the values  $m$  and  $r$  as follows:

$$a_r = \frac{r + m}{2} \quad (5.)$$

$$\lambda_r = \frac{2}{m - r} \ln \left( \frac{1 - \varepsilon}{\varepsilon} \right) \quad (6.)$$

In equations (3.)-(6.)  $\varepsilon$  is a small positive value, for example  $\varepsilon = 0.001$ . Having identified the parameters of the increasing sigmoid function  $\sigma_{a_l}^{(\lambda_l)}(x)$  according to equations (3.)-(4.), and the parameters of the decreasing sigmoid function  $\sigma_{a_r}^{(\lambda_r)}(x)$  based on equations (5.)-(6.), the two sigmoid functions are conjoined by applying Dombi's intersection operator in (2.). Due to the fact that the sigmoid function neither takes the values of 0 or 1 (since these are only the limits of the function), the function value will be  $\varepsilon$  at the points  $l$  and  $r$  and  $1 - \varepsilon$  at the point  $m$ . Henceforth, the variable  $x$  represents the performance level, whereas the function values of  $\sigma_{a_l}^{(\lambda_l)}(x)$  or  $\sigma_{a_r}^{(\lambda_r)}(x)$  express the truth of the statement that a certain level of performance belongs to a given fuzzy set, which depicts the customers' verbal judgement on the performance.

Figure 1 shows an example of a sigmoid-shaped membership function of a fuzzy set, which has been constructed as described previously.

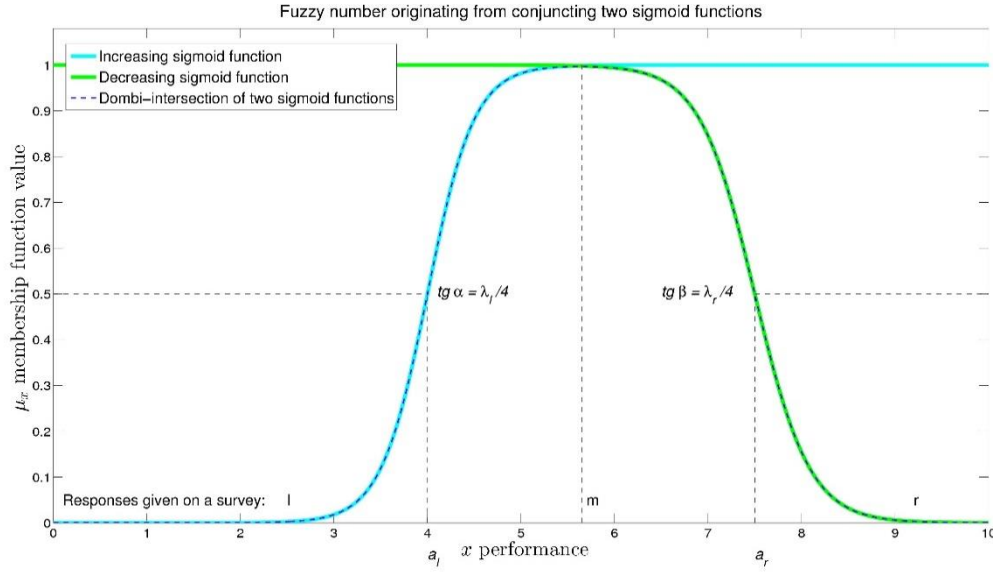


Figure 1: A sigmoid-shaped membership function of a certain fuzzy set

In order to establish the fuzzy Likert scale, the following considerations are taken into account:

- to each linguistic variable, a sigmoid-shaped membership function is assigned;
- to the linguistic variable ‘completely dissatisfied’, only a decreasing sigmoid function with  $l = -\infty$ , and similarly, to the linguistic variable ‘completely satisfied’ only an increasing membership function with  $r = \infty$  is assigned;
- in each point of the scale, two linguistic variables are defined with a membership value being greater than  $\varepsilon$ ;
- the value  $m$  of a certain membership function is assumed to be equal to the value of  $r$  of the previous membership function and to the value of  $l$  of the following membership function.

Unlike several studies in the literature (e.g. Du Plessis *et al.*, 2018; Benítez *et al.*, 2007), the proposed methodology does not require the parameters  $l$ ,  $m$  and  $r$  to be determined by the researcher. Instead, these values stem from customers’ expectations. Since the main aim of the discussed methodology is to map the relationship between the performance provided by an organization and the customers’ judgement on the perceived level of performance, customers are asked to answer the following questions in each of the dimensions to be evaluated:

*Assuming that the performance of an organization is measured on a scale between 0 and 100:*

- *What is the performance level ( $m_1$ ) under which you would be ‘completely dissatisfied’ with the performance of the organization?*
- *What is the performance level ( $m_2$ ) which seems most likely to express the performance if you are ‘dissatisfied’ with the performance of the organization?*
- *What is the performance level ( $m_3$ ) which seems most likely to express the performance if you are ‘rather dissatisfied’ with the performance of the organization?*
- *What is the performance level ( $m_4$ ) which seems most likely to express the performance if you are ‘rather satisfied’ with the performance of the organization?*

- What is the performance level ( $m_5$ ) which seems most likely to express the performance if you are 'satisfied' with the performance of the organization?
- What is the performance level ( $m_6$ ) above which you would be 'completely satisfied' with the performance of the organization?

By answering the above listed questions, the values of  $m$  can be determined for each membership function. Since the value  $m$  of a certain membership function is assumed to be equal to the value  $r$  of the previous and to the value  $l$  of the following membership functions, for each linguistic term, the corresponding membership function can be established unambiguously by utilizing equations (2.)-(5.). Figure 2 depicts a fuzzy rating scale and the values addressed by a questionnaire.

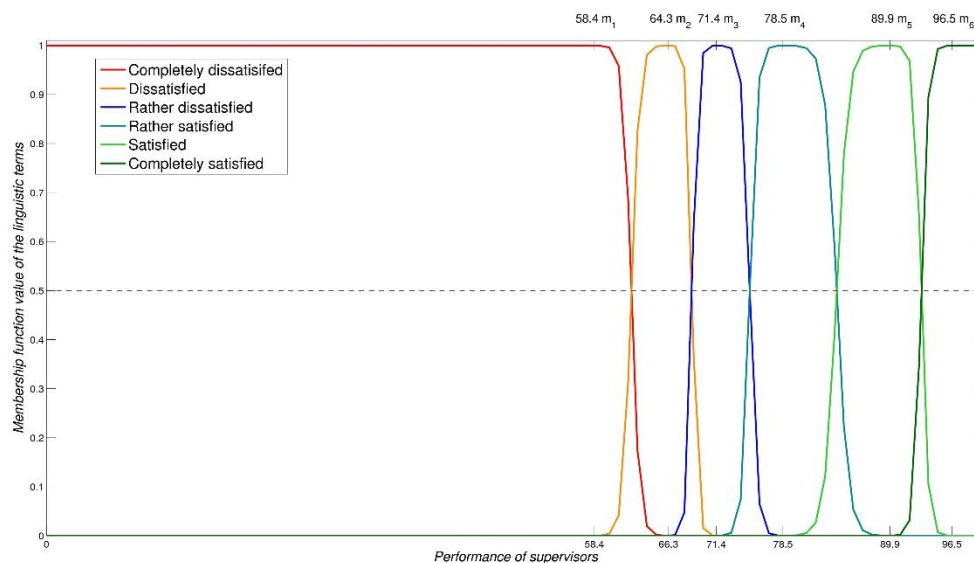


Figure 2: Sigmoid-shaped membership functions of the fuzzy sets representing the linguistic terms. The x-axis on the top of the figure denotes the values which should be addressed in a questionnaire

## Case study

Based on the favourable properties of fuzzy Likert-scales, which may help to overcome the difficulties associated with traditional Likert-scales, a novel evaluation framework has been launched at the Department of Management and Business Economics at Budapest University of Technology and Economics. This questionnaire is utilized to collect feedbacks on the supervisors' performance after students have finished their project works. It allows students to assign an importance score to each statement and then to give an assessment on the supervisor's performance by choosing appropriate values for the parameter triplet  $l, m, r$ , based on which a fuzzy number expressing the supervisor's performance can be composed (see Figure 1). Since fuzzy-rating scales do not require the respondent to reduce his or her opinion to a single crispy number, these scales contain more detailed information about students' judgement. The establishment of this questionnaire containing 26 statements are thoroughly discussed in Tóth & Surman (2018), while in Jónás, Tóth, Árva & Surman (2018b) the first results of application are introduced. Based on these results, the following five statements turned out to have the highest importance scores given by students:

*Table 1: The evaluation dimensions and the corresponding average importance scores*

Statement	Average importance score	Weight
The supervisor is ready to help with the problems arising from the student.	6.606	0.203
The supervisor is willing to answer the emerging questions and requests during consultation opportunities.	6.587	0.201
Supervisor feedbacks on the different phases of the project work are provided both in an interpretable way and form.	6.518	0.199
The supervisor is available at the agreed dates.	6.516	0.199
The student trusts the supervisor and relies on his/her professional knowledge.	6.477	0.198

Despite the encouraging results of the first year of application, the previously introduced methodology allows students to express only the performance of their supervisor, while their satisfaction with the perceived performance cannot be taken directly into account. In order to overcome the lack of connection between the supervisor's performance and the satisfaction of students with the experienced performance level, the formerly applied fuzzy scale was further developed as described previously. With the purpose of determining the membership functions of the fuzzy sets representing the 'values' on a Likert scale, 42 (During the first semester, 214 students filled in the survey, that is, the sample of 42 students corresponds to 20 % of all students. Since the investigated department has detailed and standardized requirements for all project work-type courses, the expectations of the students should not be strongly influenced by the personality of the supervisor. As a result, those students can be considered as ones being representative of all students whose project works are assigned to the department under investigation. The reliability of the method, however, may be enhanced by involving more students in the calibration phase.) students of 2 supervisors were asked to give the performance level under which he or she would be completely dissatisfied with the supervisor's performance and similarly, address the performance level above which he or she would be completely satisfied with his or her supervisor's performance for each statement listed in Table 1. Besides that, for the 'scale points' in the middle of the scale, students were asked to give a performance level which seems most likely to express the performance of the supervisor if he or she is 'dissatisfied', 'rather dissatisfied', 'rather satisfied', 'satisfied' with the performance experienced, respectively. Owing to the fact that students could answer the previously mentioned questions for each of the evaluated dimensions listed in Table 1, the different expectations regarding the supervisor's performance among the investigated aspects could be taken into account as well.

Figure 3 depicts the supervisor's performance (on the  $x$ -axis) and the membership functions of the linguistic terms 'completely dissatisfied', 'dissatisfied', 'rather dissatisfied', 'rather satisfied', 'satisfied', 'completely satisfied' assigned to the performance in each investigated dimension.

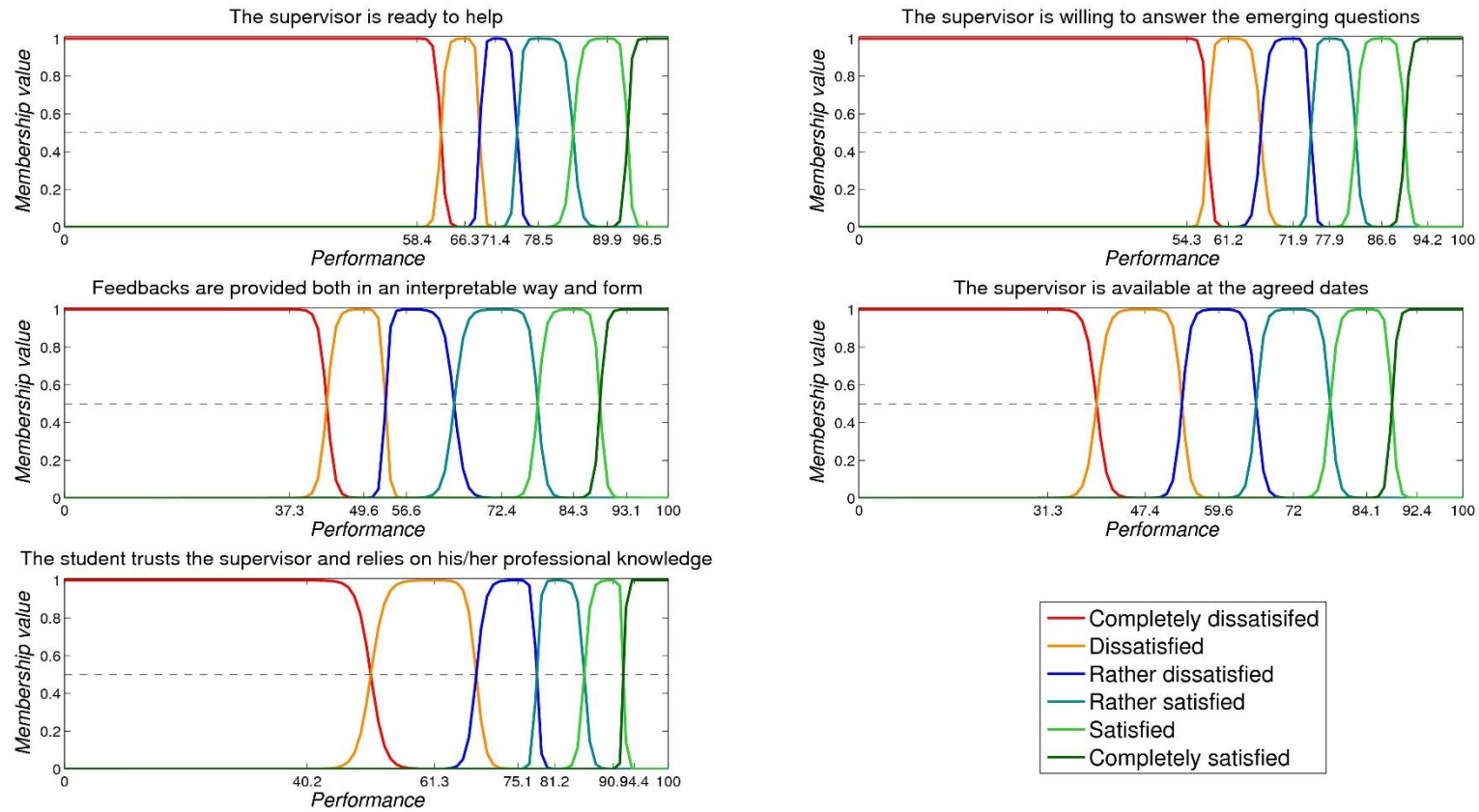


Figure 3: Membership functions of the linguistic terms assigned to the supervisors' performance in the investigated dimensions

Figure 3 suggests that the linguistic terms representing the students' (or in general, the customers') satisfaction are dependent on which quality dimension is investigated. For instance, in the evaluation dimension *'The supervisor is ready to help with the problems arising from the student'* the supervisor's performance should be higher than 58.4 to avoid completely dissatisfied students and should achieve as high performance as 96.5 to completely satisfy his or her students. On the contrary, in case of the dimension *'Supervisor feedbacks on the different phases of the project work are provided both in an interpretable way and form'* a performance score of 37.3 is enough to avoid completely dissatisfied students, whereas a performance of 93.1 is already considered as one completely satisfying students. One may say the higher the importance of a particular service quality dimension is, the higher the expectations related to the performance level are. While in the case of the supervisor's readiness to help, which is the most important aspect from the students' point of view, a performance level of 55 is considered to be 'completely dissatisfying', the similar performance level is considered to be somewhere between 'dissatisfying' and 'rather dissatisfying' in the case of the supervisor's availability at the agreed time, which statement turned out to be less important. In addition to that, based on Figure 3 one may conclude as well that the distance between the consecutive 'scale points' is not constant. Examining the evaluations given in the dimension *'The student trusts the supervisor and relies on his/her professional knowledge'*, the distance between the scale points representing the value which seems most likely to express the performance in the case of 'dissatisfied' students and that of the 'rather dissatisfied' students is 13.8 units, whereas the consecutive scale point is only 6.1 units away. It can be seen as well that up to the one-third, in some cases up to the half of the performance scale students are usually 'completely dissatisfied' with the supervisor's work.

On the contrary, on a Likert-scale, a performance level around the one-third of the scale is already considered to be the second or the third linguistic term representing the customer's satisfaction. Moreover, a traditional Likert-scale is built on the premise that there is a crisp boundary among the consecutive 'values' representing the assessor's judgement. In reality, however, due to vagueness, imprecision and uncertainty, the boundaries separating the consecutive levels of customers' judgement are vague. The proposed methodology is able to deal with these issues since a particular level of performance may belong to two different linguistic terms that represent the customers' judgement on the given performance level. In addition to that, the performance may vary as time goes on without influencing the judgement on this performance. Tóth, Surman & Árva, (2017) argue that students' perceptions on the same aspect show a significant difference during and after the semester. The suggested methodology, on the other hand, is able to capture the variation of performance.

Jónás *et al.* (2018a) suggest a methodology based on Dombi's Pliant Inequality Model to aggregate sigmoid-shaped fuzzy sets. Based on the importance scores (see Table 1), one may determine a weight for each statement. Aggregating the previously introduced fuzzy sets with the corresponding weights results in a rating scale which is depicted in Figure 4. This rating scale may depict the overall judgement related to the supervisor's performance, where each of the statements introduced previously are taken with the corresponding weight into account. The upper *x*-axis of Figure 4 belongs to a scale on which the consecutive linguistic terms completely dissatisfied (0)', 'dissatisfied (20)', 'rather dissatisfied (40)', 'rather satisfied (60)', 'satisfied (80)', 'completely satisfied (100)' are distributed equally apart from each other, exactly as the traditional Likert-scale assumes. Based on Figure 4, it can be concluded that this assumption usually does not comply with students' expectations. That is, traditional Likert-scales not only lack the ability to deal with uncertainty, vagueness, imprecision or take the variation of performance into account, but the assumption of the same 'distance' between



the consecutive scale points is not consistent with human judgement resulting in the fact that either the performance or the satisfaction is improperly evaluated. The inadequate or biased judgement may lead to weakly supported managerial decisions and as a consequence, may set organizational competitiveness back as well.

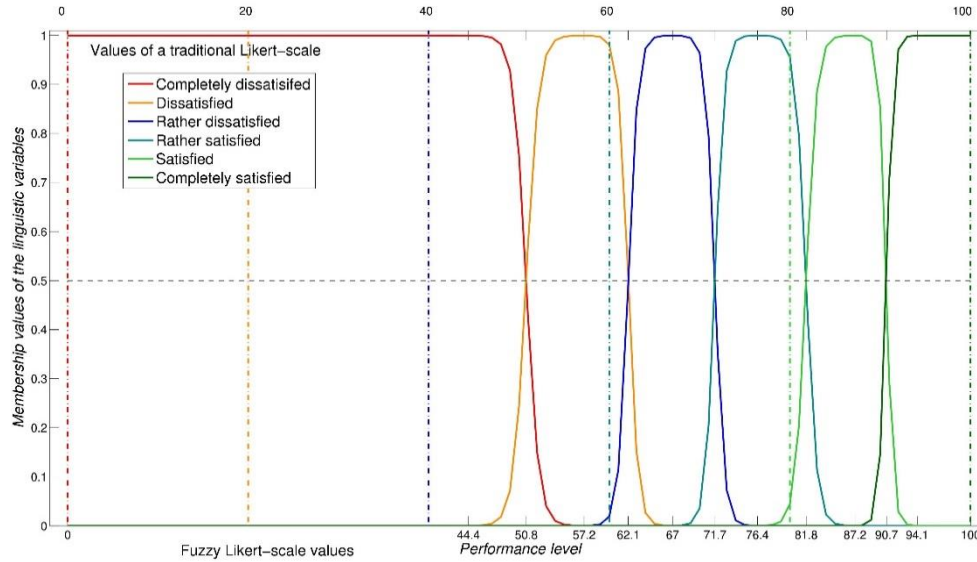


Figure 4: Membership functions of the linguistic terms representing the overall performance of the supervisor

The proposed methodology may be applied in two different ways: either the performance is surveyed and based on the performance level, satisfaction is determined, or students are asked to express how satisfied they are with the experienced level of performance and based on this the level of performance could be characterised. If one seeks to turn the evaluation into a single ‘crisp’ value denoted by  $\hat{y}$ , the following formula could be applied for the defuzzification of the fuzzy sets (Dombi, Jónás & Tóth, 2017):

$$\hat{y} = \frac{\lambda_l}{\lambda_l + |\lambda_r|} \cdot a_l + \frac{|\lambda_r|}{\lambda_l + |\lambda_r|} \cdot a_r + \frac{1}{\lambda_l + |\lambda_r|} \cdot \{\ln(\lambda_l) - \ln(|\lambda_r|)\} \quad (7.)$$

The only disadvantage of the discussed methodology is the need to answer six questions during the ‘calibration phase’ of the scale in each of the service quality aspects to be evaluated, which was the reason for reducing the application of the proposed fuzzy Likert-scale to those five evaluation dimensions that were believed to have the highest importance for students.

## Conclusion and future work

The purpose of the introduced methodology is to accurately measure and evaluate service quality by linking the perceived level of performance to the satisfaction of consumers. Resulting from the fact that human thinking and judgement are often vague, imprecise and the performance varies as time goes on, the linguistic variables expressing the students’ satisfaction are considered to be fuzzy sets with sigmoid-shaped membership functions. The novelty of the introduced method is that fuzzy sets are determined based on student’s

expectations, while former studies (e.g. Du Plessis *et al.*, 2018; Benítez *et al.*, 2007; Stefano *et al.*, 2017) have previously defined the parameters of the fuzzy sets representing the corresponding linguistic terms. This property of the proposed methodology allows researchers to apply different fuzzy sets in each evaluation dimensions. Owing to the fact that a certain level of performance may be judged differently depending on which aspect of service quality is to be evaluated, this feature of fuzzy Likert-scales results in a more precise reflection of customers' evaluation.

Since an accurate and balanced picture of customer satisfaction is urgently needed to improve service quality and thereby to increase customer loyalty, the fuzzy rating scale introduced in our work may support managerial decisions related to customer service far better than traditional Likert scaling. Based on the collected data, managers may identify the areas where further improvement of performance is needed to achieve a higher level of customer satisfaction and organizational excellence.

In this paper, the usefulness of the proposed methodology is demonstrated through the example of a survey which is applied to judge the performance of supervisors at a particular department of one of the largest universities in Hungary, however, the application of this technique is not limited to the evaluation of supervising performance. Similarly, this methodology could also be utilized to the evaluation of other aspects of teaching quality or even to studies in which the evaluation is similarly subjective in nature, like in case of hospitality or healthcare services.

A possible future research direction is to investigate the application of the proposed methodology for the regular end-of-semester Student Evaluation of Education, which has institutionally been operated for almost 20 years at the University under investigation to provide students with the opportunity to give feedback on each and every course and its lecturers. In case of this evaluation system, the utilization of Likert scale leads to the same problems that we have faced when evaluating supervising performance. Besides that, one could further investigate the relationship between the evaluations given in a particular dimension and the overall satisfaction of students and relationships between various evaluation dimensions could also be examined as well. Besides fuzzy regression (see e.g. Yabuuchi, 2015), machine learning techniques that are able to map the relationship between fuzzy inputs and fuzzy outputs may contribute to deal with these issues.

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# IDENTIFICATION OF CRITICAL TO SERVICE QUALITY ATTRIBUTES IN HIGHER EDUCATION WITH STUDENT INVOLVEMENT

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## Abstract

*Due to the momentous transformation process taken part in the European Higher Education Area since the introduction of the Bologna process, the European Standards and Guidelines and national higher education policies have increasingly enforced higher education institutions to become customer focused by implementing institution specific practices. Enormous number of studies deal with the identification of customer in higher education. Despite of the many existing interpretations in the literature, there is a common agreement that students play a prominent role when it comes to the evaluation of the quality of services provided by higher education institutions. The intensifying marketization in higher education emphasizes the importance of understanding the factors that influence student satisfaction resulting from the evaluation of student experience with regard to the educational services rendered. However, student satisfaction results can be understood in the light of student expectations. Focusing on student satisfaction enables universities to revise and reengineer their operation in order to adapt to the ever increasing needs of students. This approach also provides an opportunity through which a competitive advantage could be achieved in this sector. Following these trends, the primary aim of this paper is to identify the critical characteristics of educational services with the active involvement of students and by that means propose improvements in case of newly launched courses.*

*Taking the recent trends in the relevant literature into account, the critical to quality characteristics of specific educational services provided by the investigated institutions are determined by students as primary customers by involving them in various group techniques. Based on the compiled list of characteristics, a Likert scale based questionnaire has been developed and distributed to more than 300 undergraduate and graduate students at four business programs in two Hungarian universities to evaluate the importance of the listed service attributes.*

*Based on students' judgements, statistical analyses have been conducted with different segmentations of student attributes in order to identify the underlying dimensions and critical to quality service attributes. The applied methodology may contribute to the foundation of PDCA logic based improvements and to the shape of organizational culture by putting students into the forefront.*

**Keywords:** higher education, student satisfaction, student involvement, critical to quality attributes, service quality

## **Introduction**

Over the last decades, higher education institutions (HEIs) have experienced dramatic changes, both in their funding and in student numbers. Before the 1990s competitive advantage as a concept was totally alien to the higher education (HE) sector. However, in the 2010s it is a must for institutions to acknowledge that they operate in a developing marketplace (Bunce *et al.*, 2017). As a consequence, quality issues in HE have been intensively addressed in the last two decades as the growing marketization in HE has forced institutions to face many competitive pressures (Lupo, 2013). This has also given rise to a changing phenomenon, that is, the perception of students as primary customers (e.g. Elsharnouby, 2015; Sadeh & Garkaz, 2015). With the spread of the TQM concept, HEIs have been increasingly realizing that they are part of the service industry and putting greater emphasis on understanding students' needs and expectations and considering more carefully how they can achieve advantage to attract students have led to the increasing interest in student satisfaction and service quality issues (Xiao & Wilkins, 2015, DeShields *et al.*, 2005).

The rise of the consumer model has resulted in various distinct benefits. HEIs have started to adopt various management approaches and related tools and methods in the provision of educational services (Giannakis & Bullivant, 2016). At the same time, the role of universities is also undergoing a transformation. The trends turning up across the HE sector worldwide are shifting HEIs away from the delivery of effective teaching toward the delivery of a more transferable and professional skillset leading to successful employment in the labour market (Senior *et al.*, 2017). Today's students are more likely to be satisfied if they are actively involved in study programs that fulfil the expectations for subsequent and very specific employment. These trends have also addressed several quality concerns.

One might easily think that students' expectations and perceptions of quality and student satisfaction are easy to grasp, but the relevant literature is extremely rich and diversified in efforts that wish to clarify these concepts and develop measures to quantify them. Institutions need to address the issue of quality not only by applying traditional approaches including accreditation, course review and student feedback questionnaires, but by establishing methods which allow the evaluation what students themselves consider to be the elements of service quality (Oldfield & Baron, 2000) in order to identify and measure in a valid and reliable way the critical to quality factors (Alves & Raposo, 2009). Therefore, it is important for institutions to look at what their students want and not to collect data based upon what the institution perceives its students find important (Oldfield & Baron, 2000, p. 86); that is the expectations of students should be identified and understood. As service experience in higher education is complex and the students as customers in higher education likewise have a complex set of expectations (Grebennikov & Shah, 2013; Kahu, 2011). In case of HE services, an additional feature has to be taken into account, namely, the fact that the customers often need to take actively part in the service provision process and their participation needs guidance and motivation (Kotze & Du Plessis, 2003). What is more, the length of the service encounter is longer, usually lasts for months.

Service quality, highlighting the importance of student satisfaction, has become an increasingly addressed topic (Abdullah, 2006a, 2006b). In order to attract students, serve their needs, retain them, HEIs have to actively participate in understanding students' expectations

and perceptions of service quality (Nadiri et al., 2009). The conceptualization of HE service quality, its relationship to satisfaction and the methods of evaluation have been extensively researched in the education literature since the 1990s starting with e.g. Hill (1995), Owlia & Aspinwall (1996), Joseph & Joseph (1997). Several analyses have been carried out on the definitions of quality in HE context (e.g. Gruber et al., 2010a; Lagrosen et al., 2004), service quality dimensions (e.g. Owlia & Aspinwall, 1996; Abdullah 2006a, 2006b, Mahapatra & Khan, 2007; Teeroovengadum et al., 2016; Yeo, 2008), student expectations (e.g. Yeo & Li, 2014), service quality and student satisfaction (e.g. Zineldin, 2007; Sadeh & Garkaz, 2015).

While service quality and student satisfaction studies are quite common in Europe, most Hungarian universities have not yet paid sufficient attention to service quality concepts applied in university settings. The changed circumstances outlined above, however, will force Hungarian universities to compete for good students. They have to monitor the quality of educational services they offer more closely to retain current and attract new students. These developments enforce universities to better understand how students perceive their services as they will compete with each other to both keep and attract the best students (Douglas & Douglas, 2006).

The purpose of this study is to examine what issues constitute quality in higher education, primarily on course level with specific reference to students following graduate and undergraduate business programs and to measure students' preferences related to quality issues. Considering education from a service quality perspective, the delivery of a course is highly dependent on the interaction between the customer and the service provider, i.e. the students and the lecturers (e.g. Gruber et al., 2010b; Williams & Williams, 2010; Wiklund and Wiklund, 1999). Our main goal is also to provide a practical basis for quality management efforts that are under the control of lecturers and department managers.

## **Challenges in the Hungarian higher education system and research purposes**

Today, the Hungarian HE system is looking for ways of operating efficiently resulting from the regulations of the reform process launched in 2011. The primary aim of the structural and financial reorganization is to improve service quality by balancing between the different stakeholders' points of view. Additionally, students have to pay tuition fees in many HE fields, thus the value and the quality of education they are provided have an increasing impact. For instance, institutions have lost a significant part of the 'guaranteed' public funding in business and law programs, quality issues have naturally become important factors in the growing competition between institutions.

The prominent role of students as customers of HE has become obvious; they are paid growing attention when it comes to the investigation of quality. Only those institutions could survive that are able to provide a quality environment and education for their students, therefore able to satisfy their needs. For the sake of the enhanced operation of HE as a service under marketization, and taking into account the increasing quality level students expect and the fact that they are growingly conscious about the quality they receive, students need to have a greater role in the improvement of HE processes. This new generation of students incorporate a new opportunity as well; they do not only speak for what they want, but they expect to be treated as a partner and are willing to do something to facilitate the issues that are important for them.



Our research was conducted at two universities the main parameters of which are summarized in Table 1.

*Table 1: Characteristics of institutions involved in our research*

Traditional focus of the institution	University of technology in Budapest with a separate faculty of economics and social sciences	Traditionally a college of technology and informatics with a separate faculty of economics and business in Kecskemét (University since 2016)
Number of students	~15000	~4500
Number of faculties	8	5
Year of foundation	Faculty of Economic and Social Sciences was founded in 1998	Faculty of Economics and Business was founded in 2017
Number of students at the faculty	~4000	~270
Business programs involved in the research	Business administration (BA) International economics (BA) Engineering management (BSc) Management and Leadership (MA) Master of Business Administration (MA)	Business administration (BA level) Master of Business Administration (MA level)
Applied student feedback methods at the university	Regular end-of-semester course evaluation Graduate Career Tracking System Social survey of first-year students	Regular end-of-semester course evaluation Graduate Career Tracking System

The primary aim of this research is to gain a better understanding of the ‘voice of students’ in order to identify the expectations that have the greatest impact on student satisfaction and may be considered as critical to (education) quality factors. The secondary objective of our research was to involve students as much as possible, putting them in an active, ‘treated as a partner’ position. Our stated aim was to make them feel that they have an important role in the development and research process. On the other hand, the approach followed in our study has provided our students the opportunity to apply the principles and methods they have learned during our quality management classes in a field that they are familiar with.

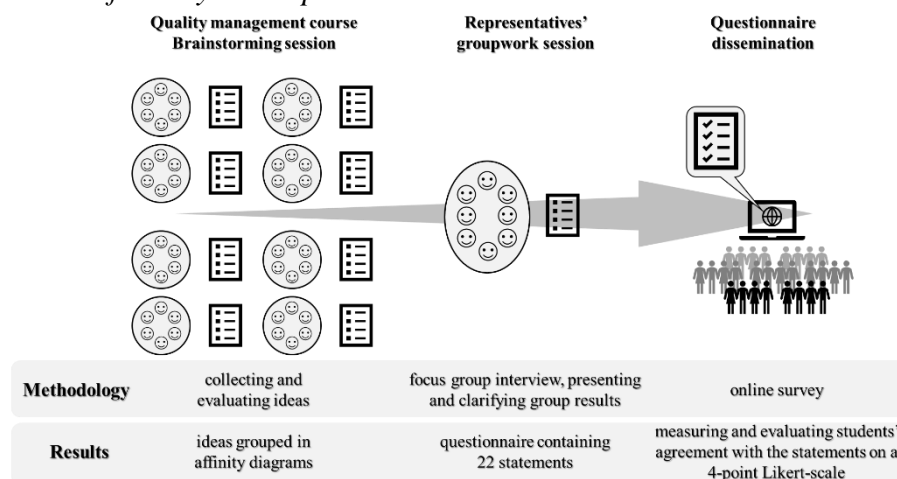
From a methodological point of view, the research can be divided into two consecutive parts: in the first stage, a survey was developed with student involvement gathering the quality attributes of HE that they deem most important. In the second part of our research the survey established this way was applied in various courses, filled out by students in different business programs both on BA and MA levels.

## Methodology

The primary aim of the research is to identify the features of HE services that are of primary importance for students. First, qualitative and quantitative methods have been used consecutively with the involvement of smaller groups of students. Students have been invited to participate actively in the research process in a Quality Management course being a part of a business program on MA level at the university in Budapest. The participants have already earned a BA or BSc level degree in a HEI, that is, they have already gained HE experience to offer a relevant opinion on quality issues concerning HE. Furthermore, the involved students have already been familiar with the principles of the most up-to-date quality management

systems and trends due to the schedule of the course. They have also had the opportunity to practice the application of the most popular quality management methods in group works during the classes. To prepare for the class in question, students had been asked to read ‘The student-customer orientation questionnaire’ of Koris & Nokelainen (2015).

*Figure 1: Process of survey development and dissemination*



Students participating in the class formed groups of 6 on average. The evolved 8 student groups were given the task to identify quality related features of HE services with brainstorming working on a prepared task sheet. They listed as many ideas as possible in the time available for this session. The gathered ideas were aggregated and clarified, then classified typically as course material, the lecture itself, requirements and assessment, educational resources etc. Then the ideas were ranked by voting within the groups. As a result, a prioritized, topic-based list of ideas and features was established by each of the 8 groups. At the end of the group work, short-listed ideas with the application of the Pareto principle were provided by the groups selecting the ‘essential few’ that received the most votes.

Next, each group chose a representative to continue the work. The nominated students presented the reduced list as a result of their group work, then set out to aggregate and clarify the features with the previously described method. This took longer than the first stage, as students were eager to present their own group’s results. The list of 22 elements created this way has become the basis of the following quantitative research. The statements formed by the students are listed in Figure 2.

The second phase of the research involved quantitative surveying. The survey containing 22 elements was utilized to gather the opinions of a large number of students. One new element was added titled as S23: ‘Students should be treated as a partner and as an adult in the context of higher education services, the communication has to be bidirectional.’ This sentence aims to evaluate students’ role in HE and to prove our assumption on which the whole research was based.

Figure 2: The statements formulated by the students

STATEMENTS		strongly disagree	rarely disagree	rarely agree	strongly agree
S01	Student feedback has to be taken into account in the development and changes of higher education.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S02	Contents that endorse students to get a job has to be prioritized in the development of the curriculum, the course materials and the lectures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S03	In the development of the curriculum, the course materials and the lectures, the focus has to be on relevant and up to date knowledge transfer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S04	Practice has to be more dominant in education than theory.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S05	The opinions of the alumni, who have been already working, have to be taken into account in the development of the curriculum and course materials.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S06	The main purpose of the course is to provide a general knowledge of areas instead of discussing certain topics in detail.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S07	It is the lecturer's responsibility to inspire and motivate student to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S08	Course and group sizes have to be reduced as much as possible, and the personal connections between lecturers and students have to be strengthened.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S09	Lectures need to be entertaining, and should include interactive elements to help students stay focused.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S10	The purpose of lectures is to discuss the course material in more detail than in the available notes provided in the course in a more concise, to the point manner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S11	In case of a university course students can rightly be expected to prepare for the classes individually previously at home.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S12	Course requirements (e.g. regarding the curriculum and the subject) have to be clear and implemented consistently during the course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S13	Course requirements (e.g. regarding the curriculum and the subject) and regulations have to be the same for everyone, the application of individual treatment is not acceptable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S14	More step-by-step assignments during the course of the semester should be provided for students to fulfil a course instead of taking an exam at the end of the semester.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S15	A greater emphasis should be put on group work and project work for students during the semester.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S16	Lecturers should consider other factors besides learning outcomes when evaluating a student.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S17	Lecturers should give prompt, objective feedback to their students in every case.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S18	Assessments should test the students' ability to apply in practice what they have learned, rather than assessing their knowledge of theory.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S19	Student assessment conditions have to be just and fair, cheating has to be prevented.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S20	Every course should aim at minimizing the number of unsuccessful completions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S21	Such educational resources are needed that help the all-round understanding of the course material, even without attending the lectures themselves.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S22	Educational resources (slides, notes, web content, software...) are required to be up to date and the solutions used need to be as modern as possible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S23	Students should be treated as a partner and as an adult in the context of higher education services, the communication has to be bidirectional.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Students of different business courses fulfilling the questionnaire indicated the degree to which they agreed with the closed-ended questions on a 4-point Likert-type scale, where 1 indicated the lowest level of agreement (strongly disagree) and 4 the highest level of agreement (strongly agree). At the end of the questionnaire, more information was gathered including the level of study, financing form, average study results and age. The hyperlink pointing to the electronic questionnaire was sent to the students by e-mail. They had 1 week to fill out the survey. An arbitrary sampling method was applied, bachelor and master students who had already taken our quality management course were invited to fill out the online questionnaire anonymously. The distribution of replies is shown in Table 2.

*Table 2: The data related to the questionnaires*

Level	Number of filled questionnaires (Budapest + Kecskemét)	Number of questionnaires	Response rate
BSc/BA (full-time programs)	194 (140+54)	636	30.5%
MSc/MA (full-time programs)	61 (61+0)	173	36.4%
MBA (part-time program)	107 (76+31)	277	38.6%
<b>Total</b>	<b>362 (277+85)</b>	<b>1086</b>	<b>33.3%</b>

## Results

As the possible answers provided on our Likert scale based questionnaire represent an ordinal scale, the variety of statistical methods that can be applied for these data are quite limited. Therefore, the histograms of Figure 3 demonstrate the relative frequency of the possible 4 responses for each statement showing some ‘eye-catcher’ differences between the level of agreement related to the statements listed in the survey.

Taking the methodological limitations into account, the sum of response scores has also been calculated. Figure 4 implies these aggregate scores indicating that there are differences in how each statement is judged confirming the results of Figure 3. Figure 4 demonstrates well that in case of S12 (clear course requirements), S22 (up-to-date educational resources and IT solutions), S03 (focus on relevant and up-to-date knowledge transfer), S01 (student feedbacks utilized for development), S19 (fair student assessment conditions) and S23 (students treated as partners) the aggregate scores are well above 1200 meaning that the surveyed students unanimously agree with the statements and the quality issues addressed in these statements are found to have high importance.

The appearance of S23 on the ‘top list’ together with S1 strengthens the motivation of this research by confirming that students themselves find it important to be involved as partners in process improvement efforts. Based on Figure 4, it has to be pointed out as well that students tend to agree strongly with 22 out of the 23 statements. Only S11 were scored differently, students seem to be more or less neutral with the statement declaring that students can be expected to prepare for the classes individually previously at home. This conclusion puts S23 in a different light, since according to our results students interpret ‘partnership’ in a different way as lecturers would translate this.

Figure 3: The results for statements S01–S23

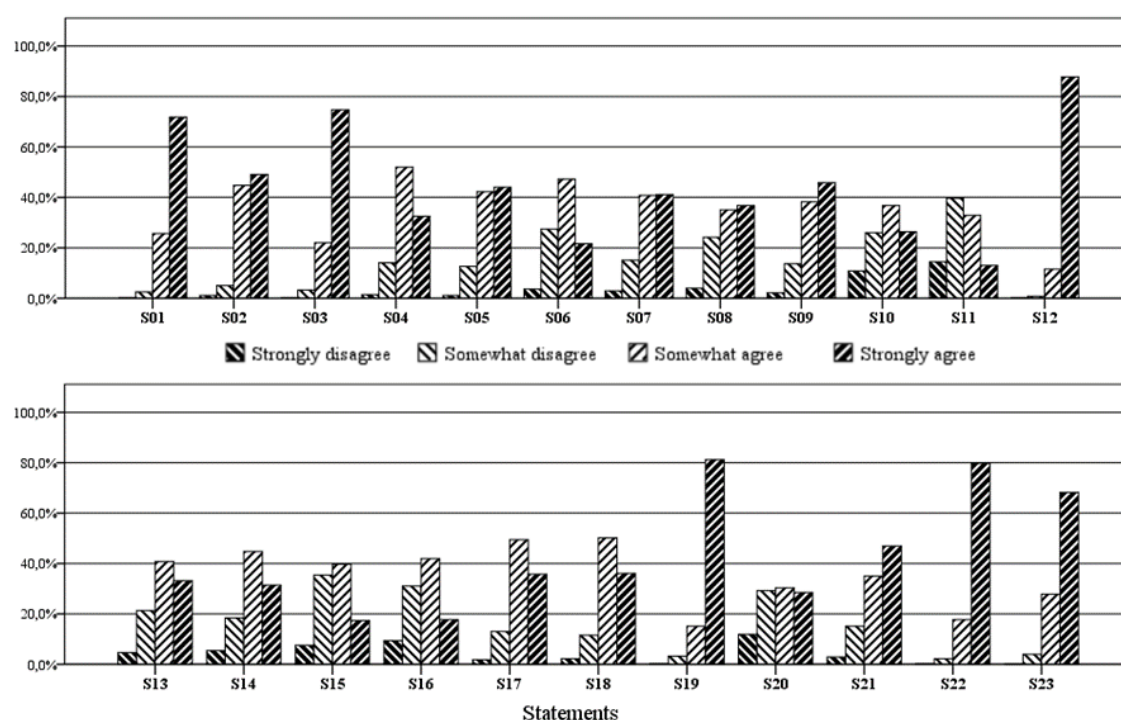
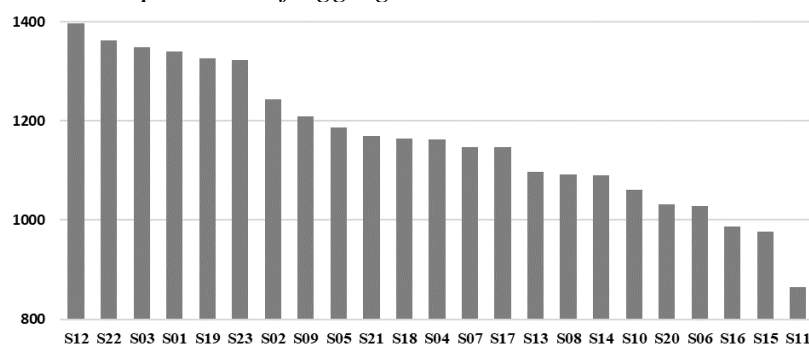


Figure 4: Graphical interpretation of aggregated scores



In order to get more detailed results and to compare them with different segments of students, other relevant methods have also been applied for the analyses of responses. One possible methodology related to Likert scales is the study of different rankings and the measurement of concordance. Ranking is based on the total score of the responses given in each statement. First of all, we were interested in what is the level of concordance between student groups segmented according to various attributes. These analyses were conducted with the Kendall's W method in SPSS (the applied level of significance is 0.05).

The first attribute applied was the level of study segmented as full time bachelor level (BSc/BA), full-time master level (MSc/MA) and part-time master level (in our case only MBA). Kendall's W value is 0.924 ( $p=0.000$ ), so concordance can be concluded, no significant difference could be found between the rankings of students on BA and MA level.

Regarding the financing form, some notes should be added. For bachelor students in business programs the government defines a minimum enrolment score year by year, above which students win state scholarship. If students with lower enrolment scores decide to study in a

business program, they have to pay tuition fee. In case of master programs, the rate of the available state-financed places is higher, institutions themselves decide how they share the state-financed master places among the various master programs provided by the institution. This means that in the field of business programs state scholarship is available for a higher proportion of students attending part-time or full-time master programs (except for MBA program where students pay tuition fee). Students in bachelor programs mostly pay tuition fee. In this specific segmentation, Kendall's W value is 0.96 ( $p=0.006$ ), so concordance can also be concluded here, no significant difference could be detected between the rankings of students paying tuition fee and having state scholarship.

Based on the average study results of the students, 4 groups were created. Based on student responses, there is significant concordance between the rankings of the statements in case of students with better or worse study results ( $W=0.928$ ,  $p=0.000$ ).

The age of students was taken into consideration according to their belonging to the popular classification of generations. Members of Generation X are at least 39 years old in 2018, students between 23–39 belong to Generation Y, while students under 23 are considered to fall into Generation Z. This analysis also shows concordance with  $W=0.93$  ( $p=0.000$ ), students of the different generations have similar views when ranking the statements.

Regarding the rankings given by the students in the two distinct HEIs, Kendall's W resulted in the value of 0.908 ( $p=0.011$ ), concordance have also been confirmed statistically.

We decided to move on with some nonparametric statistical tests (level of significance 0.05) as the normality of the distribution of responses across statements could not be proved. In these statistical analyses the same segmentations have been applied (see Figure 5) as previously.

*Table 3: Results of concordance analyses*

Applied segmentation	Number of rankings	Kendall's W value	p-value
Level of study	3	0.924	0.000
Financing form	2	0.96	0.006
Aggregate study results	4	0.928	0.000
Generational belonging	3	0.93	0.000
Institution	2	0.908	0.011

Figure 5: Results of conducted nonparametric tests

Statement	Level of study (independent samples KW test)	Financing form (independent samples Mann-Whitney test)	Aggregate study result (independent samples KW test)	Generational belonging (independent samples KW test)	Institution (independent samples Mann-Whitney test)
S1	✗ (p=0.000)	✓ (p=0.065)	✓ (p=0.679)	✗ (p=0.003)	✓ (p=0.599)
S2	✗ (p=0.004)	✓ (p=0.104)	✓ (p=0.678)	✗ (p=0.001)	✓ (p=0.395)
S3	✗ (p=0.026)	✓ (p=0.205)	✓ (p=0.112)	✓ (p=0.074)	✓ (p=0.375)
S4	✗ (p=0.006)	✓ (p=0.678)	✗ (p=0.025)	✓ (p=0.122)	✗ (p=0.010)
S5	✗ (p=0.005)	✗ (p=0.021)	✓ (p=0.238)	✓ (p=0.076)	✓ (p=0.254)
S6	✗ (p=0.025)	✓ (p=0.051)	✓ (p=0.925)	✓ (p=0.051)	✓ (p=0.258)
S7	✗ (p=0.041)	✗ (p=0.000)	✓ (p=0.299)	✗ (p=0.017)	✓ (p=0.212)
S8	✓ (p=0.125)	✓ (p=0.614)	✓ (p=0.861)	✓ (p=0.061)	✓ (p=0.284)
S9	✗ (p=0.003)	✓ (p=0.361)	✓ (p=0.270)	✓ (p=0.393)	✗ (p=0.009)
S10	✓ (p=0.707)	✓ (p=0.286)	✓ (p=0.066)	✓ (p=0.553)	✗ (p=0.001)
S11	✓ (p=0.281)	✓ (p=0.578)	✓ (p=0.138)	✗ (p=0.037)	✗ (p=0.042)
S12	Retain $H_0$ (p=0.505)	Retain $H_0$ (p=0.306)	✗ (p=0.035)	✓ (p=0.954)	✓ (p=0.599)
S13	✗ (p=0.004)	✓ (p=0.900)	✓ (p=0.848)	✗ (p=0.024)	✓ (p=0.554)
S14	✗ (p=0.000)	✓ (p=0.279)	✓ (p=0.128)	✗ (p=0.000)	✓ (p=0.696)
S15	✓ (p=0.057)	✓ (p=0.206)	✓ (p=0.063)	✓ (p=0.372)	✓ (p=0.196)
S16	✗ (p=0.016)	✓ (p=0.231)	✗ (p=0.001)	✗ (p=0.025)	✓ (p=0.056)
S17	✗ (p=0.001)	✓ (p=0.227)	✓ (p=0.358)	✗ (p=0.043)	✓ (p=0.232)
S18	✗ (p=0.017)	✓ (p=0.781)	✓ (p=0.066)	✓ (p=0.326)	✓ (p=0.542)
S19	✓ (p=0.337)	✗ (p=0.000)	✗ (p=0.001)	✓ (p=0.104)	✗ (p=0.000)
S20	✗ (p=0.005)	✓ (p=0.190)	✗ (p=0.000)	✗ (p=0.023)	✗ (p=0.001)
S21	✗ (p=0.007)	✗ (p=0.000)	✗ (p=0.019)	✓ (p=0.093)	✓ (p=0.278)
S22	✗ (p=0.003)	✓ (p=0.268)	✓ (p=0.104)	✓ (p=0.317)	✓ (p=0.787)
S23	✓ (p=0.100)	✓ (p=0.573)	✓ (p=0.170)	✓ (p=0.077)	✓ (p=0.499)

✓ - Retain  $H_0$       ✗ - Reject  $H_0$

Figure 5 consists of the results of Kruskal Wallis tests examining whether the distribution of responses is the same across statements segmented according to the level of study. In case of 16 statements the null hypotheses have been rejected (see second column) indicating that the level of study is a kind of segmentation attribute that worth deeper analysis. Regarding the financing form of the students, i.e. having state scholarship or paying tuition fee, in case of S05, S07, S19 and S21 significant differences have been found between the distribution of responses (see third column) applying Mann-Whitney U tests. Figure 5 shows the results of Kruskal Wallis tests when responses are segmented according to the average study result in case of which students were classified into 4 groups (see fourth column). According to the test results, significant differences were found between the distribution of responses in case of S04, S12, S16, S19, S20 and S21. Regarding the investigation of institutional differences between the distribution of responses in case of each statement Mann-Whitney U tests were run with the results of rejecting the null hypotheses related to S04, S09, S10, S11, S19 and S20 (see fifth column).

If we take a look at the overall test results in case of S08, S15 and S23 no significant differences between the distributions of responses could be found in any of the applied segmentations. These three statements interrelate with each other as these results mean that students generally agree that efforts should be made on reducing course and group sizes, on strengthening interpersonal relationships between students and lecturers and on putting greater emphasis on group work and project work courses. These findings verify the specific features of HE services compared to general ones, since the service provider and the customer of that service have to cooperate hand in hand for a longer period in order to end in a successful service provision.

## **Discussion and conclusion**

As the academic environment has changed, institutional management can no longer expect students to be satisfied with excellent teaching alone. There is a need to better understand the concept of student satisfaction and how this is driven by the increasingly important economic consequences that studying in HE has for individual students. In order to serve that need, it is important to understand what constitutes quality education for the students themselves. Their active involvement contributes to the identification of student expectations related to educational services, and we strongly believe that by building on their experience and abilities students might even participate in designing and developing a ‘to do list’ for HEIs.

In our research presented in this paper, the most important quality attributes of education were identified by a specific questionnaire established with student participation. This questionnaire was then filled out by hundreds of students, thus the 6 most important student expectations were successfully identified. Taking Kendall’s W coefficients into account, no significant differences could be found between the rankings based on the different segmentations of student. However, the conducted statistical analyses have revealed some significant differences between the distribution of the four possible responses by applying the same segmentations. Based on Figure 5, it can also be concluded that students of bachelor and master levels have different expectations related to the relevance and up-to-datedness of the transferred knowledge (see the results belonging to S3) and to the depth of topics discussed during lectures (see the results belonging to S6). MA level students also require the institutions to put greater emphasis on practical implementations of theoretical models and on the successful application of modern supporting structures including educational resources



and IT background. These results are in line with the fact that most MA level students have labour market experience and therefore, they would like to see themselves as active participants in the teaching and learning process rather than as passive recipients of knowledge transfer.

Taking into consideration that the modern approaches of quality management apply a wider view of customers, those who are affected by the institutions' activity should all be kept in mind. In order to contribute purposefully to the existing body of literature in higher education, we decided to choose students' perspective with emphasizing that this approach does not mean that other stakeholders' perspectives need less attention. We have chosen to focus on understanding higher education quality on course level from the students' point of view. One limitation of this study arises here since the focus is on business education as this is the area that we are most familiar with, further generalization of our results may need the application of our approach in other fields of studies.

Our study tested a newly developed measurement tool established with student involvement with the aim to give a first valuable in-depth insight into how students identify the quality of educational services offered mainly at course level and how much they agree with the identified statements related to HE quality. As the study involved two samples of students from two universities, another limitation of our research is that the results cannot be generalized to the student population in Hungary.

Further research should also be valuable from several aspects. First of all, we tend to complement these results with the perspectives of other stakeholders. Our future plan is to gather lecturer inputs as well. This could pinpoint the differences in perspectives, facilitating the conscious consideration of student expectations and creating compromise solutions. The other proposed follow-up to the research is the establishment of practical, easily applicable solutions and gradual development goals relevant to the identified expectations, with the active involvement of students. The goal is to define recommendations through group work, with a combination of associative and problem solving methods. This constitutes a well-defined task for students, where they can apply the learned management methods in practice, further strengthens the students' role as respected partners and provides a better understanding of their needs. Besides raising student satisfaction, this could also improve the efficiency and results of education.

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# THE ENTREPRENEURIAL PROPENSITY OF STUDENTS FOR STARTING A NEW BUSINESS AND THEIR KEY FACTORS

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## Abstract

*The aim of this article is to define and quantify the key indicators of the personality traits and the quality of university education which determine the perception of the entrepreneurial propensity of students for starting a new business in the Czech Republic (CR), Slovakia (SR) and Poland (PL). The partial aim is comparison the perception of the entrepreneurial propensity for starting a new business of students according nationality. Empirical research was realized through online questionnaire at base 1352 of students on the economic universities in last year of their study. The questionnaire was completed by 409 students from 14 universities in the CR, 375 students from 3 universities in PL, and 568 students from 8 universities in the SR. The statistical hypotheses were verified using the selected mathematical methods, as is a factorial analysis and a structural equation modeling (SEM),. Our research showed interesting findings about student's attitudes of the selected countries. The results showed that the entrepreneurial propensity of students in all countries is impact by the indicators of the personality traits and quality of university education of entrepreneurs. Slovak students gave the personality traits a higher impact to the entrepreneurial propensity for starting a new business than quality of university education. Polish and Czech students gave the quality of university education a higher impact to the entrepreneurial propensity for starting a new business than personality traits. According Slovak students, the personality traits have a higher impact to the entrepreneurial propensity for starting a new business than Czech and Polish students. The significant differences between student's positive attitudes of the quality of university education were demonstrated. The results having been processed are the basic information for the academic community, public sector, ministry of education in country, and other organizations whose effort is to help the students in start a new business in her/his country.*

**Keywords:** entrepreneurial propensity, personality traits, entrepreneurship, university education, empirical research.

**JEL classification:** M13, D83, L12

## Introduction

Universities' ability to prepare graduates for professional life and potential future entrepreneurial activities is among the current challenges of the education sector. In recent decades, many scholars mentioned and discussed the importance of entrepreneurship (Dinc & Hadzic, 2018; Meštrović, & Zugic, 2018). Although some scientists regard entrepreneurship as inherent behaviour (Thompson, 1999), others believe that it is an attitude that can be learned through education and stimulated through relative support (Karimi et al., 2016).

Van Stel et al. (2005) in his study compared entrepreneurs' importance in economic development in 36 countries around the world and concluded that there is a relationship between entrepreneurial activity and economic growth. The aim of the universities focused on teaching economics and management is to educate people who will have not only theoretical knowledge but also experience and propensity for entrepreneurship (Kolářova & Kolářova, 2017).

This paper analyses important factors of the entrepreneurial propensity and quantifies their relationship according students attitudes in the Czech Republic, Slovakia and Poland. The originality of this research lies in the structural models (identification and quantification of the relationships) of the factors (and their indicators) shaping the entrepreneurial propensity of university students to the start new business in selected countries.

The structure of the paper is the following: The theoretical part presents the research results on the entrepreneurial propensity of the university students to the start new business. Also the results of research's to the personality traits of business person and impact of university education of this person to the EP. The second part defines the aim of the research, the methodology, data collection and methods. The third part presents the research results and discussion about the topic. The conclusion offers subsequent research of authors, limitation and also the final summary of the research.

## **Literature background**

Entrepreneurship has many aspects. For the settlement of a company in a long time period it is necessary to successfully survive and meet the expectations and objectives of the owners. The situation is not different in SMEs, which face a number of obstacles due to their nature (Kozubíková, et al., 2017; Dvorsky et al., 2018).

Education of an entrepreneur is a subject of many studies (Garcia, 2013; Zhang, Duysters & Cloudt, 2013; Matthews & Moser, 1996). Their results agree on positive influence of higher education on the entrepreneurship (e. g. amount of new start-ups, innovativeness of firms, entrepreneurial orientation etc.). The author argues that entrepreneurship education may not be adequately designed to meet the demand of the current business environment (Dvorsky, et al., 2019). Hence, it is not useful for the students to get engaged in entrepreneurship unless they believe they have self-competencies and skills. It is also found that the entrepreneurship education does not help students to get involved in the entrepreneurship (Farhangmehr et al., 2016).

The research of personality characteristics of small and medium-sized enterprise (SME) entrepreneurs in relation to entrepreneurial orientation is an important part of the research of the whole entrepreneurial environment of small and medium-sized enterprises (Fairlie & Holleran, 2012; Kozubíková, Čepel & Zlámalová, 2018). Altinay & Wang (2011) argue that educational attainment of an entrepreneur makes a positive impact on a firm's entrepreneurial orientation. Educational attainment equips business owners with the skills and reflective mindsets of understanding customers and responding to their needs. Previous business experience of the entrepreneur also impacts positively upon a firm's entrepreneurial

orientation, while religion of the entrepreneur does not have a significant impact on the firm's entrepreneurial orientation.

Research by many authors examines the personality traits of entrepreneurs. For example Liñán, Rodríguez-Cohard & Rueda-Cantuche (2011); Leutner et al. (2014); Rahman, Civelek & Kozubikova, (2016); Şahin, Karadağ & Tuncer (2019) and so on. The research of 1, 100 university students show, that the scale development process for Individual Entrepreneurial Orientation resulted in three distinct factors that demonstrated reliability and validity: innovativeness, risk-taking, and proactiveness, which statistically correlated with measures of entrepreneurial intention (Bolton & Lane, 2012).

In this context, the authors as Beugelsdijk & Noorderhaven (2005), Fossen (2012), Badri & Hachicha (2019) Rybníček & Königsgruber (2019) argue that exist differences in the personal characteristics of students to the entrepreneurial propensity to the start new business. The results of Čera, et al. (2018) research (977 students of Czech Republic and Slovakia) said, that the majority of university students positively perceived the quality of university education in general as well as the quality of education at their faculty. Approximately two thirds of the students in both countries agreed that the acquired knowledge may help them in their future entrepreneurship activities. Czech students perceived the quality of education more positively compared to their Slovak counterparts, despite the fact that they had lower entrepreneurial intention.

Şahin, Karadağ & Tuncer (2019) indicate that the outcomes of the analyses demonstrate that a high level of entrepreneurial intention can be realized through multiple configurations of the big five personality traits and entrepreneurial self-efficacy. Also Elert, Andersson & Wennberg (2015) inform academic sphere that the long-term impact of entrepreneurship education and training in high school had impact on entrepreneurial entry, performance, and survival. Their results show that while Junior Achievement Company Program participation increases the long-term probability of starting a firm as well as entrepreneurial incomes, there is no effect on firm survival. Nowiński, et al. (2019) states that their results (university students and their entrepreneurial intentions in the Visegrád countries) show several differences with regard to the impact of education and entrepreneurial self-efficacy (ESE) on entrepreneurial intentions across the four nations. The direct impact of entrepreneurship education was positive and significant in only one country, Poland, the only of the four countries to have introduced entrepreneurship education at high-school level.

## **Aim, Methodology and methods**

The aim of this article is to define and quantify the key indicators of the personality traits and the quality of university education which determine the perception of the entrepreneurial propensity of students for starting a new business in the Czech Republic (CR), Slovakia (SR) and Poland (PL). The questionnaire covered: *a) demographic characteristics* – country of his study, gender and name of university which his study; *b) selected factors of entrepreneurial propensity* – social environment, business support from state, macroeconomic environment, quality of business environment, access to the financial resources, quality of university education, personality traits, business advantages and business disadvantages; *c) statements on the entrepreneurial propensity (EP)*. The subject of this paper is quality of university education and personality traits because these two factors are important for students and their entrepreneurial propensity to the start new business.

The authors used the data from 12 statements (27.9% of all – 43 statements) from the online questionnaire for this paper. We have managed to collect the total of 1352 fulfilled questionnaires, 409 of them were from the Czech Republic (8 universities); 568 were from the Slovakia (14 universities) and 375 students were from the Poland (3 universities).

To meet the main aim of the article the following hypothesis was formulated:

*H: Such factors as the quality of university education and the personality traits are statistically significant and determine the entrepreneurial propensity of students in the Czech Republic, in the Slovak Republic and in the Poland.*

Selected factors and their indicators:

**Quality of university education (QUE):** I consider university education of my country to be of good quality (QUE1); I consider the educational structures at my faculty (university) to be of high quality (QUE2); The knowledge acquired at my faculty (university) will help me when doing business (QUE3); The knowledge acquired by students in my country will help them to start a business (QUE4);

**Personality traits (PT):** A businessperson does not have to have any special innate abilities (PT1); The most important characteristics of a businessperson are specialisation, persistence, responsibility, and risk-resistance (PT2); It is easier to do business if close relatives are in business (PT3); Every person has certain prerequisites for doing business (PT4);

**Entrepreneurial propensity (EP):** I am very interested in business (EP1); I am convinced that I will start a business after I graduate from university (EP2); In case nothing unexpected happens, I will start a business within three years latest (EP3); At present, I have business activities (EP4).

Structure of students according their nationality:

**Czech Republic (CR)** – 156 males (38.14%), 253 females (61.86%). Students from the Czech Republic are studying in following universities: Technical University of Liberec, University of Applied Business - Newton College in Brno, University of Economics in Prague, Private University of Business in Prague, Masarykova University in Brno, Academia Sting in Brno, University of Business and Law in Prague, Palacky University in Olomouc, University of Pardubice, University of Mining - Technical University Ostrava, Technical University in Brno, Tomas Bata University in Zlín, Moravian University in Olomouc and finally the Mendel University in Brno.

**Slovakia (SR)** – 216 males (38.03%), 352 females (61.97%). Students from the Czech Republic are studying in following universities: Economic University in Bratislava, Trenčín University of Alexander Dubček in Trenčín, Žilina University in Žilina, Prešov University in Prešov, University Mateja Bela in Banská Bystrica, Technical University in Zvolen, Technical University of Košice, Pan-European University in Bratislava.

**Poland (PL)** – 145 males (38.7%), 230 females (61.3%). Students from the Czech Republic are studying in following universities: Nicolaus Copernicus University in Toruń, University of Gdańsk, Uniwersytet Szczeciński.

The number of variations of each indicators was 5 (according a five-point Likert scale: completely agree (5), agree (4), ..., completely disagree (1)). The basic statistical characteristics (mean, standard deviation) about students attitude to the selected factors (QUE, PT and EP) according nationality are presented in table 1.

*Table 1: Descriptive statistics selected indicators according nationality of student*

Indicators	Selected countries					
	Slovakia		Czech republic		Poland	
	Mean	SD	Mean	SD	Mean	SD
<b>QUE</b>	<b>3,366</b>	<b>1,017</b>	<b>3,533</b>	<b>0,889</b>	<b>3,379</b>	<b>1,139</b>
<b>QUE1</b>	3,155	1,069	3,511	0,900	3,171	1,129
<b>QUE2</b>	3,502	1,013	3,626	0,913	3,552	1,105
<b>QUE3</b>	3,507	1,010	3,592	0,922	3,504	1,183
<b>QUE4</b>	3,299	0,977	3,403	0,823	3,291	1,137

<b>PT</b>	<b>3,375</b>	<b>0,979</b>	<b>3,089</b>	<b>1,030</b>	<b>3,046</b>	<b>1,121</b>
<b>PT1</b>	2,854	1,152	2,677	1,210	2,355	1,232
<b>PT2</b>	3,799	0,868	3,443	1,016	3,861	1,027
<b>PT3</b>	4,083	0,796	4,027	0,864	2,437	1,182
<b>PT4</b>	2,762	1,101	2,208	1,028	3,531	1,041
<b>EP</b>	<b>2,883</b>	<b>1,078</b>	<b>2,735</b>	<b>1,132</b>	<b>2,719</b>	<b>1,091</b>
<b>EP1</b>	3,504	1,061	3,293	1,158	3,688	1,198
<b>EP2</b>	3,005	1,099	2,770	1,125	3,099	1,187
<b>EP3</b>	2,820	1,039	2,694	1,088	2,920	1,183
<b>EP4</b>	2,204	1,113	2,181	1,157	1,171	0,796

*Note: SD – Standard deviation. Source: own data collection.*

The method of structural equation modeling (SEM) is the supporting analytical method chosen in the context of achieving the research objective. Its application advantage lies above all in the ability to detect and accurately explain relationships between indicators (latent unobserved variables) that originally do not explain the same factor examined. In the case of the research problem, the resulting model of structural equations enables to create a hierarchical structure of factors determining the perception of credit risk and also to determine relationships between factors by means of several indicators (Olsson, Foss, Troye, & Howell, 2000). This graphical interface platform was created, providing the ability to present both table and graph results. By testing statistical hypotheses in the form of theoretical models (Fan, Thompson, & Wang, 1999), quantitative expressions of their relationships were verified in individual research steps.

## Results

In first step, the Exploratory factor analysis, was performed (Rabe-Hesketh, Skrondal & Pickles, 2004; Norris & Lecavalier, 2009). The first result from correlation matrix in Slovakia and Poland were, that the indicator PT1 had the low and negative correlations with all others personality traits indicators. The indicator PT1 was eliminated from future analysis in data set of Slovak and Polish students. Result from correlation matrix in Czech republic was, that the indicator QUE3 had the negative correlations with all others quality of university education indicators. The indicator QUE3 was eliminated from future analysis in data set of Czech students. Generally, the results of dependences between others indicators were statistical significant (p – value of dependences between indicators were low than level of significance (0.05)). After excluding the indicator (PT1 – Slovakia and Poland; QUE3 – Czech republic) new exploratory factor analysis was being performed (see table 2).

*Table 2: The results of KMO test and Bartlett's test*

Selected Tests		Selected countries		
		Slovakia	Czech republic	Poland
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.747	0.720	0.673
Bartlett's Test of Sphericity	Approx. Chi-Square	1835.5	1372.9	690.9
	Df.	66	66	66
	Sig. (p-value)	0.000	0.000	0.000

*Note: Df. – Degree of Freedom; Sig. - Significance. Source: own data collection.*

KMO (Kaiser-Meyer-Olkin Measure) has value 0.747 (SR), 0.72 (CR) and 0.673 (PL) with statistical significance of Bartlett's Test  $p < 0.0001$ . It is likely that a three factor model is more



appropriate to describe relationship between selected indicators. These results are positive because three factor model is significance for each country.

Table 3 presents the best solution to meet our face validity requirement. The factor load of the indicator was specified in order to verify if the absolute value was greater than 0.3 (according Yang & Green, 2010). All factor loadings from first, second and third group are acceptable. In order to define which indicator belongs to which factor and factor loadings, the Varimax rotation was used. The result of Varimax rotation is three extracted factors. Three factors are being extracted. The values of the factor loading indicators reached by the technique oblique factor rotation were slightly different, but insignificant. Factors were constructed using the same indicators.

*Table 3: Results of factor load on indicators, cumulative variance and reliability*

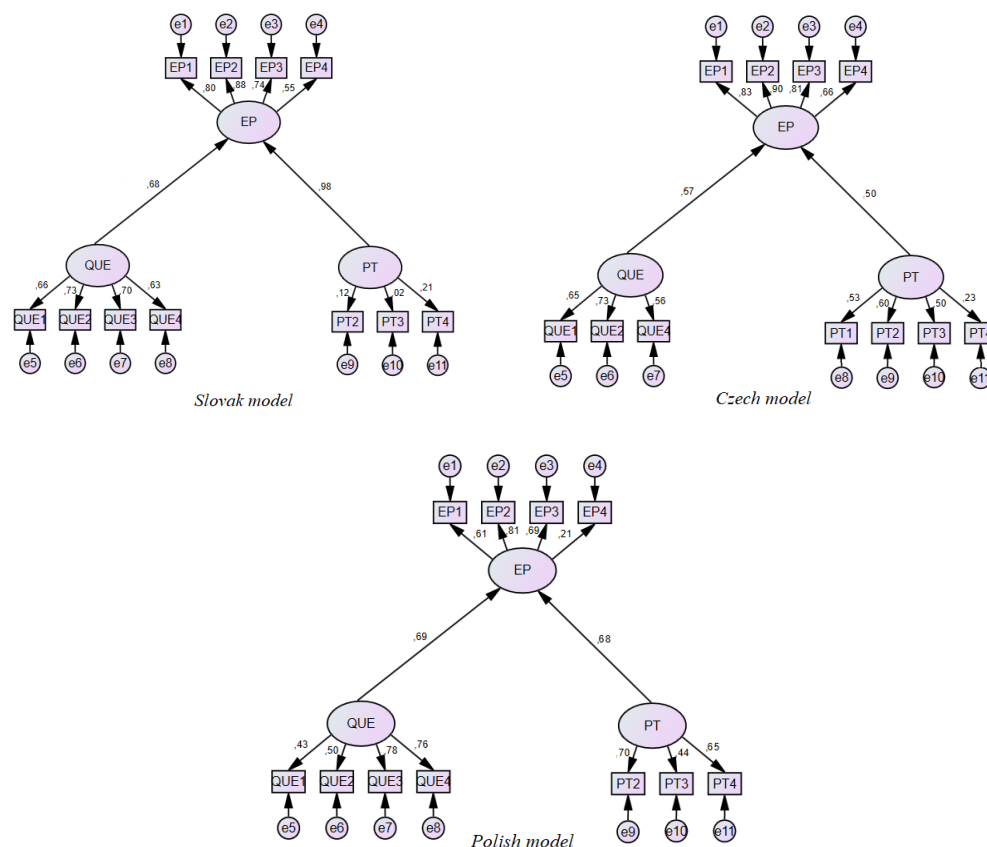
	Slovakia				Czech republic				Poland		
	QUE	PT	EP		QUE	PT	EP		QUE	PT	EP
QUE1	<b>0.684</b>			QUE1	<b>0.785</b>			QUE1	<b>0.684</b>		
QUE2	<b>0.657</b>			QUE2	<b>0.749</b>			QUE2	<b>0.657</b>		
QUE3	<b>0.574</b>		0.324	QUE4	<b>0.701</b>			QUE3	<b>0.574</b>		0.324
QUE4	<b>0.561</b>			PT1		<b>0.782</b>		QUE4	<b>0.561</b>		
PT2		<b>0.658</b>		PT2		<b>0.687</b>		PT2		<b>0.658</b>	
PT3		<b>0.598</b>		PT3		<b>0.613</b>		PT3		<b>0.598</b>	
PT4		<b>0.541</b>		PT4		<b>0.547</b>		PT4		<b>0.541</b>	
EP1	0.302		<b>0.487</b>	EP1			<b>0.593</b>	EP1	0.302		<b>0.487</b>
EP2			<b>0.478</b>	EP2			<b>0.572</b>	EP2			<b>0.478</b>
EP3	0.387		<b>0.465</b>	EP3			<b>0.539</b>	EP3	0.387		<b>0.465</b>
EP4			<b>0.460</b>	EP4			<b>0.527</b>	EP4			<b>0.460</b>
<b>CV</b>	26.2	40.1	52.7	<b>CV</b>	25.3	39.8	51.8	<b>CV</b>	27.2	50.8	61.7
<b>R</b>	0.641	0.571	0.477	<b>R</b>	0.721	0.654	0.547	<b>R</b>	0.581	0.581	0.457

*Notes: Factor load on the indicator is given if its value is higher than 0.3; CV – Cumulative Variance; R – Reliability. Source: own data collection.*

To the first factor (QUE) belong the following indicators, as is QUE1, QUE2, QUE3 and QUE4 (Slovak and Polish model). To the first factor (QUE) belong the following indicators, as is QUE1, QUE2 and QUE4 (Czech model). To the second factor (PT) belong the following indicators, as is PT1, PT2, PT3 and PT4 (Czech model). To the second factor (PT) belong the following indicators, as is PT2, PT3 and PT4 (Slovak and Polish model). To the third factor (EP) belong the following indicators, as is EP1, EP2, EP3 and EP4 (Slovak, Czech and Polish model). The results show that the factors explained 52.7% of the total scatter of the rating (Slovak model); 51.8% of the total scatter of the rating (Czech model) and 61.7% of the total scatter of the rating (Polish model).

In next step is show structural model (AMOS software) of relationships between selected factors (QUE, PT and EP) and their significantly indicators (see figure 1).

*Figure 1: Structural models with standardized path estimates*



Note: The results from IBM AMOS software. Source: own data collection.

Now we must calculate FIT - characteristics (according Bentler, 1990). of structural model (see table 4).

Table 4: The results of structural model Fit Summary

Country	Slovakia					
Fit test	$\chi^2(p\text{-value})$	<i>CMIN/Df</i>	<i>RMSEA</i>	<i>SRMR</i>	<i>CFI</i>	<i>IFI</i>
Results	0.004	2.014	0.0748	0.094	0.923	0.980
Accepted fit test	<0.05	<2.5	<0.10	<0.10	>0.90	>0.90
Country	Czech republic					
Fit test	$\chi^2(p\text{-value})$	<i>CMIN/Df</i>	<i>RMSEA</i>	<i>SRMR</i>	<i>CFI</i>	<i>IFI</i>
Results	0.021	1.914	0.0811	0.084	1.003	1.108
Accepted fit test	<0.05	<2.5	<0.10	<0.10	>0.90	>0.90
Country	Poland					
Fit test	$\chi^2(p\text{-value})$	<i>CMIN/Df</i>	<i>RMSEA</i>	<i>SRMR</i>	<i>CFI</i>	<i>IFI</i>
Results	0.001	1.712	0.084	0.044	01.165	0.967
Accepted fit test	<0.05	<2.5	<0.10	<0.10	>0.90	>0.90

Note: The results from IBM AMOS software. Source: own data collection.

The results of FIT characteristics (CMIN/Df, RMSEA, SRMR, CFI, IFI) according Levy (2011) showed, that the variables have been grouped in two latent variables and CFA (confirmatory factor analysis) was carried out. The method of maximum likelihood was used and following results were obtained. Fit Summary of structural model relationship between

quality of university education, personality traits and entrepreneurial propensity are statistically significant for each country. *The hypothesis is confirmed.*

## Conclusion

This paper analyses the university education and personality traits, as important factors to the entrepreneurial propensity of students to the start new business in the Czech Republic, Slovakia and Poland. The results showed that the entrepreneurial propensity of students in all countries is impact by the indicators of the personality traits and quality of university education of businesspersons. Slovak students gave the personality traits a higher impact to the entrepreneurial propensity for starting a new business than quality of university education. Polish and Czech students gave the quality of university education a higher impact to the entrepreneurial propensity for starting a new business than personality traits. According Slovak students, the personality traits have a higher impact to the entrepreneurial propensity for starting a new business than Czech and Polish students. The significant differences between student's attitudes of the quality of university education according nationality were demonstrated.

The results of this paper are interesting for career guidance centres; graduate offices and career fairs, entrepreneurship support organisations and also for business subjects in selected countries. The authors are aware of the research limits (e. g. regional character of the study - central Europe's countries, the sample size - only 1352 students of tree countries, only one statistical method - structural equation modeling with graphical visualization, only two factors – personality traits and the quality of university education). The authors believe that the paper has brought several interesting findings and new incentives for further research and discussion regarding assessing the selected factors and their indicators in the propensity and new attributes of entrepreneurship of students.

It is worth to concentrate our future research on the comparison of the evaluation of other factors: social environment, business support from state, macroeconomic environment, quality of business environment, access to the financial resources, business advantages and business disadvantages. Also, the authors would like to cooperate with western researchers. We believe that the attitudes of students outside V4 countries (Czech Republic, Poland, Slovakia and Hungary) to the selected factors and their indicators differently influencing the entrepreneurial propensity of the students to the start new business (western countries).

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# UNIVERSITY-INDUSTRY COLLABORATION: A CASE STUDY OF AUTOMOTIVE INDUSTRY IN SOUTH AFRICA

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## Abstract

*The highly competitive modern industrial world requires engineering education to adapt to new technologies, successfully transfer knowledge, but also to prepare young engineers for a rapidly changing real industrial environment so that they can contribute to company activities. This can be achieved if learners are exposed to practical situations on a constant basis right from the beginning of their studies. The success of collaboration between engineering education and industry is shown in the case study of partnership of the Nelson Mandela University and Isuzu Motors South Africa (Isuzu). The Nelson Mandela University is situated in a hub of the automotive industry in South Africa. As a result, a synergistic relationship has been established between the University engineering programmes, local manufacturers, suppliers and OEMs. Over the decades, the university-industry partnerships have been growing to benefit all parties: learners, companies and local communities. The success of this partnership is realised in a growing number of engineering graduates and the students' projects being implemented at the Isuzu local plant. By working with engineers on solving industrial problems, students gain valuable experience in dealing with colleagues, managers and workers. Exposure to the latest technologies strengthens the theory and better prepares graduates for their future careers in industry and commerce. This collaboration is also important for Isuzu as it supports its engineering department's projects and facilitates the company's significant contribution to education and human capital development as a whole, which is very important for the growth of the South African economy and the community at large.*

**Keywords:** Training and education, HRD, engineering

**JEL classification:** I23, L60, L62, O15

## Introduction

The importance of Human Resource Development (HRD) in modern society has been recognised globally. In many countries, business and governments work jointly to develop strategies to support HRD in order to eliminate a shortage of skills, foster economic growth and improve living standards. A shortage of skills is especially critical in the developing world, for example in South Africa, the lack of technical skills has been identified as one of the most important challenges for the country (DHET, 2011). A number of initiatives have been undertaken by the government to solve the problem of skills shortages in the country, such as: the skills development levy act and strategic plans for basic education. The South African HRD strategy for 2010-2030 also highlights the importance of HRD for economic growth and development (Human Resource Development Strategy for South Africa 2010-2030, 2013). The importance of education and training for sustainable economic development

has been evident in various aspects of society. For South Africa, shortage of skills was identified in technical and high-level design skills, as well as in medium and low-level skills, which are needed across manufacturing value chains (Kaplan, 2013). In terms of the focus of educational programmes, it has been recognised that practical experience and research are especially significant for modern engineering education (Hershberg, 1996). Therefore, universities and industries need to work jointly to support education and training. It is also vital for a university-industry partnership to be mutually beneficial, sustainable and to make a real impact for business and academia. Over a decade, university-industry interactions have been widely reported in research literature, with the core of a successful partnership having been identified as the creation of new technological knowledge and transfer of it to industry (Soon, 1990), (Gorlach, 2015).

University-industry collaboration can have a variety of forms and approaches depending on the particular type of industry, company's needs and the focus of educational programmes, which can include case studies, joint projects, research and development. For learners, one of the most important aspects of these interactions is the development of problem solving skills, which can be facilitated progressively according to the level of complexity of engineering tasks, ranging from undergraduate students' design projects up to high-tech research and development topics on the postgraduate level. Projects can be tackled individually or in groups, in a particular field of knowledge or as multi-disciplinary.

In addition to a practical aspect, modern engineering educational programmes require rapid adaptation to new knowledge in order to address fast changing industry, due to strong competition and the impact of globalization. Certain industries, such as: automotive, aerospace and telecommunication, are highly dynamic and competitive. New, cutting-edge technologies are constantly introduced at automotive companies striving for better quality and to improve their competitiveness. Therefore, the Nelson Mandela University has established long-term partnerships with South African automotive companies in the region, such as: Isuzu, Volkswagen, Ford and Daimler. One of the examples of close links in industry is the Chair of Mechatronics, which is supported by the Isuzu Motors South Africa (Isuzu). Over the years, the Chair and Isuzu have contributed significantly to HRD in engineering by providing synergetic collaboration of education, business and industrial practice (Gorlach, 2017). This paper presents a case study demonstrating the benefits of university-industry collaboration and the impact it has on education and HRD.

## **Foundation of University-Industry Partnership**

The Chair of Mechatronics at the Nelson Mandela University was established in 2009 and initially was sponsored by the General Motors South Africa and later by Isuzu. The main objective of the partnership is to co-facilitate co-operation between industry and academia with the aim to enhance HRD in support of the automotive industry. The guiding priorities for the Chair were formulated as follows: identify mutually beneficial projects, engage with the company engineering departments and university staff to support joint activities, facilitate research, training and education, knowledge transfer, and provide guidance and support for students in their interactions with the company. In order to achieve the objectives, a joint industry-university steering committee was established to govern the Chair and its activities. For Isuzu, it is important that the Chair initiatives should really contribute to the company's competitiveness. For the University, it is important that students from various engineering streams would obtain the exposure to a highly advanced automotive industry and new

technologies. By engaging with real-world industry, students would be able to apply and test theory in a real industrial environment by gaining valuable practical experience. Regular interaction of the university staff and students with the company staff is a key aspect, which provides a successful long-term partnership and benefits for the University and Isuzu. The Chair activities are regularly assessed by the steering committee, which consists of the University and company management. Detailed annual reports are provided by the Chair for the committee, which evaluates the activities and provides strategic guidance for the future.

The Chair is also actively involved in cutting-edge research, collaboration with international universities, hosting research seminars and providing support for student exchange. International exchange students, who take their internship at the University, are involved in design projects at Isuzu. The Chair activities include commercialisation of products and inventions developed by students. This is achieved by means of registering patents, developing business plans, running market surveys and establishing spin-off companies.

As indicated above, the University, as well as Isuzu, strive to better prepare young engineers for their careers, but also to increase the number of graduates. In order to address this issue, the Chair provides academic support for junior students to adapt to the university environment and mitigate any lack of knowledge in mathematics and science, which is typically due to poor schooling in rural areas of South Africa. This problem has been identified as a major factor contributing to the high student failure rate of engineering programmes. The Chair has implemented a tutoring programme, where senior students help junior students to cope with foundation courses and to acquire the necessary learning skills to master advanced engineering courses. As a result of this initiative, the number of graduates in engineering has been constantly improving. The following section highlights the success of the Chair through high impact projects.

## **Projects**

### ***Project 1***

As part of undergraduate training, it is important to expose students earlier to the real industrial world, so that they can be better prepared for the capstone project in the final year of study. Certain scope projects are identified for this purpose at Isuzu. An example of such a project is presented below. The aim of the project was to design a device for lifting and installing fuel tanks to the stuck chassis at the Isuzu truck assembly line. The common method requires two operators to lift and install a fuel tank, which is unproductive and physically difficult. The students produced a number of viable solutions for a low-cost semi-automated system to improve this operation, which are shown in Figure 1.

*Figure 1: Designs of fuel tank loading devices*

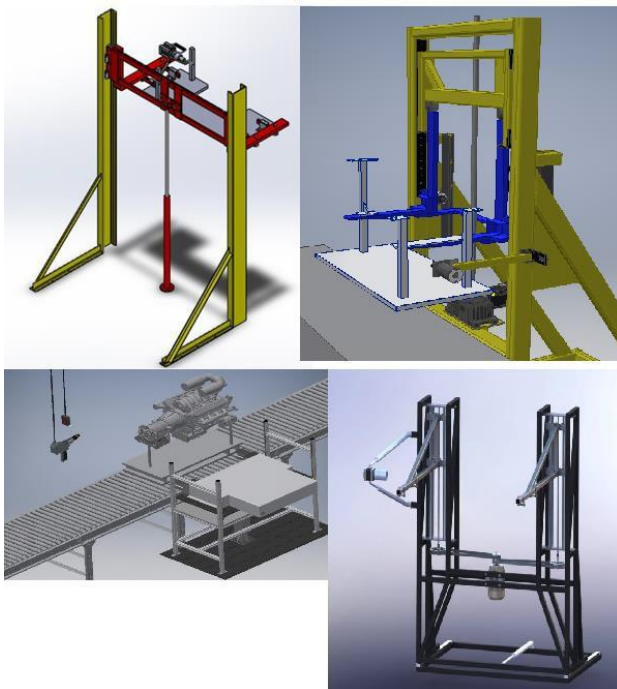




## ***Project 2***

Senior mechatronics students are assigned more complex projects, which require in-depth knowledge of many engineering courses. Recently, students were given a project to design a specific station for assembly of transmissions of pickup trucks on the new line. The old assembly line had six stations, while one station was placed outside the line. This operation was for attaching a torque converter to an automatic transmission. The goal was to design a semi-automated station in such a way that it would allow to complete the operation on the line. In designing the station, students were required to apply a multi-disciplinary approach, as well as the important ergonomic aspects. In addition, it was required to produce the complete detailed design of the station, which is shown in Figure 2. The engineering staff at Isuzu evaluated the students' designs and selected the best design, which was implemented at the company as shown in Figure 3.

*Figure 2: Designs of the semi-automated station*



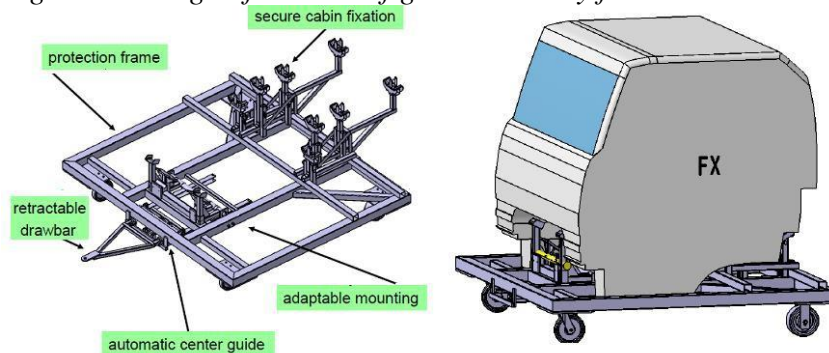
*Figure 3: Implemented semi-automated station*



### **Project 3**

One of the areas that is particularly important for the company is the efficiency of manual operations, especially in material handling. The complexity of the assembly process at Isuzu is in logistics, as there are dozens of types of trucks that need to be assembled on one line. Hence, a project was identified to investigate the process, which would improve the material supply chain of the Isuzu truck cabins from the storage to assembly area. Each cabin type required a specific transport platform to be used for delivery, hence, a large number of platforms were needed. The aim was to design a reconfigurable platform to accommodate a variety of truck cabins so that the number of transport platforms be reduced. The mechanical engineering students successfully completed the project and produced a robust and innovative design, which is shown in Figure 4. The design was implemented for all types of truck cabins on the new line at the plant.

*Figure 4: Design of the reconfigurable trolley for truck cabins*



### **Project 4**

Recently, the assembly facility of Isuzu trucks needed to be relocated to a new plant, with the requirement to design new assembly lines, support systems and auxiliary equipment. The students participated in this process right from the start, and together with the company engineers were designing fixtures and devices. Following a thorough study and evaluation of viable options, a special conveyor was designed to facilitate assembly of trucks to achieve an efficient flow of materials and operations. The core of the material handling system is a special platform, which was designed by students. The platform has foldable and adjustable

elements that allow to accommodate trucks of various sizes and support truck chassis during the whole assembly process. The system was successfully implemented at the new facility, as shown in Figure 5.

*Figure 5: Foldable platform for assembly of trucks*



## Conclusion

This paper presents the success of a long-term collaboration between academia and industry, which makes a significant impact on HRD and benefits students, local industry, and the community at large. The methodology presented in this paper, as well as the case studies of industry-based students' projects, clearly demonstrate how a university-industry partnership can be successful and mutually beneficial. Both the University and the Industry partner strive for sustainable long-term collaboration with a common aim to help bridge the gap between academia and industry, and to contribute to HRD. Since the commencement of the partnership, with the guidance from industrial mentors and academic staff, a number of industry-based projects were accomplished by students. The practical experience and exposure to the real-world industrial environment enhanced students' skills and better prepared them for future careers in industry.

The relevance and complexity of projects are important factors as they might result in a success or a failure. Therefore, it is important for selecting projects to choose challenging but realistic goals, identify possible constraints, make use of clear communication channels, obtain regular feedback, and monitor and engage with all parties at all the stages of a project. Students from different engineering streams and different levels, from undergraduate to postgraduate, were involved in solving industrial problems individually or in groups, following the systems engineering approach, and in regular contact with the company engineers and staff.

The presented case studies show that combining theoretical expertise of universities, students' drive and enthusiasm with practical expertise from industry and industry strive for

competitiveness can bring significant achievements for all parties involved. Dynamic university-industry partnership, where staff and students actively participate, can enhance engineering education and HRD, and therefore drive innovation, improve company competitiveness, help job creation and benefit the society.

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# ARE INNOVATIVE STUDENTS BETTER ACHIEVING? STUDY OF UNIVERSITY LEVEL STUDENTS

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## Abstract

*This study examines the relationship between personal innovativeness and academic achievement for university level students while controlling for several factors. In the study, the survey-based approach has been adopted with the aim of investigating the relationship between personal innovativeness and academic achievement of university level students. Survey items were adopted from Agarwal and Prasad (1998) and Zhou and George (2001) while in the analysis appropriate econometric methodology was used to answer the main research question raised: How students' individual characteristics and personal innovativeness influence their academic achievements? The overall model where the Average grade was used as a predictor of academic achievement is not statistically significant. Two models (with different variables) were estimated and they yielded different results. The second model where the Length of the study was a predictor of academic achievement has statistically significant results. This model has also shown that males on average are having higher results on Personal innovativeness factors and that older students have higher Personal Innovativeness in Information Technology (PIIT) and smaller Personal Creativity (PC) and Personal Proactivity (PP). Results from the second model also show that the age and gender have mediation effect between Personal Innovativeness Factors and the Length of the study. The findings and conclusions of this study are expected to aid students, academicians and practitioners in developing an understanding of relationship between personal innovativeness and academic achievement and also how personal innovativeness and information technologies per se can be used in improving university student's academic achievement. This study is also a contribution to the contemporary debates regarding the need for the promotion of evidence – based policy – making in education.*

**Keywords:** personal innovativeness, information technology, innovation acceptance, academic achievement

**JEL classification:** O30, E24

## Introduction

Innovativeness and in particular personal innovativeness has been in the centre of research studies of various scientific disciplines and each of these disciplines offers different domain – specific definitions of innovativeness. However, the core of the contemporary scientific literature is the understanding that the technology and innovations are the key elements of the knowledge based economy that is the main aim of countries across the globe.

The understanding of personal innovativeness depends upon the specific setting where it has been used. For the purposes of the present study we employ the specific conceptualization of Personal Innovativeness in Information Technology (PIIT) defined by Agarwal and Prasad (1998). These authors have defined innovative individuals as early adopters of innovations. Numerous authors (Catell, 1957; Ackerman and Heggstad, 1997; Aitken Harris, 2004 and others) have shown that there is a significant relationship between individual's personality traits and their academic achievement. Going one step further, this study examines the relationship between personal innovativeness in information technology as defined above, but in addition to personal innovativeness items defined by Zhou and George (2001), and the academic achievement of university level students.

This research aims to answer a research question: How students' individual characteristics and personal innovativeness influence their academic achievements? Survey was conducted among university level students and survey items were adapted from PIIT scale proposed by Agarwal and Prasad (1998) and personal innovativeness scale defined by Zhou and George (2001). The paper is structured as follows after introduction, the theoretical framework identifies different approaches in defining and understanding the effects of personal innovativeness and personal characteristics. Third part of the paper provides explanation of data used, models and estimations. This is followed by the presentation and discussion of the estimation results. Conclusion and bibliography are provided at the end of the paper.

## Review of literature

### *Personal innovativeness and its domain – specific issues*

Personal innovativeness has been investigated in various innovation related research such as innovation diffusion research (Rogers and Shoemaker, 1971; Rogers, 1995), marketing studies (e.g. Flynn and Goldsmith, 1999) and the field of information systems (Agarwal and Prasad, 1998). While innovativeness is mainly identified as determinant of innovation adoption behavior, marketing research distinguished between the concept of global innovativeness and domain-specific innovativeness (Hwang, 2014; Agarwal and Prasad, 1998; Flynn and Goldsmith, 1999).

Since global innovativeness, such as personal innovativeness in Limayem et al.'s paper (2000), displays low predictive power, „domain-specific innovativeness was found to exhibit significant influence on behavior within a narrow domain of activity“ (Xu and Gupta, 2009: 139; Agarwal and Prasad, 1998; Goldsmith and Hofacker, 1991). Domain-specific innovativeness was found to predict innovative user behavior more accurately (Leavitt and Walton, 1975).

Idea of domain specific personal innovativeness was firstly launched by Goldsmith and Hofacker (1991) and then applied in different domains such as fashion (Goldsmith et al., 2005), consumer products (Goldsmith and Flynn, 1992) and information technology (Agarwal and Prasad, 1998; Agarwal and Karahanna, 2000). Thus, researchers and professionals in different fields defined and operationalized a domain-specific construct in technology acceptance research (Fagan et al., 2012). Technology acceptance model shows that individual's perception of perceived ease of use and perceived usefulness significantly influence the individual's intention to use information technology applications (Davis, 1989). It, also, indicates that information technology applications that are easy to use are more likely to be perceived as useful (Fagan et al., 2012).

However, in addition to perceived ease of use and perceived usefulness, Argawal and Prasad (1998) theorized that personal innovativeness in the domain of information technology is also significant factor in predicting new technology adoption. Their domain-specific conceptualization of personal innovativeness (Personal Innovativeness in Information Technology PIIT) identified early adopters of innovation as innovative individuals. They hypothesized that individuals with higher personal innovativeness will have more positive perceptions and beliefs about the innovation in terms of new (target) technology. In fact, PIIT symbolizes risk-taking propensity which is characteristic for particular individuals and not for others (Lu et al., 2005). Assumption is that innovative individuals are willing to try out any new information technology. They are able to cope with high levels of uncertainty (Bruner et al., 2005). Moreover, innovative individuals tend to demonstrate higher level of computer self-efficacy (Thatcher and Perrewé, 2002), knowledge self-efficacy (Lin and Hwang, 2014) and self-confidence in performing new tasks (Kegerreis et al., 1970).

### ***Personal innovativeness in education***

Precisely those personal innovativeness effects led to the emergence of new field of personal innovativeness research in education, particularly higher education. Following Rogers' definition (1995) of personal innovativeness as the level of intention to accept new technology quicker than other individuals in social system and Van Rajji and Schepers' (2008) conceptualization of personal innovativeness as open attitude toward change, Joo et al., (2014) explained personal innovativeness as individual's openness toward mobile learning. Lu et al., (2005) found that PIIT is significant internal stimulus for MBA students affecting their positive perceptions (both usefulness and ease of use) of Internet (mobile) technology. Personal innovativeness in the domain of information technology represents significant factor explaining students' perception of the technology as well as their intent to use the technology in learning process (Fagan et al., 2012). Also, Lu et al., (2005) confirmed that personal innovativeness on the intention to use mobile learning of Chinese university students positively influences perceived usefulness. Similar results were reported in Lu et al.'s. (2003) study on users' acceptance of mobile Internet. Furthermore, personal innovativeness as personality trait was found significant in predicting university staff members' adoption of new technology. Thus, Lewis et al., (2003) in their research on 161 university staff members indicated that personal innovativeness significantly affects ease of technology use and its usefulness.

Based on previous scientific research, we believe that personal innovativeness, particularly in the domain of information technology, could be very significant factor in influencing students' intention to use information technology in learning process. This study aims to explore how students' personal innovativeness influence their academic achievements. We suggest that

students' individual characteristics and their personal innovativeness can better predict students' achievements such as grades, the length of the study, etc. Given, PIIT is most effective in determining adoption of innovations given it grabs an individuals' natural tendency to try out a new technology in multiple acceptance domainism (Lu, 2014), our research approach follows PIIT as basic conceptualization of personal innovativeness.

Previous studies have analyzed the connection between personal traits and academic achievement of secondary level students (Poropat, 2009; Laidra, Pullman and Allik, 2007 and others) and have analyzed this specific relationship in cases of specific domains such as languages and math (Spengler et al, 2016). Authors such as Cattell (1957), Ackerman and Heggstad (1997), Allik and Realo (1997) and Aitken Harris (2004) have shown that there is a significant connection between personality traits and academic achievement. However, Meyer et al. (2019) has shown that there is need for study of domain – specific study and thus present study follows this suggestion. Authors who have analyzed personal innovativeness and academic achievement have used different variables as measures of academic achievement. Most common are: average score/grade, rank-in-class, performance in core subjects (e.g. English language), results on different standardized (national and/or international) tests, final exam grades etc.

Based on the existing scientific literature in the field, the following research questions are raised:

RQ1. How students' individual characteristics and personal innovativeness influence their academic achievements measured as average grade?

RQ2. How students' individual characteristics and personal innovativeness influence their academic achievements measured as the length of the study?

## **Methodological framework**

The research methodology for the present study included multiple steps which include survey, and data collection. The study sample consisted of 316 students of School of Economics and Business at University of Sarajevo. The data were collected from both undergraduate and graduate students in the 2018-2019 academic year. About 76% of students were females. Currently, 22.5% of students are employed (additional 7.9% are part time employed) but 42.1% of all students have some employment experience. Also, 83% of the participants had experiences with online classes.

A survey was designed in line with study's objective - how students' personal innovativeness influences their academic achievements. All model-related survey items were measured on five-point Likert scale ranging from 1 which indicated strong disagreement to 5 that indicated strong agreement with the item. Most constructs and model-related items were adapted from existing scales that had been validated in previous studies. Personal Innovativeness in Information Technology (PIIT) was measured by four items developed by Agarwal and Prasad (1998). However, considering strong relationship between personal innovativeness and personal creativity in general, the survey included items on personal innovation and creativity adapted from Zhou and George (2001). To test the hypothesized relationships, IBM SPSS 25 was used to run regression modelling.



## Findings

In order to check the convergent and divergent validity of the Personal Innovativeness Scale principal component factor analysis is conducted. KMO and Bartlet test indicated that the covariance structure of the Scale is statistically significant different from identity matrix and therefore viable for factor analysis. Three factors are extracted, explaining about 62% of scale item variance. Interpretation of factors is based on the correlation matrix with varimax rotation.

First extracted factor talks about *Personal Creativity* related to problem solving (*PC*). It is consisted of 8 items (items PI.8 to PI.16) which loads on factor higher than 0.59 with Cronbach alpha reliability of 0.91. Second factor is about Personal Innovativeness in Information Technology (*PIIT*). Items loading with second factors are in line with the findings of the Agarwal and Prasad (1998) and their *PIIT* Scale. It is consisted of four items (items PI.1 to PI.4) which load on factor *PIIT* higher than 0.59 with Cronbach alpha reliability of 0.48. One item on this factor is negatively worded and recoded. Third factor is related to *Personal Proactivity* (*PP*) as proactive behavior of students in terms of their personal initiatives, going beyond assigned tasks and inventing new approaches and solutions. It is consisted of three items (items PI.5 to PI.7) which load on factor *PP* higher than 0.64 with Cronbach alpha reliability of 0.78. Factors are computed as a mean score on respective items.

This study assesses two models with two different dependent variables: *Average grade* and the *Length of the Study*. Both models assume same set of independent variables: Personal Innovativeness Factors (*PC*, *PIIT* and *PP*), *Gender* and *Age*. Before assessing the models, correlation between independent variables is estimated to see if multicollinearity might cause problems with regression analysis.

Correlations between Personal Innovativeness Factor scores are all statistically significant and range from 0.3 to 0.58. Correlation between *PIIT* and *PP* and *Gender* are statistically significant and negative, but rather small. Overall, correlation between independent variables are small and do not pose treat to multicollinearity within the models.

Table 1: Correlation matrix

	<i>Personal Creativity (PC)</i>	<i>Personal Innovativeness Information Technologies (PIIT)</i>	<i>Personal Proactivity (PP)</i>	<i>Gender</i>	<i>Age</i>
<i>Personal Creativity (PC)</i>	1	.307**	.580**	-.055	-.065
<i>Personal Innovativeness Information Technologies (PIIT)</i>	.307**	1	.442**	-.111*	.056
<i>Personal Proactivity (PP)</i>	.580**	.442**	1	-.142*	-.013

<i>Gender</i>	-.055	-.111*	-.142*	1	-.052
<i>Age</i>	-.065	.056	-.013	-.052	1

### *Assessing the fit of the first model – Average grade*

Regression model assumes that *Personal Innovativeness*, *Gender* and *Age* of students can predict academic achievement in terms of *Average grade*. *Average grade* is measured on an ordinal scale from 7 to 10, where seven means that student accomplished school grade 6 to 7, and 10 school grade from 9 to 10. As the dependent variable is ordinal, model is tested using cumulative odds ordinal logistic regression with proportional odds. About 78% of students are within the grade range from 6 to 8, with most of them being females (76%).

Overall model is not statistically significant ( $p=0.133$ ; -2 Log likelihood 725/716; Chi Square=8.458;  $df=5$ ). Meaning that adding predictors to a model do not increase precise of predictions of dependent variables. Test of parallel lines indicate that regression coefficients are not same for all levels of dependent variables, and thus making ordinal regression analysis inappropriate analysis ( $p=0.006$ ; -2 Log likelihood 716/691; Chi Square=24.907;  $df=10$ ). Analysis of the model is continued using multinomial regression analysis. Model with and without predictors differ statistically significant (Chi-Square=30.356;  $df=15$ ;  $p=0.011$ ) indicating that the model with predictors is better than model without predictors. Pseudo R square values range from 0.04 (McFadden) to 0.10 (Nagelkerke). Multinomial log-odds for achieving grade category 7-8 against 6-7 is statistically significant only for *Gender*. Male comparing to females are more likely to have final grade between 7-8 and not 6-7. Odds for males is two times higher comparing to females. Log odds for achieving grade category 8-9 against 6-8 is statistically significant for variables *Age* and *Personal Innovativeness Incremental*. As the age of the student is higher for one year, the odds of getting final grade 8-9, comparing to 6-7 increase for 7.3%. As the score on *Personal Innovativeness Incremental* factor increase for one, the odds of getting final grade 8-9, comparing to 6-7 increase for 89%. Log odds for achieving grade category 9-10 against 6-8 is statistically significant for variable *Age*. As the *Age* of the student is higher for one year, the odds of getting final grade 9-10, comparing to 6-7 increase for 11.3%.

*Table 2: Model estimations and testing of the first model*

<i>Average grade<sup>a</sup></i>		B	Std. Error	Wald	df	Sig.	Exp(B)
7-8	Intercept	-.897	1.164	.594	1	.441	
	<i>P2</i>	.008	.033	.060	1	.806	1.008
	<i>PC</i>	.087	.249	.121	1	.728	1.090
	<i>PIIT</i>	-.221	.255	.752	1	.386	.801
	<i>PP</i>	.341	.243	1.962	1	.161	1.406
	[P1=1]	.720	.317	5.149	1	.023	2.054
	[P1=2]	0 <sup>b</sup>	.	.	0	.	.
8-9	Intercept	-2.827	1.415	3.993	1	.046	
	<i>P2</i>	.071	.036	3.830	1	.050	1.073
	<i>PC</i>	.639	.321	3.962	1	.047	1.894
	<i>PIIT</i>	-.440	.324	1.843	1	.175	.644

9-10	<i>PP</i>	-.123	.299	.169	1	.681	.884
	[P1=1]	.065	.433	.023	1	.880	1.067
	[P1=2]	0 <sup>b</sup>	.	.	0	.	.
	Intercept	-5.482	2.446	5.024	1	.025	
	<i>P2</i>	.107	.052	4.145	1	.042	1.113
	<i>PC</i>	-.727	.520	1.955	1	.162	.483
	<i>PIIT</i>	.376	.661	.324	1	.569	1.457
	<i>PP</i>	.648	.579	1.256	1	.262	1.913
	[P1=1]	-1.115	1.088	1.051	1	.305	.328
	[P1=2]	0 <sup>b</sup>	.	.	0	.	.
<i>a. The reference category is: 6-7.</i>							
<i>b. This parameter is set to zero because it is redundant.</i>							

In order to test for possible mediation effect of *Gender* and *Age* on the relationship between *Personal Innovativeness* Factors and *Average grade* model is revisited without *Age* and *Gender* within. Overall model is not statistically significant ( $p=0.563$ ; -2 Log likelihood 667/665; Chi Square=2.043;  $df=3$ ). Meaning that excluding age and gender from the model makes model irrelevant. Test of parallel lines indicate that regression coefficients are same for all levels of dependent variables, and thus making ordinal regression analysis appropriate analysis ( $p=0.139$ ; -2 Log likelihood 665/655; Chi Square=9.678;  $df=6$ ). Pseudo R square values range from 0.03 (McFadden) to 0.07 (Nagelkerke). None of the *Personal Innovativeness* Factors is statistically significant predictor of Academic achievement measured as an *Average grade*.

*Table 3: Model estimations and testing of the first model – continued*

		Estimate	Std. Error	Wald	df	Sig.
Threshold	[P5 = 7]	-.189	.708	.071	1	.790
	[P5 = 8]	1.801	.716	6.323	1	.012
	[P5 = 9]	3.741	.764	23.985	1	.000
Location	PC	.157	.195	.651	1	.420
	PIIT	-.153	.198	.594	1	.441
	PP	.112	.190	.347	1	.556
<i>Link function: Logit.</i>						

### ***Assessing the fit of the second model – The length of the study***

Second model assumes that *Gender*, *Age* and *Personal Innovativeness* Factors predicts success in Academic achievement measured as the *Length of the study*. Dependent variable (the *Length of the study*) has two outcomes: 0 (student repeating some study years; 56,6% of students) and 1 (students passing all exams on time and transiting from one academic year to another on time; 43,4% of students).

The model successfully predicts 77.1% of outcome cases, with higher percentage of prediction of outcome late (84%) comparing to outcome on time (68%). Nagelkerke R Square is 0.156. The only statistically significant predictor in the model is age of the students. As the Age of the student is higher for one year, the odds of being on time with their studying decrease for 17.4%.

Table 4: Model estimations and testing of the second model

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1 <sup>a</sup>	<i>PI(1)</i>	-.009	.289	.001	1	.975	.991
	<i>P2</i>	-.191	.043	19.583	1	.000	.826
	<i>PC</i>	.422	.235	3.220	1	.073	1.525
	<i>PIIT</i>	-.385	.231	2.768	1	.096	.681
	<i>PP</i>	-.022	.222	.010	1	.921	.978
	Constant	3.742	1.318	8.066	1	.005	42.187
a. Variable(s) entered on step 1: <i>P1, P2, PII, PIIT, PIR</i> .							

In order to test for possible mediation effect of *Gender* and *Age* on the relationship between *Personal Innovativeness* Factors and the *Length of the study* model is revisited without *Age* and *Gender* within. The model successfully predicts 57.3% of outcome cases, with higher percentage of prediction of outcome late (85%) comparing to outcome on time (21%). Nagelkerke R Square is 0.037. Statistically significant predictors in the model are *PC* and *PIIT*. As the score of the student on *PC* increase for one, the odds of being on time with their studying increase for 63.7%, assuming that all others results remain the same. As the score of the student on *PIIT* increase for one, the odds of being on time with their studying decrease for 36%, assuming that all others results remain the same.

Table 5: Model estimations and testing of the second model - continued

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1 <sup>a</sup>	<i>PC</i>	.493	.222	4.937	1	.026	1.637
	<i>PIIT</i>	-.446	.222	4.048	1	.044	.640
	<i>PP</i>	-.032	.210	.023	1	.878	.968
	Constant	-.576	.785	.539	1	.463	.562
a. Variable(s) entered on step 1: <i>PII, PIIT, PIR</i> .							

Results shows that age and gender have mediation effect between *Personal Innovativeness* Factors and the *Length of the study*, as once removed from the model *PIIT* and *PC* become statistically significant predictors even though their correlation and quite small (< than 0.14). Males are on average having higher results on *Personal Innovativeness* Factors. Older students have higher *PIIT* and smaller *PC* and *PP*.

## Discussion, concluding remarks and recommendations

It is impossible to compete on the global market today without innovations and technology.

This is true for both, national economies and individuals. Technology is changing the way we live, learn and earn. Personal innovativeness in information technology has a specific importance and its conceptualization by Agarwal and Prasad (1998) was used in the present study to examine personal innovativeness and its relationship with the academic achievement within university level students. This was done by employing survey study approach and adequate statistical tools to examine the hypothesized relationships. Majority of survey constructs used in the present study were adopted from Agarwal and Prasad (1998) and Zhou and George (2001). For this purpose, two models were estimated.

Two measures of academic achievement were used in two different models. The first model used *Average grade* as a predictor of student's academic achievement. However, none of the *Personal Innovativeness* factors is statistically significant predictor of Academic achievement in this model. The second model provides different results. In this model, the *Length of the study* was used as a predictor of academic achievement of university level students. *PIIT* and *PC* are statistically significant predictors in the second model. Also, this model shows that males, on average have higher results in personal innovativeness.

Two measures of academic achievement resulted in two different model estimations. This is in line with previous studies which suggested that different measures are related to different aspects of achievement (Willingham et al., 2002). The results regarding the gender differences are inconsistent across the models and are in line with the conclusions from Carvalho (2016) who states that the variability of characteristics between male and female go beyond the gender dichotomy and thus the gender aspect in personal innovativeness needs to be developed more.

The findings of this study will aid students, academicians and practitioners in developing an understanding of relationship between personal innovativeness and academic achievement and also how personal innovativeness and information technologies per se can be used in improving university student's academic achievement. The 21st century university has to take into consideration the specific learning and leaving environment of today's students. Curriculums need to be continuously revised and updated in order to meet the demands of employers but also of the students. Only by promoting this practice student will have higher academic achievement, more innovations and more jobs. Labor market is demanding more creativity among other skills and it is the responsibility of all stakeholders in the quadruple helix system to enable its participants to acquire these skills. This study also brings implications to teachers and their classroom in sense of creating a stimulating and open environment for all students.

Even though the present study has limited scope, it has provided new insight and raised few additional questions regarding personal innovativeness in information technology. Firstly, the study of the Personal Innovativeness in Information Technology should be expanded to the students of other scientific discipline such as STEM which will also enable further inquiry into possible gender differences. Secondly, personal innovativeness needs to be analyzed further in the context of goal orientation and possible, academic motivation with a specific reference to gender. And lastly, possible future direction of the study also refers to the relationship between parents education level and personal innovativeness.

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# FINANCE



# FINANCIAL CYCLES AND PERFORMANCE OF THE CREDIT-TO-GDP GAP INDICATOR IN CESEE AND WESTERN EUROPEAN COUNTRIES

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## Abstract

*The financial cycle is one of the most important economic indicators that policymakers in every country need to watch closely - understanding the current disposition of the economy on the cycle and being able to forecast future developments is essential both for central banks and ministers of economy and finance as well. The same applies to macroprudential financial sector supervisors. Investors, firms and households, when making investment decisions, also can benefit from knowing the current phase of the financial cycle - for example, when starting a new business, taking a mortgage or planning their investment portfolio. Over the years the decision making processes not only for investors, but also for central banks and other policymakers, has become more sophisticated and therefore the knowledge of the exact properties, including trend and length, of the financial cycle, is becoming increasingly necessary for precise forecasts.*

*Awareness of regional and/or global trends and specificities of financial cycle is especially important for international investors in order to prevent malinvestments. It is also pivotal for macroprudential supervisors for them to be able to correctly set the level of the countercyclical capital buffer (CCyB) - which is one of the macroprudential instruments put in place after the global financial crisis to protect banks from financial cycle fluctuations that might in the period of financial distress disrupt financial stability by hampering the continuous credit flow to the economy.*

*The aim of this paper is to analyze the similarities and differences of financial cycles in CESEE (Central, Eastern and South-eastern Europe) region in comparison to Western European countries. The author finds that there are significant structural differences among these regions – financial systems of Western European countries are as a rule better developed and the current credit to Gross Domestic Product (GDP) ratio there is mostly at equilibrium state while CESEE countries to smaller or larger extent lag behind in financial development and the financial cycles there have not yet regained stability after the turbulences faced in the past decade. Most CESEE countries embraced capitalism only in 1990s when credit to GDP ratios started at a very low base, then reaching (and often overshooting) the equilibrium state in early 2000s, before experiencing severe drops during the global financial crisis. Among the main structural specificities of financial sectors of CESEE countries are high reliance on bank finance and significant presence of subsidiaries and branches of foreign banks.*

*The findings suggest material differences between these two regions which also manifest themselves in properties of respective financial cycles. Most importantly, small and open economies of CESEE countries exhibit financial cycles with relatively larger volatility which historically has led to significant falls in credit and GDP in the wake of global financial*

*crisis. At present the financial cycle in some of these countries has already recovered and the debate over the rise of cyclical systemic risks is increasing. This heightens the pressure for macroprudential policymakers to decide on the timing for the activation and the size of the CCyB, as well as attracts additional attention from investors, firms and households as their decisions and activities are largely influenced by the fluctuations of financial cycle.*

*Another important finding is that the methodology developed by the Basel Committee on Banking Supervision (BCBS) for setting the CCyB, namely the credit to GDP gap, overall works better for countries with larger and more stable economies that result in relatively less volatile financial cycles - which is characteristic for most Western European countries. As for the CESEE countries, this is not the case. The author believes that macroprudential policymakers there are aware of this aspect which results in the employment of additional indicators and even expert judgment when setting respective CCyB rates, but from the investors' perspective these approaches are too heterogeneous and sometimes they are not sufficiently disclosed, which makes it nearly impossible for other stakeholders to assess, analyze and compare the financial cycles of CESEE countries and the CCyB applied for each of those countries. These struggles might increase uncertainty which through transparency issues and associated lack of trust from the investors would negatively impact investment and economic development of CESEE region. Hence, the author suggests a development of a common financial cycle indicator for CESEE region which would fill the current void and provide precise and easily comparable financial cycle information for all interested parties.*

**Keywords:** CESEE region, countercyclical capital buffer, credit-to-GDP, financial cycle

**JEL classification:** C80, E02, G20

## **Introduction**

The events of the global financial crisis brought many valuable lessons for researchers and policy makers in spheres of economy and finance. Both globally and especially in the European Union (EU) these lessons were so devastating for financial systems and, by extension, to taxpayers, that overarching legislative reform was undertaken to prevent repeating of a crisis of similar magnitude.

The overall importance of cyclical systemic risks (as opposed to structural systemic risks) was acknowledged after 2008 as more scrupulous and deeper knowledge in this sphere emerged and new macroprudential measures were developed. The analyses of financial cycles and associated patterns revealed the possibilities to forecast trends and predict periods of financial crises. Shortly after the crisis first papers emerged that analyzed credit and real estate driven financial crises and optimal policy response to them. Many of them suggested developing a new macroprudential instrument – the countercyclical capital buffer (CCyB).

As one of the first was the research done by the Bank for International Settlements (BIS) researchers Drehmann, Borio, Gambacorta, Jimenez and Trucharte (2010), who explored conditioning variables that could steer the build-up and release of capital in relation to designing CCyB. They concluded that credit-to-GDP ratio is the best indicator for the build-up phase. It should be noted that already at the beginning the idea behind CCyB was the acknowledgment that fully rule-based mechanism will not be possible and expert judgement will play also a key role.

Of course these situations throughout history are not new - analyzing the financial crisis data base compiled by European Systemic Risk Board (ESRB) allows to see detailed description of various financial crises in EU from even as early as 1970s (for some countries), it becomes apparent that excessive crediting is the most common factor that accelerated or motivated shock to economy (ESRB, 2017). But only after the financial crises around 2008 the policy makers (such as Basel Committee on Banking Supervision (BCBS), European Commission, ESRB, *etc.*) started to focus on the solutions to prevent such crises by predicting credit booms through financial cycles and various macroeconomical indicators.

While the main purpose of CCyB is to ensure accumulation of sufficiently large bank capital buffers to withstand a period of severe credit losses once the cycle turns, there is also some evidence that it can have dampening effect on bank lending that has link to excess crediting which so often is amongst the reasons of financial crises. And even if the CCyB fails to materially reduce the credit growth during the economic expansion (boom), releasing the buffer is certain to significantly lessen the strain on crediting as the financial crisis envelops.

Drehmann and Gambacorta (2012) researched the effects of the proposed CCyB methodology in the Basel III framework (namely the appropriateness of the credit-to-GDP gap as an indicator for measuring cyclical systemic risk and setting the buffer) and concluded that there is a linkage with increased capital requirements and reduced credit supply. It is important to note that the case study of Spain was employed in their paper, similar exercise for CESEE countries would likely have led to a less successful calibration of the CCyB. Furthermore, Drehmann et al (2010) mentioned that credit-to-GDP gap is not the best indicator for signaling the moment of CCyB release during risk materialization phase. Ibanez-Hernandez, Pena-Cerezo and Araujo (2015) also researched the case of Spain and proposed another indicator - credit growth – as a better alternative for serving as an early warning indicator of banking crises and for being more closely related to the timing of financial cycle changes than credit-to-GDP ratio.

More recently some researchers have also acknowledged the problematics of using the credit-to-GDP gap indicator for economies that do not effectively meet the requirements for the Basel III approach (especially the length of financial stability indicators data series). Among the most notable in this regard is research done by Geršl and Seidler (2012) who specifically research the Central Eastern European country specificities (covering also CESEE region in one of their latest researches in this area (2015)) and thus the shortcomings that underlies the calibration of CCyB in this region. By using the Hodrick-Prescott Filter (HP filter) methodology on the selected sample of countries they suggest that problems with methodology indeed exist and that this indicator should not be considered as the best for estimating excessive credit growth in such countries (Geršl and Seidler, 2012; 2015).

The author proposes to deepen the knowledge regarding CCyB application in EU by taking into account also regional specificities and problems behind Basel III methodology of calibrating CCyB. The author uses mathematical and statistical calculations, one-sided HP filter calculation, data analysis method, graphical analysis as well as comparative analysis and the content analysis to outline the existing problems for application of Basel III proposed cred-to-GDP gap indicator in selected countries of the CESEE region. The CESEE region is defined according to the International Monetary Fund approach (IMF, 2016) and includes Czech Republic, Hungary, Poland, Slovakia, Slovenia, Bulgaria, Croatia, Romania, Albania, Bosnia and Herzegovina, Macedonia, Montenegro, Serbia, Estonia, Latvia and Lithuania.

### ***The Financial Cycle***

he understanding of the financial cycle is essential for policymakers in all countries. At some point every economy resides in a particular phase on their financial cycle and awareness of that phase is crucial for countering pro-cyclicality in the financial system (BCBS, 2018).

In the upswing of the financial cycle the demand and supply for credit increases, leading to increased economic activity. But for how long will the upswing continue? When the downswing will occur? These questions are paramount for policy making in light of setting and releasing the CCyB rate as in the downswing risk materialization can constrain credit supply dramatically leading to significant disruption of economic development (Detken, Weeken, Alessi et al, 2014). In other words the CCyB should be implemented as a backstop for the risk materialization process should the financial crises occur and this buffer should be calibrated precisely - if too large it will needlessly limit the economic activity during the steady state; if too small it will not be able to fulfil its purpose as a defense mechanism from financial cycle fluctuations.

The upswing of financial cycle poses threat of credit booms that may hamper bank resilience by means of insufficient capital levels at the crucial moment – the start of downswing of financial cycle (crisis). With an effective and targeted macroeconomic policy these negative effects can be mitigated. In this context Resende, Dib, Lalonde and Perevalov (2016) researched the link between CCyB requirement and monetary policy. They suggest that CCyB has a significant stabilizing effect on the most important macroeconomic variables and that monetary policy significantly interacts with bank capital regulatory policy.

There are also issues in the context of evaluating financial cycles over a long time period as they have the tendency to converge among the European countries. Nevertheless, as shown in this paper, the differences are still significant and they should be accounted for. As for CESEE countries, their economic fundamentals can broadly be described as those of previously developing countries whose rapid credit expansions can reflect both convergence to values typical of the advanced nations and excessive lending (credit bubble).

### ***The Countercyclical capital buffer (CCyB)***

The CCyB is a relatively new macroprudential instrument and its main goal as described by Basel is to reduce procyclicality and mitigate the effects of financial shocks that can devastate the banking system, financial markets and the economy (BCSB, 2011). It is clear that during sufficiently long time period the shocks in financial cycle will occur as no upswing can last forever.

The CCyB increases the resilience of banks to procyclical dynamics by absorbing shocks instead of serving as a transmitter of risk to the financial system and broader economy. In this context, BCBS (2011) and also ESRB in its Occasional Paper (2014) have outlined its key objectives, most notable being (i) countering any excess cyclicality of the minimum capital requirement as this capital might not be sufficient for shock events, (ii) promoting forward looking provisions, (iii) conserving capital as a buffer both at individual bank and the banking sector level to be used (released) during times of stress and (iv) protecting banking sector from periods of excess credit growth as requiring more capital to be stacked away for the periods of crises limits the funds available for lending.

Economic indicators of CESEE countries can sometimes send misleading signals and this should be taken into account when calculating the excessive credit indicator (credit-to-GDP gap) underlying CCyB as international methodologies from Basel and ESRB suggest HP filter based calculations (Geršl and Seidler, 2015; ESRB Recommendation of The European Systemic Risk Board on guidance for setting countercyclical buffer rates (ESRB/2014/1), 2014). One of the key aspects for proper HP filter calculation is sufficiently long time series of historical data, but for CESEE countries such data is typically available only from 1990s when these countries started to develop free market economies – and first years of these series bear little relevance to the more mature financial systems present in these countries currently.

This suggests that "one fits all" may not be the best approach for calibrating CCyB, especially in CESEE countries. Further flaws of HP filter method have been outlined (Hamilton, 2018; Edge and Meisenzahl, 2011) that are mostly associated with a real time unreliability in a conjunction of financial stability policy and with an end-point (end-of-sample) estimation of the series trend bias. The BCBS in response to these particular research milestones released a research paper summarizing the efficiency and accuracy of HP filter at least in context of generating credit gaps (Drehmann and Yetman, 2018). It acknowledges the problems associated with the use of the HP filter method, but defends its effectiveness by referring to absence of alternative theoretical foundations for an early warning indicator for crises prediction. The author analyzed the sample of 42 countries used in this particular research by BCBS and concluded that only 3 countries from the CESEE region were included –the Czech Republic, Hungary and Poland. The author suggests that it cannot be sufficiently informative, because for those three countries the observed correlation of both projected GDP gap and projected capital gap is overall smaller (with the exception of the Hungary that has a large negative correlation between the full-sample and real-time projection gaps) than other countries in the sample, and these countries have missing data issues (Drehmann and Yetman, 2018).

### ***Methodology and Data***

The author employs the *standardized credit-to-GDP gap approach* as described by the Basel. Standardized approach as legally stipulated by the ESRB Recommendation of 18 June 2014 is intended to guide the Member States to harmonized calculation of credit-to-GDP gap indicator. As described in this Recommendation the credit-to-GDP gap is measured as the difference of quarterly credit-to-GDP ratio from its long term trend calculated with HP filter using a smoothing parameter *lambda* ( $\lambda = 400\,000$  to account for long financial cycles).

For the calculation of quarterly credit-to-GDP ratio the author uses yearly end-period GDP data calculated as the sum of current quarter and previous three quarters (flowing nominal summed GDP measure). As for credit measure the author uses broad measure of the end-period stock of credit to the private non-financial sector in the respective CESEE country (ESRB Recommendation of The European Systemic Risk Board on guidance for setting countercyclical buffer rates (ESRB/2014/1), 2014), excluding credit to government. Data availability issues in some countries hinders the ability to carry out sufficient research given the relatively short time series (Table 1).

Table 1: Data availability and CCyB status of CESEE countries

Country	HP filter starting period ( $\lambda=400\ 000$ )	HP filter end period ( $\lambda=400\ 000$ )	ESRB crisis data base/CCyB rates availability	CCyB status as of the end of 2018
Albania	2008Q4	2018Q4	No	Not introduced
Bosnia and Herzegovina	2008Q4	2017Q4	No	Not introduced
Bulgaria	2000Q1	2018Q4	Yes	Introduced
Czech Republic	1995Q4	2018Q2	Yes	Introduced
Croatia	2000Q4	2018Q4	Yes	Introduced
Estonia	2003Q4	2018Q2	Yes	Introduced
Hungary	1999Q1	2018Q4	Yes	Introduced
Latvia	1995Q4	2018Q2	Yes	Introduced
Lithuania	1995Q4	2018Q2	Yes	Introduced
Macedonia	2003Q1	2018Q4	No	Introduced, but not active (0% as a default)
Montenegro	2010Q4	2018Q4	No	Not introduced
Poland	2000Q1	2018Q4	Yes	Introduced
Romania	1991Q4	2018Q3	Yes	Introduced
Serbia	2004Q1	2018Q4	No	Introduced
Slovakia	2002Q1	2018Q4	Yes	Introduced
Slovenia	2000Q1	2018Q4	Yes	Introduced

Source: Author's own calculations of HP filter (data from central banks and designated authorities of respective countries, IMF, Eurostat, ECB, ESRB, BIS and other sources)

The author chose not to use the so-called *additional credit-to-GDP approach* as it is not comparable between countries. The ESRB Recommendation of 18 June 2014 explains that *standardized credit-to-GDP gap* should be a starting point when guiding decisions of setting the CCyB rates. Additional indicators should be included if specificities of national economies and material differences in data availability are deemed to be particularly important. As observed by Pekanov and Dierick (2016), in most countries *additional credit-to-GDP gap approach* differs from the standardized one in employing the narrow definition of credit (only credit issued by banks).

The periods of financial crises were acquired from ESRB (2017). Crises periods for countries that are not included in the ESRB database were not estimated due to data availability issues. Some relevant information thereof is available in latest IMF working papers (Laeven and Valencia, 2018), but data did not match the time period for which HP filtering was performed (Table 1).

## Financial cycles and performance of the credit-to-GDP gap indicator in CESEE and Western European countries

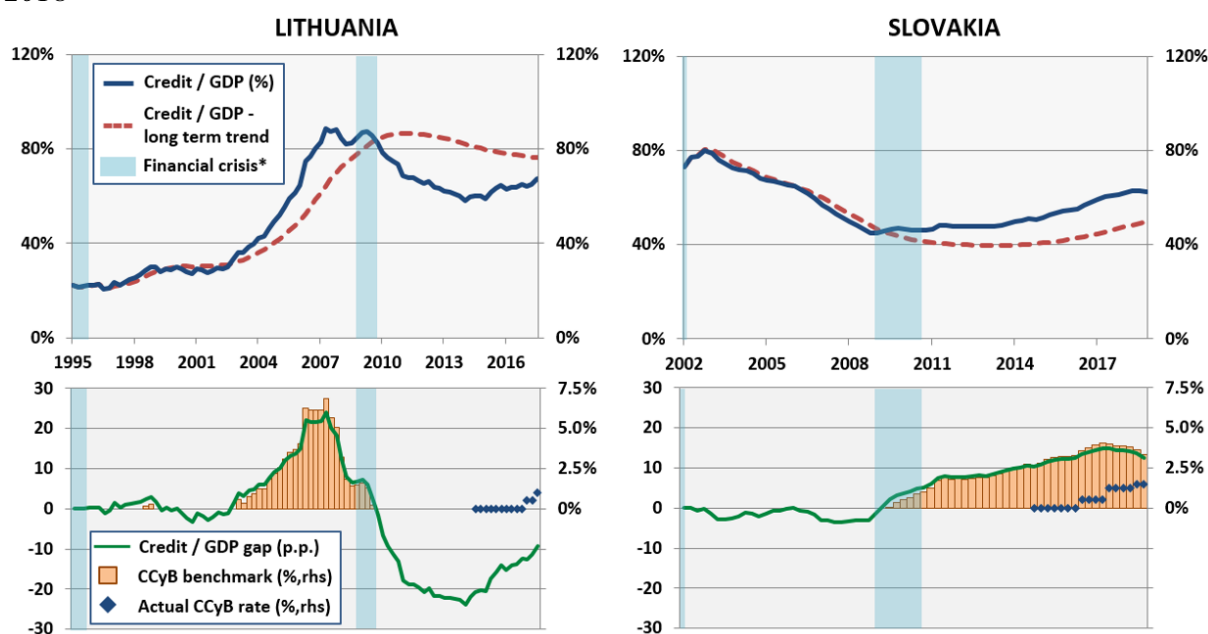
### *The CCyB in CESEE*

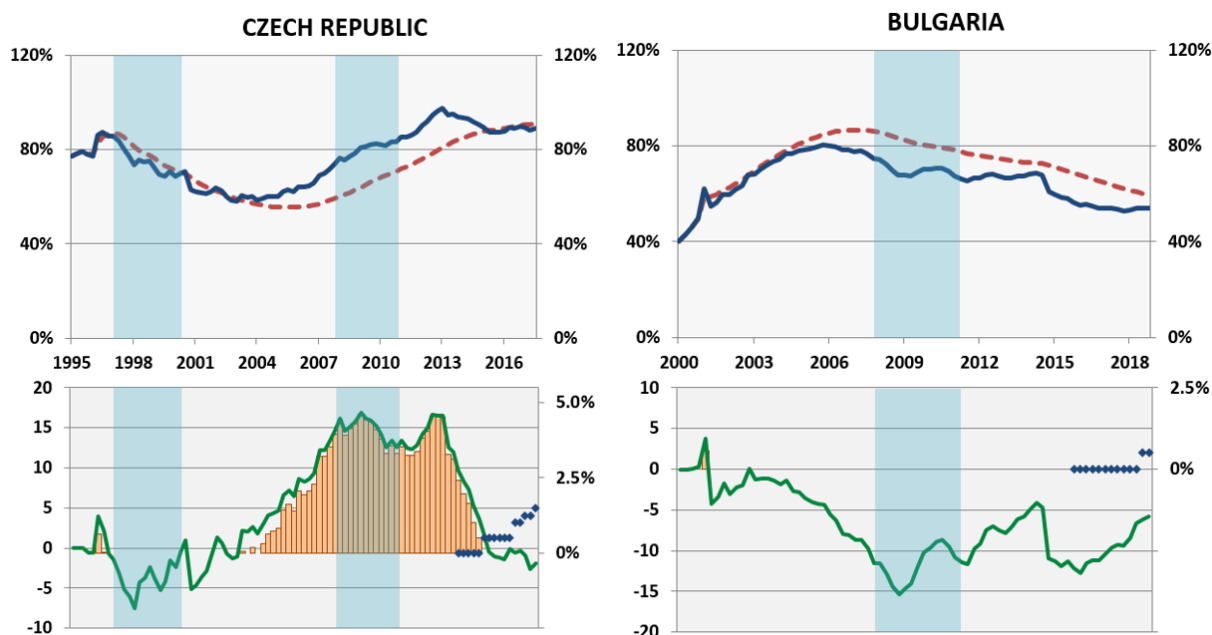
The financial cycle is measured by credit-to-GDP ratio as proposed by BCBS and ESRB. In

this context the author outlines the problems with CCyB calibration methodology for CESEE countries. In many cases it is obvious that the credit-to-GDP gap, which retrospectively would have been employed to calculate the applied CCyB ratio had the current methodology then existed, would not be sufficiently high to ensure the resilience of local financial sectors during the latest financial crisis episode.

The CCyB methodology proposes to set a positive capital buffer rate whenever there is a positive gap larger than 2% between the actual credit to GDP ratio and credit to GDP trend calculated by the Basel methodology (one-sided HP filter) (BCBS, 2010). Graph 2 visualizes that at present decisions by national designated authorities to set positive CCyB rates are based mostly on their discretion to use alternative indicators and expert judgment as neither in case of Lithuania, Czech Republic or Bulgaria (which announced positive CCyB rate in 2018Q3, effective from 2019Q3 (ESRB, 2019)) calculation by the standardized Basel/ESRB approach results in a positive CCyB gap. Only in case of Slovakia the recent decisions to increase the CCyB rate are backed by prolonged observed credit-to-GDP gaps and even in that case the CCyB rate suggested by the standardized approach is higher than currently set by the authorities. These decisions therefore raise questions regarding the effectiveness of credit-to-GDP gap as appropriate early warning indicator for CESEE countries.

*Graph 2: Increased or pending CCyB rates (above 0%) in CESEE countries at the end of 2018*



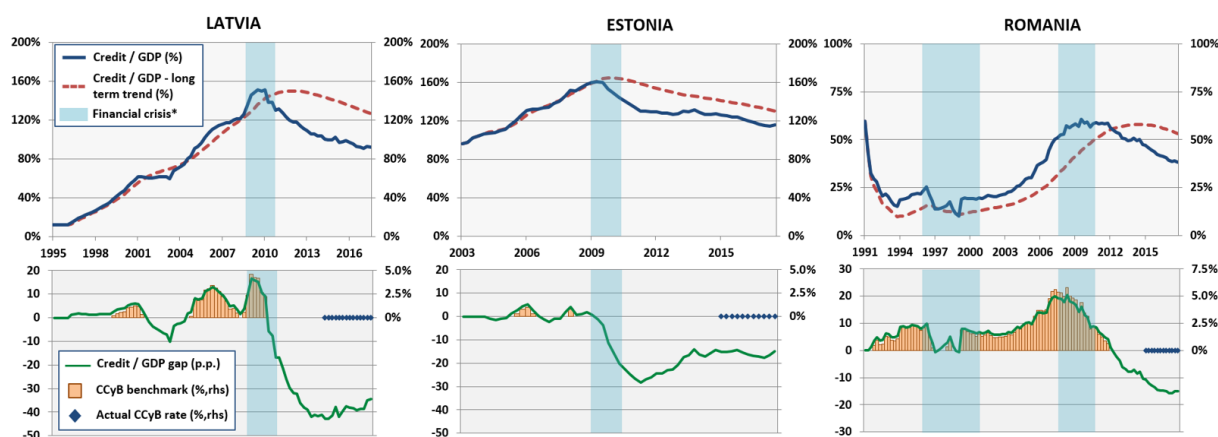


*Author's own calculation*

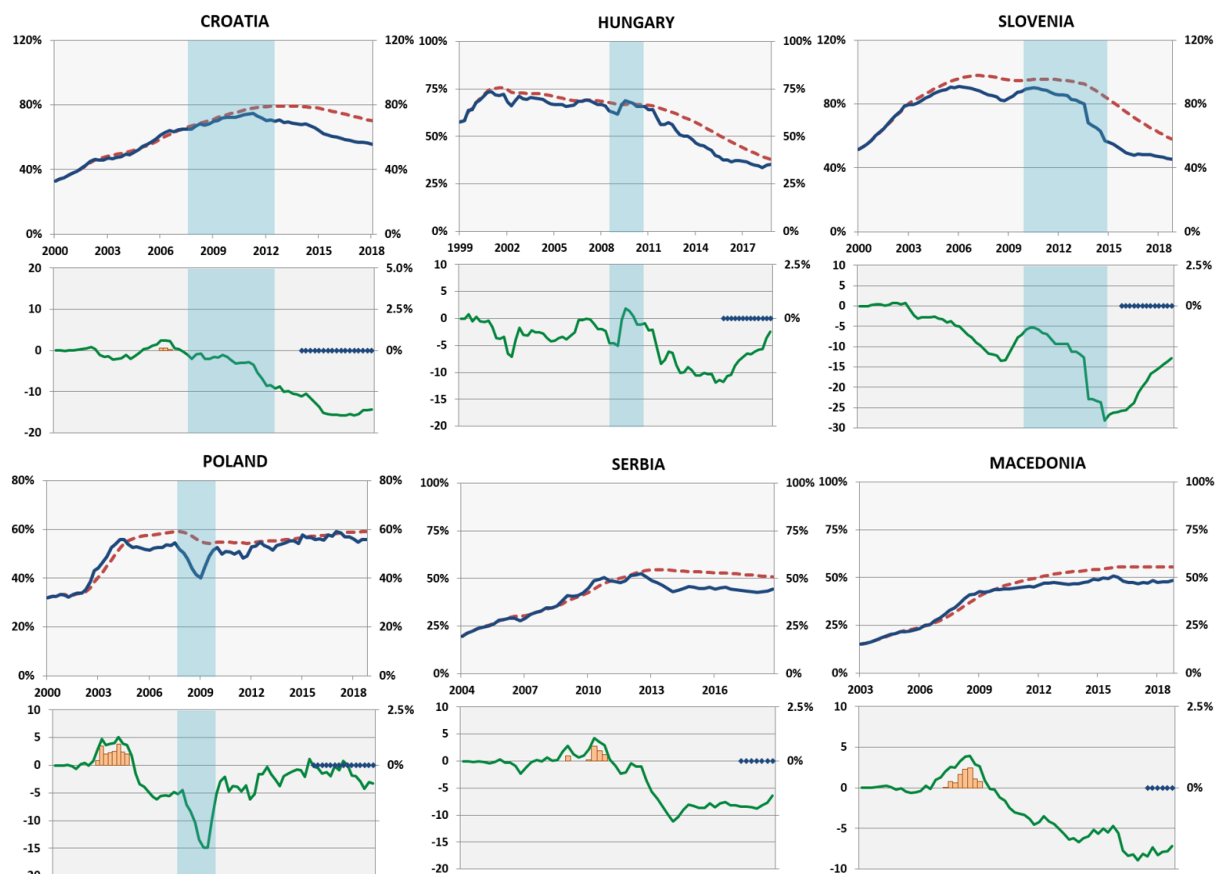
*Data source: The Central Bank of Lithuania, the Czech National Bank, ECB, Eurostat, \*ESRB crisis data base*

It should be noted that had the CCyB requirement existed during the global financial crisis it is clear that maximum cap of 2.5% of RWA as proposed by the BCBS (2011) would have proven to be not sufficient in case of many CESEE countries, in particular Lithuania, Czech Republic, Latvia and Romania (Graph 2 and 3). And while the EU legislation allows to set the CCyB over the 2.5% cap, it can potentially be problematic from the view of reciprocity regime as despite the ESRB recommendation (ESRB Recommendation of The European Systemic Risk Board on guidance for setting countercyclical buffer rates (ESRB/2014/1), 2014) other designated authorities of other EU countries might choose not to apply the CCyB rate over than 2.5% for exposures in the country setting the buffer to their banking sectors if they would doubt the underlying methodology used to set the buffer, therefore reducing the effectiveness of the measure and creating regulatory arbitrage opportunities.

*Graph 3: CESEE countries that have introduced the CCyB legislation but have not set the instrument above the 0% level*







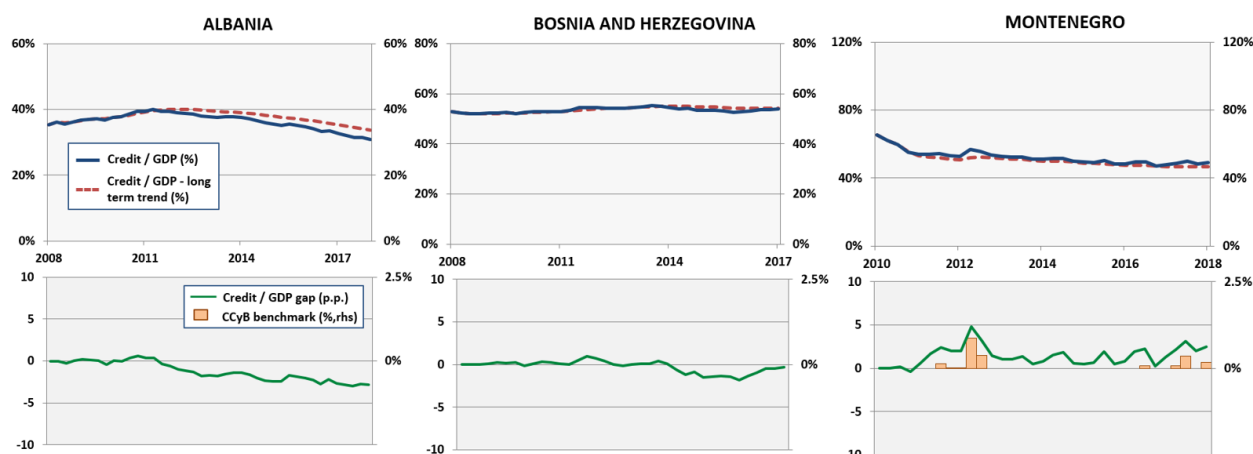
*Author's own calculation*

*Data source: The Central Bank of Estonia, the Financial and Capital Market Commission, the Croatian National Bank, the National Bank of the Republic of North Macedonia, the National Bank of Serbia, the National Bank of Romania, ECB, Eurostat, \*ESRB crisis data base*

As can be seen in Graphs 2 and 3 in many cases the data on the financial cycle is not sufficiently long (at least 20 years as often suggested by many researchers in this area regarding adequate application of HP filter) and the calculated credit-to-GDP gaps do not accurately correspond to respective historical crises episodes. As the crises episodes started, which credit-to-GDP gap would have often been either negative (in case of Slovakia, Estonia, Bulgaria, Croatia, Hungary, Slovenia and Poland) or would have signaled the necessity to release the CCyB given its downwards trend (in case of Lithuania, Latvia and even Romania if downward trend would have triggered the buffer release phase too soon). The only country that would have been able to effectively employ the credit-to-GDP gap calculated by the standardized approach for setting the appropriate CCyB rate before the downturn associated with the global financial crisis is Czech Republic.

In case of Serbia and Macedonia - non-EU members which also have introduced the CCyB instrument to ensure financial stability, the credit-to-GDP gap would have mildly signaled a financial crisis event before 2008 (in case of Macedonia) or had been ineffective (in case of Serbia) (Graph 3). As seen in Graph 4 credit-to-GDP gap indicator calculation for other CESEE countries such as Albania, Bosnia and Herzegovina suffers from either too short time series or possible data biases given the stationarity of the indicator over time.

*Graph 4: CESEE countries that has not yet introduced CCyB instrument*



*Author's own calculation*

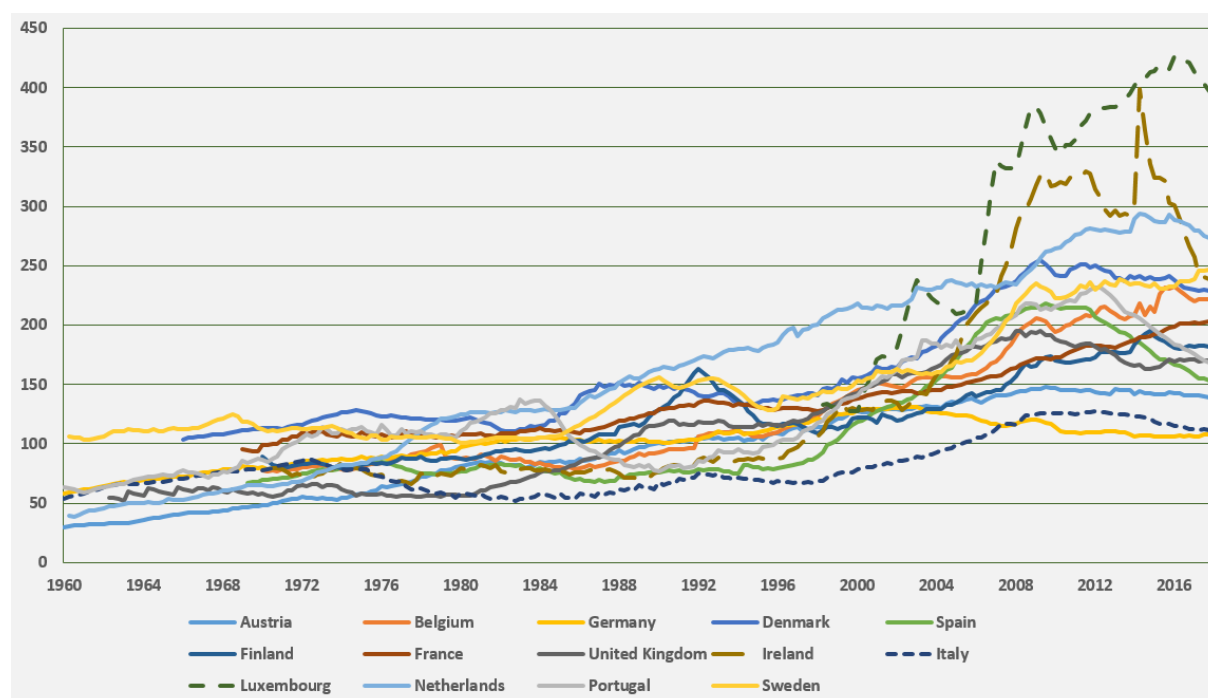
*Data source: The Bank of Albania, the Central Bank of Bosnia and Herzegovina, the Central Bank of Montenegro, Eurostat, the Statistical service in Republic of Albania*

Overall, given (i) misleading signals for CCyB in the buildup phase, (ii) relatively short and volatile financial cycle data series that lack information regarding various phases of the cycle and (iii) comparatively less stabilized credit-to-GDP ratios, the standardized credit-to-GDP methodology for calibrating CCyB is not suitable for CESEE countries.

### *The credit-to-GDP gap in Western Europe*

For comparison of the effectiveness of credit-to-GDP gap the author also takes a look at Western European countries. First and foremost is the differences between data availability and thus long time series that are needed for the calculation of HP filter. As seen in Graph 5 for a group of countries relevant data is available for a period of 58 years.

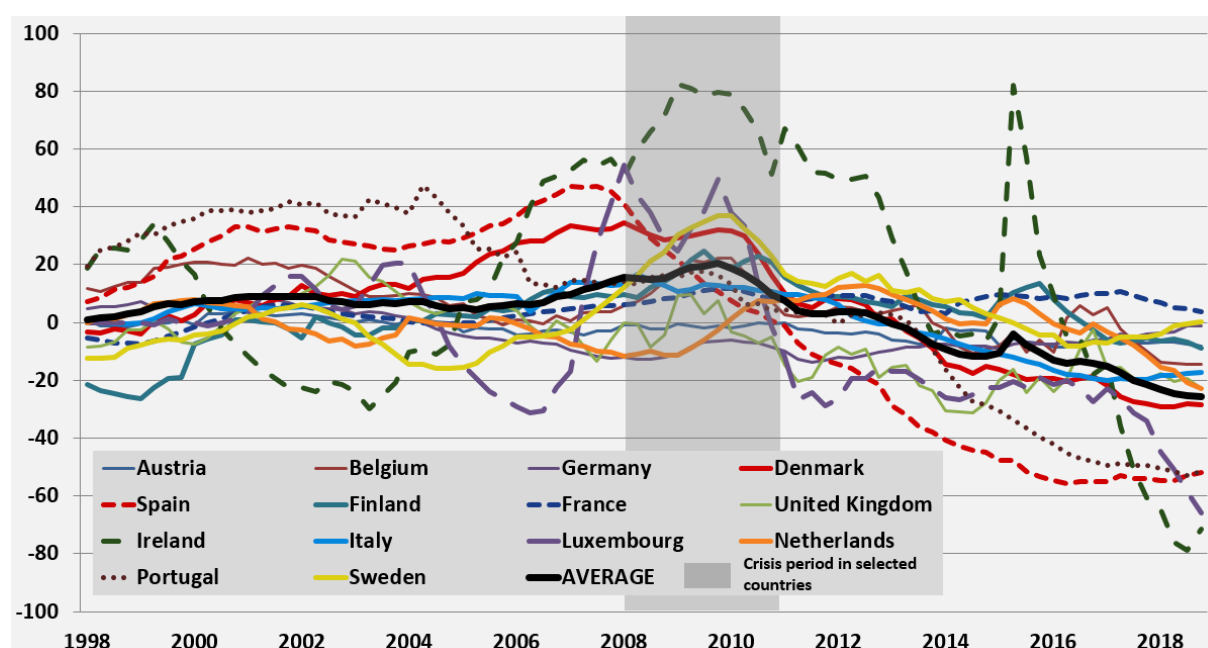
*Graph 5: Historical Credit-to-GDP indicator availability in Western European countries (% of GDP)*



Data source: BIS

As Graph 6 shows when the global crisis period started around 2008 revealing vulnerabilities and triggering bubbles in many Western European countries, credit-to-GDP gaps at that time were in most cases positive (with exception of Netherlands and Germany, but United Kingdom and Austria were almost at 0 with the indication of rising trend of credit-to-GDP gap).

Graph 6: Historical credit-to-GDP gap in Western European countries



Data source: ECB, \*ESRB crisis data base

## Conclusions

The financial cycles of CESEE countries are volatile when compared to Western European countries with larger economies and further developed financial systems. Furthermore, the available data series on financial cycles in CESEE region are shorter and due to significant changes in banking sector structure and other structural brakes the data series available for policymakers that can reliably be used in their calculations are often cut even shorter. As evidenced in previous research and from the examples of countries analyzed in this paper, this makes the application of Basel credit-to-GDP methodology problematic in the CESEE region.

As the financial cycles in CESEE countries have mostly been on an upward trend in recent years, in some countries risks of overheating and asset price bubbles are becoming an increasingly relevant topic. While policymakers in each of these countries can rely on a multitude of (often undisclosed) indicators and expert judgment to determine current phase of the cycle and optimal CCyB rate, other interested parties, such as firms, foreign investors (which are particularly important for most of these countries) and households are often left in the dark. In case of single CESEE countries they can choose to rely on the public announcements of the authorities in charge of setting the CCyB rate to determine the phase of the financial cycle, but due to problematics of applying the Basel credit-to-GDP gap benchmark in the region as a whole currently there exists no unified measure or a set of indicators that would allow to compare the state of the financial cycles across various

countries of the region.

Therefore the author suggests the development of such benchmark, specifically for the CESEE region, which would take into account data availability and other regional specificities, and provide precise and comparable information on the state of financial cycle for all interested parties. Furthermore, these regional insights might also inspire policymakers to improve their current methods for determination and disclosure of the optimal CCyB rate for their countries, thus improving the financial stability and financial decision-making in the region.

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# THE PERFORMANCE OF THE TAYLOR RULE IN EMERGING ECONOMIES

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## Abstract

*Since 1990s, many emerging economies (EMEs) have decided on inflation targeting as an effort to reduce high inflation, establish a stable economy, and recover economic prosperity. Compared with the vast literature for advanced economies, the application of the Taylor rule has just increased recently in EMEs. Furthermore, there are limited number of studies investigating how Taylor rule can approximate the process of interest rate setting in EMEs. Considering the post-crisis period, studies investigating the performance of the Taylor rule in capturing the decision of monetary authorities in EMEs are scant.*

*The objective of this paper is to examine some crucial issues regarding how the interest rate instrument is set in EMEs. First, how can the setting of interest rate instrument be represented by a Taylor rule? Second, is the response of interest rate to inflation and output consistent with the Taylor principle? Third, are there any differences in the policy of interest rate before and after crisis? We apply the generalized method of moments (GMM) to estimate different specifications of Taylor rule because of the problem of endogeneity. The use of realized inflation as a proxy for expected inflation introduces the forecast error into the disturbance term, leading to the correlation between expected inflation and disturbance terms. Moreover, we apply Bartlett kernel procedure to the standard errors so that they are robust to the presence of heteroskedasticity and serial correlation. The choice of lagged instruments satisfies the overidentification test and the weak instrument test.*

*The paper found that the Taylor rule is a good approximation of the process of interest rate setting in EMEs. The interest rate positively responds to both inflation and output but the reaction does not follow the Taylor principle. Furthermore, the rule indicates weaker response to inflation and stronger response to output after the crisis. In addition, the implication of the exchange rate shows a reduction during the post-crisis period.*

**Keywords:** monetary policy rule, interest rate, Taylor rule.

**JEL classification:** E52, E58

## Introduction

In 1990s, the world experienced some crises such as Asian currency crisis in 1997 or the collapse of Russian ruble in 1998. Many economies, especially developing and emerging

ones, encountered episode of hyperinflation. Most countries adopted the inflation targeting framework for disinflation and economic recovery, thanking to the success of New Zealand and other advanced economies. Although the literature investigating different characteristics of the inflation targeting framework is vast for developed economies, the literature is rather limited for EMEs. There are not many studies examining how Taylor rule can approximate the process of interest rate setting. Furthermore, the unstable economic environment after crisis increases the cost of disinflation, it is more difficult for monetary authorities to maintain their commitment to manage price stability. Hence, it is pertinent to question the effectiveness of the interest rate instrument during the post-crisis period.

The objective of this paper is to examine some crucial aspects of the implementation of the inflation targeting in EMEs. First, can simple specifications of the Taylor rule approximate the setting of interest rate instrument? Second, does monetary policy rule satisfy the Taylor principle? Third, does the global financial crisis have impacts on the monetary policy rule? Finally, what is the implication of the exchange rate?

The paper contributes to the existing literature in several aspects. It investigates the effectiveness of the interest rate instrument in EMEs that target inflation. Moreover, it examines the influence of the global financial crisis on the implementation of monetary policy. It provides insight into the departure of monetary policy conduct from the Taylor rule over the last two decades, which is a condition for the delivery of sound policies.

The focus on EMEs is also important for several reasons. First, EMEs cope with challenges to maintain the credibility of the inflation targeting regime because it is difficult to maintain price stability commitment (Keefe and Rengifo, 2015). Their monetary authorities can relax the commitment when discretionary space increases. They are not obligatory to fulfill the inflation target when pre-announced exemptions happen. For instance, Czech National Bank applies escape clauses when there are sharp shocks in commodity or energy prices (Rusnok, 2018). Moreover, EMEs have larger exposure to external disturbances because of their reliance on international trade (Laxton and Pesenti, 2003), implying that their autonomy is low despite of the adoption of the inflation targeting framework and flexible exchange rate regime. Furthermore, monetary authorities can focus on objectives beyond price stability such as output gap or exchange rate volatility during turbulent periods (Siregar and Goo, 2010).

The paper proceeds as follows. Section 2 provides styled facts about the implementation of inflation targeting in EMEs. Section 3 discusses the original idea of the Taylor rule as a guidance for monetary policy analysis and its application in small open economies. Section 4 discusses the empirical methodology and measures of unobservable variables in the Taylor rule such as output gap, inflation gap, and expected inflation. Section 5 presents important empirical findings and discusses its implications. Section 6 are conclusions.

## **Inflation targeting in EMEs**

Since 1990s, many EMEs have adopted the inflation targeting framework, which is a result of economic crises (Asian countries and other Latin America) or recommendations of stabilization and disinflation program supported by the IMF (Turkey). The crises reveal the ineffectiveness of previous monetary framework such as monetary base targeting in Indonesia. The reasons are the thin and segmented markets, the pro-cyclicality of monetary base, the unstable linkage between monetary aggregates and output growth (Siregar and Goo,

2010). The adoption of the inflation targeting framework is rather different for the Eastern and Central European countries because they have no experience of turbulent periods. The primary motive is the process of economic transition or the meeting of the European Union membership.

The introduction of inflation targeting improves the accountability and transparency of monetary policy conduct. Compared with other framework such as monetary aggregate targeting or exchange rate peg, the inflation targeting framework is characterized by the ease of communication with the public (Jonas and Mishkin 2003), which contributes to anchor the long run expected inflation in the economy (Ferreira de Mendonça and Simão Filho, 2007). Since the objective of inflation targeting is to maintain low and stable level of prices or inflation, economic agents can evaluate ex post performance (credibility) by examining the fulfillment of a specified quantitative target (deviation between inflation expectations and inflation target) (Svensson, 1997). Other benefit is the isolation of domestic shocks from external shocks (Krušec, 2011). In summary, the inflation targeting framework mitigates the problem of time inconsistency in the implementation of monetary policy.

However, the inflation targeting framework of EMEs is different from that of advanced counterparts in several aspects. First, in EMEs, both governments and central banks have significant role in setting the inflation target. This is contrary to the high level of the central bank independence in advanced economies. Therefore, EME central banks cannot prevent political pressures from the policy design. The fulfilment of other objectives beyond price stability leads to the consideration of the departure of the inflation target from the inflation forecast (Svensson, 1997). As a result, a tolerance band is popular, which is believed to reduce the variation of policy rate when coping with temporary economic shocks (Siregar and Goo, 2010).

Second, the setting of inflation target is different across countries. Some countries (i.e. Thailand or South Africa) aim for a target band whereas other countries aim for a point target. These targets are adjusted annually. A fixed target for multiple years is only visible in later years: from 2003 for Mexico, from 2005 for Brazil, or even from 2016 for Korea. Chile is an exception because it aims at the target of 3% from the beginning of the inflation targeting framework.

## Literature review

### *Baseline Taylor (1993) rule*

Taylor (1993) developed a simple rule (equation 1) that prescribes how central banks set the interest rate instrument  $i_t^*$  based on deviation of inflation from the target ( $\pi_t - \bar{\pi}_t$ ) and deviation of output from its potential ( $y_t$ ). Remarkably, the rule closely approximates the actual movement of the interest rate in the United States during the period 1987 – 1992.

$$i_t^* = \alpha + 1.5(\pi_t - \bar{\pi}_t) + 0.5y_t \quad (1)$$

A more generalized version is constructed by putting weights on output gap and inflation gap:



$$i_t^* = \alpha + \beta^\pi (\pi_t - \pi_t^*) + \beta^y y_t + \varepsilon_t \quad (2)$$

Although the rule is sub-optimal, its application is popular due to its simplicity and the ease of verification (Wimanda et al., 2012). Other reason is that it provides a good approximation of the monetary policy setting in many countries (Taylor, 1999), especially advanced economies (Clarida et al., 1998). Taylor (2000) also emphasized that the evaluation of simple policy rule is not influenced by monetary transmission mechanisms.

Taylor (1998) recommended that the interest rate should have positive and larger responses to inflation gap and positive response to output gap. The recommendation is known as the Taylor principle, an important condition for the attainment of stability in theoretical models (Woodford, 2001; Davig and Leeper, 2007). The violation of the Taylor principle increases inflationary pressure and lowers real interest rate, thereby leading to an unstable economy.

Clarida et al. (1998; 2000) extended the Taylor (1993) rule to account for the management of inflationary expectation.

$$i_t^* = \alpha + \beta^\pi (E_t \pi_{t+n} - \pi_{t+n}^*) + \beta^y E_t y_{t+k} + \varepsilon_t \quad (3)$$

Different with the Taylor (1993) rule, this rule explicit considers the expected value of inflation  $E_t \pi_{t+n}$  and output  $E_t y_{t+k}$  in setting interest rates. For this reason, inflation forecast is more important than observed inflation rate. According to Clarida et al. (1999), the derivation of the rule bases on a simple model that minimizes a quadratic loss function (equation 4), a forward-looking IS (equation 5) and a Phillips curve (equation 6).

$$\min \frac{1}{2} E_t \left\{ \sum_{i=0}^{\infty} \beta^i \left[ \lambda y_{t+i}^2 + (\pi_{t+i} - \bar{\pi}_{t+i})^2 \right] \right\} \quad (4)$$

$$y_t = -\alpha_1 [i_t - E_t \pi_{t+1}] + \alpha_2 E_t y_{t+1} + \varepsilon_t^d \quad (5)$$

$$\pi_t = -\beta_1 y_t + \beta_2 E_t \pi_{t+1} + \varepsilon_t^s \quad (6)$$

Where  $\varepsilon_t^d = \rho^d \varepsilon_{t-1}^d + \eta_t^d$  is the demand shock ;  $\varepsilon_t^s = \rho^s \varepsilon_{t-1}^s + \eta_t^s$  is the supply shocks;  $\eta_t^d$  and  $\eta_t^s$  are i.i.d. random disturbances.  $E_t$  is the expectation operator.

Equation (4) indicates that the objective function of monetary authorities is to minimize the discounted value of the weighted sum of the square of output gap and inflation gap. A higher  $\lambda$  indicates higher degree of output stability consideration. It also implies the longer adjustment of inflation forecast toward inflation target (Svensson, 1997). However, on the positive side, the presence of additional objectives allows less frequent policy adjustments, thereby possibly resulting in less volatility of macroeconomic variables (Svensson, 2000).

Clarida et al. (1999) examined how to design the policy rule as given in equation (3) with and without commitments to inflation targeting. In the latter case, the principle is that the interest rate should be changed with greater amount than changes in expected inflation. Therefore, the coefficient on expected inflation (or inflation gap) should be greater than one so that changes in short-term interest rate alters the level of real interest rate, leading to changes in aggregate demand and prices.

However, monetary authorities sometime show systematic violations of the Taylor principle because of concerns about financial instability or economic recovery. In these cases, interest rate policy amplifies the effect of fundamental shocks, resulting in the high level of macroeconomic volatility (Davig and Leeper, 2007). Furthermore, monetary authorities are sluggish in achieving the inflation target when they put high weigh on the volatility of output gap (Svensson, 1997; Ball, 1999a).

## Specifications of Taylor rule for EMEs

Studies of Taylor rules for EMEs require modifications in some directions. Firstly, many studies add variables  $Z_t$  into equation (3) to account for factors specific to the conduct of monetary policy in small-open economies. Although there is no consensus on specific variables that should be included in  $Z_t$ , the popular practice is to use exchange rates to account for the vulnerability to external shocks coped by EMEs (Ball, 1999b; Vašíček, 2010; Erdem and Kayhan, 2011).

$$i_t^* = \alpha + \beta^\pi (E_t \pi_{t+n} - \pi_{t+n}^*) + \beta^y E_t y_{t+k} + \beta^z E_t z_{t+l} + \varepsilon_t \quad (7)$$

Second, monetary authorities concern about disruptive effect of monetary policy on macroeconomic activities; therefore, they tend to smooth the path of interest rate. To characterize this behavior, a smoothing coefficient can be integrated into the rule (2), (3), and (7) as follows:

$$i_t = \varphi i_{t-1} + (1 - \varphi) i_t^* + \varepsilon_t \quad (8)$$

Where  $\varphi$  indicates the degree of inertia.  $i_t$  is the short-term interest rate.

## Empirical investigation of the Taylor rules in EMEs

Some studies for EMEs mainly examine whether the setting of interest rate is according to the Taylor principle and answer whether monetary policy contributes to the stability of inflation in the region. The relevance of the Taylor rule was found in many studies: Teles and Zaidan (2010) for twelve EMEs, Moura and de Carvalho (2010) for Latin America, Wang et al. (2015) for Central Eastern Europe, Minella et al. (2003) for Brazil, Erdem and Kayhan (2011) for Turkey, to name a few.

Khakimov et al. (2010) found that modified McCallum is more effective than different versions of Taylor rule and the Taylor rule provides closer approximation of the decision of Turkish central bank only in the regime of explicit inflation targeting. Aklan and Nargelecekenler (2008) showed that the inflation response is different in backward-looking and forward-looking Taylor rule in Turkey. Accordingly, the interest rate instrument is more responsive to expected inflation than observed inflation. Moreover, the reaction to expected inflation is larger than unity, implying monetary policy can stabilize inflation pressure.

For EMEs, the interest rate rule has strong emphasis on (expected) inflation during disinflation period, for instance, from 1999 to 2002 for Brazil (Minella et al., 2003) or from 2002 to 2006 for Turkey (Erdem and Kayhan, 2011). On the contrary, during stable period, the rule accepts additional variables such as output gap or exchange rate (Erdem and Kayhan, 2011). Similarly, Siregar and Goo (2010) found that Indonesia and Thailand respond to other objective beyond price stability during stable period but focus more on inflation during volatile periods. Moura and de Carvalho (2010) and Rossi and Pagano (2013), however, showed that interest rate cut is larger when inflation is below the target than interest rate increase when it is above the target, which reflects the preference to avoid recession in EMEs. In Asia, the severe effect of extreme events such as East Asian crisis 1997 motivates some Asian EMEs to officially adopt inflation targeting. However, studies examining the performance of the Taylor rule is scant for these countries.

Regarding the Taylor principle, Vašíček (2010) found mixed results for twelve new members of European Union during the period 1999–2007. The inflation response is consistent with the Taylor principle in Poland, Romania, Slovenia; insignificant in Bulgaria, Cyprus, Estonia; and even negative in Slovakia, Lithuania. Ghatak and Moore (2011) examined seven new European Union members from 1994 to 2006 and found that the interest rate rule and monetary base rule have different determinants in different countries. While interest rates respond to exchange rate deviations, monetary base responds to inflation in Czech Republic, Poland, Slovakia, and Slovenia, both instruments respond to inflation in Hungary and Romania.

Some studies detect signs of the violation of the Taylor principle in the aftermath of the global financial crisis. This happens for Brazil after the mid-2010 (Aragón and de Medeiros, 2015). However, most studies emphasize the time horizon before crisis. In Eastern Europe, the occurrence of the zero-lower bound during post-crisis periods reduces the room for monetary authorities to conduct easing policy by cutting interest rate. Therefore, to promote economic recovery, they opt to use unconventional instrument to construct expansionary effect on economic activities. For instance, Czech National Bank decides on exchange rate commitment policy (last until April 2017), whereby interventions are ready to prevent the weakening of the koruna. Therefore, it raises doubts about the effectiveness of the interest rate instrument in this region.

## **Methodology**

### ***Econometric estimators***

We apply the GMM method to estimate specifications of the Taylor rule because of the endogeneity problem. The reason is that use of the realization of inflation as a proxy for expected inflation introduces the forecast error into the disturbance term, which, in turn, increases the correlation between expected inflation and disturbance term. Moreover, we apply Bartlett procedure to account for the presence of heteroskedasticity and serial correlation. We use five lagged instruments for most specifications of Taylor rule. The choice of instruments ensures the robustness of the GMM estimation, implying that the instruments are not correlated with the error disturbances and not weakly correlated with endogenous regressors.

### **Data**

This paper uses quarterly data of eleven EMEs. All data is derived from the IMF International Financial Statistics. The start of the series is different between countries due to the reason of data availability. The series begins earliest in 2000:Q1 for Poland, Indonesia, and South Africa. The series begins in 2000:Q2 in Korea and Brazil; 2001:Q1 for Mexico and Czech Republic; 2000:Q3 for Hungary; 2002:Q1 for Philippines; 2002:Q3 for Colombia; and 2003:Q1 for Chile. All series ends in 2017:Q1 for all countries.

Output gap measures deviation of output from its potential level that is unobservable. For empirical purpose, the vast literature uses Hodrick and Prescott (1997) filter to decompose actual output into transitory and permanent/ trend component. Output gap is obtained by subtracting the permanent/ trend component from the actual value of output.

There are several possible measures of expected inflation, which is also unobservable. One, we can use the information of expectation surveys reported by central banks. However, this method is less likely because of poor statistics in some EMEs. The other method is to replace expected inflation by the forward value of the actual inflation. From empirical perspective, this method is simpler and more applicable because we can always represent expected inflation as sum of a forward value and a random forecast error. However, the procedure leads to the correlation between disturbance terms and forward inflation rates. Therefore, the problem of endogeneity emerges.

In EMEs, inflation targets are determined by the cooperation between monetary authorities and the government. Those targets are usually year-end point. This paper assumes that yearly inflation targets and monthly inflation targets are equal.

## **Empirical analysis**

### ***The Taylor principle in EMEs***

The results shown in

Table 10 show that smoothing behavior is crucial in the process of setting interest rate in EMEs. As observed, Brazil has the smallest smoothing coefficient, 0.75, whereas Philippines has the largest smoothing coefficient, 1.03. Most of other economies have relatively high smoothing coefficient, being larger than 0.9.

According to the Taylor principle, monetary policy can stabilize inflation only if the inflation coefficient should be larger than unity. This implies that changes in the short-term interest rate alters the level of real interest rate, leading to changes in aggregate demand and inflation. As shown in

Table 10, the Taylor principle only holds in Brazil, Mexico, Hungary, Poland, and South Africa. Such a finding is consistent with previous studies such as Minella et al. (2003), Aragón and de Medeiros (2015), and Sánchez-Fung (2011). However, the finding of the compliance of the Taylor principle in Hungary is contrary with the finding of Vašíček (2010). On the other hand, the Taylor principle does not hold in other economies as the inflation coefficient is less than unity in Chile, Czech Republic, and Indonesia or is even negative in Colombia and Philippines.

Turning to output coefficient, it is positive, statistically significant, and large in Chile, Colombia, Indonesia, and South Africa. The coefficient is negative and statistically significant

in Hungary, suggesting the violation of the Taylor rule, whereby the response to output should be positive. In other countries, the coefficient is positive, large, but statistically insignificant. Regarding the coefficient on both output and inflation, the Taylor principle does not hold for EMEs under investigation. The coefficient on growth rate of exchange rate is statistically significant in most of economies, except for Chile and South Africa. This implies the relevance of the fear of floating in EMEs.

In the aftermath of the global financial crisis, monetary policy experiences shift in the reaction to inflation, output, and exchange rate. However, the changes have different directions. Firstly, improvements in the inflation reaction is found in Chile and Colombia, suggesting the strengthening of the Taylor principle in these countries. On the contrary, many countries show a reduction in the response to inflation. The exception is Philippines, Czech Republic, and Indonesia. While the inflation response is statistically significant in Philippines, it is statistically insignificant in Czech Republic and Indonesia. Furthermore, the coefficient on the interaction between exchange rate and crisis dummy has the sign opposite with the coefficient on exchange rate, suggesting the reduction in the role of the exchange rate in the monetary policy rule in EMEs.

In summary, the empirical evidence suggests some crucial characteristics of the conduct of monetary policy in EMEs. First, monetary policy rule responds to the expected inflation, implying that monetary authorities in EMEs emphasize managing inflationary expectation. Second, the response of the interest rate to inflation gap and output gap does not follow the Taylor principle. This indicates that interest rate setting cannot stabilize the movement of inflation. Third, exchange rate plays important role in the monetary policy rule in emerging economy; however, such a contribution is diminishing after crisis. Fourth, monetary policy on average is less responsive to inflation and more responsive to output after crisis.

Table 10: GMM estimation of Taylor rule in EMES

	$\phi$	$\beta_{t+1}^{\pi}$ $\beta_{t-1}^{\pi a}$ $\beta_t^{\pi b}$	$\beta_{t+1}^y$ $\beta_{t-1}^{y a}$ $\beta_{t-1}^{y b}$	$\beta_{t+1}^q$ $\beta_{t-1}^{q a}$ $\beta_{t-1}^{q b}$	$\beta_{t+1,crisis}^{\pi}$ $\beta_{t-1,crisis}^{\pi a}$ $\beta_{t,crisis}^{\pi b}$	$\beta_{t+1,crisis}^y$ $\beta_{t-1,crisis}^{y a}$ $\beta_{t-1,crisis}^{y b}$	$\beta_{t+1,crisis}^q$ $\beta_{t-1,crisis}^{q a}$ $\beta_{t-1,crisis}^{q b}$	$\alpha$
Brazil	0.75 (0.03)***	1.93 (0.17)***	1.79 (18.07)	0.12 (0.04)***	-1.29 (0.15)***	-42.90 (25.52)*	-0.13 (0.05)***	10.84 (0.41)***
Chile	0.82 (0.02)***	0.50 (0.08)***	26.78 (7.89)***	0.07 (0.04)	1.07 (0.17)***	10.09 (8.27)	0.06 (0.06)	3.85 (0.17)***
Colombia	0.89 (0.02)***	-0.24 (0.55)	253.81 (47.39)***	0.24 (0.04)***	3.22 (0.83)***	-45.38 (37.65)	-0.04 (0.06)	4.47 (0.25)***
Mexico	0.81 (0.03)***	4.16 (0.53)***	33.48 (20.75)	0.32 (0.12)***	-3.87 (0.68)***	-33.81 (21.57)	-0.32 (0.12)***	4.17 (0.21)***
Hungary	0.97 (0.01)***	15.24 <sup>b</sup> (6.79)**	-550.81 <sup>b</sup> (258.86)**	-5.30 <sup>b</sup> (2.48)**	-9.27 <sup>b</sup> (5.01)*	1229.90 <sup>b</sup> (524.65)**	3.40 <sup>b</sup> (1.75)*	0.53 (2.94)
Poland	0.90 (0.01)***	1.98 (0.48)***	4.24 (6.21)	0.13 (0.06)**	-1.12 (0.49)**	3.49 (7.02)	0.15 (0.12)	4.27 (0.32)***
Czech Republic	0.90 (0.01)***	0.71 (0.19)***	-10.53 (7.64)	0.15 (0.05)***	0.20 (0.19)	12.81 (8.06)	-0.14 (0.06)**	1.40 (0.22)***
Korea	0.92 (0.02)***	-2.26 <sup>b</sup> (0.98)**	-3.55 <sup>b</sup> (6.69)	-0.10 <sup>b</sup> (0.06)*	4.33 <sup>b</sup> (1.21)***	39.19 <sup>b</sup> (16.51)**	0.34 <sup>b</sup> (0.12)***	4.93 (0.27)***
Indonesia	0.75 (0.01)***	0.89 (0.15)***	81.85 (12.91)***	0.19 (0.04)***	0.08 (0.12)	-107.30 (14.84)***	-0.17 (0.04)***	5.05 (0.10)***
Philippines	1.03 (0.01)***	-4.96 <sup>a</sup> (2.64)*	29.55 <sup>a</sup> (35.43)	1.04 <sup>a</sup> (0.50)**	6.76 <sup>a</sup> (2.94)**	-22.58 <sup>a</sup> (32.96)	-0.54 <sup>a</sup> (0.43)	6.02 (0.86)***
South Africa	0.96 (0.02)***	3.61 (1.45)**	289.66 (147.35)**	-0.09 (0.15)	-4.35 (2.13)**	740.66 (384.59)*	0.06 (0.18)	7.85 (1.30)***

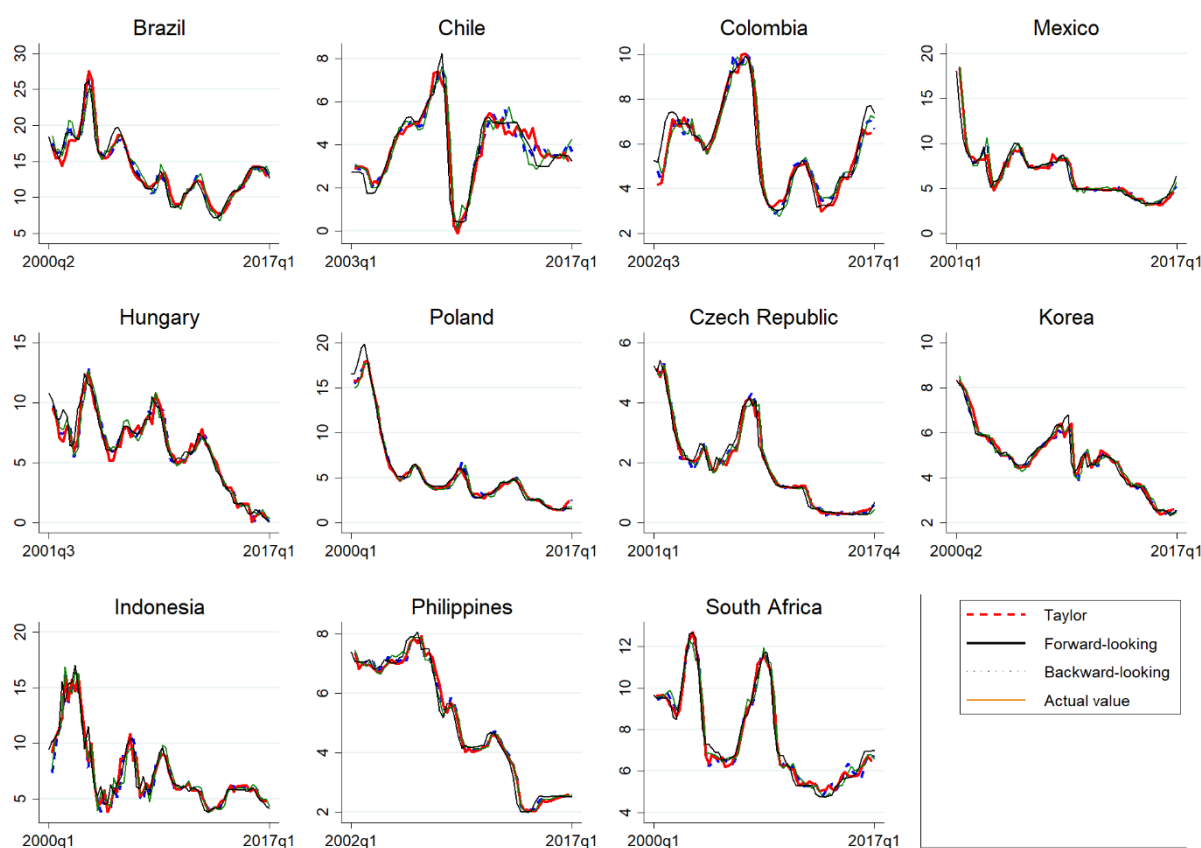
Source : Author's estimation

Notes: <sup>b</sup> current explanatory variable; <sup>a</sup> lagged explanatory variable; \*\*\*, \*\*, \* denotes the level of significance at 1%, 5%, and 10%.

## Counterfactual analysis

In line with previous studies (McCallum, 2000; Orphanides, 2003; Vašíček, 2010; Cortes and Paiva, 2017; Madeira and Palma, 2018), the paper proceeds with the counterfactual analysis of the Taylor rule. Figure 10 shows that there is little difference between specifications in approximating the process of interest rate setting. The implied interest rate of the forward-looking specification closely approximates the actual value of the short-term interest rate. However, there are certain distance between the implied interest rate and the actual interest rate in the beginning of the inflation targeting regime in some economies such as Hungary, Indonesia, and Poland.

Figure 10: Counterfactual performance of Taylor in EMEs



Source: Author's construction

## Robustness test

This section examines the performance of the Taylor rule by using other measure of inflation gap. We use HP filter to generate trend component of inflation and consider it as implicit inflation target. Then, we use the deviation of the inflation rate from the HP trend value as a new measure of inflation gap. The results are worse. The counterfactual analysis shows greater divergence between the implied interest rate of the new specifications and the actual value of the short-term interest rate. Moreover, the coefficients are different with the baseline estimations.

## Conclusion

The objective of this paper examines important aspects of the interest rate setting in EMEs. Firstly, can a simple version of the Taylor rule approximate the historical path of the short-term interest rate? Secondly, is the response to inflation gap and output gap consistent with the Taylor principle? Thirdly, does the global financial crisis cause changes in the setting of the interest rate?

We applied GMM method to estimate three specifications of the small-open economy Taylor rule: contemporaneous, forward looking, and backward looking. We found that the forward-looking specification is better than other specifications based on the AIC criteria. Moreover, the monetary policy rule does not follow the Taylor principle. After crisis, the significance of the exchange rate reduces and the interest rate is less responsive to inflation and more responsive to output.

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# HOW TO ESTIMATE THE SIZE OF CAROUSEL FRAUD?

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## Abstract

*The paper is focused on VAT evasion and especially carousel frauds. It describes the types of VAT evasion, the methods of its estimation and measures taken by the European member state to fight it. The aim of the article is to develop a reasonable method for evaluation the volume of carousel fraud. It uses the ex-post calculation of the impact of the specific reverse-charge implemented in the Czech Republic on waste and scrap in 2011. The analysis is employing the trade balance data published by Czech Statistical Office and a model of the carousel fraud to estimate the size of the carousel fraud existing prior to the implementation of the specific reverse charge in the CR. The volume of the supposed carousels in waste and scrap present in the period from 1.4. 2010 to 31.3. 2011 in the CR is according to the authors 56 mil. EUR.*

**Keywords:** VAT evasion; Carousel fraud; Specific reverse charge.

**JEL classification:** H26

## Introduction

VAT revenues are very important part of public budgets, they create on average 7 % of GDP in the EU member states (European Commission, 2018). Tax theory prefers the consumption taxes including VAT to income taxation due to economic distortions mainly on labour market caused by the latter. The efficient collection of VAT has been one of the topical tax policy issues for several recent years in the EU due to wide spread carousel fraud. This fraud is mainly based on the VAT exemption applied on cross-border supplies of goods between the member states which was implemented after the single market for movements of goods had been established in 1993. A cumulation of output and input VAT with the person purchasing the goods from another member state enables such person to become a “missing trader”. The problem is that the missing traders do not remit the output VAT and go missing. The volume of carousel fraud is estimated at the amount of 50 bill. EUR annually in the whole EU (European Commission, 2016a). The overall VAT gap that includes not only the carousel

fraud but also VAT not paid in the shadow economy or not collected due to insolvencies reached 147 bills. EUR in 2016 (Poniatowski et al, 2018).

Naturally, the governments are intensively searching for anti-fraud measures to prevent all types of VAT evasion. All those measures are complicating the VAT compliance for businesses and especially the small and medium enterprises. One of the most important characteristics of efficient tax system is its proportionality (Hillman, 2009) which consists in the balance between benefits and costs of new tax rules, requirements and changes implemented into the tax legislation. Therefore, it is important to evaluate the actual impacts of anti-evasion measures on the public revenues and on the compliance costs of VAT payers.

The aim of this paper is to establish an evaluation method to estimate the impact on VAT revenues of one of the anti-fraud measures, the specific reverse charge. Furthermore, our objective is to employ the method on practical example and calculate the impact on VAT revenues of the specific reverse charge on selected goods, waste and scrap which has been implemented in the Czech Republic.

## **Literature Review**

VAT evasion is a serious problem for tax systems and therefore scholars as well as tax policy studies focus on the estimation of the volume of VAT evasion. It is often approximated by the VAT gap, which equals to a difference between the theoretical VAT liability that should have been collected by the state and the real VAT received by public budgets. The VAT gap represents not only evasion caused by the carousel fraud already mentioned above, but also the tax evasion arising within the shadow economy, mainly from the concealed sales and possibly various errors as well as unpaid taxes due to insolvency. However, the VAT gap is estimated as a whole and is not (and cannot be) apportioned into parts according to the evasive practice that had caused it.

### ***Types of VAT evasion***

The standard VAT system is considered a very efficient method of the collection. Previous taxes levied on consumption were often cumulative as they were imposed on each level of production and subsequent distribution (Terra, 2018). On the other hand, VAT is paid by partial payments within each stage of production and distribution chain. This principle should ensure the self-policing character of VAT (e.g. Bodin et al., 2001 or Tait, 1988). The concept of VAT is also suitable for its use within the European Single Market, as it does not cause distortions due to the application of the destination principle. Unfortunately, in recent decades, the VAT system became vulnerable to evasion and fraud.

We may divide the VAT evasion into two groups. The traditional types of tax evasion include e.g. a misuse of tax rates, such as false application of the reduced rate or an exemption when the standard tax rate should have been applied. Furthermore, there are cases of unlawful claims of the input VAT related to private consumption, concealment of transactions and avoidance of the output VAT payment, failure to register to VAT by the means of artificially concealing of sales and thus remaining below the threshold turnover for the obligatory VAT registration (Tait, 1998). These traditional types of VAT evasion are not as harmful as the

new types of VAT evasion that appeared after the introduction of the European Single Market in 1993. The most significant are the so-called carousel frauds (Ainsworth, 2006.). Due to their volume, they are sometimes labelled as a criminal attack on the VAT system. Fraudulent transactions are allowed by a combination of the VAT exemption of the cross-border supply of goods and an accumulation of high input and output tax obligation within one particular subject (company) acquiring goods from another member state. However, the tax evasion occurs on the level of subsequent domestic supply. The principle is that the VAT payer who purchases goods cross the border sells the same goods to a local VAT payer. The supplier charges the output VAT on this local sale and the purchaser claims it back. The problem is that the supplier (i.e. the subject that acquired the goods from another Member State) goes missing and does not comply with the obligation to pay the output VAT to the tax authorities. The tax authorities thus incur a loss if they refund the input VAT to the purchaser since they have not collected it from the supplier in the first place. Transactions can be fictitious in a large scale to reach large claimed input VAT, which is not being paid to the tax authority by the prior company within the chain. Fraudsters usually trade in small-sized goods or even in services (emission allowances being one of the cases from the past). Those goods are sometimes not even moved from one place to another. They are just recorded on tax invoices and end up with the same trader who originally sold them. That is why these frauds are called carousel. Therefore, tax authorities may potentially sustain an unlimited tax loss. Details of carousel frauds are described e.g. in Keen and Smith (2007).

### *Estimates of VAT evasion*

VAT evasion is regularly assessed by studies prepared for the European Commission (Poniatowski et al, 2018). The latest report puts the amount of the 2016 VAT gap for the 28 European Member States at EUR 147 billion. In relative terms, the average share of the VAT gap decreased to 12.3 per cent of the theoretical VAT liability from 13.2 per cent in 2015. The methods adopted by individual EU member states in order to estimate the VAT gap are summarised in European Commission (2016). Some EU Member States such as the United Kingdom (HMRC, 2018), Sweden (Hansson and Wallberg, 2008), Slovakia (Novýsedlák and Palkovičová, 2012), Romania (Romania Fiscal Council, 2011), Germany (Chang, Gebauer and Parsche, 2003 and Parsche, 2008), and Italy (Chiarini, Marzano and Schneider, 2009, D'Agosto, Marigliani, Pisani, 2014) publish their estimates of the VAT gap. In other Member States, as for example in France, the VAT gap is calculated by the respective national statistical offices. For some Member States, e.g. Estonia and Finland, these calculations were made and published by the International Monetary Fund (Thackray and Ueda, 2014, Thackray, Hutton, and Kapoor, 2015). However, most European countries do not publish their own VAT gap estimates.

The main method used for VAT gap estimates is the Top-down method using data from national accounts, specifically from the supply-use tables. The Top-down method further splits into two types. The first type estimates the VAT gap from data on the final consumption of households and intermediate consumption of the public sector and other sectors exempt from the tax. This method is called the Demand method and it has been adopted by for the first time by Reckon (2009), now it is used by Center for Economic and Social Research for their regular reports on VAT in the EU member states, the last one being Poniatowski et al. (2018). The second type of the Top-down method uses information on the production for all sectors in the given economy, comparing their VAT due on production with the deductible input VAT. This methodology is used by IMF, e.g. Thackray, Hutton, and Kapoor (2015) and referred to as the Supply method. Several tax authorities (Estonia, Slovenia and UK) also

estimate the VAT gap by the Bottom-up approach based on the analysis of the tax return data, tax audits or surveys and administration data (European Commission, 2016). The Bottom up methods are in contrast to the top down methods able to estimate the volume of VAT evasion caused by different types of evasion. This is really important for tax policy choices as the measures aimed to prevent the VAT evasion must be differentiated according to the type of misconduct. Method of estimating carousel fraud was proposed by Poniatowski (2016) using the mismatches in the EC sales lists and purchase lists (or tax returns) where the VAT payers report their cross-border transactions.

### ***Measures against VAT evasion***

Measures against VAT evasion include for example extended reports on all transactions between the VAT payers, on-line reporting and verifying of VAT invoices, shortening of taxable period, burdensome VAT registration, increased requirements on documentation to be able to claim VAT deduction or joint liability of the purchaser for the VAT not remitted by the seller. A growing number of Member States introduced temporary measures such as extended data reporting to the tax authorities, usually electronic reports or online transmitted data related to the ongoing transactions that are sent in a unified electronic format to tax officers. Apparently 13 European countries have implemented such anti-fraud VAT reporting by September 2017 (Hallam, 2017). Also, a split payment method where the purchaser pays the VAT directly to the tax authorities instead to its supplier is being introduced e.g. in Poland (TPA, 2017). The United Kingdom is now discussing split payments and joint liability for VAT to be paid by overseas e-shops (Krikorian-Slade, 2017).

However, the most common measure against the carousel fraud is the specific reverse charge applied on certain commodities, implemented across all the EU member states (European Commission, 2014). Its critics argue that the carousel fraud could shift towards other commodities or other states that have not yet implemented such a measure (PWC, 2007). Therefore, within the EU are currently under discussion new methods of the VAT collection. A most preferred alternative by the European Commission is a new VAT treatment of cross-border supplies of goods. These would no longer be exempt from VAT and thus the carousel fraud would no longer be so advantageous (European Commission, 2017).

Also the Czech Republic (further referred as “the CR”) has started to combat the VAT evasion with the reverse charge mechanism, i.e. using a specific VAT regime under which the duty to pay the output VAT is shifted onto the purchaser. This prevents situations where the supplier does not pay the output tax to the tax authorities and the purchaser asks for its refund. Under the reverse charge mechanism, the purchaser pays to its supplier for goods or services the price excluding VAT. The corresponding VAT is reported in his tax return as the output tax on the supply received (this procedure is exactly reverse to the standard mechanism where the output tax is reported by the supplier on its sold supplies). The purchaser also deducts the input tax incurred on the purchase in its tax return. The input tax equals to the amount declared as the output tax on the very same purchase. He cannot deduct the input VAT unless he reports the output VAT on the supply purchased under the reverse charge mechanism. Therefore, the tax on that transaction cannot disappear (the responsibility for its channelling to the state budget does not rest with the supplier as in the case of the standard VAT mechanism). The reverse charge mechanism was first applied in the CR on gold in 2006 and gradually extended to other commodities. Application of the reverse charge mechanism in the CR is presented in Table 1.

*Table 1: Application of the reverse charge mechanism in the CR*

<b>Date of application (since)</b>	<b>Commodity included</b>
1 January 2006	Gold
1 April 2011	Emission allowances, scrap and waste.
1 December 2012	Grain, technical crops, metals, mobile phones, tablets, notebooks, integrated circuits.
1 February 2016	Electricity, gas and certificates to electricity supplied to trader.
1 October 2016	Services of electronic communication for further sales.
1 July 2017	Sale of immovable property under execution, transfer of goods that served as a guarantee, higher out of labour in construction.

*Source: Czech VAT Act, different wording.*

## **Data and Methods**

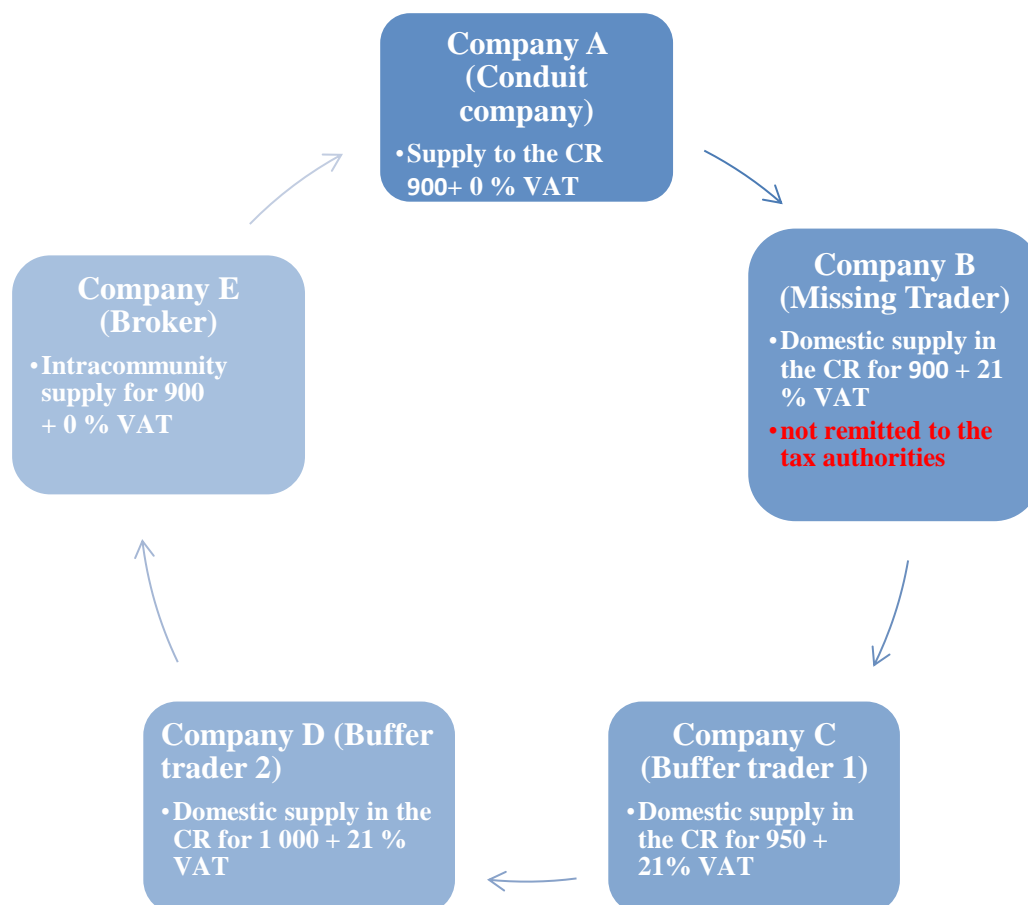
To find out what is the actual volume of carousel fraud on specific goods we perform an ex-post estimate using the data from the trade balances between the CR and other EU member states (CSO, 2019) in those goods that were suspected to be subject to the carousel fraud and later the specific reverse charge was implemented on them. Our hypothesis is that the fictitious transactions in carousel chains would disappear (by shifting to other goods or other member states) after the implementation of the specific reverse charge on those goods. We selected the waste and scrap which started to be subject to the specific reverse charge on 1. 4. 2011. Therefore, we analysed the development of the trade balances in waste and scrap between the CR and other EU member state as described further.

### ***Principle of carousel fraud***

Before analysing the trade balances, it is necessary to fully understand the principle of the carousel fraud where several fraudsters are collaborating in the chain. Therefore, we built up a model of a carousel chain as follows. The first of them (Company A) settled in a member state, e.g. Austria, supplies the goods to another member state, e.g. the CR. The second fraudulent firm in the chain (Company B) purchases the goods cross-the border. From the VAT point of view this transaction is neutral as Company B applies the output VAT on the intracommunity acquisition of goods and at the same time it claims the input tax deduction of the equal amount. Company B supplies the goods locally to an innocent buffer trader (Company C) for a decent price with local VAT. Company C purchases the goods and pays the VAT in the price, then claims it as deduction from the tax authority. However, Company B became the missing trader and did not remit this VAT to the tax administrator. If the tax administrator refunds the VAT to Company C, the tax loss arises for the state as the VAT refunded was never collected from the missing trader (Company B). Subsequently, the goods are sold to another innocent buffer company Company D (there could be more buffers in the chain, but we only use for our model two) and afterwards to a fraudulent Company E that supplies the goods back to Company A. The whole chain is depicted in the Diagram 1 below. For the analysis, we assume that the missing traders do not charge any margin on the goods

traded (they even sell the goods cheaper than they bought it) to find innocent buffer traders through which the goods can flow in the carousel. In our model, we use hypothetical prices to show the potential profits and losses of the traders and the state.

*Diagram 1      Functioning of Carousel fraud*



From the above diagram, it is apparent that the VAT in the amount of 21% of 900, i.e. 189 is not remitted by Company B to the tax administrator but refunded to Company C. Company B has a profit of 189 equal to the stolen VAT. Company C and Company D are normal traders who charge margins on their sales. Company E is again the fraudulent trader who sells the goods to Company A in other member state for 900 without VAT as it is a cross-border sale. Company E made a loss of 100. The reduction of price is purposeful to make the goods more attractive to innocent traders (buffers). Company A is selling the goods back to the CR for 900 (not applying any margin). In the whole chain the profit for the fraudulent companies is equal 89 (profit made by Company B less the loss made by Company E). The loss to the public budgets of the CR is equal to 189 representing the non-collected but refunded VAT in the chain.

Our model describes a hypothetical example that will be used for the estimate of the carousel fraud on waste and scrap inputting in the volumes of supposed fictitious transactions found out from the trade balance as described further.

### Trade balance of the CR with 28 EU member states

Data from the Czech Statistical Office (further referred as “CSO”) were essential for our analysis. As it prepares and updates trade balances containing an information about intracommunity supplies and acquisitions between the CR and other European member states.

Table 2 shows the volume of intracommunity supplies and acquisitions of scrap and waste in the years before and after the specific reverse charge (further referred as „SRCH“) was implemented in the CR. The last column includes the balance, i.e. the difference between the supplies and acquisitions. The highlighted line shows the annual period before 1.4. 2011 when the SRCH was implemented.

*Table 2: Intracommunity supplies and acquisitions of waste and scrap from/to the CR*

Period		IC acquisition (in k EUR)	Changes of IC acquisition (in k EUR)	IC supply (in k EUR)	Changes of IC (in k EUR)	Total balance (in k EUR)
1.4.2008	31.3.2009	264,865.03		866,269.96		601,404.93
1.4.2009	31.3.2010	225,260.66	-39,604.37	808,074.12	-58,195.84	582,813.45
1.4.2010	31.3.2011	369,544.03	144,283.37	1,389,834.61	581,760.49	1,020,290.57
1.4.2011	31.3.2012	523,431.38	153,887.35	1,179,711.91	-210,122.70	656,280.53
1.4.2012	31.3.2013	530,258.29	6,826.91	1,144,209.30	-35,502.61	613,951.01
1.4.2013	31.3.2014	443,821.01	-86,437.28	964,244.58	179,964.72	520,423.57
1.4.2014	31.3.2015	424,320.30	-19,500.71	976,927.72	12,683.14	552,607.43
1.4.2015	31.3.2016	363,795.89	-60,524.41	757,615.03	219,312.69	393,819.14
1.4.2016	31.3.2017	435,240.48	71,444.59	885,395.25	127,780.22	450,154.76
1.4.2017	31.3.2018	535,750.86	100,510.38	1,130,100.68	244,705.43	594,349.82

*Source: Czech statistical office*

It is apparent from the table that the intracommunity acquisitions as well as supplies grew in the year before the implementation of the SRCH, i.e. in the period from 1.4. 2010 to 31.3. 2011. However, it should be noted that supplies to the EU increased much more than acquisitions in this particular period. After the implementation of the SRCH, i.e. in the period starting on 1.4. 2011 and ending 31.3. 2012, the development of intracommunity acquisitions and supplies differed. The purchases from the EU grew further, while the sales to the EU decreased significantly.

Table 3 summarizes the development of the trade balance in waste and scrap and the average monthly size of the trade balance. The year 2011, when the SRCH was introduced in the CR, is divided into two parts so that the pre-implementation period is more apparent. The average monthly trade balance in the year 2010 was 73,785.16 thousand EUR. It is interesting that in the three-month period before the implementation of the SRCH (1.1. 2011 to 31.3. 2011), the average monthly balance increased to 103,354.05 thousand EUR. This development could indicate the fraudster’s attempt to make as many carousel frauds as possible before the introduction of the anti-fraud measure.



Table 3: Trade balances in waste and scrap and average monthly size of trade balances

Period		Total balance (in k EUR)	Average monthly balance in that period (in k EUR)
1.1.2008	31.12.2008	663,364.81	55,280.40
1.1.2009	31.12.2009	469,993.00	39,166.08
1.1.2010	31.12.2010	885,421.91	73,785.16
1.1.2011	31.3.2011	310,062.15	103,354.05
1.4.2011	31.12.2011	507,979.19	56,442.13
1.1.2012	31.12.2012	650,711.81	54,225.98
1.1.2013	31.12.2013	495,405.98	41,283.83
1.1.2014	31.12.2014	561,188.72	46,765.73
1.1.2015	31.12.2015	436,933.84	36,411.15
1.1.2016	31.12.2016	390,940.78	32,578.40
1.1.2017	31.12.2017	585,900.42	48,825.03
1.1.2018	30.11.2018	567,274.30	47,272.86

Source: Czech statistical office

For further calculation, we will consider only the volume of intracommunity supplies. The reason for using only intracommunity supplies is our assumption that the data on intracommunity acquisitions are not reported properly. Information about the movement of goods between the CR and other EU member states are gained by the Czech Statistical Office from the Intrastat reports filed by the entrepreneurs. These reports are filed with the Czech Customs Administration by all traders who exceed the threshold of 8 mil. CZK. When computing the trade balances between the CR and individual EU member states, the Czech Statistical Office extrapolates for smaller traders who do not report due to statistical threshold (8 mil. CZK) and compensates for the loss of information due to non-response. We know that the missing trader in carousel fraud does not file the VAT return and remit the VAT to the tax administrator. Therefore, we assume that such missing trader does not file the Intrastat report to the Customs Authorities neither. Therefore, the CSO does not obtain the information on the fraudulent acquisition of goods. This idea is supported also by the UK Office of National Statistics (2016). Therefore, we do not analyse the development of intracommunity acquisitions but focus on the substantial increase of intracommunity supplies in the year before the implementation of the SRCH. It is quite probable that fictitious fraudulent sales from the CR to other EU member states are responsible for the difference between the supplies to the EU in the period prior to the implementation of the SRCH, i.e. 1.4. 2010 to 1.4. 2011, and the year before.

However, we must consider that the data about intracommunity supplies and acquisitions are affected by price changes. For the next calculation, we use the export and import price indices published by the CSO to adjust for the price increases in the waste and scrap trade in the relevant period. We chose the chain indices for waste and scrap that show the year to year

change in prices of the goods explored. Table 4 shows the price increases where not only price developments but also the changes in foreign exchange rates are included.

Table 4: Price indices for waste and scrap in the CR

Period		Price indices (in %)
1.4.2008	31.3.2009	25.45
1.4.2009	31.3.2010	26.01
1.4.2010	31.3.2011	24.92
1.4.2011	31.3.2012	24.77
1.4.2012	31.3.2013	25.27
1.4.2013	31.3.2014	26.44
1.4.2014	31.3.2015	27.58
1.4.2015	31.3.2016	27.14
1.4.2016	31.3.2017	27.03
1.4.2017	31.3.2018	25.91

Source: Czech statistical office

After adjusting the amount of intracommunity supplies by the price indices, we can estimate the size of the fictitious deliveries. Table 5 contains the adjusted intracommunity supplies values and changes in values between years. The highlighted row shows in the last column the size of the fictitious deliveries, which we will use to estimate the VAT fraud in waste and scrap present in the CR before the implementation of the SRCH.

Table 5: Adjusted intracommunity supplies and their year to year changes

Period		Intracommunity supplies (in k EUR)	Changes of Intracommunity supplies (in k EUR)
1.4.2008	31.3.2009	866,269.96	
1.4.2009	31.3.2010	895,869.31	29,599.35
1.4.2010	31.3.2011	1,089,212.07	281,137.95
1.4.2011	31.3.2012	1,115,039.61	-274,795.00
1.4.2012	31.3.2013	1,107,656.63	-72,055.28
1.4.2013	31.3.2014	978,928.51	-165,280.79
1.4.2014	31.3.2015	960,597.57	-3,647.01
1.4.2015	31.3.2016	839,927.97	-136,999.75

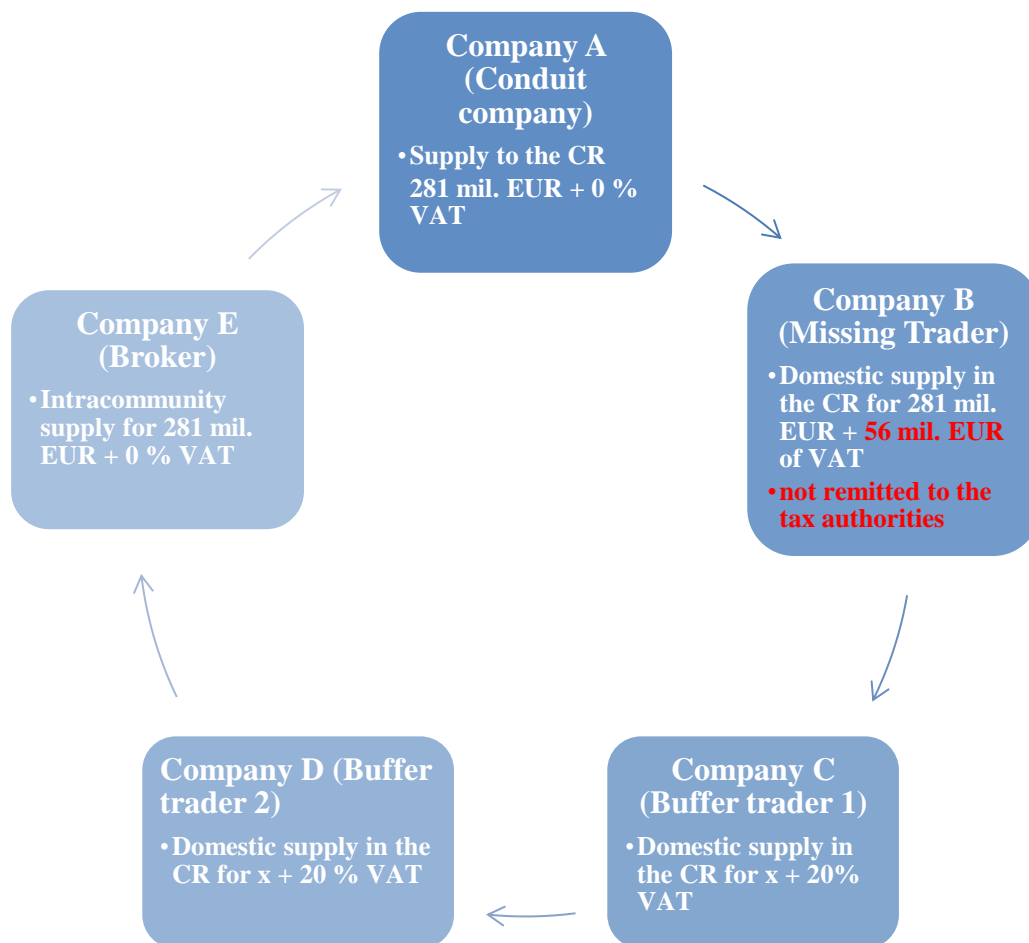
Source: CSO (2019) and own calculation

The size of the fictitious deliveries is estimated to the amount of 281,137.95 k EUR as follows from the previous table. For the calculation of the VAT not collected (and refunded) in the carousel fraud, we use the VAT rate, which was applicable in the year of the implementation of the SRCH. The valid VAT rate in the CR was 20 % from 2010 to 2012. The export prices (the value of intracommunity supplies published by the CSO) are expressed without VAT. Therefore, our estimate of the VAT fraud in waste and scrap is resulting in 56,227.59 k EUR.

## Results

For our calculation, we assumed that the volume of fictitious intracommunity acquisitions was the same as the volume of fictitious intra-community supplies, i.e. the margins of buffer traders summed up to the voluntary reduction of the price by Company A that sells with a loss to attract the buffer trader in the chain. Therefore, we filled in the diagram for the intracommunity acquisition by Company B the volume of fictitious cross-border supplies of approximately 281 mil. EUR.

*Diagram 2: Carousel fraud on waste and scrap in the CR (1.4. 2010 to 31.3. 2011)*



The Diagram shows that missing traders (expressed as Company B) purchased and sold the waste and scrap for approximately 281 mil. EUR in the period from 1.4. 2010 to 31.3. 2011 (a year before the implementation of the SRCH). The VAT rate in the CR was 20 % in the years 2010 and 2011, so the VAT not collected due to carousel fraud but refunded by Czech tax administration could be 20 % of that amount, i.e. approximately 56 mil. EUR. This is of course an estimation performed based on a number of assumptions. However, we believe that our premises regarding the zero or negative margins in carousel fraud are well-founded (Ainsworth, 2006).

## Conclusion

Based on our ex-post calculation, the presumed volume of the carousel fraud on waste and scrap before the implementation of the SRCH in the CR amounted to approximately 56 mil. EUR per year. This estimate is important for tax policy makers as the EU VAT Directive enabling the member states to implement the specific reverse charge in to their tax legislation requires the reports on its actual impact on the public budgets.

Moreover, a reliable estimate of the carousel fraud volume in the whole EU is a significant input to the current discussion on the Definitive VAT system applicable on the cross-border supplies of goods (European Commission, 2017). In the definitive system, the cross-border sales of goods would be taxed by the supplier using the VAT rate of the country of destination. This would unify the VAT collection method of domestic and intracommunity supplies. The current system of exempting the intra community supplies and taxing the intracommunity acquisitions enables, in fact, encourages the VAT fraud as explained above.

The definitive system should solve the problem of carousel fraud as the person acquiring the goods from other EU member state would not have the incentive to go missing and keep the VAT that his customer paid him together with the price for the goods. However, the definitive system has also its flaws (CFE, 2018) and primarily represents a completely new method of taxation of the EU trade. This would require a lot of changes in compliance on the side of the EU businesses trading in goods within the EU.

Although some expert estimates exist on the extent of the carousel fraud as mentioned in the literature review, the numbers differ, and the methods of their calculation are not publicly known. Therefore, the actual knowledge of the volume of the carousel fraud would help to decide whether it is worth to change the whole system because of it. Our method enables the ex-post estimation of the carousel fraud that had existed before the implementation of the specific reverse charge on waste and scrap in the CR. It is based on the analysis of trade balances between the EU member states and could be extended to evaluate the carousel fraud on other goods and other member states.

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# INVESTMENT PORTFOLIO OF UCITS EQUITY FUNDS IN THE REPUBLIC OF CROATIA

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## Abstract

*The aim of this paper is, through structural analysis of investment of 21 open-end investment equity funds categorized into three groups according to geographic structure of the investment, to find what group of equity funds is the most risky and what group generates the highest returns. 21 equity funds are divided into three groups; the first group invests primarily in European market, second in Central and Eastern European market and third group invests in global market. The analysis covered the risk analysis and analysis of investment structure for the period from 2014 to May 2018. Results suggest that funds investing in the European capital market have the lowest average yield. This can be attributed to investing in already developed European countries and sectors like food and trade industry. The riskiest group of funds is a group that operates on the global market because it invests in riskier countries such as the United States, Russia, Brazil, China and India. Group that invests in the Central and Eastern European market has the highest yields because those funds invest the most in the transition countries and their growing industries like tourism.*

**Key words:** UCITS, equity funds, VaR, sectorial structure, Croatia

**JEL classification:** G23, D4

## Introduction

The investment funds market in Croatia is beginning to develop at the beginning of the 21st century. Although investment funds are great alternative to bank savings, they are relatively underdeveloped in the Croatian bank-centric system, accounting only 2.9% of the Croatian financial market.

The crash of financial market in the USA in 2008 and the spread of the crisis to other sectors and countries, investment funds in Croatia have become less popular. Equity funds have quickly become one of the smallest groups of funds, and cash funds become the largest group of funds. Due to distrust in the financial market, the growth of equity funds stagnates. But equity funds are still the most numerous, most diverse, most risky type of funds and bring about the highest expected yield.

Investment funds can be organized either as UCITS (Undertakings for Collective Investment in Transferable Securities) or AIF (Alternative Investment Fund). In the Republic of Croatia, the UCITS fund's operations are regulated by the Law on Open-end Investment Funds with



Public Offering (Narodne novine, 2016), while AIF's operations are regulated by the Act on Alternative Investment Funds (Narodne novine, 2018). Both these laws are made according with European Union regulations. The main difference between these two groups of funds is that UCITS funds are intended for a wide range of investors, while AIF funds are predominantly for investors with more experience and knowledge in the field of investment (so-called professional and qualified investors) (Hanfa, 2018). This paper analyzes UCITS funds.

UCITS fund is an open-end investment fund with a public offering. This means that money is collected on the basis of an open bid for anyone who wants to invest. This can be a small or a professional investor. Small investor in this sense is person who does not possess so much investment knowledge and experience as a professional investor, such as financial institutions. The fund is established through an investment fund management company which must have the approval of the supervisory authority, which is called HANFA in Croatia.

The number of open-end investment funds worldwide reached 114,131 in 2017 (Statista, 2019). The total assets of all investment funds in the world reached 50 trillion USD in the same year (Efama, 2019). The market shares of the largest countries/regions in the world market were the United States (46.3%), Europe (34.0%), Australia (3.9%), China (3.4%), Japan (3.4%), Brazil (3.3%), and Canada (3.2%) (Efama, 2019). Almost half of the global mutual fund assets were concentrated in the United States. The number of UCITS funds in USA was 9,356 funds in 2017, and they were managing assets worth approximately 19 trillion USD (Efama, 2019). In the same year, Croatia had 21 UCITS fund which generated the assets of 18.5 billion Croatian kuna (approximately 3 billion USD) (Hanfa, 2017).

## **Methodology**

The study observes risk, return and sector structure of open-end equity funds in Croatia. Return on investment is viewed annually and risk is interpreted by two indicators: the synthetic risk and reward indicator (SRRI) and Value at Risk (VaR). SRRI is a risk indicator that measures past changes in the fund's share price, ranging from 1 to 7. When the SRRI index ranges from 3 to 6, it is officially considered to be medium risk, but most investors considered risk levels 5 and 6 as high risk. VaR is the risk of value, which is percentage of asset that is at risk.

The observed funds are divided into three groups of funds; funds investing in the European market, funds investing in the markets of Central and Eastern Europe, and funds investing in the global market. The study used secondary data sources; monthly reports of 21 open-end equity funds published at Hrportfolio web site and publications and statistical data published by HANFA. The analysis covers the data from 2014 to May 31st 2018 and uses it to draw conclusions on the risk and structure of groups of funds.

The data for this analysis have been taken from the regulatory agency HANFA (Hanfa, 2019 and Hanfa 2014) and from the web portal hrportfolio.hr (<https://hrportfolio.hr>). The index data in this paper have been analyzed using descriptive statistical methods (Holmes, Illowsky, Dean, 2017; Gogala, 2001; Šošić, 2011). The main variables analyzed in this paper are returns of investment funds, shares of invested assets, SRRI and VaR.

The analysis in this paper is divided into three parts. The criterion for grouping investment funds is the geographical area of the dominant investments of a fund. According to that, the analysis is conducted for three groups of funds:

1. Funds investing in Central and Eastern European market;
2. Funds investing in European market;
3. Funds investing in global market.

For each group of investment funds, we analyze details for one fund, which should serve as the typical representative of a group. After that, in the second part we analyze the average risk, investment and return. The aim of this paper is to detect the differences and similarities between these three groups of UCITS funds. We expect some differences in SRRI, VaR and yield, which could be generated from investing in different areas and in different industries. The portfolio of investment should show the differences (or similarities) between chosen variables.

## **Literature overview**

Investment funds have been extremely popular in the scientific literature over the last 15 years. Besides papers that are dealing with investment funds in general, there are much less researches orientated to the specific group of investment funds. In this literature overview we present the most current literature in the chronological order, but divided into two parts. The first part are researches on the global level or in the foreign countries. The second part are researches focusing on Croatia.

The first part starts with the year 2013, as we wanted to avoid older researches. Daniel and Lhabitant (2013) have analyzed UCITS in Europe. Undertakings for Collective Investments in Transferable Securities (UCITS) is a European regulatory regime originally created to standardize mutual fund structures in Europe and facilitate their cross-border distribution once they have been authorized in one member state of the European Union. Several funds of hedge funds have rolled out investment vehicles under the UCITS framework - the so-called Newcits - and now openly market them to retail investors. Authors review the various challenges and restrictions faced by funds of hedge funds (FoHFs) operating under the UCITS framework. They show that UCITS restrictions and additional compliance costs are expected to have a large impact on performance and restrict the ability to exploit longer-dated market dislocations. This might explain the relatively low number of UCITS FoHFs and their difficulties in attracting sizeable investor capital.

Busack, Drobetz and Tille (2017) have studied the performance persistence of alternative UCITS funds, which are a hybrid between mutual funds and hedge funds. Persistence is gauged by alternative measures of performance and risk. Based on contingency tables, performance persists for up to 2 years following ranking. However, persistence is stronger in the short run, and ranked portfolio tests indicate that investors can benefit from persistence for only up to 1 year. The evidence for persistence in risk is ambiguous. Authors have linked fund characteristics to performance persistence and found that offshore hedge fund experience enhances persistence. These results are robust against survivorship bias and other potential database biases.

Kutan, Lin, Sun and Yu (2018) have compared different fund performance measures to examine which performance measures can generate risk-adjusted returns between high ranked

and low ranked China's actively managed open-end equity mutual funds. The results show that only the six-factor (five factors plus a momentum factor) alpha as the performance measure meets the criteria. Separated by the six-factor alpha, better performing funds have a larger asset under management, a better past 6-month cumulative return, a better stock picking ability, and a higher percentage of hybrid funds. Through the sample period from July 2004 to December 2015, the highest ranked quintile funds generate a monthly risk-adjusted return of 0.24% more than the lowest ranked quintile funds and the six-factor alpha reliably selects a better fund portfolio in both bear and bull markets on the basis of both fund return and holding data. Furthermore, the results from fund trading data show that funds with the highest six-factor alpha rank demonstrate a better trading skill in bear markets, suggesting that those better performing funds exhibit their market timing and stock picking abilities when investors need them most.

Sallum, Gomes and Machado (2018) have analyzed the performance of 20 multimarket investment funds in the Brazilian market from 2015 to 2017 in order to categorize them into 4 performance levels. The cumulative rate and the funds' volatility are calculated in 2 periods among the total periods studied, in order to generate a mutual degree of influence among the funds of each group. Next, the WINGS method is applied, which splits each group into 2 subgroups, generating the 4 levels of classification. The use of the methodology classified 5 funds in each subgroup. The data analysis compared the obtained classification with the classification established by the cumulative rate of the funds throughout the entire period and presented 4 ways to prioritize the decision for the funds ranked higher. These 4 ways of prioritizing the decision aim at assisting investors with different points of view.

Agarwal and Pradhan (2018) have analyzed investment fund performance in India. In contrast to developed countries, Indian capital markets do not exhibit strong efficiency and therefore it appears possible that fund managers beat the benchmarks. The paper examines the existence of superior performance of open-end equity mutual funds in India with various models including traditional CAPM-based as well as recent Fama-French-Carhart (FFC)-factors-based models. Authors have found evidence of stock picking and timing abilities in Indian fund managers.

After this first part of the literature overview, we will now focus on the literature connected to Croatia. Morić Milovanović and Galetić (2006) have analyzed investment funds in Croatia, with a particular emphasis on open-end investment funds. The analysis covers the perception of the funds, the trends in total assets and in average yields. The degree of concentration of open-end investment funds is shown with statistical measures of concentration (the Gini Coefficient, the Lorenz Curve and concentration ratios). All these indicators show that the concentration on Croatian open-end investment fund market is moderate to strong. The greatest yields are obtained by the equity funds, but these are also the most risky.

Percevic, Hladika, and Micin (2016) have analyzed close-end investment funds in Croatia. Closed-end investment funds are important institutional investors in the developed capital markets, while their significance is smaller in the transition countries where trade in the capital markets is not that intense. In Croatia there are three closed-ended investment funds on the Zagreb Stock Exchange, for which in the period of 5 years (2010-2014) is observed a correlation between the two variables: earnings per share and the market share price. The assumption is that the market share price is positively correlated with the business results achieved by the company, because generally movement of the market share price is

accompanied by the profitability of the company. That is because the investors while making investment decision about buying shares are observing the business results of a company as well as potential earnings per share (EPS). Therefore, there is the assumption that there is a positive correlation between earnings per share, which is one of the indicators of investment companies based on the business performance of the company and the market share price. Earnings per share is one of the most important indicators for the investors on the capital market, whose methodology for calculating is regulated according to International Accounting Standard 33 Earnings per share. The aim is to prove evidence that there is a positive correlation between earnings per share and the market share price for each of the three closed-ended investment funds in the period observed. In order to achieve the aim of the paper, secondary data obtained from the Zagreb Stock Exchange d. d. were used. Those data were analysed using descriptive and inferential statistics methods. Results of the research conducted showed that there is a positive correlation between earnings per share and the market share price in closed-ended investment funds in the period of 2010-2014 in Croatia.

Calopa and Kokotec (2017) have made the performance analysis of money market UCITS funds which represent the dominant type of open-end investment funds with a public offering, in terms of net asset value. Referring to the period from the January 1, 2014 to December 31, 2016, this research was carried out on a sample of 17 selected money market UCITS funds in the Republic of Croatia, which were treated separately according to the few key data, like investment funds' net assets, number of investment funds, and investment structure. Management performance was analyzed using descriptive analysis, but also by means of risk-adjusted return measures using Sharpe and Sortino ratios.

Ćurković and Krišto (2017) have analyzed the performance of the UCITS investment funds in Croatia with the aim to detect relatively homogeneous groups among the UCITS funds based on its performance. The analysis includes 55 UCITS, in the period from the beginning of 2011 until the end of 2014, and it was conducted on daily data of share prices, available from Bloomberg terminal. Analysis was performed separately within the groups of different investment fund by investment strategy. They concluded that funds with higher values of net assets were more successful compared to the funds with below-average asset values. Also, funds with below-average values of net assets were more volatile. At the same time, funds run by foreign own management companies were more successful by the absolute performance measures, compared to funds run by management companies with domestic ownership. On the other hand, those funds were more volatile.

## **Group of funds investing in Central and Eastern European market**

This group of funds invests in Central and Eastern Europe market in countries like Germany, Austria, Hungary, Croatia, Poland, Slovenia, the Czech Republic, Bosnia and Herzegovina, Serbia, Turkey, Greece and Russia.

### ***Fund ZB Aktiv***

ZB Aktiv is an open-end investment fund founded in 2006 by the investment fund management company ZB Invest Ltd that manages other 14 funds in Croatia. ZB Aktiv is also the biggest equity fund in Croatia.

The Fund belongs to a group of medium-risk funds with an average SRRI index 4 and a VaR of 3.47%.

*Table 1: ZB Aktiv fund returns from 2014 to 2018*

Year	2014	2015	2016	2017	2018
ZB Aktiv Fund Returns	4.97%	6.47%	12.42%	-10.00%	5.14%

*Source: hrportfolio.hr*

Returns were positive until 2017 when returns were negative because of the Agrokor case. In 2018 returns are recovering and recording 5.14%.

The fund mostly invests into consumer goods, optional and basic with total share of 38.51%, financial sector and cash with a share of 24.21%. Other major categories are “other”, energy with a share of 10.83%, industrial products and raw materials.

The currency structure of assets is made up of the Croatian kuna with a share of 44%, euro with a share of 20.30%, Serbian dinar (16%) and other currencies. As an equity fund, it invests primarily in shares of companies and other funds and 11.26% in cash and receivables.

*Table 2: Top positions in the fund ZB Aktiv from 2015 to 2018*

Type of property	Issuer	Share of invested property
Stocks	ADRIS PLC	8.27%
Stocks	JAMNICA PLC	5.79%
Stocks	MESSER TEHNOGAS A.D. BEOGRAD	4.99%
Stocks	GORENJE PLC	4.93%
Stocks	PETROL PLC	4.33%
Stocks	NIS A.D. NOVI SAD	3.61%
Stocks	LEDO PLC	2.93%
Stocks	ARENA HOSPITALITY GROUP PLC	2.48%
Stocks	KRKA PLC	2.16%
Stocks	LUKA KOPER	1.97%
Stocks	KOMERCIJALNA BANKA AD BEOGRAD	1.92%
Stocks	VALAMAR RIVIERA PLC	1.54%
Stocks	SOCIETATEA NATIONALA DE GAZE NATURALE ROMGAZ SA	1.29%
Stocks	KONČAR - ELEKTROINDUSTRIJA PLC	1.08%
Stocks	PODRAVKA PLC	0.77%
Stocks	PIVOVARNA LAŠKO	0.73%
Stocks	KAZMUNAIGAS EXPLORATION PRODUCTION	0.62%

*Source: Author's calculation using data from Hrportfolio*

In observed period the largest position in the fund is held by the Adris group, even 8.27% of the assets. The second biggest position are shares of Jamnica, but in the last two years ZB Aktiv no longer invests in Jamnica due to the large drop in value due to the Agrokor case. Significant portion have shares of Serbian manufacturer Messer Tehnogas whose price recorded a great price increase in the period from 2014 to 2017, shares of Slovenian

manufacturer Gorenje whose prices recorded a strong growth in 2018. The large fall in returns in 2017 was associated with a significant investment in companies that are related to Agrokor.

***Average risk, investment and return of funds investing in the Central and Eastern European market***

Group consist of 9 funds and its total assets are 964,404,719.08 kuna. Although funds in the group are diverse, they operate on specific Central and Eastern European market which makes the group geographically slightly homogeneous, unlike other two groups of funds.

This is a group of medium-risk funds with the average SRRI index of 4.33 and average VaR of 3.21%. Variation coefficient of average SRRI index is 10.88%, which means that the average risk of the group is representative. The average VaR has a variation coefficient of 30.25% meaning that the arithmetic mean is non-representative. There was a bigger deviation of the arithmetic mean because of big differences in the VaR risk indicator among the funds in the group.

*Table 3: Average risk of the group investing in the Central and Eastern European market*

<b>Fund</b>	<b>Average SRRI</b>	<b>VaR (2018)</b>
(1) KD Victoria	5	4.12%
(2) Capital Breeder	5	2.21%
(3) PBZ Equity Fond	4	2.69%
(4) ZB Aktiv	4	3.74%
(5) InterCapital SEE Equity	4	2.53%
(6) OTP Indeksni	4	4.43%
(7) OTP Meridian 20	4	2.30%
(8) Allianz Equity	4	2.17%
(9) A1	5	4.71%
<b>Group average</b>	<b>4.333333333</b>	<b>3.21%</b>
Standard deviation	0.471404521	0.009712471
Variation coefficient	10.88%	30.25%

*Source: Author's calculation using data from Hrportfolio*

The least risky fund in the group is Allianz Equity, because it invests 13% in much safer government bonds and 18% in the safest form of property, cash. The most risky fund of the group is A1.

*Table 4: Average group returns from 2014 to 2018*

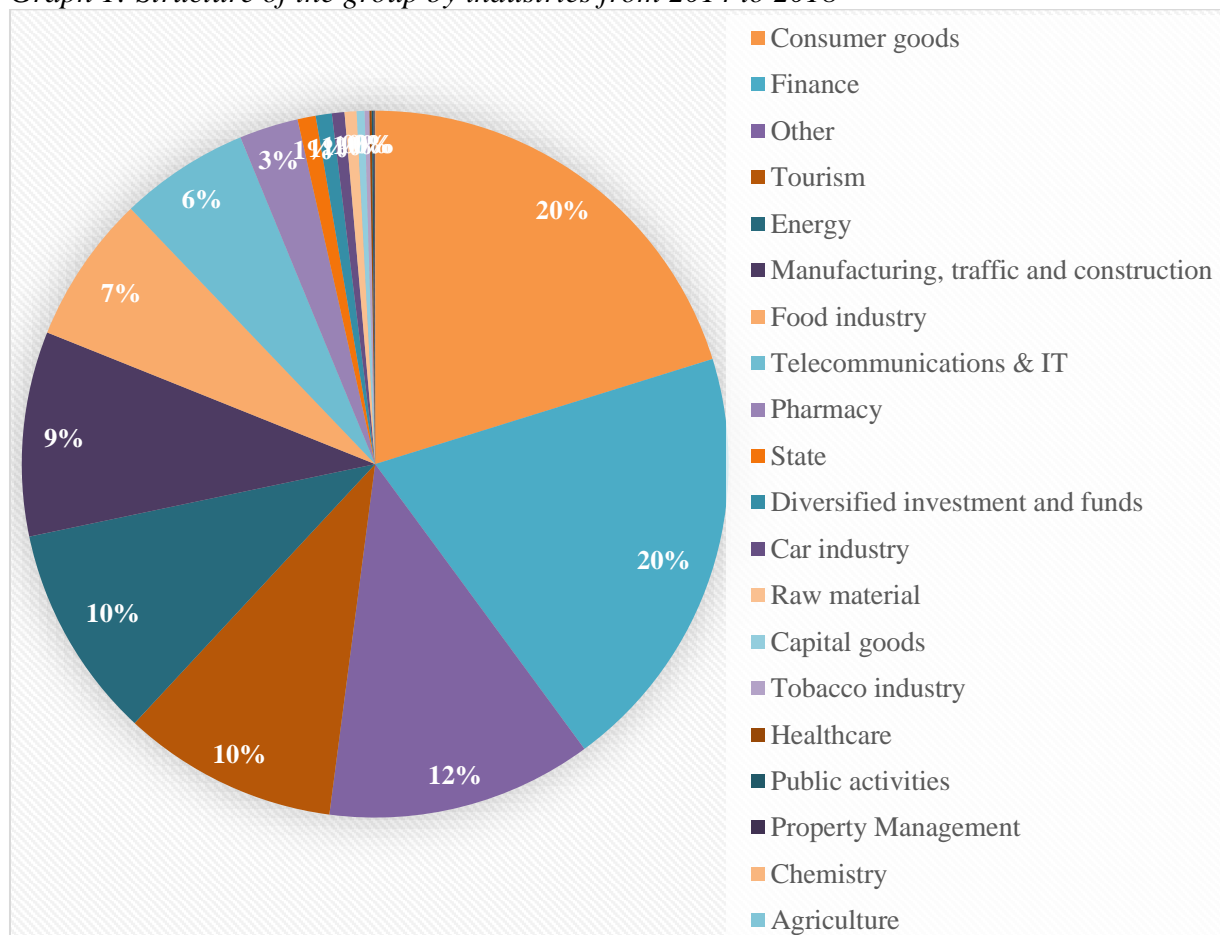
<b>CALCULATION OF THE AVERAGE RETURN OF THE GROUP</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>The arithmetic mean</b>
(1) KD Victoria	25.12%	-6.09%	24.73%	-14.06%	6.55%	7.25%
(2) Capital Breeder	27.48%	21.93%	7.51%	2.67%	-1.49%	11.62%
(3) PBZ Equity Fond	9.26%	3.66%	14.03%	-1.29%	4.48%	6.03%
(4) ZB Aktiv	4.97%	6.47%	12.42%	-10.00%	5.14%	3.80%

(5) InterCapital SEE Equity	27.09%	8.97%	13.22%	7.71%	1.76%	11.75%
(6) OTP Indeksni	1.47%	2.22%	19.95%	-7.01%	1.14%	3.55%
(7) OTP Meridian 20	1.43%	4.03%	7.66%	5.70%	-0.13%	3.74%
(8) Allianz Equity	13.50%	6.84%	17.03%	-0.50%	2.28%	7.83%
(9) A1	16.14%	6.79%	19.56%	-21.22%	-8.25%	2.60%
<b>Group average</b>	<b>14.05%</b>	<b>6.09%</b>	<b>15.12%</b>	<b>-4.22%</b>	<b>1.28%</b>	<b>6.46%</b>
Standard deviation	0.100030	0.069432	0.054231	0.090532	0.041452	
Variation coefficient	71.19%	113.99%	35.86%	-214.42%	324.97%	

Source: Author's calculation using data from Hrportfolio

Table 4 shows the average returns of a group through an arithmetic mean. An estimated return of the group is 6.46%. It's possible to notice that returns of most of the funds are moving in the same direction, ie most of the funds record positive returns up until 2017, when most of funds record negative returns. Although the group is diverse, these funds mainly invest in a similar market and a lot of them were exposed to Agrokor which explains drop of returns for most funds in 2017.

Graph 1: Structure of the group by industries from 2014 to 2018



Source: Author's calculation using data from Hrportfolio

A total of 20% of assets are invested in consumer goods and 19.72% in the financial sector. 9% of the assets are invested in each of the following industries: tourism, energy and manufacturing, construction and transport. According to the sectoral structure, this group of

funds is more diversified than the group of funds investing in the European market, which can explain the higher returns and the lower risk of this group.

The whole group invested 88.83% of the assets in shares of companies, 8.61% in the safest form of cash and receivables, 1.42% in shares of funds and 1.15% in bonds. The currencies most invested by this group are Croatian kuna (56%), euro (21.35%), Serbian dinar (7.18%), Romanian lei (8.24%), US dollar and other currencies.

## Group of funds investing in European market - analysis of fund KD Europa and group analysis

This group of funds invest its assets in EU countries and European countries outside the EU like UK, Switzerland, Russia, Turkey, Bosnia and Herzegovina. This group primarily invests in countries inside EU, unlike the category of funds investing primarily in Central and Eastern Europe.

### *Fund KD Europa*

KD Europa is an open-end investment fund founded in 2004. Since 2016 fund is managed by investment fund management company KD Locusta Fonds. KD Europa is considered a fund with a higher level of risk and yield. VaR in 2018 is 4.16%. The average SRRI for the period from 2016 to 2018 is 6.

*Table 5: KD Europe fund returns from 2015 to 2018*

Year	2015	2016	2017	2018
KD Europa Fund Returns	-7.25%	4.32%	8.59%	-0.28%

*Source: hrportfolio.hr*

In Table 5 are returns of KD Europa fund. In 2015, the fund records a drop of 7.25% but returns are recovering in following years. In May of 2018 the fund is recording a drop again.

Sectorial structure of the fund suggests a variety of investments, of which the largest group makes the category “other” with 29% of the assets. The largest sector is finance with 18.1%, then 15.83% energy, telecommunications and IT and pharmaceuticals. The rest of the assets are invested in auto industry, tobacco industry, nutrition, consumer products, healthcare, manufacturing, communal services and other diversified investments.

The largest share in the structure of the assets is invested in shares of companies and other funds (6.66%), cash and receivables (5.61%) and bonds (1.91%). The currency structure of the fund consists of 54.55% of assets in euro, 22.19% in British pound, 9.23% Croatian kuna and other currencies such as Swiss franc, US dollar, Serbian dinar, Norwegian crown and Danish crown.

*Table 6: Top positions in the fund KD Europe from 2015 to 2018*

Type of property	Issuer	Share of invested property
Stocks	SAP GY-SAP AG	4.56%
Stocks	ALLIANZ	4.45%



Stocks	ADRIIS GRUPA P.L.C.	4.43%
Stocks	NOVARTIS	3.86%
Stocks	BNP PARIBAS S.A.	3.59%
Stocks	ROYAL DUTCH SHELL PLC	3.54%
Stocks	BMW AKTIENGESELLSCHAFT	3.48%
Stocks	DAIMLER AG	3.44%
Stocks	BP PLC	3.37%
Stocks	INFINEON AG	3.09%
Stocks	WIRECARD AG	2.67%
Stocks	TOTAL SA	2.22%
Stocks	NESTLE SA	1.71%
Stocks	ANHEUSER-BUSCH INBEV NV	1.34%
Stocks	BAYER AG-REG	1.18%
Stocks	ROCHE HOLDING AG-GENUSSCH	1.18%
Stocks	GLAXOSMITHKLINE PLC	1.16%
Stocks	SIEMENS AG	1.11%
Stocks	HRK-PBZ PLC	1.03%

*Source: Author's calculation using data from Hrportfolio*

The top position in fund portfolio are shares of German software manufacturer SAP AG, whose price have been growing in the observed period. Other top positions are shares of German financial company Allianz whose prices have been increasing over the last three years, shares of Adris group whose prices are in decline since the middle of 2017, shares of Swiss pharmaceutical company Novartis whose prices have been fluctuating a lot with lowest point in 2016 and slight recovery in 2017 and shares of British group BNP Paribas whose price rises in mid-2016.

#### ***Average risk, investment and return of funds investing in European market***

The group consists of three funds and its total assets are 193,112,319.79 kuna. The largest fund of the group is Erste Adriatic Equity and the smallest is KD Europe.

The average risk profile of the group is calculated as the arithmetical mean of the average SRRI index and VaR of each individual fund. Then, the coefficient of variation determines the representativeness of the calculated averages. The average SRRI index of the group is 5.467 and an average VaR is 4.69%, which puts them in a group of highly risky funds.

*Table 7: Average risk of the group investing in European market*

<b>Fund</b>	<b>Average SRRI</b>	<b>VaR (2018)</b>
(1) KD Europa	6	4.16%
(2) Erste Adriatic Equity	4.4	4.58%
(3) KD Nova Europa	6	5.32%
<b>Group average</b>	<b>5.466666667</b>	<b>4.69%</b>
Standard deviation	0.754247233	0.004795368

Variation coefficient	13.80%	10.23%
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*Source: Author's calculation using data from Hrportfolio*

The coefficient of variation shows whether the arithmetic mean of the sample or population is representative. If the coefficient is higher than 30%, the arithmetic mean is considered non-representative. The coefficient of variation of the average SRRI is 13.80% meaning that the average of the group is representative just as the average VaR is, ie there is no big difference in risks of individual funds within the group. The most risky fund is KD Nova Europa.

The Table 8 shows the average returns of the group through an arithmetic mean, which is, according to the indicators, non-representative just as a geometric medium is non-representative. The average return of a group is counted as the geometric mean of the average group return for each year.

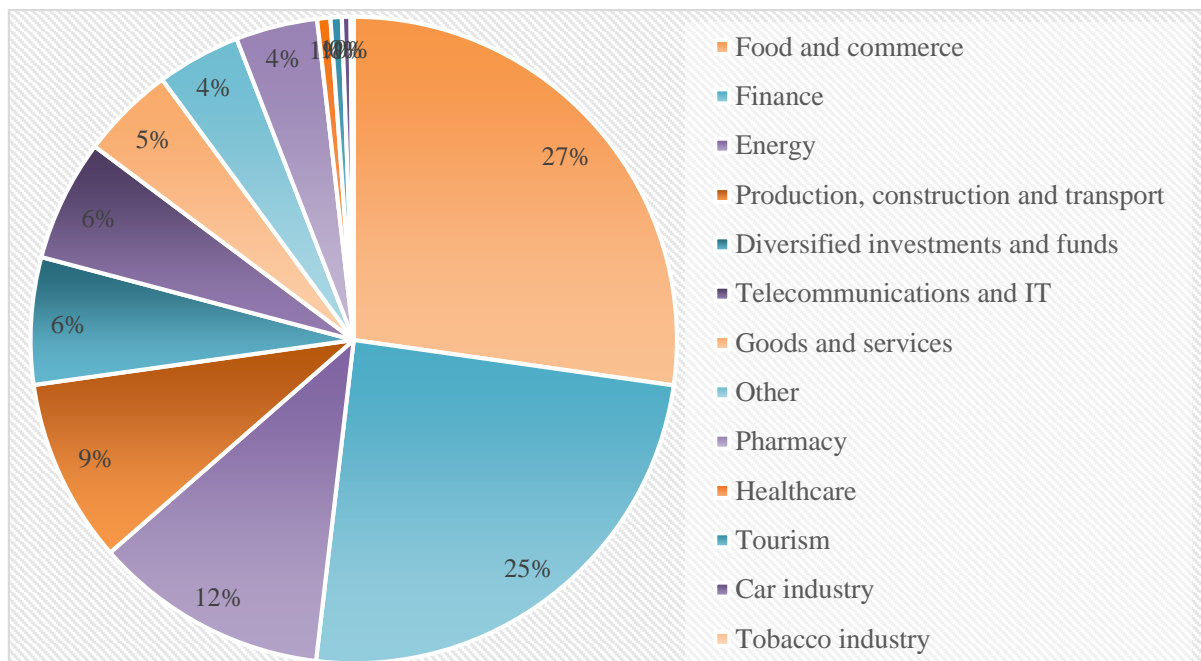
*Table 8: Average group returns from 2014 to 2018*

<b>CALCULATION OF THE AVERAGE RETURN OF THE GROUP</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>The geometric mean</b>
(1) KD Europa	5.03%	-7.25%	4.32%	8.59%	-0.28%	-
(2) KD Nova Europa	-15.52%	-8.34%	22.92%	2.67%	-5.41%	-
(3) Erste Adriatic Equity	5.03%	6.13%	19.52%	-22.82%	-0.39%	-
<b>Group average</b>	<b>-1.82%</b>	<b>-3.15%</b>	<b>15.59%</b>	<b>-3.85%</b>	<b>-2.03%</b>	<b>3.71%</b>
Standard deviation	0.096874	0.065794	0.080868	0.136275	0.023928	
Variation coefficient	-532.27%	-208.65%	51.88%	-353.65%	-118.07%	

*Source: Author's calculation using data from Hrportfolio*

Due to large deviations in returns it is difficult to determine the average return of the whole group, so the average of the group is calculated as geometric mean, ie an average return of the group is 3.71%. All three funds record high positive returns in 2016 and losses in 2018. The most risky fund, KD Nova Europa, is also the most volatile when it comes to its yearly returns.

*Graph 2: Structure of the group by industries from 2014 to 2018*



Source: Author's calculation using data from Hrportfolio

On average, the entire group invested 27.24% of assets in the food industry and trade. A total of 25% of assets were invested in the financial sector, 10% in energy, 9.20% in manufacturing, construction and real estate, while 6% were invested in telecommunications and IT.

## Group of funds investing in global market - analysis of fund InterCapital Global Equity and group analysis

The group of funds investing in the global market includes 9 funds investing in the US market and / or the Asian and European market. The group also includes funds investing in BRIC countries, such as Brazil, Russia, India and China.

### *Fund InterCapital Global Equity*

The InterCapital Global Equity Fund was found in 2002 as Addico Growth. Since 2017, the fund is managed by the InterCapital Asset Management Ltd and it has changed the fund's name to InterCapital Global Equity.

According to the average SRRI index (5), the fund belongs to the category of high risk funds. It's VaR is 3.25%. In the observed period, fund yields are positive, but they are decreasing (table 9).

Table 11: InterCapital Global Equity fund returns from 2014 to 2018

Year	2014	2015	2016	2017	2018
InterCapital Global Equity fund returns	15,28%	10,00%	5,25%	7,41%	3,26%

Source: Hrportfolio.hr

50% of assets were invested in the US market, 18% in the Croatian market, 9% on the British market, and 23.22% of other countries. The fund has invested 30% of the assets in basic and other consumer products, 26% of the assets in the financial industry, 10.34% in the IT sector and 8.73% in other funds. The other sectors are: manufacturing, cash and other sectors.

The largest share of assets is in the U.S. dollar (41.77%), euro (29.85%) and British pounds (11%). Other currencies in the structure of the property are Croatian kuna, Swiss franc, Danish crowns and other currencies. 83.53% of the property was invested in stocks, 6.8% in funds, and the rest of the assets in cash and receivables, state securities and bonds.

*Table 12: Top positions in the fund InterCapital Global Equity from 2015 to 2018*

Type of property	Issuer	Share of invested property
Stocks	BERKSHIRE HATHAWAY INC.	5.79%
Stocks	ADMIRAL GROUP PLC	5.53%
Cash	MONEY IN THE ACCOUNT	4.79%
Fund shares	ETF VANGUARD FTSE EMERGING MKTS	3.36%
Stocks	MASTERCARD INC-CLASS A	3.20%
Stocks	VISA INC-CLASS A	3.05%
Stocks	AMERICAN EXPRESS CO	2.91%
Stocks	DIAGEO PLC	2.78%
Stocks	NESTLE SA	2.23%
Fund shares	iShares MSCI EM UCITS ETF	2.22%
Stocks	PROCTER & GAMBLE	1.61%
Fund shares	JP MORGAN CHASE & CO. COMMON ST	0.95%
Stocks	PANDORA A/S	0.75%
Stocks	BOOKING HOLDINGS INC	0.72%
Stocks	MOODY'S CORP	0.71%
Stocks	VISCOFAN SA	0.71%
Stocks	L BRANDS INC	0.68%
Stocks	AMLIN PLC	0.40%
Stocks	GENERAL ELECTRIC CO	0.35%

*Source: Author's calculation using data from Hrportfolio*

The largest position in the fund is held by the shares of the American conglomerate Berkshire Hathaway, whose price has been steadily increasing in the last 5 years with the top price in 2018. In second place are shares of the British Insurance Group Admiral whose stock price varies considerably in the observed period. The third top position is the cash in the bank account (the name of the bank is not available in reports). A significant proportion of the total property was invested in the shares of fund Vanguard FTSE Emerging Markets that recorded the growth of the stock price of 2016 years. 3.20% of the stakes were invested in the stocks of MasterCard whose price rose 4 times since 2014. Such portfolio has enabled the achievement of positive returns since 2011.

#### *Average risk, investment and yields of funds investing in global market*

The group consists of 9 funds and its total assets are 577,619,537.15 kuna making it the second biggest group (after the group investing in Central and Easter European market). According to sectorial and geographical structure, this is the most diverse group.

Funds investing in global market have an average SRRI index 5.467 and the average VaR of 4.89%, which puts them in a group of high-risk funds. The coefficient of variation of the average SRRI is 12.32%, which means that the group average is representative. The average VaR has a coefficient of variation of 26.09% which confirms the representativeness of the average VaR.

*Table 13: Average risk of the group*

<b>Fund</b>	<b>Average SRRI</b>	<b>VaR (2018)</b>
(1) InterCapital Global Equity	5	3.25%
(2) ZB Trend	5	4.30%
(3) KD Prvi izbor	6	4.55%
(4) ZB euroaktiv	5.2	4.55%
(5) HPB dionički	4	2.78%
(6) KD BRIC	6	6.33%
(7) KD Energija	6	6.39%
(8) ZB BRIC+	6	5.51%
(9) USA Blue Chip	6	6.39%
<b>Group average</b>	<b>5.466666667</b>	<b>4.89%</b>
Standard deviation	0.673300329	0.012770984
Coefficient of variation	12.32%	26.09%

*Source: Author's calculation using data from Hrportfolio*

The least risky fund is HPB dionički that predominantly invests on a less risky European market, and the most risky funds in the group are KD Energija that predominantly invests in the oil industry and USA Blue Chip fund that predominantly invests in the U.S. market.

In table 12 the average group returns are calculated for each year as well as the deviation from the arithmetic mean. The coefficient of variation confirms the non-representativeness of the average returns of the group for each year individually. Highest returns were achieved in 2016 after 2015 when almost half of the funds recorded losses. Based on these average yields, the average return of the entire group is calculated as 4.49%.

*Table 14: The average return of the group from 2014 to 2018*

<b>CALCULATION OF THE AVERAGE RETURN OF THE GROUP</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>The arithmetic mean</b>
(1) InterCapital Global Equity	15.28%	10.00%	5.25%	7.41%	3.26%	8.24%
(2) ZB trend	-3.22%	-8.71%	-0.42%	23.63%	3.98%	3.05%
(3) KD Prvi izbor	12.86%	3.03%	6.65%	3.35%	2.07%	5.59%
(4) ZB euroaktiv	-1.00%	7.91%	-0.72%	5.81%	-0.36%	2.33%
(5) HPB dionički	9.16%	8.21%	14.21%	-2.52%	3.86%	6.58%

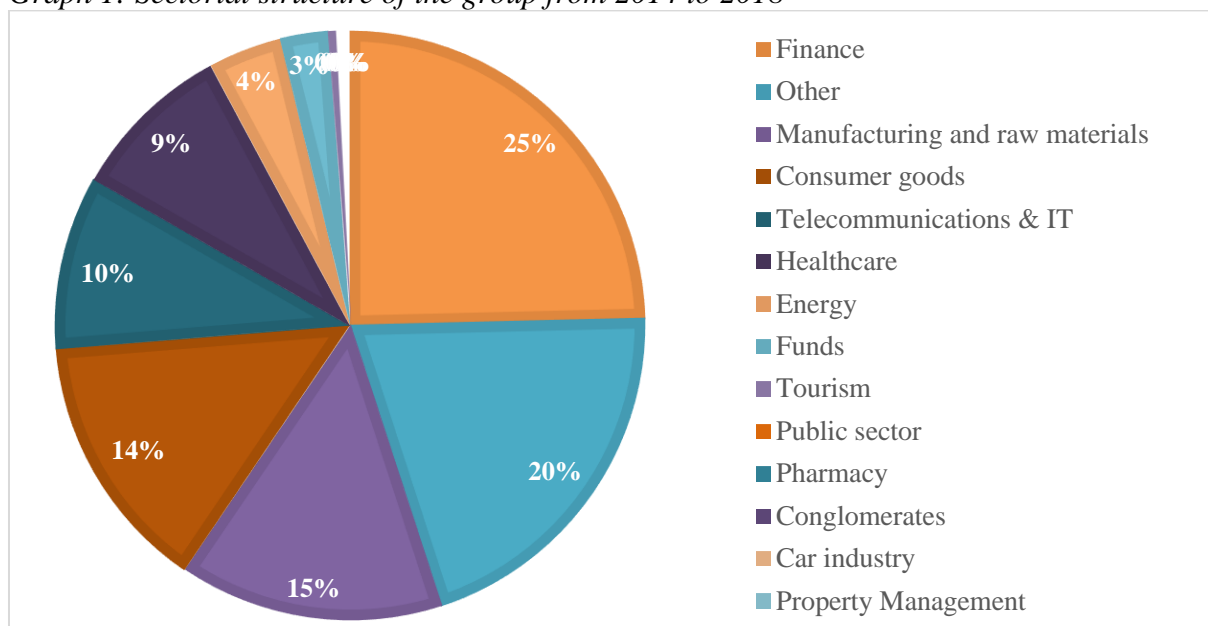
(6) KD BRIC	4.88%	-5.22%	16.00%	17.77%	-5.01%	5.68%
(7) KD Energija	-6.13%	-13.66%	20.39%	-1.89%	4.59%	0.66%
(8) ZB BRIC+	-0.55%	-4.20%	16.19%	20.62%	-4.00%	5.61%
(9) USA Blue Chip	-	-	-	4.88%	0.35%	2.62%
<b>Group average</b>	<b>3.91%</b>	<b>-0.33%</b>	<b>9.69%</b>	<b>8.78%</b>	<b>0.97%</b>	<b>4.49%</b>
Standard deviation	0.073613	0.082585	0.075542	0.090582	0.033264	
Coefficient of variation	188.27%	-2502.59%	77.93%	103.12%	342.54%	

Source: Author's calculation using data from Hrportfolio

As a much diversified group of funds, the geographical structure of the group is very variegated. The whole group invested 33.95% of the assets in EU market and 17.83% in the U.S. market. Other countries that have a significant share are Switzerland, China, the UK and the category globally, Japan, Russia and Brazil.

37.15% of total assets were expressed in euro, 27% in U.S. dollar, 9.78% in British pounds and 9.30% in Swiss franc. Other larger stakes in the structure are Croatian kuna, Hong Kong dollar, Japanese yen, Swedish crown, Danish crown, Macedonian denar and Serbian dinar.

Graph 1: Sectorial structure of the group from 2014 to 2018



Source: Author's calculation using data from Hrportfolio

A group of funds investing the global capital markets invest the most in the finance sector, 24.62%. For more US market-oriented funds, the US financial industry is a developed and relatively stable sector for investment. For funds investing in BRIC countries, this sector is rapidly growing. Manufacturing and raw materials sectors (14.50%) and the consumer goods sector (14.23%) have a large share in the structure of the group. The group is investing heavily in telecommunications and IT industry, healthcare and energy. A significant item in the group investment structure has a category "other".

## Comparison of risk, returns and investment structure of three groups of funds

Table 13 contains the average SRRI index and VaR risk indicators as well as the average returns. According to the data it can be concluded that the group of funds investing in the European market and the group of funds investing in the global market have the same average SRRI index, but the group of funds investing in the global market has a higher average VaR which makes this group the most risky. Interestingly, the least risky group of funds had the highest average returns in the observed period.

*Table 15: Average risk and return of three groups of funds*

Comparison of risks and yields	SRRI index	VaR	Yield of a group
I. European market	5.466666667	4.69%	3.71%
II. Central and Eastern European market	4.333333333	3.21%	6.46%
III. Global market	5.466666667	4.89%	4.49%

*Source: Author's calculation using data from Hrportfolio*

Graph 4 shows average group returns for each year. It can be noticed that the trend of returns of the group investing in the global market in the last two years is opposite from the returns of funds investing in the European market and the markets of Central and Eastern Europe. The group investing in Central and Eastern Europe have the same trend of yields in 2016 and 2017 as well as the trend of returns of the group of funds investing in the European market.

*Graph 2: Average yields of three groups of funds from 2014 to 2018*

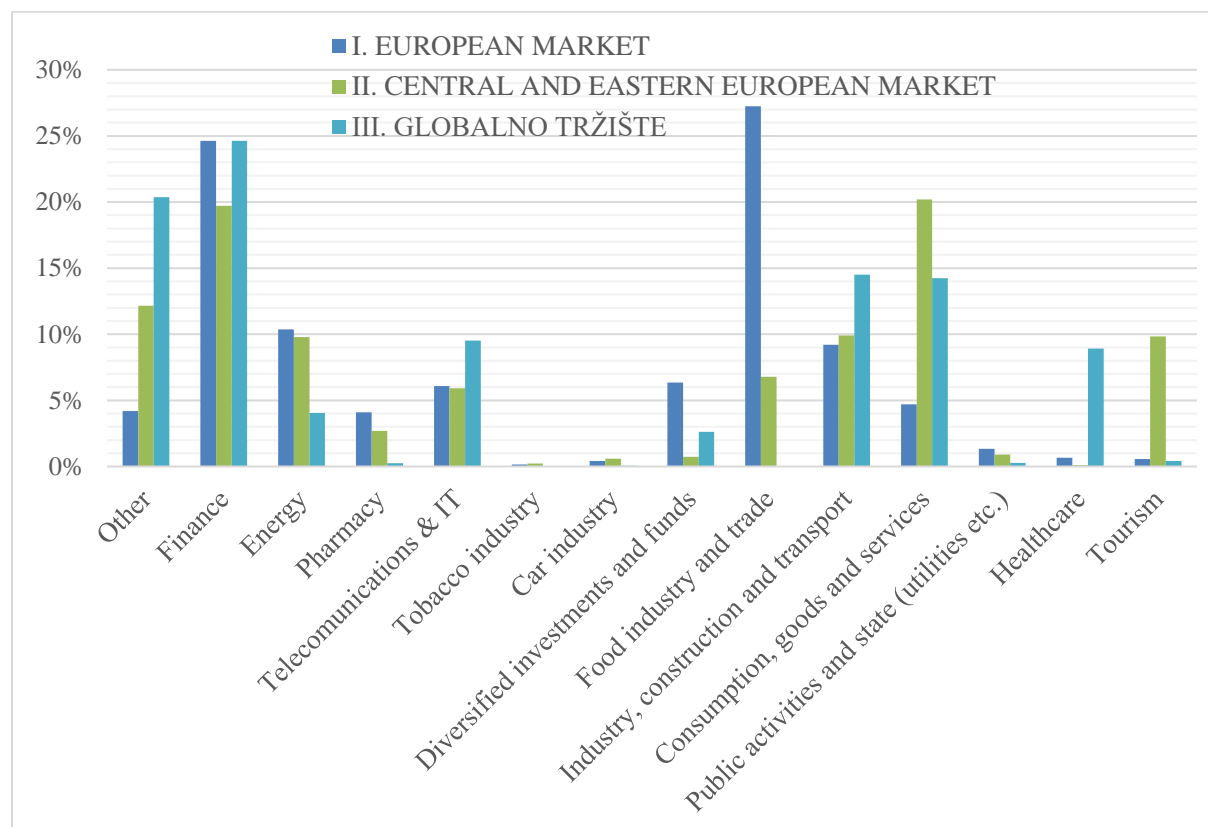


*Source: Author's calculation using data from Hrportfolio*

Yields and risk of three groups are linked to the industries and countries they invest. From our analysis it is obvious that funds which invest in European market, have the lowest yield, and relatively high SRRI and VaR, and they invest mostly in sectors of food and commerce, finance, energy and production, construction and transport. Funds investing in Central and Eastern European market have the lowest SRRI and VaR, and at the same time the highest yields, and they invest mostly in sectors of production of consumer goods, finance, tourism, energy and manufacturing and construction. The last group of funds investing on global

market have the highest SRRI and VaR, and the middle value of the yield, and the most important sectors of investment are finance, manufacturing and raw materials, consumer goods, telecommunications & IT and healthcare.

*Graph 3: Sectorial structures of three groups from 2014 to 2018*

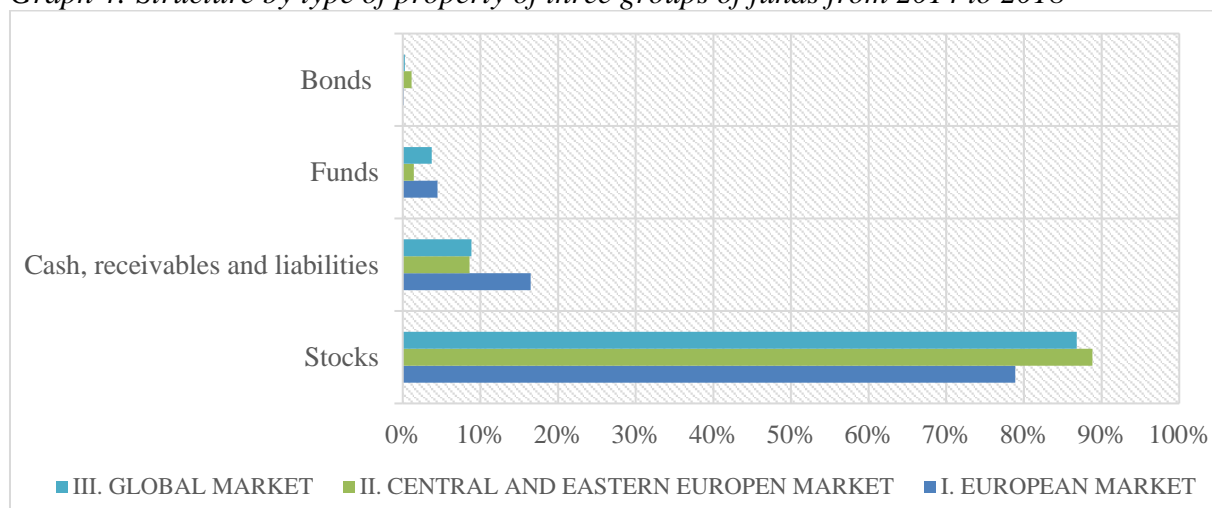


*Source: Author's calculation using data from Hrportfolio*

The most risky group of funds (global market) invests in markets that are more prone to risk like United States and countries where the financial market is developing and are currently more risky like Brazil, China and India. The most risky group of funds invests mostly in the financial sector, the industry, construction and transportation sectors, the consumer goods sector, telecommunications and the IT industry and healthcare. The other two groups barely invest in the health sector. The reason for that lies in the fact that most European countries have national health systems funded predominantly or partly from the contributions paid by the working-active population while the US health-care system is privatized. The group that records the lowest yields (European market) invests in the already developed European countries and sectors like food and trade industry, the finance industry, the energy industry, manufacturing, construction and transport, telecommunications and the IT industry and the consumer goods. The group that records the highest yields (Central and Eastern Europe) invests mostly in the consumer goods, finance industry, energy industry, manufacturing, construction and transport industries and tourism. Of all three groups, this group mostly invests in the tourism industry as it invests in tourist countries that are experiencing the growth of tourist offer, content, number of visits, nights and tourist spending, which explains the higher returns of this group.



*Graph 4: Structure by type of property of three groups of funds from 2014 to 2018*



*Source: Author's calculation using data from Hrportfolio*

The group investing in Central and Eastern Europe invests most in equities, which is an additional reason why this group has the highest average yield. A group of funds investing in the European market, of all three fund groups, invests the least in equities and the most in cash and receivables, which explains the lowest yields.

## Conclusion

While very popular and developed in the US, investment funds in Croatia are only a small part of the financial market. Due to the banking system centricity and the relatively inadequate development of the financial market, investment funds account for only 2.9% of the financial market in Croatia. Among them, open-end investment funds with a public offering prevail over the ease of entry and exit from the fund.

In this paper we have analyzed the risk and investment structure of 21 open equity funds in Croatia divided into three categories, according to the geographic structure of investments. The analysis concludes that the group of funds investing in the European market has the lowest average returns. This is the result of investing in a less prosperous industry such as food industry and the fact that, of all three groups, this group mostly invests in cash and receivables that are experiencing a decline in yields due to low interest rates in 2017. The most risky group of funds is a group that operates on the global market because funds from this group invest in riskier countries such as the USA, Russia, Brazil, China and India. The group that invest in the markets of Central and Eastern Europe, records the highest yields because it invests mostly in transitioning countries and their growing industries.

Our analysis has shown that there are differences between groups of UCITS funds in terms of SRRI, VaR and yields, and these differences are generated mainly through two factors. The first factor is the geographical area of investment, and the second factor is the portfolio of investment, which is different in every group. Within these groups, we have shown that SRRI has the values between 4.33 and 5.47, VaR between 3.21% and 4.89%, and yield between 3.71% and 6.46%. The obtained results can be useful in the process of analyzing the possibilities of long-run investing in UCITS in Croatia.

Although there is space for development of equity funds in Croatia, the Agrokor case has considerably shrunk the financial market in 2017, which can be seen in the decline of yield of almost all funds from the group which invests in the markets of Central and Eastern Europe.

For further research, this topic could be expanded to other groups of investment funds – mixed funds, money funds and bond funds. Additionally, the analysis could include other countries from the European Union and/or countries from Croatian neighborhood, which would enable the comparison of different national markets for open-end equity investment funds.

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# THE DYNAMICS OF MARKET POWER ON THE BANKING MARKET IN CROATIA

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## Abstract

*Over the last ten years, the number of banks in the Croatian market has decreased by nine, usually because of merger, bankruptcy or liquidation. This article analyzes the market power dynamics of the banking market in the Republic of Croatia from 2008 to 2017. The aim of the thesis is to show the influence of change in quantity and total assets of banks on the market concentration. Based on the calculated indices, the next conclusions are reached: indices that contribute to the larger banks lead the conclusion toward oligopoly, however, indices that emphasize the importance of smaller banks point to moderate and even low concentration. Today, there are 26 commercial banks active on the Croatian banking market, which have the elements of both, oligopoly and monopolistic competition.*

**Keywords:** merger and acquisition, banking market, measures of concentration, market power

**JEL classification:** D43

## Introduction

The concentration of the Croatian banking market has changed in the past ten years. The number of banks has decreased, and the most common reasons are mergers and acquisitions. „Big players“ increased their assets even more and strengthened their position on the banking market.

Globalization and liberalization are the occurrences that had influenced the whole world and small and undeveloped markets like Croatian, made even more interesting to foreign investors. These occurrences resulted in ownership restructurings. As numbers show, foreign banks in Croatia are holding over 90% of all the assets.

The aim of this paper is to calculate and analyze different concentration indices for the Croatian banking market. Based on the calculated values of individual indices, conclusions on the concentration can be made. This paper analyzes the following indices: concentration ratio, Herfindahl-Hirschman's index, Hall-Tideman's, Rosenbluth's index, extensive industrial concentration index, Hannah-Kay's index, Index U, Hause's index and entropy measure. After calculating all of the indices, the analysis and comparison of their values will follow.

## Methodology

For calculating indices of market concentration, microeconomists use market share. As banking market is specific, and there are no classical products, the first issue to solve is how to measure the market share. The common praxis in such situations is to analyze the share of total assets, which is also adopted in this paper.

The data about the total assets used in this paper were taken from official reports from the Croatian National Bank (CNB) which is the central bank of the Republic of Croatia. CNB is autonomous and independent in its work and responsible for supervising the work of banks.

Banking market is very specific and one of the starting points in the analysis is the question which market shares of each bank in the market can be determined. The term "banks" in this article implies the assets of banks and savings banks. Since 2010, the Croatian National Bank has reported in its reports the total assets of banks and savings banks. In 2008 and 2009, the CNB separately presented the assets of banks and savings banks. In order to make all the data in this paper comparative, savings banks' assets in 2008 and 2009 were added to the total assets of banks.

Assessments of market concentration have been calculated using market shares of total assets. The purpose of all these calculations is to analyze the trend in a 10-year period, and to compare these indicators.

## Literature overview

As the banking market is very popular among researchers, as well as market power and market concentration, in this literature overview we concentrate only on the most current researches, publicized in 2018 and 2019.

Barra and Zotti (2019) explore the relationship between bank performances and financial stability of the banking system taking into account the role of market concentration. The z-score is used as financial stability indicator, while the performance of financial intermediaries is measured using a parametric method recently developed. The empirical evidence shows a positive relationship between bank performance and financial stability and supports the concentration-stability view for non-cooperative banks only when concentration is measured on the whole sample of banks. Differences in the performance-stability nexus seem to depend more on the type of banks rather than different levels of market concentration. Higher market concentration of cooperative banks affects systemic stability by reducing the z-scores of non-cooperative banks, supporting the hypothesis that the presence of non-profit-maximizing entities can pull down stability of other financial institutions.

Since the global financial crisis, there has been a significant amount of concern about the presence of large-scale financial intermediaries which affects the competitive landscape of the banking sector in advanced economies. In light of this issue, Ghossoub and Reed (2019) develop a framework to demonstrate how the degree of concentration impacts economic activity. They incorporate production externalities from the aggregate capital stock which promote economic development. In this setting, authors show that monetary policy may need

to accommodate departures from perfect competition by setting a higher rate of money growth. In fact, in the presence of large capital externalities, neither low inflation nor perfect competition may be optimal.

Ventouri (2018) provides a characterization of the Association of the South East Asian Nations (ASEAN) banking system's competition under the new environment that the implementation of the Financial Integration Framework implies. The paper focuses on the largest banking markets in the region, represented by the ASEAN-5 under the period 2007-2016, covering the preparation period of the ASEAN banks to fully implement the new Banking Integration Framework (ABIF) in 2020. Author examines the evolution of the banking competition by observing the trend of the competition level using a rolling estimation with a 5-year window. This paper also investigates the factors that may influence the competitive conditions, specifically controlling for structural conditions and institutional characteristics. The main findings confirm that banks operate under monopolistic competition, although there is still a high level of heterogeneity among the ASEAN countries' banking market and banking integration sure is a challenging objective for the region. Results reveal a positive relationship between density of demand, concentration and competition.

Fosu et al. (2018) investigate the impact of competition, as measured by the individual bank's pricing power in the banking market, on bank opacity using a large sample of US bank holding companies over the 1986-2015 period. Whilst the ongoing banking regulatory reforms towards a comprehensive Basel III framework emphasise disclosure, transparency and a competitive banking market environment, very little is known about the empirical relationship between bank opacity and banking competition. New evidence on the competition-bank opacity nexus suggests that banks with higher market power and operating in less competitive banking markets have lower analysts' forecast errors and dispersions and may thus be less opaque. This effect is more pronounced for the 2007-09 global financial crisis period.

Camino-Mogro and Armijos-Bravo (2018) analyze the private banking sector in Ecuador from 2000 to 2015. First, they measure the competition in the private banking sector, and second they determine whether there is equilibrium in the long run in this sector by ROA regression equation. Finally the authors aim to identify evidence of economies of scale in the private banking sector. The main results indicate that private banks in Ecuador operate under monopolistic competition. In addition, this competition increased during the 2007 - 2015 period. Other result shows that there is no equilibrium in the long run for this sector. Finally, there are not economies of scale, therefore small banks do not operate with disadvantages compared to medium and large banks.

Khan, Ahmad and Chan (2018) provide a research on market structure of ASEAN bank market over the period of 1999-2014. Whether banks in a concentrated market increase their profits through monopoly pricing is a question of prime concern for antitrust policies. The results indicate that the higher profits in concentrated banking industries are partially attributable to the anti-competitive conduct of banks. These findings are robust across alternative measures of market structure and bank conduct, and different time horizons. The implications of these findings require regulators to make sure that the consolidation policy for ASEAN is achieving its purpose - i.e. financial stability - and not allowing the banks to earn monopoly rents.

Christophers (2018) analyze the monopoly profit on the US banking market. Different economic measures afford different ways of seeing processes of financialisation. In the prototypical case of the US economy, the most compelling evidence of post-1970s financialisation is found in corporate profits measures. This much has been clear for at least a decade. What remains much less clear, however, is the explanation for the long-term maintenance and amplification of extreme financial-sector profitability that financialisation in the United States has and continues to entail. With a specific focus on banking, this article turns to post-Marxian scholarship on profit rate trends to explain this phenomenon. It argues that limited and declining levels of competition within the US banking sector during recent decades rooted in high levels of industry concentration, collusive behaviour, and substantial entry barriers have contributed to sustaining and boosting abnormal sectoral profitability. In doing so, the article theorises financialisation in the United States explicitly in terms of monopoly profit.

Diallo and Koch (2018) investigate the relationship between economic growth and bank concentration. They introduce imperfect competition within the banking system according to the Schumpeterian growth paradigm, and we theoretically and empirically show that the effects of bank concentration on economic growth depend on the proximity to the world technology frontier. The theory predicts that when a country reaches a sufficient level of financial development, bank concentration has a negative effect on development and growth and that this effect increases when the country approaches the frontier. However, for countries with credit constraints, growth depends on only financial intermediation.

Expanding access to financial services holds the promise to help reduce poverty and foster economic development. However, little is still known about the determinants of the outreach of financial systems across countries. The study of Owen and Pereira (2018) is the first attempt to employ a large panel of countries, several indicators of financial inclusion and a comprehensive set of bank competition measures to study the role of banking system structure as a determinant of cross-country variability in financial outreach for households. They use panel data from 83 countries over a 10-year period to estimate models with both country and time fixed effects. They find that greater banking industry concentration is associated with more access to deposit accounts and loans, provided that the market power of banks is limited. Authors also find evidence that countries in which regulations allow banks to engage in a broader scope of activities are also characterized by greater financial inclusion.

Since the Supreme Court's landmark 1963 decision in *United States v Philadelphia National Bank*, antitrust challengers have mounted *prima facie* cases against horizontal mergers that rest on the level and increase in market concentration caused by the merger. Proponents of the merger are then permitted to rebut by providing evidence that the merger will not have the feared anticompetitive effects. Although the means of measuring that concentration as well as the triggering levels have changed over the last half century, this basic approach has remained intact. This longstanding structural presumption has been critical to effective merger enforcement. Hovenkamp and Shapiro (2018) argue that the structural presumption is strongly supported by economic theory and evidence and suggest some ways to further strengthen it. They also respond to those who would weaken or eliminate it. The analysis applies to the modern legal landscape, where the promotion of competition and the protection of consumer welfare are considered the purpose of merger enforcement. Authors suggest that the proposal can be improved so as to strengthen merger enforcement, primarily by facilitating the government's establishment of its *prima facie* case, while staying true to the fundamental goal of antitrust to promote competition.

The argument on the puzzling relationship between bank concentration and firms' debt structure in China remains inconclusive as the effects of firm ownership competition and firm size competition are intertwined in the existing research. Liu, Huang and Li (2018) utilize the market shares of Big Four state-owned banks to investigate whether bank concentration affects debt structure in China. The results show that bank concentration has a stronger positive effect on debt maturity for state-owned enterprises and large-sized enterprises. The effect of bank concentration on debt maturity strengthens with firm state ownership and firm size. Moreover, state-owned enterprises and large-sized enterprises are associated with a longer debt maturity compared to non-state-owned enterprises and small and medium-sized enterprises, respectively. These results reveal that privatizing state-owned banks and state-owned enterprises would be an effective way to reduce credit discrimination and relieve the capital constraints of non-state-owned enterprises and small and medium-sized enterprises.

Gómez Rodríguez, Ríos Bolívar and Zambrano Reyes (2018) evaluate the competition in the Mexican banking sector through two approaches: market concentration and power. Concentration indices and the Herfindahl-Hirschman index are used within the concentration measures. Two tools are used in the market power approach: the Lerner index and the H-statistic. To calculate the Lerner index, a simultaneous equations model is used, which is estimated with the generalized method of moments. On the other hand, a data panel estimated in first differences and fixed effects is used for the calculation of the H-statistic. A sample of 15 banks is used for the case of the market power approach, and of 32 banks for the concentration approach; both approaches are studied within the 2000-2012 period. It can be observed that within the concentration approach there is a decrease in the concentration indices, and therefore an increase in competition. The result obtained in the power market approach for the Lerner index and H-statistic is monopolistic competition.

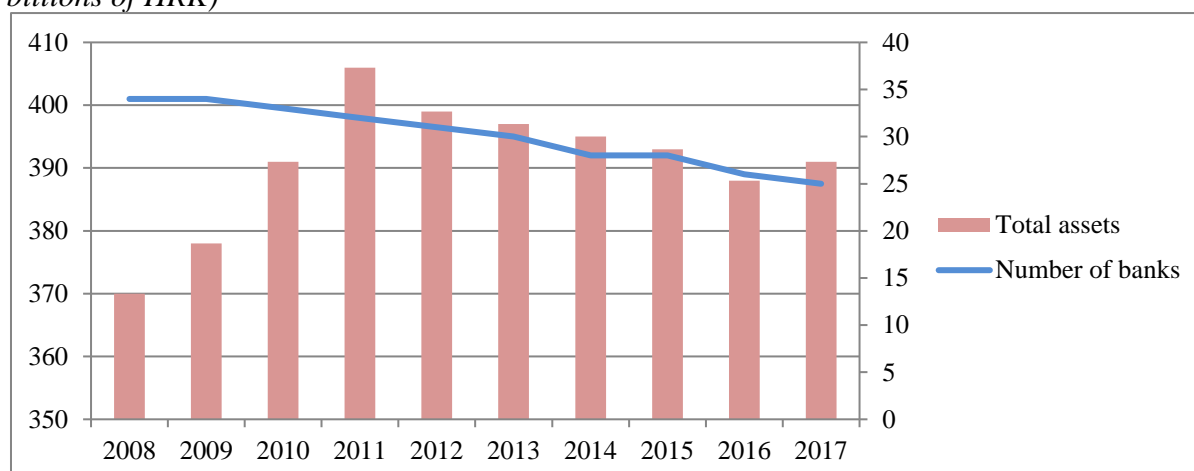
Vozkova and Teply (2018) analyze the key determinants of bank fee and commission income in the European Union with a special emphasis on market concentration. On a sample of 258 EU banks during the 2007-2014 period, they apply System Generalized Method of Moments. First, authors argue that the banks facing higher competition tend to expand more aggressively into non-traditional activities, and therefore they report a higher share of fee income in total income. Second, they found that a higher equity to assets ratio is related with higher shares of fee income since the bank needs more capital to prevent or manage the potential risks of the non-traditional activities. Finally, a high deposit to assets ratio tends to increase the fee income share, which may be possibly attributed to relatively high switching costs and to close depositor-bank relationship in the EU banks.

## **Credit institutions in the Republic of Croatia**

Assets of credit institutions consist of cash and deposits, securities and loans. Over 60% of the assets refers to the given loans. The most common recipients of loans are the sectors of the population and enterprises, while a smaller part of the loan is left to the government and financial institutions. The movement of commercial banks' assets in the Republic of Croatia is determined by interest rates on loans and the share of loans granted to the largest sector, the population.



*Graph 1: Change in number and assets of credit institutions in the Republic of Croatia (in billions of HRK)*



*Source: Authors' calculation according to CNB data*

Graph 1 shows the number of credit institutions in the Republic of Croatia. It is evident that the number of banks is constantly decreasing. The number of banks is highest in the initial years of observation, while the size of assets is smaller when compared to years of observation. The reason for this is the economic and banking crisis that hit the world. In 2011, the total assets amounted to HRK 406.9 billion, and after the peak, they are reduced.

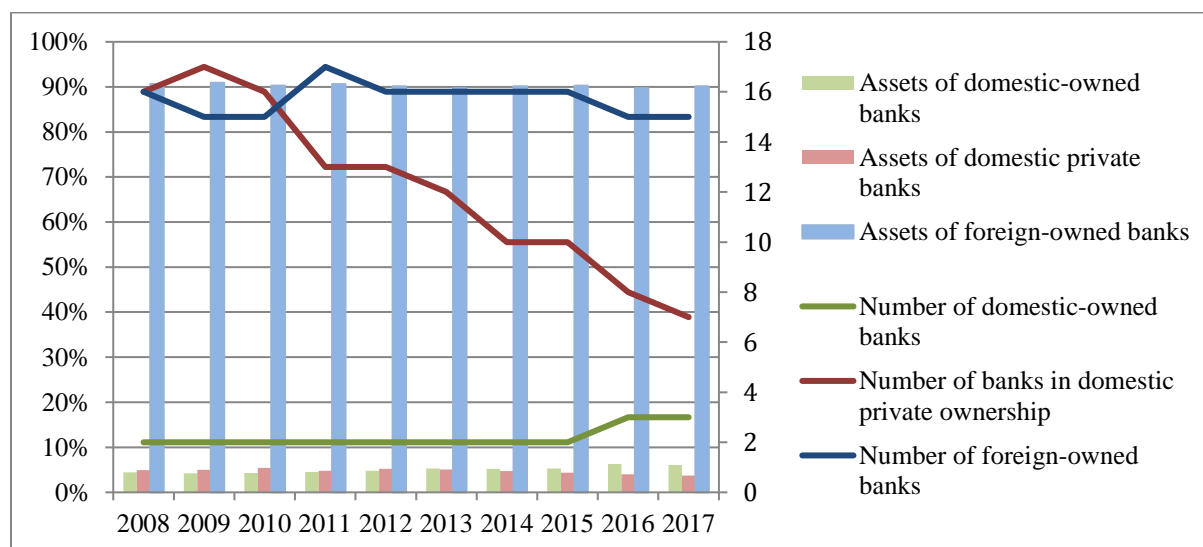
Most of the assets of banks are granted loans. In the period after 2011, the number of loans granted to non-financial corporations and households decreased. Also, as a consequence of the decrease of assets, there were write-offs of the principal of loans due to the conversion of loans with the Swiss franc, unfavorable exchange rate movements, bankruptcies, and liquidation of certain banks.

The multi-year trend of shrinking total assets of banks has been halted in 2017. It reaches a mild increase in assets by 0.7% compared to the previous year. The reason for the increase in assets is the increase in credit activity by population and companies.

## **Restructuring of banks**

Bank's ownership restructuring is very common in CEE countries. The cause of ownership restructuring is the globalization and liberalization of transition countries that have opened their markets for foreign investors. Liberalization and globalization have led to the changed ownership structure of banks. Foreign-owned banks have significantly influenced the development of the Croatian banking system.

*Graph 2: Assets and number of banks in the Republic of Croatia by ownership structure*



*Source: Authors' calculation according to CNB data*

Graph 2 shows the number and ownership structure of banks in the Republic of Croatia. Only in the initial years of observation (2008 and 2009), there are more domestic private-owned banks operating in the market than foreign-owned banks. In 2011, for the first time, more foreign banks are operating and the trend continues to this day. In 2017, there are 15 foreign-owned banks operating on the market, but there are much bigger differences when comparing assets.

Apart from the decrease in the number of banks and the increase in total assets in the observed period, there was also a change in ownership structure. The graph shows the ownership structure of banks in the Republic of Croatia from 2008 to 2017. Foreign-owned banks hold on average of 90% of the total assets of all banks. Foreign financial institutions have changed the structure of the banking system. Most foreign-owned banks are owned by European Union shareholders. The assets of these banks are growing slightly in 2017 compared to the previous year.

The banking system is under the strong influence of foreign capital, and the same is expected in the future. The establishment of new banks is hampered by strict regulations. For this reason, foreign banks will enter into the Croatian market to gain ownership in one of the domestic banks.

## Concentration indices

The mergers, takeovers and acquisitions have affected the change in the number of banks and total assets of credit institutions in the Republic of Croatia, which has affected the change in market concentration. Indices are calculated on the basis of data on credit institutions' assets. Property data is downloaded from the official site of the Croatian National Bank. For assets

between 2008 and 2016, the revised data were taken, while the data concerning 2017 were unaudited.

### *The Concentration Ratio*

The Concentration Ratio is the most commonly used measure of concentration. It shows the share of the largest banks in the total banking industry.

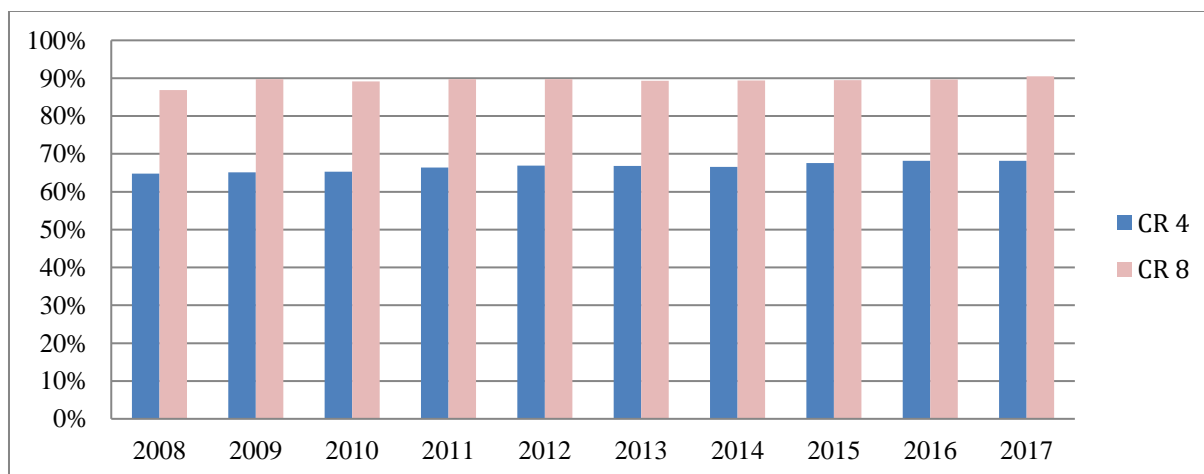
The concentration index is defined as:

$$CR_k = \sum_{i=1}^k S_i$$

Where **CR** is the concentration ratio, **k** number of largest banks, **S** is the share of the *i*-th bank. For the calculation of the concentration ratio, it is necessary that all the banks in the industry are shown in order, from the largest bank to the smallest.

The Concentration ratio ranges from 0 to 100. If the ratio is 0, then there are an infinite number of banks with the same amount of assets, which refers to perfect competition. In this paper, the concentration ratios for four and eight largest banks in Croatia are calculated. The share of assets of the largest banks is taken, and the influence of smaller banks on the market is neglected.

*Graph 3: Concentration ratios for four and eight largest banks in the Republic of Croatia*



*Source: Authors' calculation according to CNB data*

The concentration ratio for the four largest banks is steadily increasing over a ten-year period. Concentration is the largest in 2017 when the indicator amounts to 68.15%, an increase of 5.14% over 2008, when the indicator was 64.82%. The four largest banks in the Republic of Croatia by the size of assets are: Zagrebačka banka d.d., Privredna banka Zagreb d.d., Erste & Steiermärkische Bank d.d. and Raiffeisenbank Austria d.d. Exception is 2011, when Hypo Alpe-Adria-Bank d.d. had a 10.10% share in total assets and Raiffeisenbank Austria d.d. 9.54%.

In the observed period, the concentration ratio for the eight largest banks was also increasing. The highest value reaches 2017 and is 90.51%. The indicator is the smallest in 2008 when it is 86.84%.

The concentration ratio for the four and eight largest banks shows the same growth trend and consequently the value of the concentration indicator increases. Based on the calculation, it can be concluded that there is an oligopoly present on the market because the eight largest banks hold almost 90% of the market. The concentration ratio is the simplest indicator and shows the impact of the largest banks on the market, but does not take into account the impact of smaller banks.

### *The Herfindahl-Hirschman's index*

The Herfindahl-Hirschman's index is the most well-known indicator of industrial concentrations and includes all banks. The Croatian National Bank publishes HHI-score on the Bank's Bulletin, which is used in decisions on future mergers and acquisitions of banks. HHI is calculated as the sum of the square of the market share of banks and is defined as:

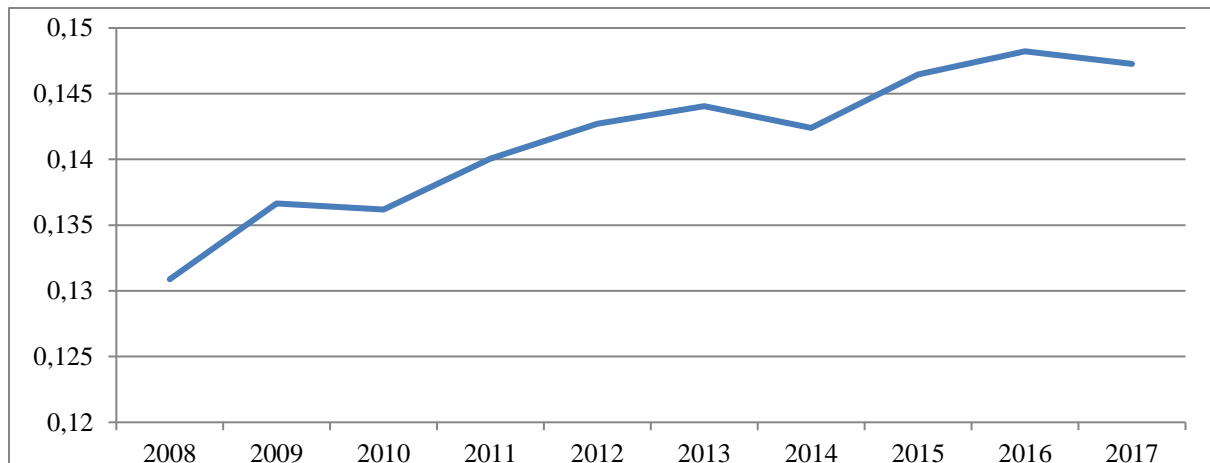
$$HHI = \sum_{i=1}^n S_i^2$$

where  $S$  is the market share of the  $i$ -th banks in the market and  $n$  the total number of banks. The US Central Bank defines conditions under which the value of HHI must not exceed 0.18. If the index exceeds this level, some banks could maintain prices above the competitors. If the HHI value is less than 0.1 the concentration is low, between 0.1 and 0.18 the concentration is medium, and high if the index is more than 0.18.

The Herfindahl-Hirschman's index can range from  $1/10.000 n$  to 1. It depends on whether the share in the total asset is expressed as a percentage or a decimal number. In this paper, the range of  $1/10.000 n$  to 1 is used.

HHI represents a better measure of concentration than the concentration ratio since the calculation includes all banks, and does not account for four or eight largest banks. Also, this calculation places greater emphasis on the largest banks because market shares are squared.

*Graph 4: The calculation of Herfindahl-Hirschman's index*



*Source: Authors' calculation according to CNB data*

The Herfindahl-Hirschman index ranges between 0.13 and 0.15 and points to the mean concentration throughout the years of observation. In 2017, the indicator declined slightly compared to the previous year due to the strengthening of small and medium-sized banks in relation to the banks with the largest assets. Unlike the concentration ratio, the Herfindahl-Hirschman index highlights the importance of smaller banks.

### ***Hall-Tideman's and Rosenbluth's index***

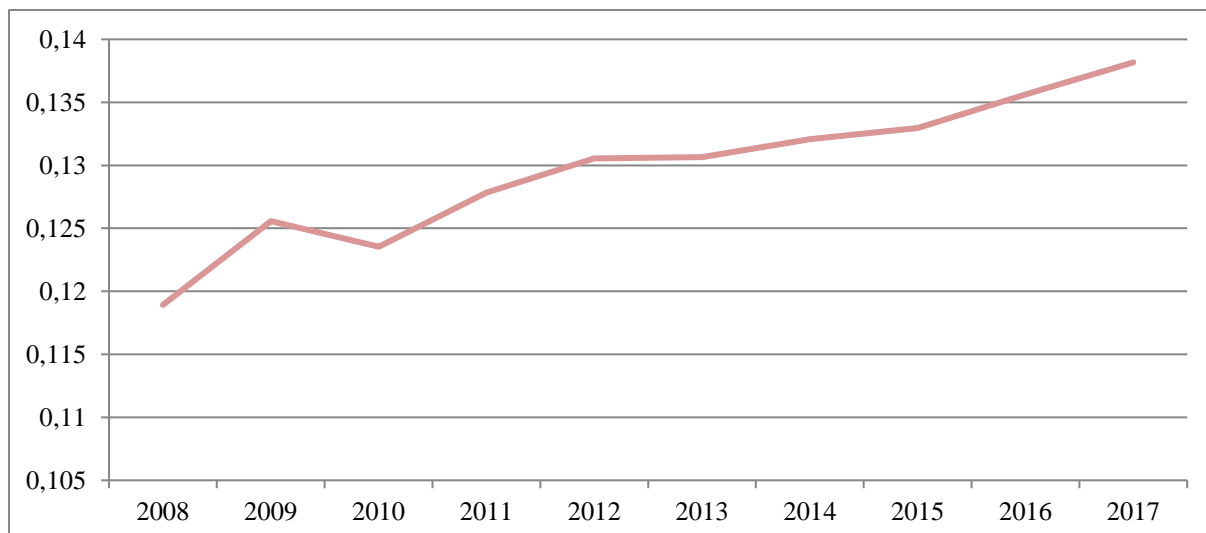
Hall-Tideman's (HTI) and Rosenbluth's (RI) concentration index emphasize the importance of a number of banks. It is assumed that it is easier to enter the market if there is a large number of banks, and it is harder to enter the market if only several banks operate on the market.

HTI is expressed by the following formula:

$$HTI = \frac{1}{(2 \sum_{i=1}^n iS_i - 1)}$$

Where  $S_i$  represents the market share of each bank, and  $i$  its corresponding rank. The market share of each bank is multiplied by the corresponding rank. The highest-rated bank by the asset is assigned rank  $i=1$ , and the smallest bank,  $i=n$ . HTI ranges from 0 to 1. In case of a pure monopoly, the value of the index is 1, while it is 0 in the case of an infinite number of same-sized banks.

*Graph 5: Hall-Tideman's index*



Source: Authors' calculation according to CNB data

Graph 5 shows the value of Hall-Tideman's index for the Croatian banking market. The largest asset bank in Croatia, Zagrebačka banka, is ranked first and multiplied by its share in total assets.

Hall-Tideman's index shows a continuous increase in concentration during years of observation. The lowest value is recorded in 2008 when it amounts to 0.118925043, and the highest in 2017 when it amounts to 0.138171678. The reason for the higher value of the indicator is the growth of the largest bank's assets in Croatia-Zagrebačka banka. In the initial year of observation, Zagrebačka banka has assets in the amount of 89,387,763 HRK, and at the end of 2017 102,188,364 HRK, an increase of 14.32%. The growth of the assets of other banks also affects the increase in the index value.

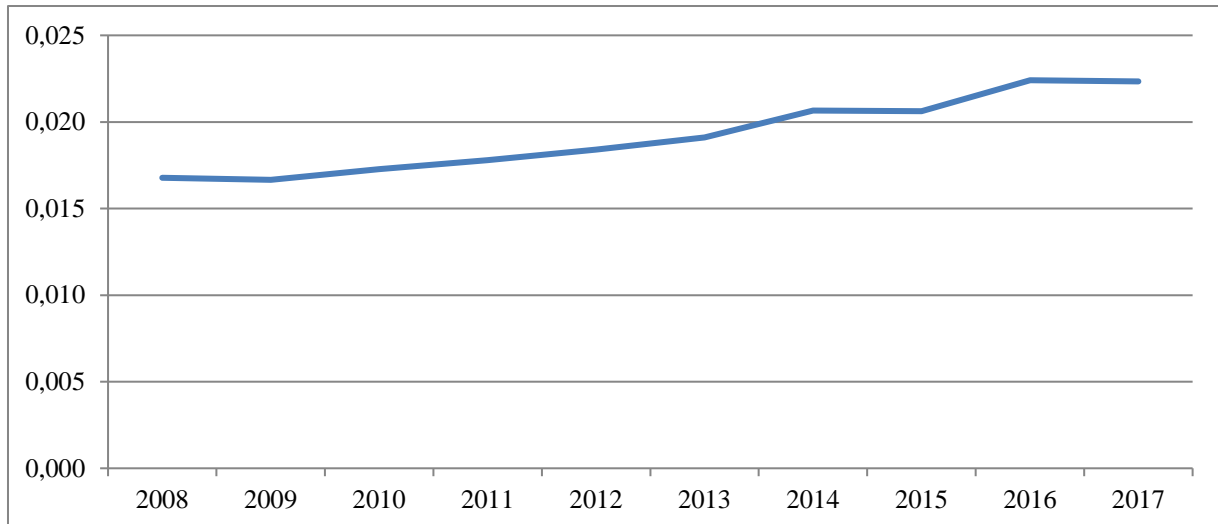
The main difference between Hall-Tideman's and Rosenbluth's index is in the bank ranking. RI is expressed by the following formula:

$$RI = \frac{1}{(2 \sum_{i=1}^n j S_i - 1)}; j = n, \dots, 1$$

Where  $S_i$  represents the market share of each bank, and  $i$  its corresponding rank. The market share of each bank is multiplied by the corresponding rank. Rank  $j=1$  is assigned to the smallest bank and  $j=n$  the largest bank in the market.

The development of small banks has a significant impact on Rosenbluth index. The denominator is growing in the case of growth in the number of banks since the shares of the largest banks are multiplied by increasing absolute numbers. If a large number of small banks enter the market, the value of RI will decline significantly.

Graph 6: Rosenbluth's index



*Source: Authors' calculation according to CNB data*

Rosenbluth's index grows mildly through years of observation. The lowest value reaches 2008 when it amounts to 0.016780961 and the highest in 2016, 0.033508923. The cause of the growth of the index value is also the reduction of the number of banks, with 34 banks at the end of 2008 to 25 banks in 2017. The decrease in the number of banks affects the reduction of the denominator, and thus the increase in the index value.

### ***The extensive industrial concentration index***

The extensive industrial concentration index (CCI) at the same time highlights the role of the largest banks on the market, but also the role of smaller banks that can influence the change in the market structure.

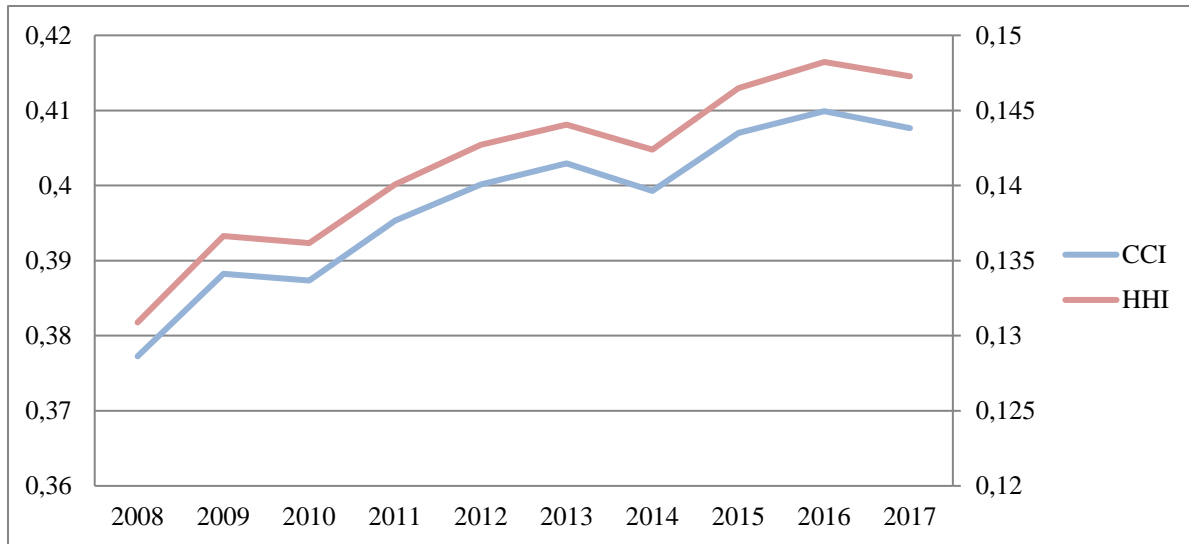
The CCI form is partially derived from HHI and is expressed by the formula:

$$CCI = S_1 + \sum_{i=2}^n S_i^2 (1 + (1 - S_i))$$

Where  $S$  represents the share of the  $i$ -th banks in the market, and  $n$  the total number of banks. The extensive industrial concentration index distinguishes the share of the largest bank from the sum that is obtained by adding multiplications of the squared share of the  $i$ -th bank.

In this case,  $i$  ranges from 2 to  $n$ . The index is appropriate for market analysis in which there is one dominant bank, and the other group consists of other banks. The CCI ranges from 0 to 1. In case of a pure monopoly, it is 1.

*Graph 7: The extensive industrial concentration index*



Source: Authors' calculation according to CNB data

Graph 7 shows the trend of an extensive industrial concentration index. The index value ranges from 0.3773 in 2008, the highest value being recorded in 2016 when it amounts to 0.4099. The trend fully corresponds to the movement of Herfindahl-Hirschman's index.

### ***The Hannah-Kay's index***

The Hannah-Kay's concentration index is defined as:

$$HKI = \left( \sum_{i=1}^n S_i^\alpha \right)^{1/(1-\alpha)}, \alpha > 0, \alpha \neq 1$$

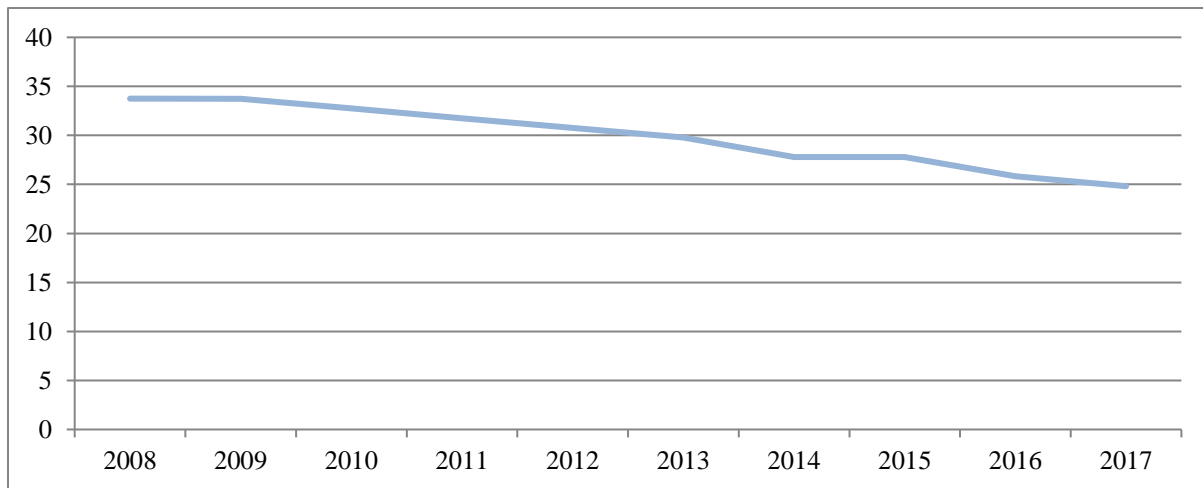
Where  $S$  is the share of the  $i$ -th bank on the market,  $n$  is the total number of banks, and the parameter  $\alpha$  emphasizes the effect of change in the number and size of banks. For the  $\alpha$  parameter, the values most frequently used are: 0.005; 0.25; 5 or 10. The lowest values (0.005 and 0.25) indicate the impact of smaller banks, and the highest values (5 and 10) the impact of larger banks on concentration.

The Hannah-Kay's index is sensitive to the change of the parameter  $\alpha$ . The index for  $\alpha = 0.005$  is the mirror image of the Rosenbluth index and their movements are negatively correlated. When the parameter  $\alpha$  approaches the value 0, the index value moves like the number of banks in the market.

When calculating Hannah-Kay's index for the Croatian banking market, the parameters  $\alpha=0.005$  and  $\alpha=5$  were used.

*Graph 8: The calculation of Hannah-Kay's index for  $\alpha=0.005$*



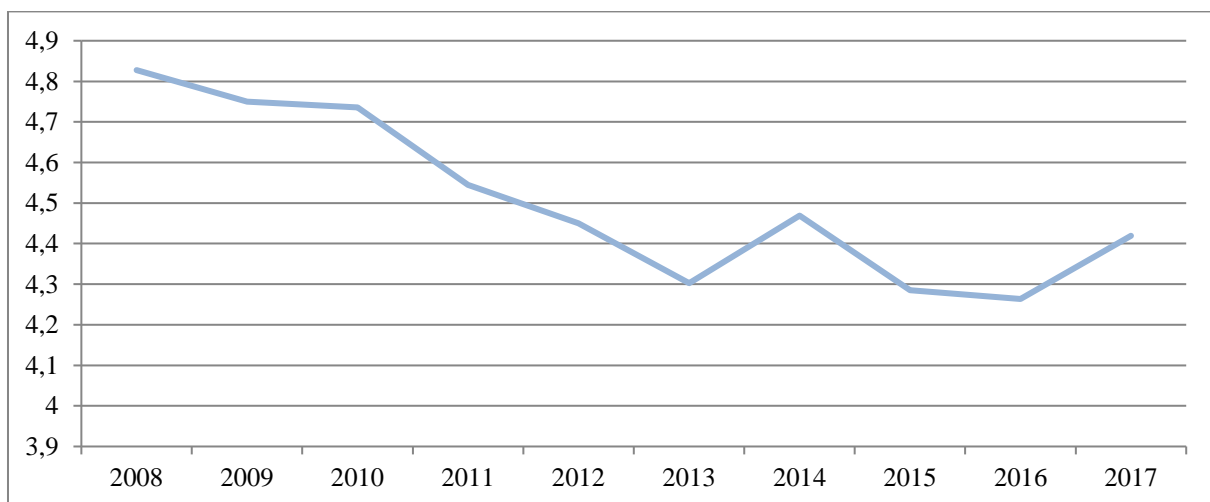


Source: Authors' calculation according to CNB data

Graph 8 shows the calculation of Hannah-Kay's index at  $\alpha=0.005$ . The index shows the impact of smaller banks on the market and monitors the absolute number of banks. The value of the index was expected to decrease in the observed years. As the absolute number of small banks falls, the value of the index is decreasing. The index value is the lowest in 2017 and amounts to 24.81674331, which is approximately the number of active banks on the market, 25.

The movement of Hannah Kay's index is negatively correlated with the movements of the other indices. The decline in the value of the index indicates an increase in concentration.

Graph 9: The calculation of Hannah-Kay's index for  $\alpha=10$



Source: Authors' calculation according to CNB data

Graph 9 shows the movement of Hannah-Kay's index for  $\alpha = 10$ . The index highlights the importance of large banks in the market. There was a drop in the index value with exceptions in 2014 and 2017 when the largest bank in Croatia - Zagrebačka banka recorded a decrease in total assets.

## Index U

Index U equates the influence of the absolute number of banks and inequality between the size of the banks on concentration. Its form is as follows:

$$U = I^\alpha n^{-1}, \alpha \geq 0$$

Where **I** represent the measure of inequality, **n** is the number of banks, and parameter **α** adds greater importance to the inequality or the total number of banks in the market. The value of the parameter **α** is determined by the model, and the most frequently used values are 0.25, 1, 2 and 3. In the paper, the concentrations for  $\alpha = 0.25$  and  $\alpha = 3$  are calculated as the two end values of the parameter.

First, inequality (I) is defined, then index (U):

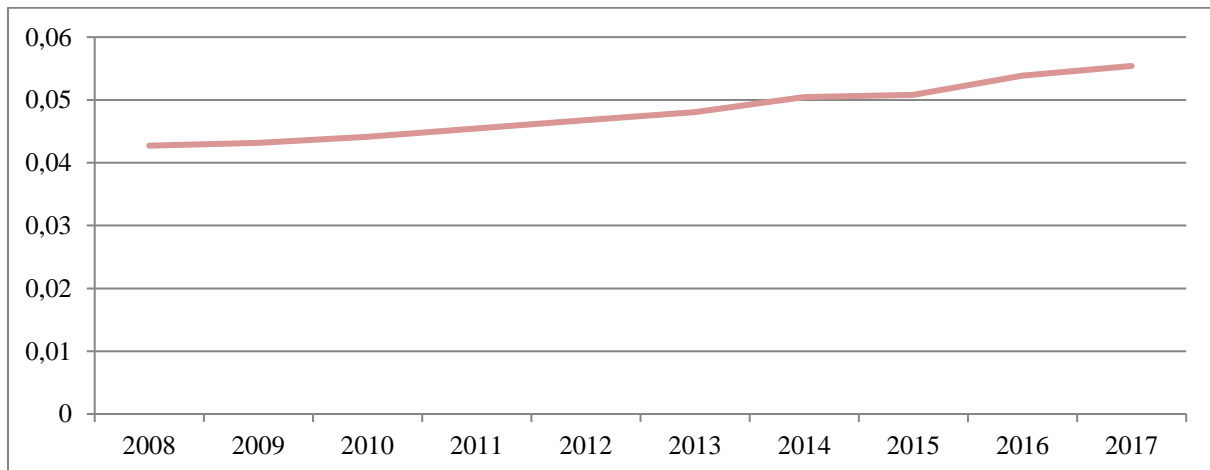
$$I = n \sum_{i=1}^n S_i^2 \quad U = \left( n \sum_{i=1}^n S_i^2 \right)^\alpha n^{-1}$$

Or simpler shown:

$$U = (nHHI)^\alpha n^{-1} = (HHI)^\alpha n^{\alpha-1}$$

From the last formula, it can be seen that if the parameter  $\alpha=1$  the value of the index U is equal to the value of HHI.

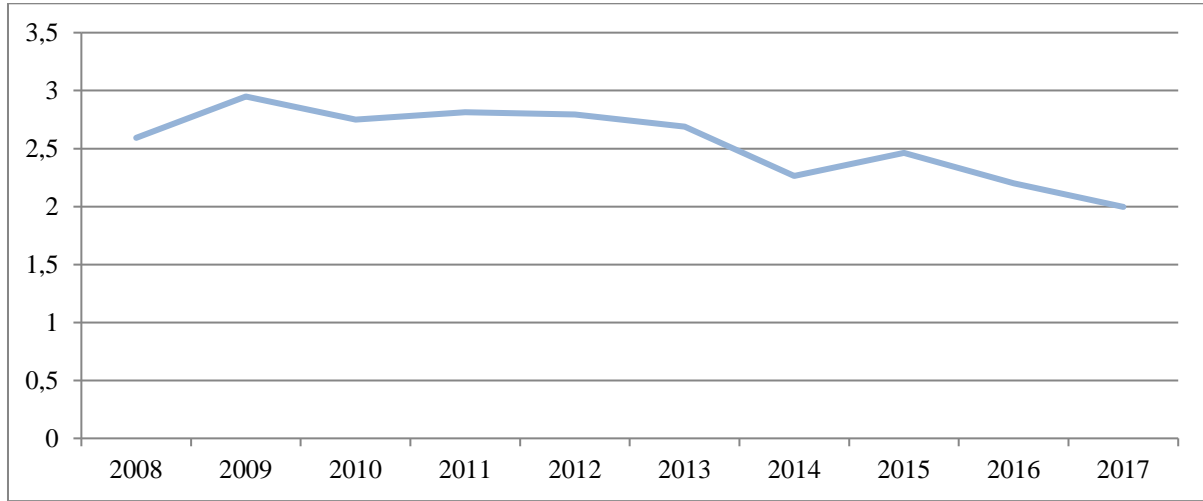
*Graph 10: Index U for  $\alpha=0,25$*



*Source: Authors' calculation according to CNB data*

Graph 10 shows the calculation of U Index. The parameter  $\alpha=0,25$  emphasizes the influence of the absolute number of banks. The trend of the index once again confirms the conclusions of previously analyzed indices that emphasize the influence of an absolute number of banks on concentration movements, such as Hall-Tideman's and Rosenbluth's index. The trend of steady increase of the index value through the years of observation has been recorded as a result of the decrease in the number of banks.

Graph 11: Index  $U_{\alpha=3}$



Source: Authors' calculation according to CNB data

Index  $U$  in parameter  $\alpha = 3$  highlights the inequality among banks. During the observed period, the index value falls and shows the intensification of the struggle between the largest banks, ie the strengthening of other banks. The assets of other large banks (excluding the two largest) increased and brought closer to the value of the assets of the largest banks (CR2). The index records the highest value in 2009 when it amounts to 2.9491 and the lowest value is recorded in 2017 when the index value falls below 2.0. The results of the calculation are confirmed by the theoretical viewpoint, the index emphasizes greater importance to the inequality between banks being reduced, and consequently, the market concentration also decreases.

### Hause's index

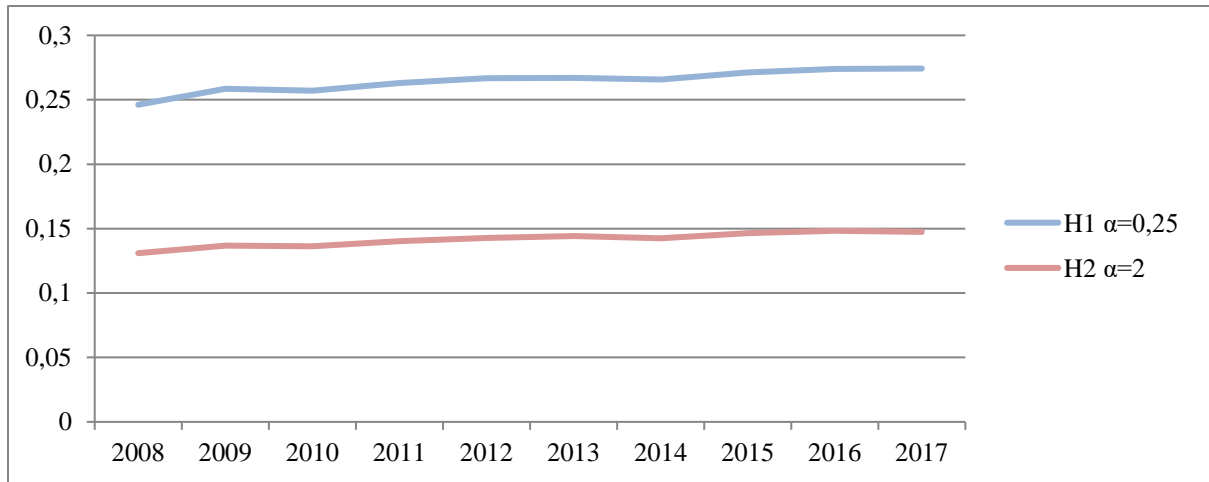
Concentration index where a parameter that indicates the degree of collapse (degree of tacit agreement and cooperation between companies in the market) is introduced. It is very difficult to prove that companies or banks are secretly cooperating. The index is expressed by the formula:

$$H(\alpha, \{S_i\}) = \sum_{i=1}^n S_i^{2-(S_i(HHI-S_i^2))^\alpha}$$

Where  $S$  represents the share of  $i$ -th bank on the market,  $n$  the total number of banks and parameter  $\alpha$  indicates the degree of tacit agreement between banks.

The parameter can reach the value of 0.25, 1 and 2. In the calculations, the values of parameter  $\alpha=0.25$  and 2 will be used as two final values. High degree of collapse is to be emphasized at  $\alpha=0.25$  ( $H_1$ ) while  $\alpha=2$  ( $H_2$ ) is suitable for the low degree of collapse. H index is equal to 1 in case of monopoly, and in case of perfect competition, it is 0.

Graph 12: Hause's index



Source: Authors' calculation according to CNB data

Graph 12 shows the movement of the Hausse's index over a ten-year period. Indices H1 and H2 show the same trend of movement. Although H1 index highlights a high degree of collapse, there is no significant difference in relation to H2 index movement, which highlights a lower degree of collapse. Throughout the observed period, the index value increases and shows growth in market concentration.

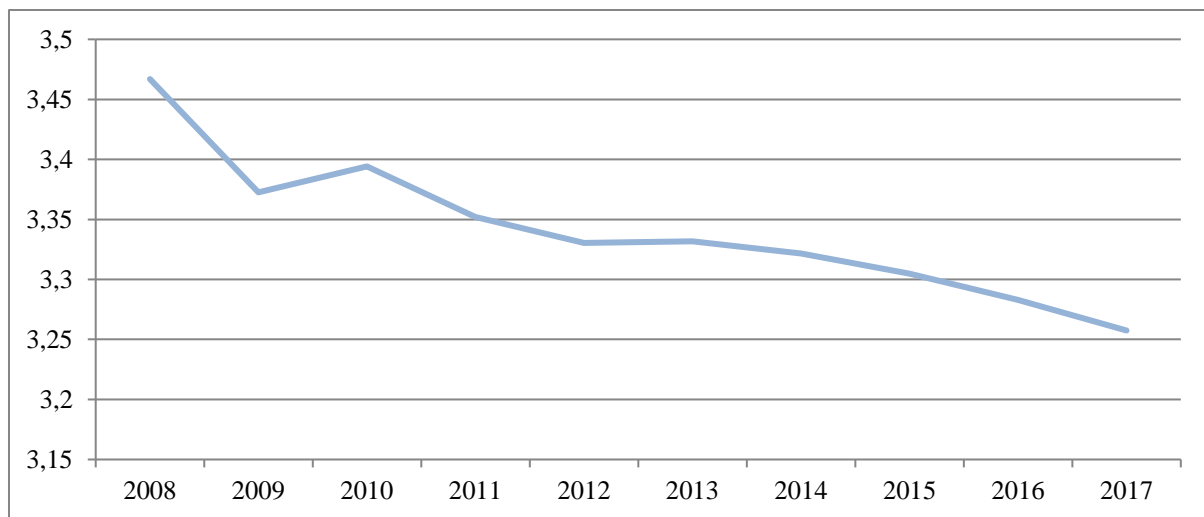
### ***The entropy measure***

The entropy measure is often used when calculating concentrations in a particular industry. Expressed by the formula:

$$E = - \sum_{i=1}^n S_i \log_2 S_i$$

The index value is not restricted by the  $[0,1]$  interval as most other concentration indices are, but ranges from 0 to  $\log 2n$ . In case the monopoly reaches 0, and when the market shares of all banks are equal, the value of entropy is  $\log 2n$  at which point concentration is the smallest. This indicator emphasizes the importance of smaller banks in the market. The value of the indicator moves in an inverse increase in concentration. The increase in concentration over the last few years has had an impact on the decline in the index value.

Graph 13: The entropy measure



*Source: Authors' calculation according to CNB data*

The measure of entropy confirms the results so far. During the observed period, the index value falls. The movement is inverse and represents the growth of market concentration. Concentration is smaller in early years of observation when more banks operate in the market, and the largest is in 2017.

## Conclusion

Over the last ten years, the number of banks has decreased by nine. The reasons for the reduced number of banks are most commonly mergers, liquidations and bankruptcy. Due to strict regulations and laws that make it difficult for new banks to enter the market, foreign-owned banks acquire shares in domestic banks. Ownership restructuring is a trend that hit the world. Globalization and liberalization have influenced the opening of the markets of developing countries, especially the countries of eastern and central Europe. In the Republic of Croatia, foreign banks account for over 90% of total assets.

Each index is specific and has distinct characteristics. It is concluded that most of the indices show the trend of growth in value over the years of observation and the rise in market concentration. Concentration ratios (CR) for four and eight banks point to a high concentration and structure of the oligopoly because eight banks hold over 90% of the total assets.

Herfindahl-Hirschman's Index (HHI) includes all banks. It also shows the growth trend of the index value as well as the increase in market concentration in years of observation. What differentiates it from the concentration ratio is the power of concentration. According to HHI, the market concentration is of medium strength. The trend of the high indices of industrial (CCI) concentration values fully corresponds to the trend of HHI movement.

The movements of Hall-Tideman's and Rosenbluth's index point to similar conclusions. Due to the reduction in the number of banks, and especially the disappearance of small banks, the value of the index is increasing and influences the increase in concentration.

The Hannah-Kayev index is the first to show a decline in value over a ten-year period. The index is negatively correlated with the movements of other indices, and in this case the index decrease indicates an increase in concentration.

Index U in parameter  $\alpha = 0.25$  highlights the influence of the absolute number of banks and shows the growth of the index value caused by the reduction of the absolute number of banks and consequently the increase in concentration. In parameter  $\alpha=3$ , where the inequality between banks is emphasized, the index value falls. Banking inequality has shrunk as other large banks approach assets by approaching the two largest banks. Concentration is reduced in this case.

The Hause's index shows a similar movement trend as the HHI, CCI and CR indices. It indicates an increase in the value of the index and a rise in concentration. The last calculated index is an entropy measure that highlights the impact of smaller banks on the market. The measure is negatively correlated with the movements of other indices, and the drop in the value of the index indicates a rise in concentration.

Concentration ratios for four and eight largest banks point to an oligopoly and a high and strong concentration. The following indices show the growth trend of the concentration in the observed period and the concentration of medium strength: the Herfindahl-Hirschman index, the extensive industrial concentration index, Hall-Tideman's, Rosenbluth's index, U and Hause's index. Entropy measure and Hannah-Kayev index show the impact of smaller banks on the market and their movements are negatively correlated with the movements of other indices.

In the future, the number of small banks and the strengthening of the largest banks is expected to decrease. Domestic-owned banks are hampered by market competition and have to struggle with a strong influence on foreign capital.

For the future research, this analysis could be expanded to more EU countries, to detect similarities and/or differences across banking markets. Such an analysis would also enable grouping similar countries and detecting possible economic reasons for having similar banking markets.

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# **AUSTRALIAN FIRMS UPTAKE OF TRADE CREDIT AS EXTERNAL FINANCING DURING THE GLOBAL FINANCIAL CRISIS OF 2008 AND FOR THE FOLLOWING 10 YEARS**

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## **Abstract**

*The Global Financial Crisis (GFC) of 2008 had a dramatic impact worldwide and resulted in numerous firms failing and increased unemployment levels. While there have been many studies conducted which focus on trade credit as an external form of finance for firms during the GFC, there has not been a study based on Australian firms uptake of trade credit when examined in conjunction with European firms uptake during the same period. Therefore, as a result of the identified gap in the existing research the following paper seeks to examine the effect that the GFC and global bank lending constraints had on Australian firms' uptake of trade credit during this period of time. Expanding on this theme, an analysis of whether Australian firms acted in a manner consistent to their European counterparts will be carried out. Furthermore, the paper examines the 10 years following the GFC and what effect trade credit had as a form of external finance during Australia's post-GFC recovery.*

*The research is governed by a positivist design whereby the role of the project team is restricted to the collection and analysis of secondary panel datasets to measure trends over the timeframe of the research. The research datasets consist of Australian firm Days Sales Outstanding (DSO), Bank Loans written to Australian firms and listed firms on the Australian Stock Exchange balance sheet data. The results of the research have found that there was a marked increase in Australian firms' uptake of trade credit finance during the GFC period. Interestingly, external bank finance uptake by Australian firms during the same period remained consistent with no reduction of its uptake by Australian firms which is at odds with a global reduction in the access to bank finance. While Australia is geographically distant from Europe the increased reliance on trade credit by Australian firms during the GFC is consistent with the results of studies carried previously. The 10 years following the GFC saw a reduction in Australian firms' reliance on trade credit as a form of external finance coupled with an increasing uptake of bank finance which suggests of a substitutional relationship between the two forms of external finance available to firms. The implications of the following research resides with the fact that during times of financial crisis Australia is not immune and while there is currently limited research into the role that trade credit has had as a form of external finance for Australian firms, the findings from previous European studies can be applied to Australia with similar results.*

**Keywords:** Trade Credit, Bank Loans, Australia



## **Introduction**

During times of economic downturn, Trade Credit Finance has played a stabilizing role where it has allowed firms throughout the world access to a form of external finance outside of bank loans which are the largest form of external finance available to firms. Studies by (McGuinness et al., 2018) into this field discovered a greater reliance by European firms on trade credit to survive the Global Financial Crisis (GFC) of 2008 caused by a global reduction in external finance offered by banks.

Despite there being a global reduction in the availability in external finance offered by banks to firms, the need for external finance by many firms was growing during the GFC due to a worldwide weakening of economic conditions. The increased reliance by firms on external finance during the GFC was apparent as operating firms still had fixed costs and existing liabilities that needed to be met, while weakening economic conditions placed considerable strain on the firms to satisfy their obligations. A reduction in the availability of bank finance to firms resulted in many firms failing or being required to reduce their staffing levels which increased unemployment levels. However, many firms were able to survive the GFC by obtaining alternative external funding through an increased uptake in trade credit finance.

Where the research conducted by (McGuinness, Hogan & Powell, 2018) demonstrate the significant level of external funding that trade credit represented for European firms during the GFC there is an absence of any corresponding studies concerning how this form of external funding was used by Australian firms during times of financial crisis. Therefore, the objective of the paper will be to examine the role of trade credit if any, as a form of external finance for Australian firms during the GFC. Based on the findings of Australian firms' uptake of trade credit finance during the GFC, the paper will examine and discuss whether Australian firms operate in a manner consistent with their western counterparts in the European Union when it comes to the uptake of trade credit finance during times of financial crisis such as the GFC. Extending on the previous research carried out around the uptake of trade credit as a form of external finance during the GFC by European firms, the paper will finally examine the uptake of trade credit during the post GFC recover years in Australia.

To achieve the objective of the following paper, the following research questions will be asked:

RQ1) What effect did the GFC and global bank lending constraints have on Australian firms' uptake of trade credit as a form of external finance in 2008?

RQ2) Did Australian firms act in a consistent manner to European firms in their usage of trade credit as an alternative form of finance during the GFC?

RQ3) In the 10 years following the GFC, what role did trade credit play as a form of external finance for Australian firms?

Studies by (Psillaki & Eleftheriou, 2015), (McGuinness et al., 2018) and (Carbo-Valverde, Rodriguez-Fernandez, & Udell, 2009) throughout the Europe found that the correct

management of trade credit finance during times of financial downturn greatly limited the negative impact of the GFC on the economy. Australia was not spared from an economic downturn during the GFC and the following two years, which saw Australia business failure rates jump by 25 percent ("Business failures on the rise," 2011) and unemployment rise to a high of 6 percent (Jefferson & Preston, 2010). Increased unemployment and business failure rates have a detrimental effect on any country's economy, however the rate at which this detrimental effect can influence the economy can be greatly reduced through appropriate monetary policy and corporate governance. The significance of a study into trade credit as an alternative form of finance is that to date, 10 years after the GFC there has not been a study carried out from an Australian perspective into the use of trade credit as an alternative form of finance during times of economic downturn. With current economic conditions in Australia similar to the early stages of the GFC that the USA experienced in 2007 / 2008 with housing prices starting to fall after record years of consecutive growth, a tightening in the availability of Bank Loans as a result of the Australian Government founding a Royal Commission into unethical Bank Lending practices lessons from the past, similar to a post incident review in Information Technology this study will provide valuable insights into the future as Australia enters uncertain economic times.

## **Literature Review**

### ***Overview of Trade Credit in Australia***

Trade credit fundamentally consists of the supply of goods and/or services by one firm to another firm with payment for the transaction to occur at a later date (Yazdanfar & Öhman, 2017), while the firm receiving the goods and/or services obtains immediate benefit from the transaction (Martínez-Sola, García-Teruel, & Martínez-Solano, 2017). The supply of goods and services on trade credit is often governed by a formal agreement between the firms such as a credit applications terms of trade which details factors such as how long the customer has to repay the trade credit debt incurred and the level of trade credit finance that the supplier is willing to extend.

The provision of trade credit financing by a firm to its customers can be viewed in a similar context to a credit card or overdraft facility being offered by a Bank to its customers. Trade credit is in effect a revolving line of credit (Danielson & Scott, 2004) where a firms approved customers have the ability to purchase goods and services up to a prescribed credit limit and repay the debt at a later date set out in the credit applications terms of trade. The credit limit is often associated with the level of trust that the supplier has in their customer and their perceived ability to repay the trade credit debt incurred (Kouvelis & Zhao, 2012). In contrast to a credit card, in the event that a customer would like to purchase goods and services that will exceed the credit limit provided to them the firm selling the goods and services can allow the transaction to proceed which will result in the customer exceeding their credit limit. A firm may allow the customer to exceed their credit limit because unlike banks, the firm does not profit from the level of trade credit finance it provides, instead it profits from the additional sale being made (Giannetti, Burkart, & Ellingsen, 2011). Alternatively, the firm supplying the goods and services on trade credit finance may request that the customer pays down their account before the due payment date so that it is below its assigned credit limit and the transaction can proceed, which is consistent with how a bank issued credit card operates.

Trade credit is offered by many businesses in Australia to their customers as an alternative form of short term financing for their purchases (Bastos & Pindado, 2013) for the express purpose of stimulating sales which benefits the suppliers of trade credit to their customer

through increased sales revenue and higher gross margins (Box, Davis, Hill, & Lawrey, 2018). The increased sales revenue occurs as a result of the absence of the requirement for immediate payment of goods and services which are purchased from suppliers as the customer is given a period of time before they are required to pay for the goods (Love & Zaidi, 2010), (Cuñat, 2007), & (Wu, Firth, & Rui, 2014) and subsequently this allows the customer to be able to purchase more than what their current cash reserves could accommodate. The ability of customers being able to purchase more than what their current cash reserves could accommodate allows them to utilise the extension of trade credit as a form of externally funding their business operations through sale of the goods received on trade credit and collecting payment from their customer while subsequently withholding payment of the trade credit they received from their supplier.

Therefore, the offering and receiving of trade credit finance does come with a level of risk attached to it for both the supplier and the customer. The offering of trade credit finance on goods and services by a supplier comes with an implicit level of trust in the customer (Wu et al., 2014) and that they will repay the debt within the agreed terms. In the event that a customer is unable or unwilling to repay the trade credit finance extended to them for the purchase of goods and services, this may result in the supplier facing the risk that the sale made on trade credit finance needs to be classified as unrecoverable and has to be written off as a bad debt (Paul, Devi, & Teh, 2012). A customer who accepts trade credit financing on the goods and services they purchase faces the potential risk of being unable to repay the debt incurred should an unforeseen circumstance arise (Nilsen, 2002). This may lead to the supplier commencing legal action for the repayment of the trade credit debt which could see additional costs being added to the original amount payable by the customer (Thomas, 2002). The non-payment of trade credit and subsequent legal action will also affect the customer credit rating (Bauer & Esqueda, 2017) which will have an adverse effect on the customers access to both bank financing and trade credit options provided by other suppliers of external finance.

### ***Trade Credit Finance in Europe during the GFC***

(Carbo-Valverde et al., 2009) found in their research into Spanish SME's using firm level data, that during times of financial crisis such as the GFC, credit constrained firms' dependence on using trade credit for finance intensifies and firms offering trade credit finance become in a way, lenders of last resort with an increasingly important role during a credit crisis and the absence of bank loans. Correspondingly, (Psillaki & Eleftheriou, 2015) in a study of French firms during the GFC found that larger firms which had the capacity to obtain additional finance through banks did so, however small firms access to bank loans was constrained which led to an additional uptake of trade credit finance as other external finance options were unavailable. This highlights the important role that trade credit plays for financially vulnerable firms during a financial crisis which is particularly illustrated in Figure 1 whereby European micro distressed firms and small distressed firms increased their reliance in the amount of trade credit received in the years following the 2008 GFC. Additionally, Figure 2 supports Psillaki & Eleftheriou findings whereby small and medium European firms increased their reliance on trade credit during the GFC while their larger counterparts remained relatively unchanged.

Trade Credit Received by Distressed and Non-Distressed Firms

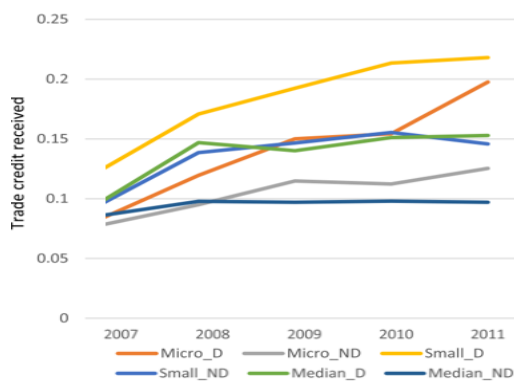


Figure 1: European firms trade credit received. Source (McGuinness, Hogan, & Powell, 2018)

Average Ratio of Net Trade Credit to Sales

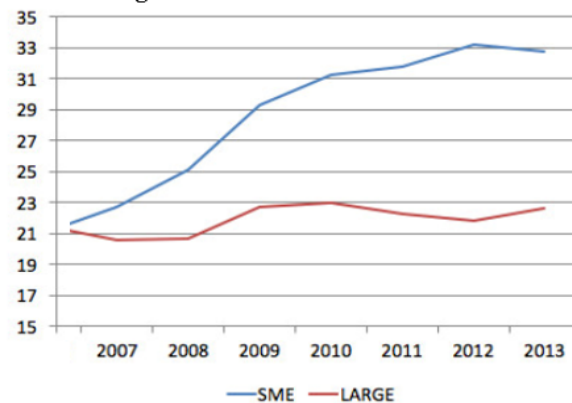


Figure 2: Ratio of European firms trade net trade credit to sales. Source (Fabrizio Coricelli, 2017)

Therefore, from the analysis of the aforementioned literature, it can be concluded that European firms relied significantly on trade credit finance as a form of external funding during times of financial crisis as seen with the GFC. Based on the findings of the literature, RQ2 will need to examine whether Australian firms' reliance on trade credit finance during the GFC increased similarly to that which was observed in the studies conducted on European firms' uptake of trade credit finance.

## Methodology

The following section of the paper will provide an explanation into the methodology behind how the research was carried out in relation to answering the three research questions. This will consist of describing the research design, the data collection plan, analysis of the data and a description of the participants who made up the sample.

### Research design:

The nature of the three research questions has led to a positivist research design approach being employed for this project with the role of the researcher being restricted to the collection and interpretation of the relevant data. To remain consistent with the proven techniques of trade credit analysis identified by (Atanasova & Wilson, 2003), (Bastos & Pindado, 2013) & (Du, Lu, & Tao, 2012), the research consists of a longitudinal data analysis of Australian firms days sales outstanding (DSO), bank loans written and firms balance sheet data for a ten year timeframe where the data is available. Therefore, the data which is analysed is of a secondary nature with the Australian Firms DSO data coming from both Illion Australia (previously Dun and Bradstreet Australia) and Equifax Australia (previously Veda Advantage). Bank Loan dataset is obtained from The Australian Prudential Regulation Authority (APRA) which is an independent Australian Government body that is responsible for the regulation of institutions which operate in the banking, insurance and superannuation industry. The Balance Sheet data is provided by Morningstar through DatAnalysis Premium. After the three datasets were obtained and collated, a longitudinal data analysis was carried out to investigate any changes over the studies timeframe to determine Australian firms' uptake of trade credit as a form of external finance in 2008. Furthermore, we will examine if

Australian firms' uptake of trade credit acted in a consistent manner to Europe during the GFC and the role that trade credit has played for Australian firms post GFC.

### ***Data collection plan***

The data required for the longitudinal analysis has been compiled by third parties for purposes other than this research project making it classifiable as quantitative and secondary in nature. Therefore, as the data required for the project is secondary in nature the collection plan consists of procuring the data from the original authors.

Australian Firms Days Sales Outstanding (DSO) data:

The Data which relates to Australian Firm's Data Sales Outstanding (DSO) was obtained through a combination of publicly available newspapers and websites, with additional data being sourced through publications provided to members of the Australian Institute of Credit Management. The Authors of the DSO data are Illion Australia which holds commercial records on over 2 million Australian Firms (Illion, 2019) and Equifax Australia which holds commercial records on 3.6 million Australian Firms (Equifax, 2019). Where available the data was downloaded as a Microsoft Excel file however in some cases that data had to be manually recorded into Excel.

Bank Loan dataset:

The Bank Loan data is managed by APRA, the independent Australian statutory authority that supervises institutions across banking insurance and superannuation (called pensions in USA) (APRA, 2019). Part of APRA's role is to act as a national statistical agency for the Australian financial sector. APRA's statistical publications are freely available on their website and for the purpose of this project the data was downloaded directly into Excel.

Balance Sheet Data:

The balance sheet data was obtained through DatAnalysis Premium which is provided by Morningstar, a global research and investment firm. DatAnalysis Premium provides financial information on all Australia listed stock exchange (ASX) firms over the last 10 years. The data for the project is obtained through executing a number of queries through the DatAnalysis database and downloading the relevant data into Excel. The balance sheet data provided through DatAnalysis' ASX records provides the research project with a level of surety as all Australian Firms listed on the ASX, regardless of size need to be comply with ASX audit and financial reporting standards to remain listed on the stock exchange. This therefore provides the study with higher quality financial data than that which what would have been available from non-listed Australian firms which do not have to adhere to the strict rules of listing on the ASX.

### ***Data analysis plan***

Upon the successful collection of the DSO, bank loan and balance sheet data, MS Excel is used to carry out an analysis of the existence of any correlation between the three sets of data. In an effort to address RQ1, the Australian DSO firm data and balance sheet data for the years of 2007 - 2009 is compared against the bank loan data from the same period to ascertain if there has been a increase in the uptake of trade credit external finance by Australian firms through an increase in balance sheet ratios and DSO while concurrently experiencing a

decrease in the amount of bank loans provided over the same period. Subsequently as an extension of RQ1, the information provided by the DSO firm data and balance sheet data analysis for the years of 2007 - 2009 compared against the bank loan data will additionally resolve RQ2 by way of confirming if Australian Firms acted in a consistent manner to European firms in their treatment of trade credit as a form of external finance during the GFC through either an increase or decrease in its uptake during the study period. Increasing the study period from 2007 – 2009 which addresses the specific period of the GFC and immediate years either side, to encompass the years of 2007 - 2018 while still applying the same analysis techniques utilised in RQ1 and RQ2, RQ3 is subsequently address by indicating the role that trade credit played as a form of external finance for Australian firms in the years preceding the GFC and the economy recovered.

## **Findings and Discussion**

The key findings of the research project identified that while Australia is geographically distant from Europe, as a country it did however demonstrate consistent results in relation to the uptake of trade credit as an external firm of external finance by Australian firms during the GFC. Interestingly, while the rest of the world was experiencing a constriction in bank lending, Australia experienced a marked increase in the value of the bank loans provided to Australian firms from 2007 which continued until November 2008 with only a slight decrease occurring in the middle of 2009. A long terms analysis of Australian firms' uptake of trade credit as a form of external finance in the recovery years of 2009 – 2018 post the GFC noted a considerable decline in its use as a form of external finance while bank loans to Australian firms continued to increase in value.

### ***Trade Credit Finance During the GFC***

Specific analysis of the data pertaining to the years 2007 – 2009 seeks to address RQ1 which examines the effect that the GFC and global bank lending constraints had on Australian firms' uptake of trade credit as a form of external finance during 2008. Figure 1 which is compiled from Australian firm DSO data obtained from Equifax and Illion Australia shows an increase in late repayment of trade credit finance by 7.102% which equates to firms being repaid trade credit finance 3.7 days later than experienced in 2007. Whilst 2009 saw a dramatic decrease in DSO to lower than pre-GFC levels which would indicate that trade credit finances' role in providing a form of external finance to Australian firms has diminished. As a robustness check on the DSO data, an analysis of Australian firms balance sheet data relating to the uptake of trade credit during the same period was also applied. To calculate the level of trade credit finance being received by Australian firms from their suppliers the following formula which has been employed in studies into Trade Credit by (McGuinness & Hogan, 2016) was utilised:

$$Net\ Trade\ Credit = \frac{(Accounts\ Receivable - Accounts\ Payable)}{Total\ Assets}$$

Australian firms' balance sheet data exhibited a similar increase in the reliance of trade credit as an external form of finance by Australian firms during 2008 with a 3.737% increase from 2007. Similarly, the balance sheet data pertaining to trade credit finance also experienced a reduction in the reliance on trade credit finance by Australian firms in 2009.



Figure 3: Australian firms DSO



Figure 4: Australian Firms Trade Credit

Similar to Figures 3 and 4, Figure 5 relates to the value of bank loans provided to Australian firms as a form of external finance. It also experienced an increase from 2007 to 2008. It suggests that Australian firms did not experience constraints when it came to accessing bank loans as a form of external finance. An analysis of the three graphs illustrates that during the GFC in 2008 Australian firms had a greater reliance on all forms of external finance when compared to their demand for external finance in 2007.

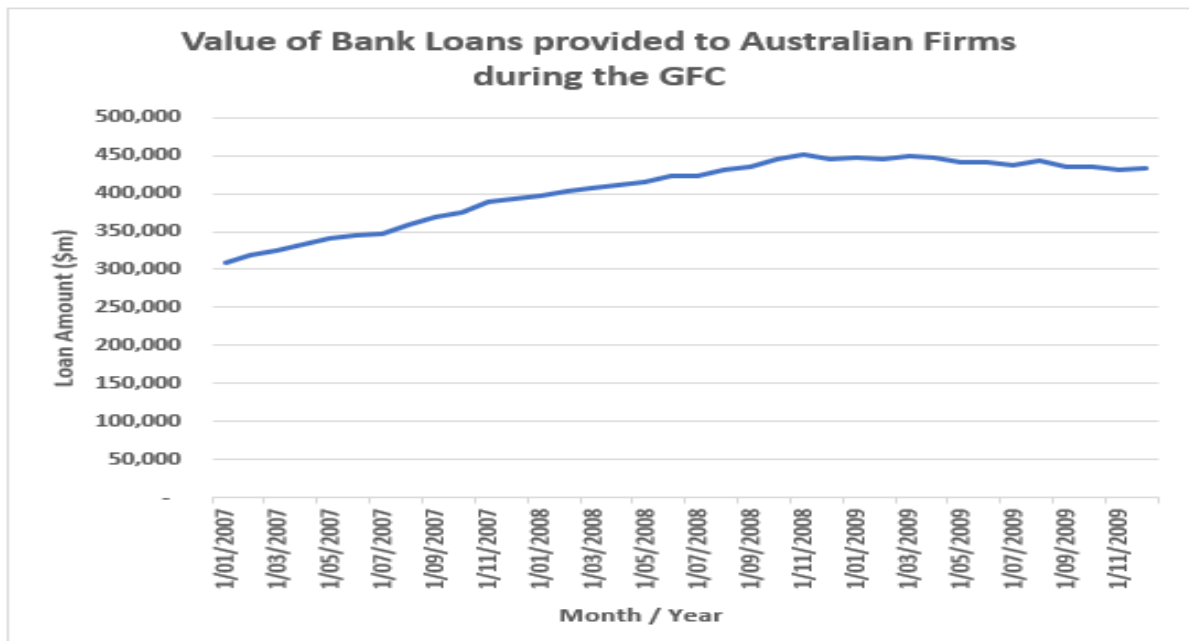


Figure 5: Bank loans provided to Australian firms.

Where bank loans as a form of external finance for Australian firms, differ from trade credit that existed in 2009, is that loans continued to remain at a constant level compared to trade credit finance which experienced a considerable decline.

Therefore, in relation to RQ1, bank loan finance for Australian firms continued on an upward trajectory in the period 2007 – 2009. There is little evidence to suggest that Australia experienced constraints in bank lending during the GFC. While Australian firms had readily available access to bank loans as a form of external finance during the GFC, from the increase in demand for trade credit finance during the same period and subsequent reduction back to pre-GFC levels in 2009, it can be concluded that trade credit finance played an important role in providing Australian firms with an additional form of external finance during a time of economic crisis and uncertainty.

Furthermore, when examining if Australian firms acted in a manner which was consistent with the findings of studies carried out into European firms' uptake of trade credit as a form of external finance during the same period, it can be concluded from the findings of this study that Australian firms did act in a manner which was consistent to their European counterparts. This is demonstrated by way of the conclusion that Australian firms did act in a consistent manner with their European counterparts when it comes to their uptake of trade credit finance and therefore addresses RQ2 of this study.

### ***Trade Credit Finance Post-GFC***

It has been established that Australian firms acted in a consistent manner in their uptake of trade credit finance to their European counterparts during the GFC. This therefore addresses RQ1 and RQ2. The following section of this paper specifically addresses RQ3 and focuses on the 10 years following the GFC whereby examining the role that trade credit played as a form of external finance for Australian firms during the recovery period. To stay consistent with the previous section of the paper, the same measures of trade credit uptake are employed (DSO analysis and firm balance sheet data) and in relation to measuring bank loans provided to Australian firm's statistical data from APRA is employed.

Research conducted by (Huang, Shi, & Zhang, 2011) has demonstrated in many circumstances that trade credit finance normally has a substitutable relationship with bank finance. With the latter being the preferred option of firms due to the high cost associated with trade credit finance in Europe where trade credit settlement discounts are common business practice. For example, a supplier may offer a firm trade credit finance on a 2/10, net 30 arrangement whereby a 2% discount is applied to the invoice if it is paid within ten days or no discount if paid between eleven and thirty days. Failure by the purchasing firm to take up the 2% discount is very costly, with an implied annual interest rate of 44.59 percent which greatly exceeds interest rates offered to firms by way of banks loans and therefore ensures that trade credit finance is a less attractive option when compared with bank loans.

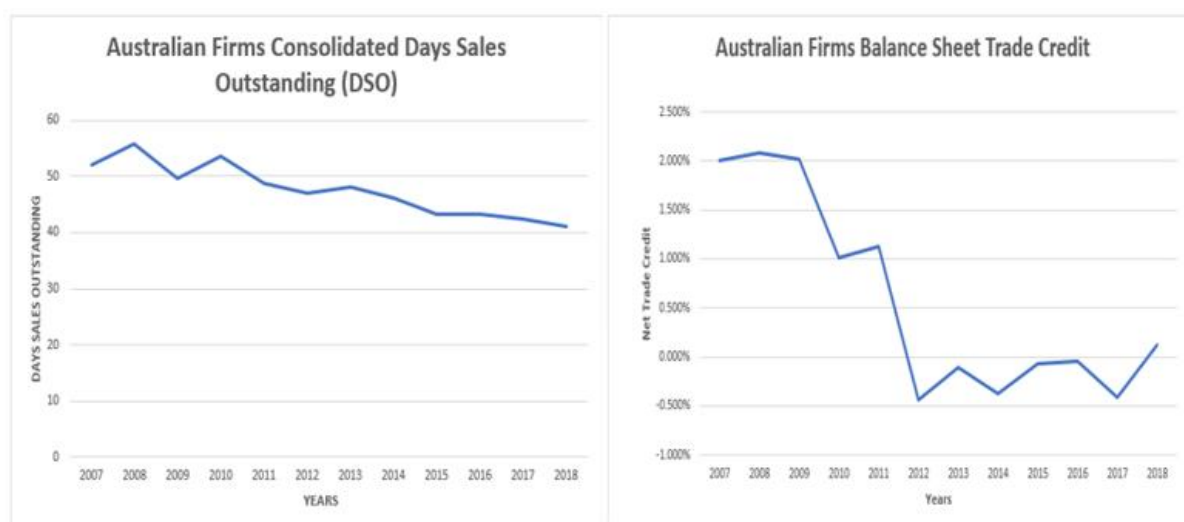
$$98(1 + r_{TC})^{20/365} = 100 \Leftrightarrow r_{TC} = \left( \frac{100}{98} \right)^{365/(30-10)} - 1 = 44.59\%$$

*Figure 6: Calculation of the implicit interest rate applied to a 2/10, net 30 trade credit invoice. Source (Astrid, 2011).*

Where Australian firms differ greatly from European firms is that it is not normal practice to offer settlement discounts on trade credit finance to their customers. With no implied cost associated with the late repayment of trade credit finance by Australian firms to their suppliers it would be expected that in the years following the GFC, trade credit finance would remain at a similar level to that experienced between 2007 – 2009.

Figures 7 and 8 which measure Australian Firms uptake of Trade Credit Finance both demonstrate a reduction in the use of trade credit finance post GFC as a way of meeting external finance requirements.

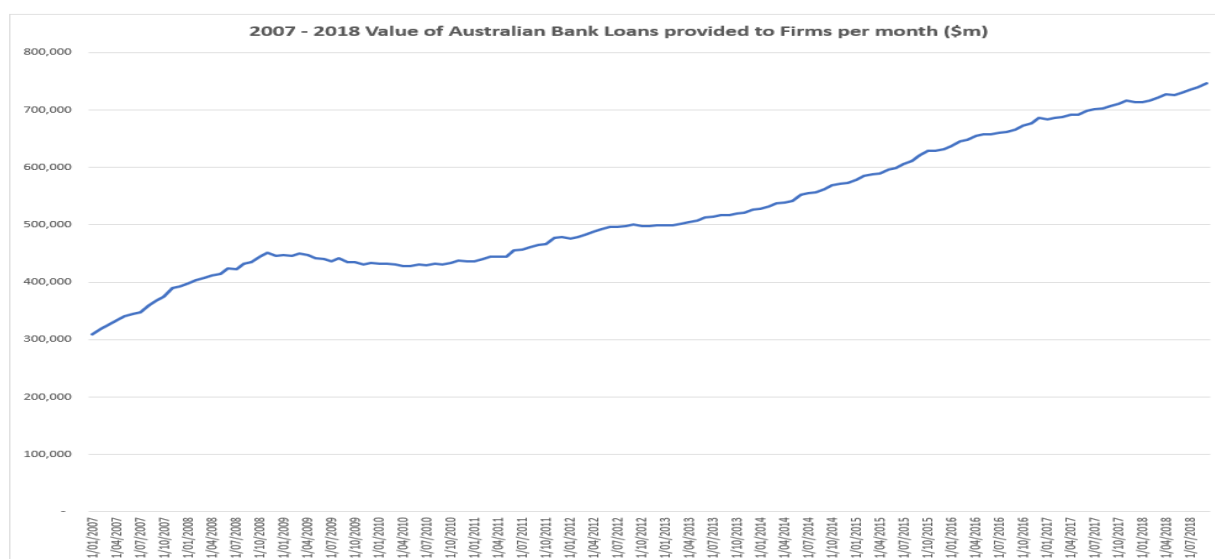




*Figure 7: Australian Firms DSO Pre and Post GFC*

*Figure 8: Australian Firms Balance Sheet Trade Credit Pre and Post GFC*

In contrast to the reduced reliance on trade credit finance by Australian firms, Figure 9 reveals that a greater reliance by firms being placed on bank finance as a form of external funding has occurred in the Post GFC years of 2009 – 2018 which has seen a 66.71% increase during that time.



*Figure 9: Bank Loans to Australian Firms*

With reference to RQ3 and the role that trade credit finance has played in the post GFC years it can be confidently confirmed from the analysis of the data, trade credit finance displays the characteristics of a substitutable relationship with bank loans as a form of alternative external funding for Australian Firms. This is true save for times of financial stress such as those seen during the GFC. Australian bank interest rates have remained unprecedentedly low for a number of years and the Reserve Bank of Australia has been keeping the official cash rate at 1.5% since August 2016. Australian firms while opting for bank loans as their preference for external finance are at odds with their European counterparts by choosing the more expensive option for externally financing their operational needs.

## Conclusion

While Australia is geographically distant from Europe, during times of economic downturn such as the GFC, Australia was not immune and conversely experienced a significant adverse impact to their economy. Overseas studies have demonstrated that trade credit finance can contribute as a stabilizing force during times of economic downturn by allowing firms to access an alternative form of external finance to bank loans as a form of buffering the full impact of an economic crisis. Like their counterparts in Europe, Australian firms also increased their uptake of trade credit finance during the GFC; however bank lending did not experience a material change during the same period. The post GFC years saw Australia follow the rest of the world into recovery and while Australia experience a considerable downturn during the GFC the proceeding years saw an economic boom, especially in the mining sector which was marked by a distinct relaxation in bank loan criteria across all industries and increased incentives for bank agents to offer cheap and readily available bank finance to Australian firms at the expense of appropriate credit checks.

Despite being the more expensive option, easy access to bank loans as a form of external finance to Australian firms has seen a decrease in the demand for trade credit finance post-GFC which contrasts with their European counterparts who increased their reliance on trade credit finance in the years following the GFC. In anticipation for the next economic downturn or crisis, it would be prudent to presume that trade credit finance will play an important factor as a form of external finance for Australian firms in a financial downturn or a government facilitated reduction in firms' access to external bank loan finance. With this being demonstrated in the data by a sharp increase in Australian firms demand for trade credit finance during 2008 which is consistent with the European firm data outlined in the literature review. While in the years following the GFC, Australian firms reduced their reliance on trade credit finance which is inconsistent with European firms. Furthermore, in the absence of extensive Australian focused research, business decision makers and government policy officials can gain insights into Australian firms' reaction to a financial crisis and the uptake of trade credit through the analysis of research carried out in Europeans studies. While additional research into the cause and effects relating to Australian firms' uptake of trade credit finance during a financial crisis as opposed to European firms is warranted, an area of further analysis would be Australian firms' preference for bank loans as a form of external finance. With bank loans being the more expensive form of external finance in the absence of settlement discounts as opposed to trade credit, which is at odds to their European counterparts.

### *Limitations*

The limitations of the study lie with the dataset used for the analysis of the uptake of trade credit vs bank credit for the subsequent years following the GFC within Australia. As the dataset consists exclusively of Australia firms listed on the Australian Stock Exchange a vast number of SME's and privately owned large firms have been excluded from the sample. Therefore, it could be argued that the sample data is biased towards medium and large firms which are predominately listing on the stock exchange and have easier access to external funding through bank loans and the issuing of additional stock options to raise capital rather than a heavy reliance on trade credit for external funding. Access to private SME firms balance sheet data could provide additional insights into the external funding options and uptake which was available to Australian firms during the 10 years following the GFC.

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# AN QUALITATIVE APPROACH TO DETERMINE THE IMPACT OF STICKY COSTS IN THE MANUFACTURING INDUSTRY

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## Abstract

*Since the eye-opening paper *The Hidden Factory* of J. G. Miller and T. E. Vollmann in the Harvard Business Review in 1985 about overhead cost management the ramifications of managing fixed and indirect cost remain on the radar of business decision makers. Unfortunately, the percentage of overhead costs on the overall costs continues to rise. It reaches for some industries more than 90% (e.g. in the semiconductor industry). What makes matters even worse is the fact that once incurred overhead is very hard to scale down. The term sticky cost has been coined in the last years to describe this situation. It means that it is easier to increase costs in order to justify a new activity than it is the other way around to decrease the very same costs when the activity diminishes with the once same amount. Given this background the research objective is how to deal with sticky costs in the manufacturing industry in Styria. The objective of the factories is to keep the operational capacity intact in terms of having sufficient leeway for navigating through the rough seas of business. As research approach a qualitative study has been chosen in order to find out reliable answers to the question: How is the behaviour characterized in the manufacturing industry to deal with sticky costs? The research design follows the Grounded Theory methodology to develop a mid-level theory grounded on empirical observations. As practical tool the CAQDAS software ATLAS.ti has been used under the guidance of Dr. Susanne Friese. The results of the research are threefold. First, there is a huge reluctance in the industry to increase the fixed cost base. - Only, if really unavoidable new permanent hires or infrastructure investment is approved. Second, the variabilization of costs is the preferred way to scale the costs in both directions up and down. - Although, this is not always possible because of legal issues (e.g. environmental commitments and demands of the unions hinder the scaling down). Third, a rigid controlling system helps to determine early deviations to the (often) once linear scaling model - A newly (from the author) introduced tracking signal indicates an early warning for the decision maker to react proactively. There is a permanent scrutinizing of the cost data. It is easier to react early - and often fast - to small deviation than to make deep cuts, which need thoroughly and time-consuming analysis, in order to correct major misbalances. It is fair to say that as conclusion of the research it is a matter of fact that sticky costs have been around since manufacturing has been done in a professional way. What is new is the observation that recognizes for the first time the criticality of the situation, especially in dynamic environments. Additionally, new innovations of digitalized solutions help to shed light into the data jungle. It is the transparency of early indicators that makes the difference for the decision-maker to deal with sticky costs intelligently. Many organizations are overwhelmed with the hype around Industry 4.0, which prevents them to use already available information from a different perspective.*

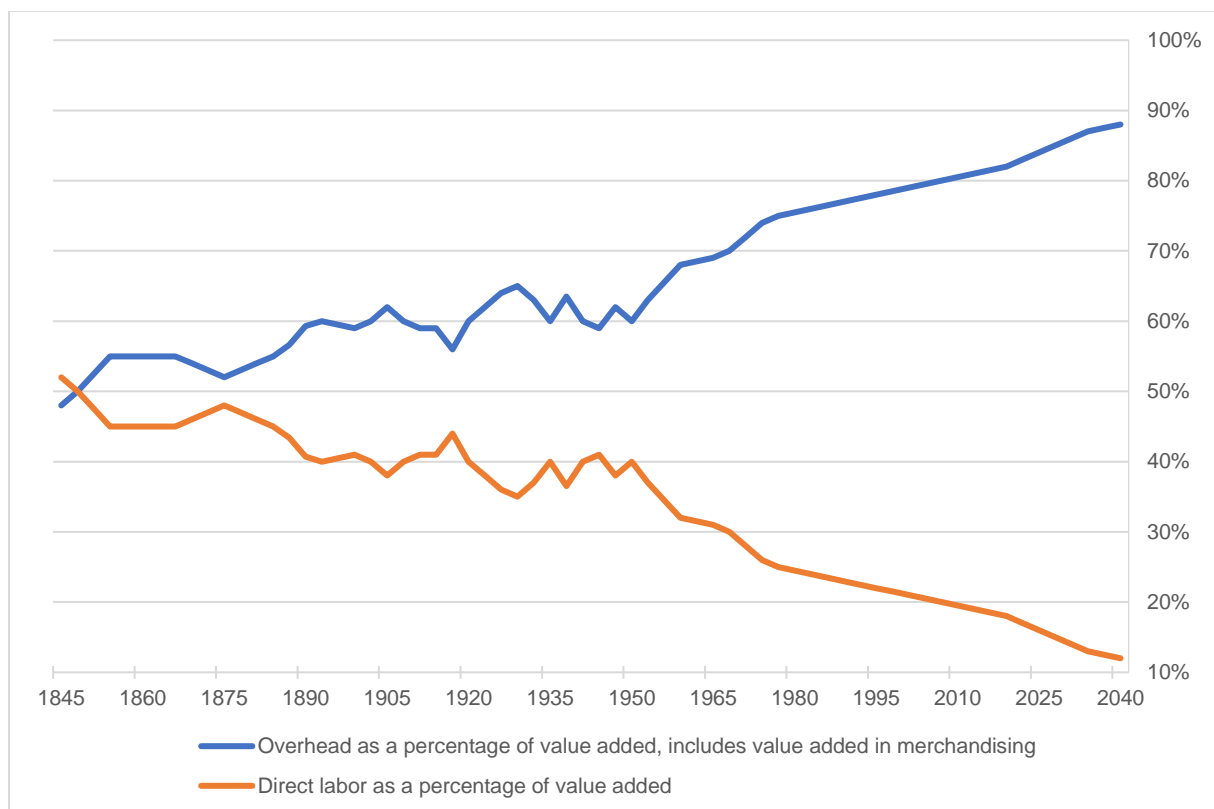
**Keywords:** Digitalization, Overhead Costs, Qualitative Research, Sticky Costs

**JEL classification:** D22, G41, L60, M14

## Introduction

Cost management has been always important for companies. Although, since the financial crisis in the year 2008, which has turned for many companies into an economic crisis, the successful management of costs became even more important. In manufacturing companies, the overheads, which are fixed costs from a structural point of view and which are indirect costs from an accountability point of view, become more significant due to several reasons. There is the issue on the inflexibility of scaling overheads quickly up and down as necessarily required in dynamic markets. Especially, the reduction of overhead is a delicate process. In particular, this is true if it means to let go well-established routines. Miller and Vollmann display numbers from the mid-19th century until the early 1980 (Miller and Vollmann, 1985: 142-150). It shows the continuous increase of overhead costs.

*Figure 1: The increase of overhead-costs in a long-term perspective*



*Source: HBR, own research*

Miller and Vollmann state that the continuing surge of overhead is immanent due to the ongoing automation of the businesses processes. Figure 1 shows an increase of overhead from 50% in the middle of the 19th century to almost 90% as a percentage of value added 190 years later. The trend indicates that overhead will slightly continue to raise. Consequently, the direct labour decreases.

Asymmetric cost behaviour has emerged as a vibrant research area in accounting. This means that it is harder to scale down costs – especially overhead cost – than to build it up. Therefore,

the popular term Sticky Costs were introduced. Costs are a fundamental determinant of earnings. Insights into cost behaviour has major ramifications to financial accounting issues that rely on understanding or forecasting the time series of earnings, earnings prediction, detection of earnings irregularities, and earnings forecasts. Asymmetric cost behaviour is far broader than a naive assumption that costs are sticky. It introduces to a new perspective how to think about cost behaviour and the influencing factors. While the traditional view of cost behaviour anticipates a direct correlation between costs and the corresponding activity, simplified with a cost model using so-called fixed and variable costs. As a side-comment it needs emphasis to the fact that costs are never really fixed. It is a matter of time when the once fixed costs evaporate (e.g. by selling the cost object). The new perspective on cost behaviour recognizes the explicit impact of conscious decision-making on management level.

The asymmetric cost behaviour builds on two observations about costs. Firstly, many - but not all - costs arise because decision-makers make a deliberate decision to commit resources. Secondly, several commitments on resources can be altered even on short notice, but the execution to do so has costly ramifications (e.g. costs for installation and disposal for capital equipment, changing an already started production run, severance payments to laid-off employees, training costs for new employees). The interaction of conscious decision-making and the adjustment of resources enjoys a lively dynamic that goes back and forth. There is a time element as well as the uncertainty of future events that needs managerial attention. In particular, managers have to consider not only current activity (as in the traditional model), but also previous resource levels, because they impact eventually needed adjustment costs which incur in the actual period. Additionally, the consequences of current resources on future cost levels requests responsible valuation. Further, managers' incentives and behavioural biases influence the decisions on resource commitments. The research addresses the question: How do factories deal with sticky costs in Styria?

## **Research Methodology**

Grounded Theory was developed by Barney Glaser and Anselm Strauss in the early 1960s in response to the dominating positivist grand theoretical work in the field of sociology. At the time, empirical research grounded in field-based participant-observation was in decline. There was a clear preference to develop a grand theory. The idea of grand theory follows generally the "notion that the purpose of social research is to uncover pre-existing and universal explanations of social behaviour" (Suddaby, 2006: 633). Although, the creation of grand theory displaced researchers from the field and encouraged them to deduce from axiomatic truths new contexts by applying logic. It can be said that it extrapolates these truths into a new frame. Glaser and Strauss criticized this approach of research. They believed that grand theorizing puts too much distance to real people as they struggle to solve their everyday issues (Goulding, 2002). Therefore, in contrast to grand theory they positioned the Grounded Theory methodology as an qualitative approach for a so-called mid-level theory "developed by thinking things through in a logical manner and sought to replace it with theory developed from rich observational data" (Locke, 2002: 19). Glaser and Strauss had the impression that the behaviour of the research community in the early 1960s "had the unfortunate consequence of discrediting the generation of theory through flexible qualitative and quantitative research" (Glaser & Strauss, 1967: 223).

The Chicago School of Sociology influenced Glaser and Strauss. They found a comprehensive tradition of field research there, which encouraged the direct observations of

participants by the researchers. Additionally, they were in favour of the interactions between participants and researchers. Glaser and Strauss were also affected by the field of symbolic interactionism. It pays especial attention on how people interpret the meaning of objects in the world, the dynamic reciprocation of human behaviour, the felt realities of individuals, and the construction of social behaviour (Charmaz, 2005; Gephart, 2004; Goulding, 2002; Locke 2001, 2002). With Grounded Theory, they were looking to extract new explanations about patterns in relationships among social actors. Further, they wish to find out how these relationships works and how the interactions dynamically manufactures realities for the social actors (Glaser & Strauss, 1967).

The research methodology of Grounded Theory proposes a well-tested and consistent “set of systematic procedures extending and significantly supplementing the practices long associated with participant observations in order to achieve their purpose of developing grounded theories of action in context” (Locke, 2002, p. 19). While Grounded Theory consists of various analytical principles, it is the collective iterative revisiting of these principles that creates a holistic methodology for mid-level theory building. Grounded Theory is much more than a vague collection of tools for handling and analysing data. It is also not a recipe for coding data. Further, Grounded Theory should not be misused as a reservoir for any newly invented qualitative research approach. As Strauss and Corbin (1990) proclaim, “The [Grounded Theory] procedures are designed to systematically and carefully build theory. Taking shortcuts in the work will result in a poorly constructed and narrowly conceived theory.”

Since Glaser and Strauss released the ground-breaking work *The Discovery of Grounded Theory*, the two authors developed in different directions. Glaser prefers creativity and openness and Strauss (with co-author Juliet Corbin) favours a more structured approach for analysing the data (Locke, 1996; Strauss & Corbin, 1990). In spite of this difference of opinions on a philosophical level between Glaser and Strauss, the book *The Discovery of Grounded Theory* of 1967 stays the fundamental handbook on Grounded Theory. It provides guidance to leading contemporary qualitative researchers to build their own grounded theory in many fields, notably for marketing and management disciplines. They are based on Glaser and Strauss’s (1967) very original ideas/recommendations (e.g., Fournier, 1998; Gephart, 2004; Gummesson, 2005; Isabella, 1990; Klein & Myers, 1999; Orlikowski, 1993, 1996; Ringberg, Odekerken-Schroder, & Christensen, 2007; Suddaby, 2006).

However, while the principles of Grounded Theory have been around for more than 50 years, its methodological execution demonstrates a broad variance from one study to another. This makes the methodology look ambiguous and is often misunderstood by many - even those who promote it. In practice, while many qualitative studies refer to the use of Grounded Theory methodology, an over-whelming amount have hardly applied any elements of the approach. Even worse, the jargon of Grounded Theory is not respected, as noted by Gephart (2004), Glaser (2009), Johnston (2009), and Suddaby (2006). This in-complete adaptation of Ground Theory may cause problems. As Urquhart, Lehmann, and Myers (2010: 359) refer: “Researchers who use grounded theory only as a way of coding data are neglecting the main purpose of the method - which is to build theory”. The mighty effect of Grounded Theory becomes best in effect when Grounded Theory is applied from an epistemological viewpoint. This means to create new insights. Grounded Theory is a holistic methodology, which is more than the coding and analysing of data.



## Results

Using the Computer-assisted qualitative data analysis software ATLAS.ti (Friese, 2019) the analysis and formulation of a mid-level theory emerges the following results. As source for the analysis serves the interviews of 20 factory managers who have the power of authority to make resource-sensitive decisions. The land Styria in Austria performs as the geographical region for the interviews. The size of the factories ranges from 100 to 600 employees. The age of the factories goes from 5 to 140 years. All have in common that they have at least an export ratio of 50%. It is assumed that saturation has been achieved as additional interviews confirmed the following findings.

*Table 1: Concepts → Categories → Sub-core Categories → Core Category*

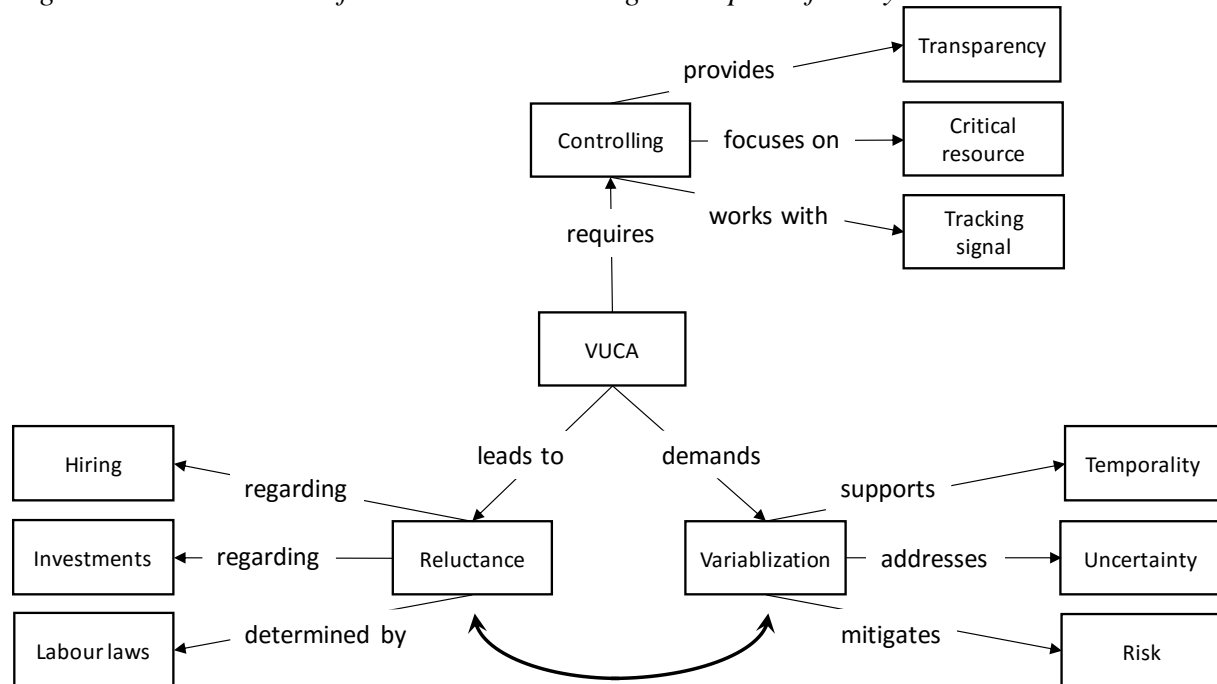
<b>Core Category</b>	<b>Volatility, Uncertainty, Complexity, Ambiguity (VUCA)</b>		
<b>Sub-core Categories</b>	Corporate governance model	Variablization of Costs	
<b>Categories</b>	Reluctance to increase fixed cost	Dynamic scaling of costs	<b>Determination of early deviations</b>
<b>Concepts</b>	Labour regulations National laws EU conformity GRI (Global Reporting Initiative) IFRS (International Financial Reporting Standards)	Hysteresis of costs Digitalization Transparency Objectivity Sustainability Cost driver Long-term vs. short-term perspective	Industry 4.0 How to find out if there is a significant gap to the original plan?

*Note: Result - The concepts are the qualitative aggregation of the interviews*

*Source: Author's findings*

The table above delivers the core category of the study, which is VUCA. It has manifold meanings. The cooperate governance model (once defined for the organization) and the successful variablization of costs (often at the expense of long-term success) are the corresponding sub-core categories. The induction of the found concepts condenses to three categories: (1) reluctance to increase fixed cost, (2) dynamic scaling of costs, and (3) determination of early deviations. All three categories have in common that they have an impact on sticky costs. Interestingly, the numerous concepts range from abstract reporting standards to hands-on questions how to identify the gap. Overall, they demonstrate a sophisticated understanding in the industry, namely of the interviewed factory managers. As a next step the findings are displayed in a network view.

Figure 1: Network view of the results concerning the impact of sticky costs



Source: own research

The figure above shows the dependencies and interrelations of the categories. VUCA as core category stands in the middle. The arrows indicate the direction of the relationships. It is worth to mention the inter-relationship between the categories Reluctance and Variablization which is described as following:

### ***Huge reluctance in the industry to increase the fixed cost base***

The first finding unveiled a stiff reluctance to hire permanent workers or to invest in expensive infrastructure. There is a clear trend that the employment of temporary workers (provided from work agencies) will continue. As reason for that uniform assessment is the inflexibility demanded by local labour laws. The significant burden of the expenses for the social welfare-system makes even matters worse. It is the – often feared - long-term impact that drives decisions preferring short-term solutions (even on a higher total cost).

### ***Variablization of costs is the preferred way to scale the costs***

Based on the previous finding there is consensus that the best way to tackle sticky costs is to keep them as long as possible truly variable. This is often more difficult as assumed. For example, temporary workers become automatically permanent workers if their contract is prolonged twice. This leads to the undesirable effect that well trained staff needs to leave the factory because of the uncertainty of future demand. The factory management does not want to take the risk to increase the overhead costs by hiring them permanently. They decide then to hire different new workers temporarily and to start with the training again. This leads to a permanent uneasiness among the staff. Further, critical knowledge might go out the door if the transition to the new staff is badly managed.

### ***Rigid controlling system helps to determine early deviations***

Cost-transparency created by rigid controlling systems enable the decision-makers fast and timely decisions on resource-critical issues. The digitalization of business process helps to have the data available. Although, the data needs to be translated into information that is fed into a decision model. Interestingly, the well-tested forecasting tool of tracking signal experiences a revival. The author introduced the tool to all the interviewed factories. 14 of them use it now to balance the demand with the supply, in a narrower sense the resources. A tracking signal monitors the comparison of forecasts with actuals. It warns when there are unexpected deviations in the forecasts. The forecasts can relate to sales, inventory, or anything else contributing to an organization's success (e.g. overhead costs). The deviation of actual to forecasted sticky costs is demonstrated in the following table.

*Table 2: Tracking signal to indicate early a significant deviation of acceptable overhead costs*

Week	Actual	Forecast	Error (E)	Running Sum (RS) of (E)	Absolute Deviation (AD)	Mean Absolute Deviation (MAD): Sum of (AD) / Week	Tracking Signal: (RS) / (MAD)
1	21	19	2	2	2	2	1
2	25	22	3	5	3	2,5	2
3	22	24	-2	3	2	2,3	1,3
4	24	23	1	4	1	2	2

*Source: Author*

The tracking signal is an effective early indicator. It unveils if there is a bias in the data. The companies apply the tracking signal to validate their forecasting model. Per week, there are actual and forecasts (of sticky costs) recorded. The Error (E) describes the delta of the actual minus the forecast per week. The Running Sum (RS) cumulates the Error (E) by week. The Absolute Deviation (AD) describes the absolute delta (always positive) of the actual minus forecast per week. The Mean Absolute Deviation (MAD) cumulates the AD per arising week and divides it by the number of weeks. Finally, the tracking signal divides the Running Sum by the Mean Absolute Deviation.

A tracking signal helps to find out if a forecasting method is out-of-control. If it stays within 3.75 times the MAD (which represents roughly three standard deviation of a normal distributed process) the probability that the Error is caused by random variation (and not specific or biased variation) is high. In the table above the tracking signal stays below this limit and therefore the forecasting of sticky costs can be considered as unbiased. A tracking signal outside established limits indicates that the forecasting method should be modified.

## **Discussion**

The core category with the three categories are the findings that explain the elements to determine the impact of sticky costs in the manufacturing business. What the research leaves open are the root-causes of the finding itself. For example, it is not clear why a tracking signal is hardly used in the industry. There are plenty of – often quantitative – methods available that are rarely used in the industry. It raises the question if a lack in statistical education is the reason for that. Or, that the quantitative methods do not meet the ease-of-use requirements in the practical world of the factories.

Further, the research misses out the geographical impact of the topic. It might be easily the case that in another economical system the results are completely different. Even in a widely homogenous theatre like the European Union there is no prove that the same question produces completed different results in the Scandinavian or in the Mediterranean countries. As pointed out the findings are solely grounded for factories in Styria.

## Conclusion

It seems that the problematic impact of sticky costs is well understood in the manufacturing industry in Styria. The three findings of the research provide useful insights how factory managers deal with sticky costs right now in 2019. For the experienced industry leader, the results might be somewhat expected, even common sense. Though, the research delivers a well-tested qualitative answer that confirms this latent feeling.

Still, the study has several constraints: First to mention is the small size of the interview partners. The 20 interviews unveiled interesting insights that the author would have not foreseen. It gives the impression that serendipity makes the size sufficient as all interviews are consistent concerning the core message: Sticky costs as well as VUCA are hard to handle, but we are learning to deal with it. Second, a quantitative verification would bring a comprehensive clarification on the amplitude of sticky costs in the entire region. Additionally, it is recommended to benchmark the study with other industries in other regions. Unfortunately, there is a lack of data. Further, from a methodical point of view the model needs more depth. So far just three categories were developed. Many steps in between could be explored and elaborated. For the sake of brevity just the major elements have been described.

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# DIVIDEND SMOOTHING ASYMMETRY ON ZAGREB STOCK EXCHANGE

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## Abstract

*Even though dividends are a frequently analysed matter, they are still considered to be one of the most interesting and intriguing issues in modern financial literature. This is once again proven by Brealy and Myers who, at the beginning of the 21st century, put dividends among ten most important unresolved concerns of modern finance. One of the quintessential papers dealing with dividends is John Lintner's paper written in 1956 which, according to many economic theorists, gives basis for modern dividend policy. His work presented an econometric model of conclusions drawn from research made by analysing managers making decisions about dividend payout. Lintner has set postulations regarding dividend behaviour according to which dividends are a function of long-term sustainable earnings. As stated by Lintner (1956), managers are trying to manage dividends. In doing so, the managers try to smooth dividends or mitigate dividend volatility compared to earnings volatility attain. Companies have target dividend payout ratios. The change in dividends follows the changes in the company's earnings, with the managers not willing to reduce dividends unless they are forced to do so. The Linter model assumes that companies are smoothing dividends to their target dividend payout ratios at the same speed, regardless of whether the dividend is above or below the target payout ratio. The aim of this paper is to reject the assumption of symmetric dividend movement and to investigate if there is dividend smoothing asymmetry depending on whether the paid dividend is above or below the target payout ratio. In this paper, the authors have followed Lintner (1956) approach using regression analysis conducted in STATA. The sample consists of joint stock companies listed on the Zagreb Stock Exchange (ZSE) that have, in the period from 2003 to 2018, paid out a dividend for at least four consecutive years.*

**Keywords:** dividends, dividend smoothing, dividend behaviour, Zagreb Stock Exchange

**JEL classification:** G14, G35, G40

## Introduction

One of pioneering papers dealing with dividend behaviour is Lintner's from 1956, which, according to a number of economic theorists, provides the foundation for modern understanding of dividend behaviour and dividend policy. Lintner (1956) reviewed the

academic and popular finance literature that dealt with dividend policy and recorded fifteen variables that were identified as dividend decisions determinants. Among identified dividend decision determinants were variables such as firm size, capital expenditures, willingness to use external financing, willingness to use stock dividends, earning stability, ownership, etc. Next step in his research was to choose a sample of more than 600 listed, well-known companies. From more than 600 listed companies he chose 28 companies for intensive follow-up interviews. Lintner then conducted interviews with several of the managers responsible for dividend decisions in each of the chosen 28 companies (Lease, John, Loewenstein, & Sarig, 2000).

Lintner's research shows that managers believe that shareholders prefer stable dividend payment that reflect stability and gradual growth. Furthermore, the research also shows managers belief that having to reverse a dividend increase is highly undesirable. Therefore, when earnings increase, firms do not immediately increase their dividends to achieve the previous payout ratio. Companies tend to increase their dividends gradually toward a target payout ratio to avoid any unexpected changes in dividends should the earning increase not be long-lasting (Baker, 2009).

Based on the interviews conducted, Lintner has set hypothesis on target dividend payout ratio according to which, dividends are a function of long-term earnings. The conclusions of Lintner's research can be summarised into following:

- the companies have long-term target dividend payout ratio,
- managers are more oriented on changes of dividends than on their absolute amounts,
- changes in dividends follow changes in long-term earnings,
- managers are not prone to dividend changes that might have negative consequences and specifically they are not willing to reduce dividends.

Based on his findings, Lintner has set a model showing conclusions of his research regarding managers making decisions on payment of dividends. Specifically, according to Lintner, most dividend decisions are a function of earnings in current year ( $E_{i,t}$ ) and dividend payments in the previous year ( $D_{i,t-1}$ ). His model can be shown using the following equation:

$$\Delta D_{i,t} = a_i + c_i \times (D_{i,t}^* - D_{i,t-1}) + \mu_{i,t} \quad (1)$$

with  $a_i$  being the constant. Positive value of  $a_i$  indicates the greater reluctance to reduce dividends. The parameter  $c_i$  indicates the speed of adjustment coefficient varying between  $0 \leq c_i \leq 1$ . If  $a_i$  equals zero and  $c_i$  equals one, the real change in dividends equals targeted.  $D_{i,t-1}$  is the amount of dividends paid in the previous year ( $t-1$ ), and  $\Delta D_{i,t}$  is the change in dividend payments.

Lintner tested his regression model with actual corporate dividend. The conclusion was that his model explained 85% of the variation in changes of dividend. It is worth noting that the intercept  $a_i$  was significant and positive (Lease et. al, 2000).

According to Lintner, dividend policy is a managed dividend policy arising from the conclusions of his paper stating that companies have target payout ratio, changes in dividends follow a shift in earnings with managers being reluctant to cut dividend payments except when they are forced to do so (Miletić, Pavić Kramarić, & Pepur, 2017).

Despite the differences in the characteristics of the dividend streams of corporations in various countries, dividend smoothing seems to be a management tendency everywhere. Indicator that is often used as a measure for dividend smoothing is speed of adjustment coefficient (the parameter  $c_i$  in equation 1) from Lintner model. The higher the speed of adjustment coefficient, closer to 1, the faster is the company's adjustment of dividend to the desired amount. If the amount is 1, the company instantaneously adjusts (changes) the dividend to the desired amount or the actual changes in dividend coincide with the desire's changes. If this indicator is near zero, the company responses slowly or does not change the dividend to the desired, targeted amount. In Lintner's research the speed of adjustment coefficient was 0.30. The speed of adjustment coefficient is different from research to research, and from market to market. Speed of adjustment coefficient is often smaller on developed stock markets meaning that companies on developed stock markets do slower changes to desired amount, also the speeds of adjustment of bank-based countries such as Japan and Italy were higher than those of market-based countries such as the US and Canada (Seungwook Bahng, Lee, & Chul Jeong, 2011). According to research of Leary and Michealy (2011), speed of adjustment coefficient for companies in US for period from 1985 to 2005 was 0.14. The same authors state that the speed of adjustment coefficient for the same market has decreased over the time from about 0.4 in the early 1950s to 0.14. Research (Andres, Andre, Goergen, & Renneborg, 2009) done on German companies showed that speed of adjustment for companies on German stock market is 0.21 and also authors concluded that the value of speed of adjustment is top end of the values obtained by previous studies on France, Germany, Portugal, the UK and US.

## Methodology, data description and empirical results

With the aim of defining the research sample, basic criteria has been set up. Specifically, the period from 2003 to 2018 has been taken as the period of analysis and only those companies listed on the ZSE that paid out a dividend at least in four consecutive years have been covered by the sample. 34 companies have met the specified criteria. Average number of consecutive years in which dividend was paid was 9.6. Average target dividend payout ratio (TPR) for companies in sample was 0.46.

Indicator that can be used as a measure for dividend behavior is Lintner's speed of adjustment coefficient. With the aim of conducting research on dividend behavior, the sample must consist of companies paying out the dividends in several consecutive years. Since Croatian capital market is relatively underdeveloped and small; there are not many companies that have paid out dividends over a longer period.

Calculation of the speed of adjustment coefficient can be subject to the small-sample bias in AR (1) models similar as it is Lintner's model. With the aim of solving this problem, Leary and Michaely developed the alternative procedure for calculating the speed of adjustment coefficient (Leary & Michaely, 2011).

First, target payout ratio for each company is calculated as ratio of means of dividend per share and means of earnings per share. This is shown with the following equation:



$$TPR_i = \frac{\frac{\sum_{t=1}^{z_i} DPS_{i,t}}{z_i}}{\frac{\sum_{t=1}^{z_i} EPS_{i,t}}{z_i}} \quad (2)$$

where  $TPR_i$  presents target payout ratio company  $i$ ,  $DPS_{i,t}$  stands for dividend per share of company  $i$  in the year  $t$ .  $EPS_{i,t}$  stands for earning per share of company  $i$  in the year  $t$  and  $z_i$  stands for number of consecutive years in which dividend was paid out.

This is the main difference between regular calculations of  $TPR_i$  where it is indirectly calculated using Lintner's regression model. However, in this procedure it is calculated directly.

Based on target dividend payout ratio  $TPR_i$ , deviation from target dividend payout ratio is calculated for each observation:

$$dev_{i,t} = TPR_i \times EPS_{i,t} - DPS_{i,t} \quad (3)$$

where  $dev_{i,t}$  presents dividend per share deviation of company  $i$  in the year  $t$  from target payout ratio of company  $i$ .

After these two steps, speed of adjustment coefficient is represented as  $\beta$  in next linear regression formula:

$$\Delta DPS_{it} = a_i + \beta \times dev_{i,t} + \mu_{it} \quad (4)$$

$\Delta DPS_{i,t}$  is calculated by the following formula:

$$\Delta DPS_{i,t} = DPS_{i,t} - DPS_{i,t-1} \quad (5)$$

$\Delta DPS_{i,t}$  stands for change of dividends of company  $i$  in the year  $t$ ,  $DPS_{i,t}$  stands for dividend per share of company  $i$  in the year  $t$  and  $DPS_{i,t-1}$  stands for dividend per share of company  $i$  in the year  $t-1$ .

First, the authors calculated speed of adjustment coefficient based on Lintner research with the assumption of dividend symmetry, meaning whenever paid dividend is above or below its target, the dividend moves with the same speed towards its target. Dividend smoothing symmetry does not distinguish the response of companies to positive earning shocks from that to negative earning shocks.

Regression analysis is conducted in STATA and is based on equation 4. Empirical results are shown in table 1.

Table 1: Regression results for calculation of speed of adjustment coefficient

Source	SS	df	MS		Number of obs = 289	
Model	38020.9772	1	38020.9772		F (1, 287) = 80.19	
Residual	136079.876	287	474.14591		Prob > F = 0.0000	
Total	174100.854	288	604.516853		R-squared = 0.2184	
					Adj R-squared = 0.2157	
					Root MSE = 21.775	
$\Delta DPS$	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
dev	0.4041349	0.0451306	8.95	0.000	0.315306	0.4929637
_cons	1.196811	1.28307	0.93	0.352	-1.328609	3.72223

Source: authors' research based on data from statistic software STATA

Speed of adjustment coefficient for companies listed on ZSE amounts to 0.40 and is significant at 1% level (p-value is 0,00). Specifically, percentage of dividend adjustment towards target amount is 40,41% annually. If this coefficient is significant and ranging between 0 and 1, companies conduct dividend smoothing policy.

Based on the previous we can confirm the conclusion obtained by interpretation of the Lintner's model that had R-squared as high as 85% which was interpreted that variables of the model explain 85% of dividend change, while results show that variables in the model explain 21,84% of changes of dividends. Results obtained on the sample of companies listed on the ZSE are expected. In the introduction it was mentioned that speed of adjustment coefficient is often smaller in developed stock markets then growing markets as it is ZSE, meaning that companies in developed stock markets do slower changes to desired amount.

Companies operating on ZSE make greater changes of dividends over time, i.e. on US market speed adjustment coefficient was 0.14 meaning that percentage of dividend adjustment towards target amount is 14% annually contrary to change of 41% annually for companies on ZSE. Therefore, companies on ZSE will need less time to reach target dividend payout ratio than companies on developed markets who will need more time to get to target dividend payout ratio.

After calculating the speed of adjustment coefficient for companies on ZSE based on Lintner research and model, the next step in research was to remove the assumption of dividend smoothing symmetry. Survey and empirical evidence on dividend changes suggest that companies are more likely to increase their dividend than to cut it, but when dividends are cut, the magnitude of the average cut is more severe than the magnitude of the average dividend increase (Leary & Michaely, 2011). To investigate if dividend smoothing asymmetry is present, we used the following regression:

$$\Delta DPS_{i,t} = a_i + \beta_1 * dev_{i,t} + \beta_2 * dev_{i,t} * dummy + \mu_{i,t} \quad (6)$$

where dummy variable gets the following values:

$$dummy = \begin{cases} 0 \\ 1 \end{cases}$$

where 0 stands for negative deviations from the target payout ratio. The paid dividend is above its target. 1 stands for positive deviations from the target payout ratio. The paid dividend is below its target.

For dummy that equals 0, result is  $\beta_1$  and for dummy that equals 1 result is  $\beta_1 + \beta_2$ .

This empirical research determines if there is a difference in the speed of the adjustment coefficient and if it is faster to adjust the dividend depending on whether the dividend is paid above or below the targeted payout ratio. Results of testing dividend smoothing asymmetry are shown in table 2.

*Table 2: Regression results dividend smoothing asymmetry*

Source	SS	df	MS	Number of obs = 289		
Model	40280.7325	2	20140.3662	F (2, 286) = 43.04		
Residual	133820.121	286	467.902521	Prob > F = 0.0000		
Total	174100.854	288	604.516853	R-squared = 0.2314		
				Adj R-squared = 0.2260		
				Root MSE = 21.631		
$\Delta$ DPS	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
dev	0.5365428	0.0751004	7.14	0.000	0.388723	0.6843625
devdummy	-0.2385146	0.1085330	-2.20	0.029	-0.452139	-0.0248898
_cons	3.055650	1.52972	2.00	0.047	0.044716	6.066583

*Source: authors' research based on data from statistic software STATA*

Both coefficient  $\beta_1$  and  $\beta_2$  are statistically significant at 1% level and 5% level respectively. Speed of adjustment coefficient for situation when paid dividend is below target payout ratio (positive deviation,  $\beta_1 + \beta_2$ ) is 0.30 while speed of adjustment coefficient when paid dividend is above target (negative deviation,  $\beta_1$ ) is 0.54. The difference between the dividend payment below and above the target corresponds to the value of the estimated coefficient  $\beta_2$ . Value of the  $\beta_2$  coefficient is negative and statistically significant. Empirical results when examining dividend smoothing asymmetry show that companies have greater speed of adjustment coefficient when their paid dividend is above target payout ratio. Companies on ZSE whose paid dividend is above target will cut their dividend for larger amount than companies whose paid dividend is below the target, while reaching the target amount. According to result, companies on ZSE, when taking decision about dividend changes will more likely cut their dividends then increase them. Companies avoid increasing dividends (they are more cautious) so that they do not need to cut them later. Companies with dividends below target smooth their dividends at lower pace than companies with dividends above their target. Companies with dividends above their target have greater fluctuations in dividend changes. If the paid dividend is above the target level companies will try to do faster changes in dividends so that they can have less cash outflow.

## Conclusion

Speed of adjustment coefficient for companies listed on ZSE is larger than for companies on developed markets. Speed of adjustment coefficient for companies on ZSE is 0,40 meaning

that percentage of dividend adjustment towards target amount is 40,41% annually. Companies on ZSE do greater changes while moving to target amount; therefore will need less time to get to target dividend payout ratio than companies on developed markets. Speed of adjustment coefficient taken as indicator of dividend smoothing does not include the assumption of asymmetric movement of dividend whether paid dividend is above or below target. When removing the assumption of dividend smoothing symmetry, results showed that companies on ZSE whose paid dividend is above target will cut their dividend for larger amount than companies whose paid dividend is below target payout ratio. Speed of adjustment coefficient in case when paid dividend is below target payout ratio for companies on ZSE is 0.30 while speed of adjustment coefficient when paid dividend is above target is 0.54. Companies on ZSE with dividend below target smooth their dividends slower than companies with dividends above their target. Companies with dividends above their target have greater fluctuations in dividend changes. If the paid dividend is above the target level companies will try to do faster changes in dividends.

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# FREE CASH FLOW AS DIVIDEND DETERMINANT

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## Abstract

*Dividend and dividend policy represent one of most debating economic subjects, but till now have a lot of unanswered questions. One of the main questions regarding with dividends and dividend policy is which significant factor determines the dividend. Previous research shows that significant factors of dividend and dividend policy are profitability, stability of earnings, growth, debt level, owner ship concentration and size. The main determinant is profitability, which is crucial for making the business surplus, which partially serves for dividends. But beside to profitability for paying the dividends the company must have cash. The old saying "cash is king", points the role and meaning of cash in the business. The role of cash in the business is particularly pronounced in today's business conditions when access to cash is difficult and expensive. Companies have to ensure liquidity and solvency, which are necessary for paying off dividends. Starting from the fact that dividends are a portion of a company's cash flow, which is paid to shareholders, with this paper we want to answer on questions if and how the free cash flow influences the dividends level on Croatian capital market. So the research objective was to explore the correlation between free cash flow and amount of total paid dividends. The research was conducted on the 40 companies from the Croatian capital market by using static unbalanced panel data analysis. The research result shows that free cash flow is a significant determinant of dividends and that greater free cash flow resulting with higher dividends. The obtained data shows that free cash flow statistically significantly affects the amount of the total paid dividends at the 1% level. The free cash flow is positively correlated with the amount of total paid dividends and show if the free cash flow increased by 1,00 kn the amount of total paid dividend will rise for 0,078 kn. This paper implied the crucial role of free cash flow in the determination of dividends level.*

**Keywords:** dividend, cash, free cash flow

**JEL classification:** G32, G35; L21; M41

## Introduction

Dividend and dividend policy represents a very complex economic area. The complexity of the dividend policy arises from the different influencing factors and different results between

different countries. When we speak about the dividends we are facing with the inevitable question: "What determines the size of the dividends? A lot of researches regarding with dividends and dividend policy tried to answer on questions which significant factor determines the dividend and dividend policy. Previous research shows that different factors influenced a dividend policy, including profitability, stability of earnings, growth, debt level, ownership concentration and size. Dividend pay-out is positively linked with the size of the company and its profitability, while it is negatively linked to the indicator of the relationship between the market and book value of the company (Fama & French, 2001). Companies which paid dividends are more profitable, had higher growth rates, higher cash reserves and fewer investment opportunities than companies that did not pay dividends (Bulan, Subramanian, & Tanulu, 2007). Company profitability, company size and company mature are positively linked to dividend payments (Denis & Osobov, 2008). The company's decision to pay dividends is positively correlated with the company's profitability, size and mature, while is negatively correlated with the financial leverage (Husman-Aldin Nizar, 2008). As we can conclude from the mentioned studies the most explored and the main influencing factors on the dividends level is profitability, but companies pay dividends from the cash so the focus of this study will be on the cash. Starting from the fact that dividends are paid out of cash not from earnings the question arises if the cash is closely and significantly connected with dividend policy. In recent times research's shows a significant influence of free cash flow on the dividend but that influence doesn't have the same influence direction. That influences vary because of the different structure of the financial system, level of investor protection and other differences between the countries. Regarding the Thailand listed companies larger and more profitable companies with higher free cash flows tend to pay higher dividends (Thanatawee, 2011). On the Nigerian market, free cash flow and earnings per share have positive effects on the dividend policy while a negative significant relationship is found between leverage and dividend policy of listed companies (Armeyau, 2016). Regarding the Korean shipping companies, the free cash flow has a significant negative influence on dividend because the greater free cash flow leads companies to increase investment and reduce dividends (Yeo, 2018). Also on the Iranian capital market, the free cash flow has a significant negative impact on dividend (Rostamlu, Pirayesh, & Hasani, 2016). Previous research of dividend determinants for Croatian companies didn't include the free cash flow as dividend determinant. As the significant factors that determine the dividend level on Croatian companies were profitability and debt level until the stability of profitability/earning and size of the company weren't significant (Kozul, A. & Mihalina, E., 2013). Companies which pay dividends and which improve business indicators such as: operating cash flow, earnings before interest and taxes, earnings per share, return on equity, return on assets will likely to increase the amount of dividends for the next year, while companies which decrease a business indicator will likely to reduce the amount of dividends for the next year (Miletić, Buljan Barbača, & Lolić Čipčić, 2010). So the intention of this study is to analyse the relationship and impact of the free cash flow on the dividend levels. Also, till now we didn't have a study which analyses free cash flow as dividend determinant on the Croatian capital market. Based on the description above we are motivated to find empirical evidence of the free cash flow as dividend determinant.

## **Free cash flow**

The old saying "cash is king" or "cash is life blood of the business" implicates cash as the most important current assets in the company. Cash flow is the life-blood of all growing businesses and is the primary indicator of business health, so the companies emphasize cash management. Cash management is the art and increasingly the science of managing a

company's short-term resources to sustain its ongoing activities, mobilize funds and optimize liquidity (Alman-Ward, M. & Sagner, J., 2003). The cash role in the dividend policy was set up by (Jensen, 1986) which by free cash flow explained why companies pay dividends and how dividends can solve the agency problem. Free cash flow hypothesis expressed by (Jensen, 1986) argues that managers had a tendency of holding cash in the company and invest it in the different project to improve their personal prestige even when these investments is not at the interest of shareholders. Agency theory explains that dividend payments may reduce problems related to information asymmetry between managers and shareholders. In accordance with the agency theory, if the company has adequate free cash flow, managers will get pressure from shareholders to share it in the form of dividends (Giriati, 2015). Therefore dividends serve as a tool for reducing the cash flow under manager control and gaining benefits for shareholders, thus reducing the agency problem. Free cash flow is a cash flow available for the capital provider, which is for reinvestment, after fulfilling all the requirement of the business, such cash flow which is extra or free is free cash flow (Ilyas Sindhu, 2014). Free cash flow is operations cash flow reduced by the required investment (Jensen, 1986) which has a positive net present value at a cost that is relevant. Free cash flow is Operating cash flow (cash generated by running the business) less normal capital expenditures which are necessary for keeping it into operating business. So the greater free cash flow should imply the greater possibility for dividend payment. Consequently, we define the basic assumption of this study through a positive and significant relationship between the free cash flow and total dividend payment.

## Methodology and data description

The aim of this study was to explore if the free cash flow has a significant influence on the dividends level. Research is done in statistic software STATA. For the purpose of econometric data analysis, we employed static unbalanced panel data analysis. Model (1) forms the basis of our estimation:

$$Y_{it} = c + \sum_{k=1}^K \beta_k X_{it}^k + \varepsilon_{it} \quad (1)$$

$$\varepsilon_{it} = z_i + u_{it},$$

where:

$Y_{it}$  is the total dividend amount of company  $i$  at time  $t$ , with  $i = 1, \dots, N$ ;  $t = 1, \dots, T$ .

$X_{it}$  is free cash flow as an independent variable.  $\varepsilon_{it}$  is the disturbance with  $z_i$  being the unobserved specific effect and  $u_{it}$  being the idiosyncratic error. The presented model is a one-way error component regression model where  $z_i \sim IIN(0, \sigma_z^2)$  and independent of  $u_{it} \sim IIN(0, \sigma_u^2)$ .

The data was taken from the Thomson Reuters database for 40 large companies from non-financial sector. Selected companies were included in the official stock index of the Zagreb Stock Exchange Crobex and other companies whose shares were most traded. Sample period covers 2013, 2014, 2015, 2016 and 2017. From the Thomson Reuters database we collected information related to Free cash flow and Total dividend paid. By Thomson Reuters database Free Cash Flow represents Cash From Operating Activities for the time period minus Capital Expenditures for the same period (2).

$$FCF = CFO - CAPEX \quad (2)$$

where:

Cash From Operating Activities (CFO) represents the amount of cash a company generates from its operating activities.

Capital Expenditures (CAPEX) represent the amount which the company used for the purchase fixed and intangibles assets.

Descriptive statistic of dependent and independent variables is shown in Table 1.

*Table 1: Descriptive statistic*

Variable	Obs.	Mean	Std. Dev.	Min	Max
Free cash flow	200	123.4869	555.3976	-1007.8	4576
Total dividend paid	200	48.5894	160.0321	0	1679

*Source: authors' calculations*

Various tests were used in order to determine which static panel (pooled panel, static panel with fixed effects or static panel with random effects) would be the most appropriate for this research. An F test was applied to analyse the applicability of the panel with fixed effects compared to a pooled panel, whereas a Lagrange Multiplier test was used to analyse the applicability of panel with random effects compared to a static pool panel. Finally, the applicability between models with fixed and random effects was determined using a Hausman test. The results of this test are shown in Table 2.

*Table 2: Tests for determination of which static panel would be the most appropriate*

Tests	Results	p-value
F test	7.78	0.0000
Breusch and Pagan Lagrangian multiplier	126.28	0.0000
Hausman test	1.84	0.1752

*Source: authors' calculations*

As mentioned before, Table 2 shows the result of F test, Lagrange Multiplier and Hausman test. F test showed that static panel with fixed effects model is appropriated than pooled model. A result of a Lagrange Multiplier showed that static panel with random effects is also more appropriated than pooled panel. After these two tests, Hausman test was used and results showed that static model with random effects (RE) is more appropriated rather than static model with fixed effects (FE). A static model with random effects (RE) proved to be the most appropriate when analysing the effect of free cash flow on total dividend amount paid. The empirical results model with total dividend payment (TDP), as dependent variable, is presented in Table 3, while their interpretation follows.

*Table 3: Parameter Estimates of Static Panel Model*

Random-effects GLS regression Group variable: id R-sq: within = 0.0145 between = 0.2005 overall = 0.1377	Number of obs	= 200
	Number of groups	= 40
	Obs per group	min = 5 avg = 5



Random effects u <sub>i</sub> ~ Gaussian Corr (u <sub>i</sub> , x) = 0 (assumed)					Wald chi2(1)	= 10.00
					Prob > chi2	= 0.0016
TDP	Coef.	Std. Err.	z	P > z	[95% Conf. Interval]	
<b>FCF</b>	<b>.0779867</b>	<b>.0246606</b>	<b>3.16</b>	<b>0.002</b>	<b>.0296528</b>	<b>.1263207</b>
_cons	38.95906	19.63969	1.98	0.047	.4659766	77.45214
sigma_u	114.43386 97.467192 .57955879 (fraction of varianc due to u <sub>i</sub> )					
sigma_e						
rho						

Source: authors' calculation

From the data in Table 3 [Prob > chi2 = 0.0016] it can be argued that the model as a whole is statistically significant. The data in Table 3 shows that the free cash flow (independent variable) positively and statistically significantly affects the total dividend paid (dependent variable) at the 1% level. Free cash flow has a positive impact on total dividend paid [coef. 0.0779867]. The free cash flow is positively correlated with the total dividend paid and shows if the free cash flow increased by 1,00 kn, the total dividend paid will rise for 0,078 kn. The above result implies the importance of free cash flow as a significant metric for prediction of the total dividend payment.

## Conclusion

This study investigates how the free cash flow influences the total dividend payment of Croatia listed companies from 2013 to 2017. Based on the free cash flow hypothesis we found that the free cash flow has a positive and highly statistically significant impact on the total dividend payment at the 1% level. The results show if the free cash flow increased by 1,00 kn the amount of total paid dividend will rise for 0,078 kn. So, our conclusion is that greater free cash flow increases the amount of total dividend payment. From these points, we recommend capital providers that besides the profitability should use and free cash flow as a metric for prediction of future dividends. These findings expand the knowledge about dividend determinants on the Croatian capital market. Considering that different authors calculate free cash flow on the different ways we recommend that future studies should use alternative measures of free cash flow to explore influences of free cash flow on the total dividend payment.

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# TESTING FOR INTERCONNECTEDNESS AS A PROXY FOR SYSTEMIC RISK IN UNLISTED BANKING MARKET

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## Abstract

*Interconnectivity as an important aspect of systemic risk rose to academic and regulator attention during the outbreak of global financial crisis. Since then researchers have been focused on closing the knowledge gap but by focusing on global and regional systemically important financial institutions, less attention was given to banks that are not publicly listed and operate in smaller markets but still pose significant systemic risk.*

*The model proposed in this research is applicable to such cases, as it uses quarterly bank performance indicators – the change of return on assets, capital adequacy, equity multiplier and liquidity and tests the interconnectedness of banks through Granger causality network. The timeframe for this research was from 01-01-2014 till 31-12-2018. The significance of the causality was classified into 3 intervals – strong, average and weak.*

*The model developed during this research had been applied to Latvian banking market. The market consists of 14 banks – licensed credit institutions plus one bank that is currently being liquidating due to claims of money laundering concern. All 15 banks are in the sample.*

*The results show that the particular market is averagely indirectly interconnected with only Nordic subsidiary banks being distanced but no other foreign owner banks. By using this method market leaders and followers can be successfully distinguished and stronger interlinkages distinguished from the weaker ones. The results show that not all banks are indirectly interconnected, meaning that some of the banks do operate completely independently.*

*It is concluded that using only change of return of assets as a variable for testing interconnectedness for small number of banks is not enough and several performance indicators should be used simultaneously to distinguish interconnectivity.*

*As the method for identifying interconnectivity aspect of systemic risk in small economies with banks not being listed is novel, it should be further tested to other similar markets.*

**Keywords:** banks, systemic risk, networks, Granger causality

**JEL classification:** G21, G28, G40

## Introduction

Ever since the last global financial crisis the study of systemic risk has increased enormously as inability to distinguish, evaluate and limit the systemic risk was one of the central aspects of the crisis.

In Europe new regulations as well as supervisory body - European Systemic Risk Board (ESRB) (EC No. 1092/2010) was created to not only study and evaluate but also to contain the systemic risk and make banks more macro and micro prudent.

However, both, academics and regulators, did mainly focus on global and regional systemically important financial institutions, giving less attention to financial institutions in small, open economies. This is especially the case, when considering financial institutions that are not publicly listed and therefore their impact on systemic risk is harder to detect. In Central and Eastern Europe publicly listed banks take up between 0% to 60% of total local banking assets. Also, with improving understanding about the systemic risk, divergent opinions arise on what is systemic risk and how to evaluate it (Kristine Petrovska, 2017).

This research follows Bank for International Settlements definition, i.e., the systemic risk is a risk that “the inability of one or more participants to perform as expected will cause other participants to be unable to meet their obligations when due” (Bank for International Settlements, 2003) concentrating on the interconnectivity as proxy for systemic risk, meaning, if banks are too interconnected, the risk that failure of a single bank will amplify to other banks through direct and indirect inter-linkages increases.

**Other channels** of systemic risk are largeness of a bank (too big to fail phenomenon), complexity (too complex to fail) (Banulescu & Dumitrescu, 2015) and uniqueness to perform an activity (for example, banks that lend to specific, state supported sectors).

While *Acharya, Engle and Richardson* emphasize a single bank’s contribution to overall systemwide failure as a systemic risk (Acharya, Engle, & Richardson, 2012), others simply express systemic risk as a tail risk (Arsov, Canetti, Kodres, & Mitra, 2013). This research emphasizes on the connectivity of the banks in the local market, as suggested by *Billio et al* (Billio, Getmansky, Lo, & Pelizzon, 2012) that systemic risk measure must capture at least some degree of connectivity between market participants.

Due to progress in the systemic risk literature, several aspects of systemic risk have already been proposed, namely, interconnectivity of the banks, expected capital shortfall of the bank in a crisis, probability of a crisis and real social costs of a crisis per dollar of capital shortage (Acharya et al., 2012), (Kristine Petrovska, 2018). This research focuses on **interconnectivity** aspect of systemic risk and the model developed here is applicable to markets where banks are **not publicly listed** (or their debt instruments) and therefore, the choices to evaluate systemic risk are yet **limited**. Besides the usage of the model depends on the publicly available data, as publicly disclosed information varies gradually between countries.

Otherwise, more **robust and established methods** to evaluate systemic based on bank share price have already been created, namely, Conditional Value-at-Risk (Adrian & Brunnermeier, 2016), Systemic Expected Shortfall (Acharya, Pedersen, Philippon, & Richardson, 2017), Extreme-Value analysis (De Jonghe, 2010), Systemic Contingent Claims Analysis (Jobst & Gray, 2013), Distress Insurance premium based on CDS (Huang, Zhou, & Zhu, 2012), SRISK (Brownlees & Engle, 2017).

This research proposes using **Granger causality as a proxy for interconnectedness** between each two banks in the market. But instead of using share price changes as a variable this research uses **the changes in four bank performance indicators** – return on assets, capital adequacy, equity multiplier and liquidity. These performance indicators are based on CAMELS type of rating of the soundness of the banks but are revised based on the data that banks are enforced to publicly disclose. For example, in neighbouring Lithuania, banks only publish balance sheet data. By using publicly available quarterly data, the result is less dependent on market noise (Kristīne Petrovska, 2018).

While this method is feasible for a number of banks in a single market like Latvia, developments in big data processing possess desired abilities to apply Granger causality networks for many markets at once.

Granger causality and consequential network modelling has **already been successfully tested** between banking and insurance markets in US, using returns of listed banks and insurance firms as variables (Billio et al., 2012) or between 34 major stock markets using returns on index as input variables (Zheng & Song, 2018). It has been argued that identifying Granger caused movements between stock markets as seen in the study mentioned before, bilateral relations can be established between the markets, and leaders and mimics can be detected, as suggested in herding theory (Acharya & Yorulmazer, 2008). This model by using bank performance indicators try to establish **causal relations between banks** and identify banks that are **central to the system** and those that are peripheral.

As banks are operating in the same economic area and are subjected to the same regulatory environment, they are also subjected to the same macroeconomic environment. However, banks can choose their business models quite freely and therefore can choose to consciously or unconsciously to herd or not to herd with other banks. If banks do operate completely independently then the test shows no Granger causal relationship. Besides this test is able to distinguish the **direction** of the causal relationship and particularly in Latvian banking market very few simultaneous two directional causal relationships between the same two banks same indicator were detected, meaning that leaders and mimics can be successfully distinguished.

However, there is still a gap of contributions focusing on the peculiar features of interconnectivity aspect of systemic risk in small and non-listed banking markets. The banks in Latvia operate in a different regulatory & legal environment and have unique institutional and market infrastructure as compared to other European banks which are analysed in the foreign literature (Rupeika-Apoga, Syeda, 2018).

The paper is organized as follows – next section explains the data used in the study, followed by methodology being explained, later on results are presented and conclusion drawn.

## **Data**

### ***Latvia – market where no bank is publicly listed***

Shortly after regaining independence number of banks in Latvia rose very sharply reaching 30 credit institutions in 2011 (FCMC, 2011), until the number of banks declined and currently there are 14 banks – licensed credit institutions plus liquidating ABLV (“FKTK - Market - Credit institutions - Banks,” 2019). In Latvia there are two types of banks – large Nordic bank

subsidiary banks and banks whose owners' origin are Latvian or Commonwealth Independent States.

Besides, for such a high number of banks in a small country like Latvia, the market concentration is very high, as Herfindahl-Hirschman Index is larger than 1300 (Petrovska & Bojāre, 2018).

During **time span of 2014-2018** (which is the timeframe for this research) one bank was forcefully closed due to AML claims, two large Nordic subsidiary banks merged into one and sold part of its business to US investment company and one bank, namely, ABLV in 2018 experienced depositor and market run due to *FinCEN* claim of money laundering concern and ECB's decision not to bail out the bank as it was not deemed significant for the market ("ECB determined ABLV Bank was failing or likely to fail," 2018) and decided to voluntary self-liquidate (ABLV, 2018). As ABLV was supervised by ECB and being categorized as other significant institution, and being 3<sup>rd</sup> largest bank in Latvia per assets, the bank was included in the sample to test the past interconnectedness with other Latvian banks.

The time period of 2014-2018 was chosen as in 2014 Latvia joined Eurozone and Basel III requirements had been adopted through CRR (EU Regulation No 575/2013) and CRD IV (Directive No 2013/36/EU), therefore gradually expanding the publicly disclosed information.

### ***Sample***

Sample consists of **14 licensed credit institutions** or commercial banks plus one bank that is currently being liquidating, therefore, timeframe for the ABLV is only from 01-01-2014 till 31-12-2017. Overall data span from 01-01-2014 till 31-12-2018.

Input data were acquired from bank webpages where they must publicly issue quarterly **financial reports**. The banks in the study cover the largest part of the banking sector of Latvia. However, there is an important player in the local lending and deposit holding sector that operates as subsidiary of an Estonian bank whose owners are large Nordic banks and an US investment firm. However, this particular bank is not legally bound to publicly disclose any financial data for Latvian subsidiary and therefore chooses not to publish the data.

### ***Ratios***

In this study four financial indicators for each bank in question were used as an input for Granger causality tests. Bank and not group data were used, as group entities in periods of crisis can be isolated from the bank and it's pertaining regulatory obligations.

The calculation of equity multiplier was followed by *Ross et al* (Ross, Westerfield, Jaffe, Jordan, 2011) while the calculation of other ratios was followed by *Ong* (Ong, Jeasakul, & Kwoh, 2013). The selection of particular financial ratios was based on individual banks' health indicators, as defined by *Ong* (Ong et al., 2013).

First ratio is **equity multiplier (EM)**. The calculation was done according to formulae 1.

$$\text{Equity multiplier} = \frac{\text{total assets}}{\text{total equity}} \quad (1)$$

The higher the equity multiplier, the riskier banking operations are.

The next ratio is **return on assets** (ROA). The calculation was done according to formulae 2.

$$\text{Return on assets} = \frac{\text{total profit after taxes}}{\text{total assets}} \quad (2)$$

The higher the ratio, the bank is performing better. However, if bank has excessive returns it might develop traits of possible instability.

The penultimate ratio is short term **liquidity (LIQ)** ratio. The calculation was done according to formulae 3.

$$\text{Liquidity ratio} = \frac{\text{current assets with maturity up until one month}}{\text{current liabilities with maturity up until one month}} \quad (3)$$

This ratio shows how well bank is able to meet its short-term obligations – the higher the ratio the more liquid (safe) the bank is. As in 2018 the regulatory requirements dramatically changed for the reported bank liquidity, the timeframe for this ratio was only from 01-01-2014 till 31-12-2017.

Last ratio is **capital adequacy (CA)** ratio. The calculation was done according to formulae 4.

$$\text{Capital adequacy} = \frac{\text{total capital}}{\text{risk weighted assets}} \quad (4)$$

This ratio shows how well capitalized the bank is – higher the ratio the more capitalized the bank is (and is to be considered safer).

Even though the Financial and Capital Market Commission (from now on FCMC) does set some minimum requirements for CA and LIQ, the research uses the **changes in the ratios as input data** for Granger causality network, therefore omitting possible biases.

## Methodology

### Stationarity

To test Granger causality, time series must be stationary, therefore, firstly, ratios were first differenced and later on unit root test – Augmented Dickey Fueller test was applied using p lags of the dependent variable (Brooks, 2008, p.329).

$$\Delta y_t = \psi y_{t-1} + \sum_{i=1}^p \alpha_i \Delta y_{t-1} + u_t \quad (5)$$

Lag length for unit-root tests were automatically selected based on Schwarz info criterion (see formulae 6) and where either 0 or 2. These tests were closely followed as in (Zheng & Song, 2018).

$$SC = \frac{-2l}{T} + n \frac{\ln T}{T} \quad (6)$$

where  $n$  is the total number of estimated parameters,  $k$  is the number of endogenous variables,  $T$  is the sample length,  $d$  is the number of exogenous variables, and  $p$  is the number of lag orders. The logarithmic likelihood value  $l$  can be calculated by hypothesizing that the multivariate normal distribution is met, see formulae 7:

$$l = -\frac{Tk}{2} (1 + \ln 2\pi) - \frac{T}{2} \ln(\det(\frac{1}{T-m} \sum_t \varepsilon_t \varepsilon_t')) \quad (7)$$

Even after first differencing five time series were still non-stationary, therefore, were excluded from further tests (second differences of these time series were stationary, but the economical meaning of such time series is lost), namely, PrivatBank\_EM, RIB\_EM, Swed\_LIQ, Signet\_LIQ, PNB\_LIQ.

Stationarity and Granger causality tests were done using Eviews 7.

### ***Granger causality***

Granger causality was first developed in 1969 by C.W. J. Granger to test two-variable case of causality and feedback mechanisms.

This test examines whether past changes in one variable,  $X_t$ , help to explain current changes in another variable,  $Y_t$ . If not, it can be concluded that  $X_t$  does not Granger cause  $Y_t$ . The test is based on regression below:

$$\Delta Y_t = \alpha + \sum_{i=1}^p \beta_{yi} \Delta Y_{t-i} + \sum_{i=1}^p \beta_{xi} \Delta X_{t-i} + \varepsilon_t \quad (8)$$

Where  $\Delta$  is the first-difference operator and  $\Delta X$  and  $\Delta Y$  are stationary bank specific performance indicators (for example,  $\Delta$  SWED\_ROA and  $\Delta$  RIB\_ROA),  $p = 18$  (14 for liquidity),  $i=2$  as 2 is the optimal lag selection based on Schwarz info criterion and during two time periods the influence of a particular bank should have been expressed fully.

Null hypothesis that  $X_t$  does not Granger cause  $Y_t$  is rejected if coefficients  $\beta_{xi}$  are jointly significant based on the standard F-test, similar to *Rodriguez-Moreno and Pena* (Rodríguez-Moreno & Pena, 2013).

The author classifies significance of causality in 3 intervals, namely:

- $p < 0.05$  – strong causality
- $0.5 < p < 0.1$  – average causality
- $0.1 < p < 0.15$  - weak causality.

Significance levels have also been classified in *Oet, Bianco, Gramlich & Ong* (Oet, Bianco, Gramlich, & Ong, 2013). However, they use significance level up to 20%.



Even though the sample size in this research is small, *C.W.J. Granger* states that if sampling period is too long then details of causality cannot be distinguished (Granger, 1969).

*Acharya, Engle & Richardson* do raise the awareness that Granger causality tests cannot be correctly interpreted unless all the shocks are considered at the same time (Acharya et al., 2012). However, as the sample consists of all the banks in the market (except one that has limited connections with the other banks and the Latvian market itself), this issue is offset.

## **Network**

After calculating all the pairwise Granger causality tests for all 15 bank 4 performance indicators, positive Granger causality were classified within 3 previously mentioned intervals. Strong causality was given the thickest line (6pt) to emphasize the strong linkage, average line (3pt) was attributed to average causality and the thinnest line (1pt) was attributed to weak causality. Each line was also attributed a code in which performance indicator the connectedness was found.

Network modelling was done using Edraw Max 9.4. software.

## **Results**

Overall, Latvian banking market seems to be averagely interconnected with some banks being in the centre while **larger Nordic subsidiary banks** that take the largest part of Latvian banking market (Finance Latvia Association, 2018) seems somehow **distanced** in the network. That was not expected before conducting research. This result might be due to strong dependency from their Nordic owner-banks and not from their market peers.

Overall 117 causal relations were identified. A lot of indicators show strong Granger causal relations (with  $p < 0.05$ ). However, mainly they are one sided, meaning that in this particular market leaders and followers exist (knowingly or un-knowingly). Important result is that **35 bank pairs showed no interconnectedness** between them, meaning that they do operate completely independently.

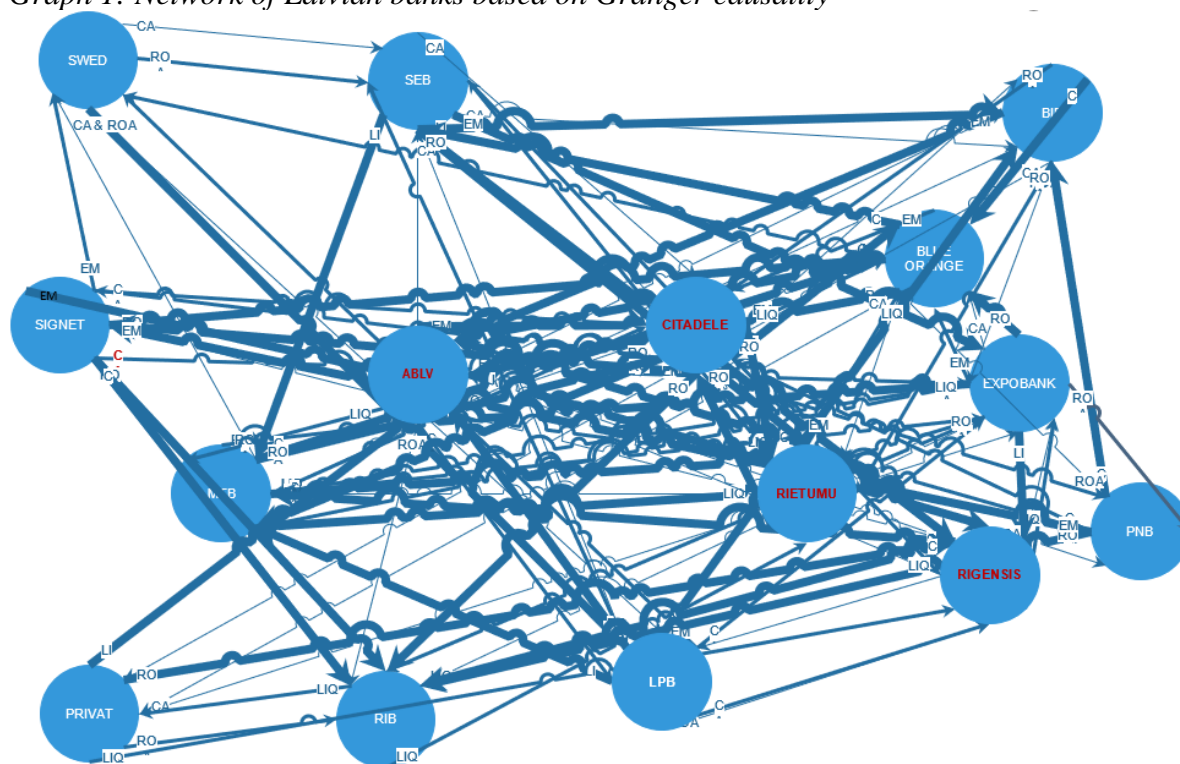
These research results indicate that, at least, where interconnectedness was concerned, ABLV was an important market player. The **most interconnected banks** in the study were ABLV, Citadele, Rietumu bank and Rigensis (market in dark red). All of the above, except Rigensis are also one of the largest banks with significant market share in Latvia. Even though ABLV, Rietumu and Rigensis had been known to focus on servicing third country residents (at least until the crash of ABLV happened), they still managed to be **of influence on other market participants**.

The results show that using only **ROA** as a proxy for interconnectedness would **not have been enough**, as even though banks did show interconnectedness through ROA, true Granger causality was expressed more by other indicators.

Besides, none of the banks had Granger caused interconnectedness in all performance indicators.

Full results of bank interconnectedness in Latvia can be seen in the graph no. 1.

*Graph 1: Network of Latvian banks based on Granger causality*



*Source: authors calculations based on Granger causality between changes in bank performance indicators*

## Conclusions and further research

### Conclusions

Overall it can be concluded that Granger causing bank performance indicators as a proxy for interconnectedness in the banking market where no bank is publicly listed is an adequate method. Using only one indicator, for example, ROA is not sufficient to conclude the interconnectivity of the banks.

Banks in Latvia are averagely interconnected with some being in the clear centre and others distancing themselves. So called “Nordic” banks show the largest distancing.

Granger causal relations between banks can not be the only proxy for systemic risk, as it ignores the too big to fail phenomena and diminishes the importance of large banks, as is seen especially in the Latvian banking market, where largest banks are so called “Nordic banks” and in this market these banks are in the periphery.

Even if FCMC do set minimum requirements for some indicators, like LIQ and CA, the changes in these performance indicators are not regulated, therefore, banks can freely choose the change levels they wish to follow and sometimes they are interconnected with other banks.

## Further research

Even though the method for proxying interconnectivity as an aspect of systemic risk shown in this paper had been robust, the small sample size could be corrected using bootstrap bias correction method - bootstrapped resampling originally developed by D. E. Runkle (Runkle, 1987).

In future, to incorporate the “too big to fail” aspect, the banks in the network could be weighted by their assets that originate in the market under question. Also, Tarashev *et al.* argued that bank size is an important contributor to systemic risk (Tarashev, Tsatsaronis, & Borio, 2016).

Overall, the method developed in this research should be further tested to other similar markets.

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# MONETARY STABILITY VERSUS FINANCIAL STABILITY, A LEGAL TENDER BETWEEN SCYLLA AND CHARYBDIS

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## Abstract

*The Hero, Homer, in the narrow waters, in his wandering described in Homer's Odyssey, book XII was supposed to choose between Scylla and Charybdis, to get out of the Messina strait. On one side, Scylla was a supernatural female monster 12 feet long and 6 heads on long snaky necks, with a triple row of shark's like teeth, at her loins girdled were the heads of baying dogs.*

*Charybdis, was a whirlpool that swallowed the shipwrecked Odysseus who saved himself clinging to a tree, until the raft surfaced after many hours, on the other side.*

*Two unpleasant alternative represent, in present days, our instable financial markets, evolving along attributions of heavier growing responsibilities, attributed to enlarging central banks functions.*

*The present financial stability standards have been creating contradictions in the - Great Recession central banks model, after the 2008 last financial crisis with two simultaneous central banks (Diamond, 2007: 189-200) conflicting main operative areas, monetary and financial stability goals, not just in the USA, but also around the world. We have lived a very difficult and dramatic period, which requires a lot of reconsiderations about what the monetary policy means and may pursue. With respect to the financial system restrictions, in particular, during the post-second World War, based on the pseudo gold dollar parity. Things were relatively stable and major financial crises were happening in emerging markets only.*

*Financial stability was relevant, but it was not something to which Government devoted much attention. Based on what happened during the recent crisis, it is now of great responsibility maintaining monetary and economic financial stability at same time. Central bank can't carry out both functions relying on classical market tools. The only obligation, imposed to a central bank as private agent, has been taking care of monetary stability, to avoid inflation rate over upper limits, assumed in entering the legal tender era.*

*Originally, for monetary policy purposes, between central banks and possible loans structures, there were no guidelines or insight controls, only institutional and statutory single bank's incorporation clauses. There were no constraints such as loan to - value, or loan to - cash-flows, or dynamic capital level charges, based on formal obligations. Free repurchase agreements and sales or purchases of securities (the most important tools of monetary policy operations), generally based on private financial contracts, were the sole most recurrent means in adjusting the economic activity. The assuming statutory bindings was casual of the incorporating state, central bank used to monitor the activities of agents through economic incentives, rather than mandating and monitoring specific course of action.*

*The evolving inconsistency of both activities, has become even more serious: two conditions should be fulfilled simultaneously to avoid dilemmas in which a central bank might be called to make the management choice between monetary prices stability, pursuing at same time financial stability, the two different policies should be rarely jointly assigned to central banks. As regards the first issue, the IMF as well, with Brunnermeier and Sannikov (Brunnermeier and Sannikov, 2012), have argued that price stability and financial stability are interlinked "Short-term debt financing played an important role in the run-up to the financial crisis, as increases in leverage helped boost growth but also made the economy more susceptible to a*

*downturn. Since the recession, private agents have reduced their debt level while many governments have increased borrowing. This deleveraging process appears to be holding back the recovery, and the Japanese experience suggests that such deleveraging can continue over an extended period”.*

*It is true, as reminded by Lamfalussy (Lamfalussy, 2010: 7-9), that prices and the growth - employment objectives, run into each other because it is seldom the case that the pursuit of one is consistent with the pursuit of the second.*

**Keywords:** Central banks, monetary policy, financial instability, gold standard and exchange rates

**JEL classification:** G28 Financial Institutions and Services: Government Policy and Regulation

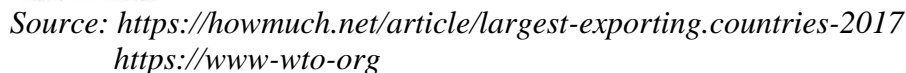
## **The original problem roots and its complexities**

The demise of the gold standard, after the huge crisis surfaced on the first day of World War I<sup>o</sup>, and the Stock Exchange of New York unpredicted closure on the first August 1914, to avoid the huge shares sales’ orders issued to hoard gold, the general issue of legal standard currencies, were the financial solution to the war expenses, ranging over every single country capability, as involved in huge military costs. Free to issue currency without a real value base, afterwards, any emergency started to justify any short of political monetary competition. The related events are clearly depicted in the history (Reinhart and Rogoff, 2008).

The misunderstanding aroused recently around the conflicting original two goals: the monetary stability peculiarities, after the historical collapses of most of the legal tender monetary systems, experienced in the modern history and the determinant institutional role of central banks, reached its azimuth in coincidence of the dissolution of the last *quasi gold standard* reinstallation, shrewdly managed by Harry Dexter White, the originator of the Bretton Woods scheme, with conventional fixed rates of exchange based on the assumed single national gold reserve stock.

After the Colombian age, at the end of the second World War, two left systems survived, the pseudo gold standard: with the IMF and the WB, roles outlined after the previous establishment of the Basle: BIS (Bank for International Settlements, operative in the year 1930), in order to smooth the international trade imbalances, surfacing in the international trade, out of the gold standard. In the Comecon area, the multilateral clearing agreements within the Soviet Alliance, tried to avoid trade imbalances through agreed trade planning among the members under the Soviet influence.

## The World's Top Exporters in 2017



His colleague in Yale, the Belgian America professor Robert Triffin, outlined the “extraordinary success of the nineteenth century system of international convertibility and the calamitous collapse of the late 1920’s brave attempt to bring it back to life after World War I. It boldly tries to pry out of this musty record the lessons it may hold for us today and an indication of the main danger facing the similar attempt as “reconstructing the past” launched some thirty years later during the 1958 Christmas weekend..... but whose revival and survival today require far more than a mere digging-up and dusting-off of a dead body from its fifty-year-old grave.” (Triffin, 1961: vii)

The real problem has been the monetary issues down to the huge inflation following the inconvertibility decision of the US in August 1971, in a panicking Camp David week-end, after the Nixon's rejection of the *pseudo gold standard* and the consequent universal gold inconvertibility of the currencies adhering to the IMF mechanism. Since then, the inflation



coexisted with a permanent economic stagnation named stagflation and a contextual inconsistency of both the Taylor and the Phillips curve principles. The three decades of a declared convertibility, a fixed exchange rates mechanism and a permanent foreign deficit supported by the gold American reserves, but with an equivalent legal tenderable dollar, had seen a huge economic growth associated with the industrial reconstruction of Italy, Germany and Japan, in a stable economic framework, without relevant financial international crisis.

After the successive '70s Gulf Wars a "de facto" oil standard upheld the dollar, up to the Paul Volker deflating policy and the taking over of the FED by Alan Greenspan, carrying a monetary releasing attitude, the monetary trends were split into two different paths.

On one side was the monetary abnormal growth and foreign exchange fluctuations, without inflation fallouts in the '80s, and the financial instrument trading values expanding abnormally, up to unseen levels since the Wall Street foundation. On the international front, the problem aroused with the dollar debasement which leads to a peripheral series of default progressively reaching the center.

As Triffin used to say, *"..... that the evolution of the last ten years has now brought us to a point where these issues have become inextricably tangled with one another, and where we can no longer afford to ignore the impact of our internal policies upon our external position, and vice versa. We have certainly licked that famous, supposedly permanent and intractable dollar shortage which dominated for more than ten years economic thinking and policy here and abroad. I only pray God that none of my bright colleagues come up tomorrow with an opposite, and equally absurd theory of a permanent an intractable dollar glut. Before placing before you a number of disturbing facts and ominous danger signals, let me affirm in no uncertain terms that I do not believe for a minute that our present difficulties are either permanent or intractable. The strength and resiliency of our economy and of our policies make it certain that they can and that they will, be solved."* (Triffin, 1961: 5).

The new endemic problem since Camp David '71s had been the growing unbalanced foreign and internal debt structures and the likely spreading of national defaults, in absence of an automatic stabilizing mechanism, as was happening with the gold standard compensating movements of the gold itself, with inflating and deflating balancing quantitative effects on the demand and supply of stable money. There was a single currency, gold itself and self-compensating rates of exchange fluctuations, linked to the trade imbalances, through compensating effects of the physical metal movements. Ralph Hawtrey and Gustav Cassel, (Cassel, 1922) brought, therefore, their reflections as members of the Finance Commission, which was attending the 1921 International Economic Conference in Genoa. They addressed the relevant operators about the monetary perspective, in the aftermath of the first world-war debasement, out of the gold standard, arousing undisputable arguments in the everlasting dispute about internal and external imbalances, money, savings, investments, finance, profit sharing and the new welfare State income taxation, in the New Deal pending legacy (Batchelder and Glasner, 2013).

On a global perspective, the trading increasing transactions process ends up to enlarge local deficits of Countries without enough resources in natural species, or skilled technological. Characteristics allowing to compensate the transitional monetary deficits arousing almost immediately as the local productions brands are not selling enough, compensating tradable industrial products, as shown in figure 1.

## The solutions adopted and their fallout

At the origin of the national imbalances, the currencies of Countries affected by durable and progressing trading deficits, were degraded by marginal progressive growing debts and general final monetary defaults, with irrevocable foreign exchange collapses and unbearable financial austerity at present represented by the troika measures to ameliorate the damage incurred by the recession and austerity as only solution left (Blyth, 2013). Through general national defaults and payment suspension, the Country involved had to issue a new reliable currency. The alternatives are simply these: or the transaction is formalized in a third Country currency with legal tender of a reliable partner or, otherwise, the payment implies an uncontrollable exchange risk, when the buyer must pay in an unpredictable currency, or the seller will ask for a currency different from the devalued local purchaser one, or will even not be interested to conclude transactions in the purchase's area.

This calm may be partly explained by the booming world growth, but perhaps more so by the repression of the domestic financial markets (in varying degrees) and the heavy-handed use of capital controls that

Followed for many years after World War II. (We are not necessarily implying that such Repression and controls are the right approach to dealing with the risk of financial crises.)

The present or past crisis are of Within a single monetary area, the actual currency or monetary specie most of the times is expressed by a banks' debit, or letter of credit, that surrogate easily actual monetary species, and is transferred among economic entities as a medium better apt to close an economic transaction from a monetary point of view. This procedure is likely to satisfy both creditors and debtors, when performed within a common monetary area, when the currencies are different and exchange problem arises and may taint the payment, when the monetary value is not reflecting the base of the substantial originating material transaction. *"Every borrower in fact has to take account of conditions that limit the amount which he borrows, and this very limitation of borrowing tends to confine the income and consequently the expenditure of the consumer to their previous limits"* (Hawtrey, 1919: 10). Furthermore, from the same source: *"Thus the merchant and the banker share between them a larger rate of profit on a larger turnover. The credit created for the purposes of production becomes purchasing power in the hands of the people engaged in production; the greater the amount of credit created, the greater will be the amount of purchasing power and the better the market for the sale of all kinds of goods."* (Hawtrey, 1919: 13).

There is no surprise that the worldwide Great Depression of the 1930s posts the highest readings of banking crises during the previous years' stretch. Widespread, "waves" of Global financial stress are evident during and around the Panic of 1907, that originated in New York, as well as the crises accompanying the outbreak of the First World War. Another striking feature in Figure 2 is the relative calm during the late '40s up to the early '70s, different origins and grounds: trade imbalances, foreign exchange crisis, inflation crisis, employment and production crisis, but generally there are some common tract. This could be overall systemic *"As we emphasize, particularly in chapter 16, different varieties of crises tend to fall in clusters, suggesting that it may be possible, in principle, to have systemic definitions of crises."* (Reinhart and Rogoff, 2009: 4).

Figure 2: Proportion of Countries with Banking Crisis, 1900-2008

## Proportion of countries with banking crises: 1900-2008



Source: Figure 1 in Reinhart & Rogoff (2008), "Banking Crises, An Equal Opportunity Menace", NBER WP 14587.

Source: <https://blog.iese.edu/xvives/files/2018/01/Lecture-1.pdf>

Since the early '70s and after the Camp David debasement resolution, financial and international capital account liberalization progressively took root worldwide in a widespread floating exchange rates system. The main reason might be linked to the unusual long period of stability and economic growth, since the end of the second World War, with operating fixed exchange rates with the dollar-gold anchor, in a quasi-gold standard international payment system, linked through the 1944 Bretton Woods renaissance Hume scheme, scheme of the GATT rule. The GATT comes out of the resolution taken by 23 nations in Geneva on 30 October 1947, and has been operating since January first, 1948. It remained in effect until the signature by 123 nations in Marrakesh on 14 April 1994, of the Uruguay Round Agreements, which established the new World Trade Organization (WTO) on 1 January 1995, in an open new global market. Afterwards, up to the Smithsonian agreement in 1973, new ideas were proposed to overcome the predicted Triffin - Rueff instability framework, which as last resort, was faced with the variable exchange rate in a general legal tender system.

Although President Nixon, as a reorganization of all international monetary issues, hailed the Smithsonian Agreement, it failed to encourage discipline by the Federal Reserve, or the United States government itself. The dollar price in the gold free market while sliding continued to cause progressive pressure on its official rate: soon after a 10% devaluation was announced, on 14 February 1973, that Japan and the OEEC countries decided to let their currencies float without restraint. After ten years, most of industrialized nations followed the example.

Immediately, afterwards, banking crises were progressively emerging around the World. The share of countries having banking difficulties began to expand during the '70s. The collapse of the Harry Dexter White Bretton Woods plan, as expected during the sixties by both Rueff and Triffin, disrupted the fixed exchange rates, the sharp spike in oil prices, and the quasi gold standard released a new oil standard, a prolonged global recession that jumpstarted the financial sector difficulties, eventually in a number of advanced economies.

In the early '80s, a surge in global commodity prices, resulting from the CRB (Commodity Research Bureau) combined with high and volatile interest rates, contributed to a spate of banking and sovereign debt crises in emerging economies. Most famously in Latin America and then Africa, finally at the center of the financial systems, with the major countries running unbelievable combined external and internal deficits. It was the Paul Volker monetary effect raising rates to fight inflation, (WIN) win inflation now.

We understand inflation crises, both because of their universal scope and long historical significance. Interested in cataloging the extent of defaults (through inflating debt and not only its frequency) central banks attempt to mark not only the beginning of an inflation or currency crisis episode, but its duration as well. Therefore, the monetary stability seems to be the prevailing issue in central banks plans.

The leveraging and de-leveraging roots of such economic crisis reflect themselves on banks' size and affect the ongoing recession or expansion phases of the economy in general. Therefore, the financial systems, supposed to reflect a smooth flow of funds from savers to firms through the banking sectors and side financial intermediaries, motivated by interest rates and dividends, are destabilized by monetary factors and, the economic logic at the base of the entrepreneurs choices, become confused and irrational, the irrational exuberance might be sustained by immoral hazard.

As Hayman P. Minsky says *"Three distinct income-debt relation for economic units, which are labeled as hedge, speculative, and Ponzi scheme finance, can be identified."* (Minsky, 1992: 8). The monetary market conditions verified through the financial activity of intermediaries, can determine the expansion or the contrary deleveraging position of the banks' system. *"Thus bankers (using the term generically for all intermediaries in finance) whether they be brokers or dealers are merchant of debt who strive to innovate in the assets they acquire and the liabilities they market."* (Minsky, 1992: 8). The base of any economic impulse is the connection between savers and investors and the efficiency lays on the financial market operators and their stability. When the financial market allows and promotes savings confidently, then the capital base grows by the progressive stratification of savings, as income not disposed but channeled through the financial structure, to the buildup of capital base and investments in productive renewed assets. The financial stability is the result of an efficient allocation of saving resources, through intermediaries stimulated by credit prices, interest rates and earning prospective in full balance within themselves.

## **The present deadlocks and alternatives possible and their likely fallout**

Bernanke expressed the overall shared conclusion: *"the view is increasingly gaining acceptance that without the forceful policy sponsor that stabilized the financial system in 2008 and early 2009, we could had a much worse outcome in the economy."* (Bernanke, 2015: 87) (Rajan, 2013). Actually the Great Recession has been on the stage since its formations

years 2006-2008 for almost a ten years' time span and was not under control, on the contrary, it has induced some worse effects on the global economic order not foreseen or accounted for by any econometric instruments and models.

However, Diamond and Dybvig argue that unless the total amount of real expenditure needs per period results, available with certainty, suspension of convertibility cannot be the optimal mechanism for preventing instability linked bank runs. Instead, they argue that a better way of preventing bank runs is deposit insurance backed by the government or central bank. Such insurance pays depositors all or part of their losses in the case of a bank run. If depositors know that they will get their money back even in case of a bank run, they have no reason to participate in a bank run.

On the other side, banks' deposit insurance has always raised comments about the implied moral, or even immoral hazard, the adverse selection and the shock absorbers issues, inferred by a bank's unfair, or irrationally exuberant management. When public insurance provisions protect clients and the case has actually surfaced, the immense immoral hazard that has been involving the whole crony world banking systems has become visible, if banks are operating on legal tender basis and deficit spending sourcing unlimited coverage, their image is blackened.

Central banking, after the Great Recession (2012), has started a large QE (Quantitative Easing) monthly issuing and to feed banks, often, to expand unsound credit. With Quantitative unlimited Easing emergency currency, the problem is not likely to be reversed as there are moral hazards progressive expansions and no limits to pull already unbearable taxation levels, or pursue areas of tax evasion to be captured, without improving low cost global delocalized productions, to accentuate the ever growing crisis.

Such policies, according to the section 13 § 3 of the Fed Act [12 USC 342. As amended by act of Sept. 7, 1916 (39 Stat. 752), which completely revised this section; June 21, 1917 (40 Stat. 234); and March 31, 1980 (94 Stat. 139). With respect to the receipt by Reserve Banks of checks and drafts on deposit, see also this act, section 16.] [12 USC 343. As added by act of July 21, 1932 (47 Stat. 715); and amended by acts of Aug. 23, 1935 (49 Stat. 714); Dec. 19, 1991 (105 Stat. 2386); and July 21, 2010 (124 Stat. 2113). As enacted by Public Law 111-203 (124. Stat. 2115), "any reference in any provision of Federal law to the third undesignated paragraph of section 13 of the Federal Reserve Act [FRA] (12 USC 343) shall be deemed to be a reference to section 13(3) of the FRA."] do not need political authorization if considered *emergency finance*. Started by Bernanke in big bail out facilities issue in order to save falling institutions: JPMorgan Chase supported by the Federal Reserve Bank team, bailed out Bear Stearns, a last ditch move to save the investment bank through mergers and acquisitions financed by public issues, took place. Such move has placed the Central Bank out of plane custom monetary goals, essentially it was a preliminary path in the new legal tender paper currency QE system, entering the area of monetary policies, aiming to the stabilization of the financial system. The initial imbalance was already a historic issue of Bernanke at his very beginning chairing the FED (Bernanke, 2005).

The shift from the monetary stabilization target to the financial stabilization policies implies a row of likely consequences we can deeply analyze and without previous comparable situations experiences. The only alternative to money - values was the social concept of the bank becoming an accounting center, previously unsuccessful planned economies in the Comecon bilateral or multilateral foreign exchange clearing systems, within strict quantity

plans determined volumes and official agreed exchange rates. With reference to the intrinsic merchandise values available, the system didn't work as the strong currencies convertibility system developed within the FMI adhering Countries and a grey discounted market for available residual Comecon single countries balances was finally trading currently in Switzerland during the evolving European Monetary Agreement.

After the 2008 both IMF and FED econometric models misunderstood the financial destabilization, when the financial indexes were climbing to previously never seen levels, from the centennials historical upper level of 1000 points at most, for the DJ index, meanwhile the real economy started to collapse, only the huge monetary flood saved, through temporarily bailing out, the major institutions from unavoidable financial break-down.

Based on what happened during the crisis and its fallouts, we are still wandering, whether it is clear that monitoring financial stability is just important as maintaining monetary and economic stability. The attribution of heavier duties in pursuing financial stability to central banks, created inconsistencies, with the previous recession, splitting the central bank model, in two different directions. The first inconsistency was that the central bank could no longer carry out its clearing functions nearly exclusively by means of classical monetary market tools. Instead, statutory and structural tools monitoring were required. Indeed, the only, or at least the most important restriction imposed by the central bank on private entities banks, for monetary policy purposes, was the holding of compulsory reserves. Furthermore, as the example of England showed, this obligation could be easily transformed into agreement between the central bank and individual banks, through moral suasion. The tools to pursue financial stability are instead mostly of a statutory nature. For example, constraints on bank lending in terms of loan-to-value or loan-to-income ratios or fixed capital requirements based on legal obligations, unlike repurchase monetary policy facilities based on private contracts. The exercise of statutory tools is intrinsically dependent on the authority of the state and does not fit easily with the model of an independent central bank, used to influence the behavior of agents through economic incentives rather than mandating given courses of action and relates to the involvement of the Authorities in the market economy.

Other necessary choice is between price stability and financial stability, when the financial indexes are showing wide fluctuations in absence of reflecting movements in the economic activity. Often, price variability and financial stability are not necessary inconsistent or intertwined. The classical assumption that price stability, growth and employment objectives are consistent objectives are independent on a global perspective when major production factors are economically independent like the cost of labor.

Financial stability implies a constant smooth, flow of savings to the financial markets and intermediaries without excessive risk connected to sudden uncertainties due to potential monetary instability. Even the appearance of derivatives, immediately after the 1971 gold debasement with hedging, speculative and arbitrage functions, was not able to limit market and systemic risks that was at the base of the huge volumes of losses registered in the years 2000 and afterwards. The bubble burst after the dot.com, sub-prime, derivatives and central economies recessions produced large scale Central Banks interventions, spread between bailouts and bail-in solutions in the single monetary areas, from distant peripheries, to core markets' centers.

Most of present confusion and uncertainties arise from the absence of a value parameter, stable monetary function performances and huge deficit spending policies, from the monetary

illusion to the political monetary goals based on legal tender instruments. On one side we have a classical monetary inflation theory, as described originally by Bernardino Davanzati (Davanzati, 1588) in Florence, during the 16<sup>th</sup> Century and afterwards by Von Mises and Hajek thereafter by Friedmanians - Wickselians, during the two gold debasements, on the first day of World War I, and the second, on the 15 August 1971 in the panicking Nixon's Camp David "*temporarily declaration*". After the monetary stable decades, '40s - '77s, running from Bretton Woods to the 1971 Camp David experience, both Robert Triffin and Jacques Rueff predictions became reality, we enter the new era of monetary unresolved troubles searching for a solution up to now.

During the stagflation in the seventies, the recovery of the eighties, the first market crash signal in 1987, all the efforts have been directed to the discovery of gold-clauses or alternatives to be institutionalized on large continental areas, without success.

## **The only possible solutions and the alternative looming between Scylla and Charybdis**

Central banks are peculiar institutions whose origin comes from different environments, necessities and customs that we cannot characterize homogeneously. In order to satisfy different necessities, central banks have mostly acted as clearing houses first and in different environments, lender of last resort later, monitoring the compliance of area banks, after the banks started to issue credits under fractional reserve practices. This was the case of the Dutch Amsterdam Wisselbank, literally Amsterdam Exchange Bank in 1609. Then came the Sveriges Riksbank in 1668, first promoter of the transfer of titles of deposits and fractional lending. Monetary bills issuance started by the Bank of England in 1694. After the 1907 US bank crisis, when finally, a lender of last resort institution, was designed in a secret gathering chaired by J. P. Morgan at a secluded Jeckill Island, off the coast of Georgia in 1910. The idea laid the foundations for the Federal Reserve System, designed to become a law in 1913, and actually instituted as Federal Central Bank, at the end of 1914. Other central banks contributed to unify monetary areas as the BCE, after the launching of the Euro in 1998. The clear public nature has as well been pivots in some cases but not in others and a common definition of the functions performed by Central banks, is not possible as their origin stem from peculiar functions in different ages and with different grounds. "*The main monetary policy tools of central banks are of a private law, rather than a statutory nature. Indeed, the compulsory requirement for banks to hold reserves at their respective central banks are of a private law, rather than a statutory nature. Indeed, the compulsory requirement for banks to hold reserves at their respective central banks is the only notable exemption. Statutory tools are, instead, mostly used in supervisory activities by those central that have this responsibility. Some central banks - like the ECB, the Fed, and the Swiss National Bank - dispose of substantial independence in pursuing their statutory objectives by means of monetary policy. Some other central banks – like the People's Bank of China and the Bank of England (until 1997) - are (or were, in the case of the Bank of England) subject to government control. Moreover, the objectives of various central banks changed over time. Price stability, financial stability, funding of the government, and growth-employment appear in different periods as the objectives of central banks, with diverse rankings and in various combinations (Fischer, 1995; Bordo 2007, 2016; Reinhart and Rogoff, 2009; Goodhart, 2010; Hellwig, 2015) (see Box 1) (Papadia and Välimäki, 2018: 10).*

Central Banks adopt a fundamental role in monetary policy configurations, they supply liquidity to the market and their operators, mostly banks, and institutionally, strictly control and fix credit prices through interest rates policies and open market repo agreements, in controlling inflation they even could assume GDP or CPI target guidelines.

This strategy is possible only and if longer and riskier interest rates are controlled, whenever their behavior has become very uncertain to allow short-term intervention. In the conditions of the contingent markets, after the final derivatives' bubble and the following present Great Recession, these objectives seem not to be locally and likely at hand any more. *"But the revolutionary changes of communication have unified markets to such a degree that ... there is practically a single market and a single world price.....it was fallacious to explain the adjustment wholly in terms of the price level. There was even at that time, an approximation to a world price."* (Hawtrey, 1932: 144)

If the scope of central banking becomes wider, a targeted reserve and capital set of requirements might be issued to financial operators, often incompatible with each other and the free global market competition. The special role was experimented in the Socialist reform called new economy, reducing banks to *center of social accounting*, to supply and control legal tender fiat paper money, in the decaying planned Economy inconsistent mechanism.

The difference between the basic local central banks commercial credit interest rates management and the spread with industrial long term credit, are at the origin of the first decade financial crisis in the 21 first century, after the Greenspan monetary deluge, characterized by conflicting high rates and unlimited monetary issues pulling up asset related values, on the financial market, starting from the dollar area to the UK and Euro currency at the end.

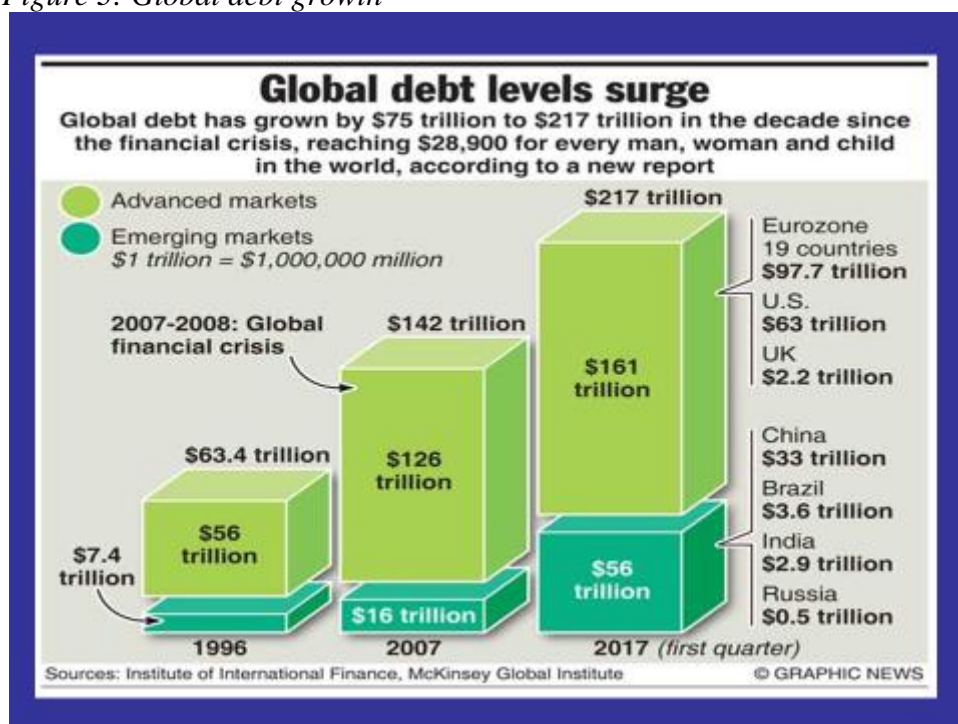
In order to avoid the failure of the Lehman Brothers, the FED started to affect the real economy via substantially increased bank lending liquidity. After the 2011 European recession symptoms, the CEB shifted from the monetary stability target to the financial stability goal, starting the QE, LTRO and other similar policies out of the original Euro single currency scheme without local exchange rate mechanism among Euro Countries and without a CRA community reinvesting Act or Community Protection Act, as happened in the USA interstate banking extension, with balancing geographical effect (Pines, 2001: 335). After ten years of constant QE and LTRO and similar monetary policy instruments, a deep ruling on capital base, lending policies, and *non-performing loans clearing procedures, bad banks and mergers*, the Great Recession has not yet shown any sign of progress, consolidating in an unexpected definitive stagnation age. The result is a general increase of growing moral hazard, adverse selection and finally shock absorbers, split between bail-in, bail - out and finally too big to fail, or too big to bail, crossing roads.

The original adoption of an inflation higher rate limit of 2% as the FED and the CEB did, was an original target assumed as prevailing and strategic choice to develop the single currency in a real variegated society, without a community protection act like the USA did in allowing the interstate banking, a local community protection legislation Act as well was not provided. The consequence was the shift from the necessary inflation target to the complementary monetary stability instruments and, during the Great Recession, the further weakening of the empirical basis of the Friedmanian approach to monetary policy, in the perspective that the interest rate policy were leading to the monetary stability as well. Indeed, the balance sheet tool, inflating both liabilities and assets with the central bank, was also relevant during the Great Recession



to influence the interest rate conditions, not a fair assumption of a quantitative approach to implement a sound monetary policy. Central banks managed their balance sheet either to regain control of the short-term rates, or to re-establish an orderly relationship between the short-term rate, presumed an operational target by the central bank and longer, riskier rates, that are more important for the macro economy, or to further release the monetary conditions in the lower brackets corridor, through lower interest rates. The common belief was not envisaging a “base money-monetary aggregate-inflation approach” according to the Friedman - Wicksell approach, with the relevant complications that turned out to be necessary, during the Great Recession, to discover that it was just the analytical framework for conducting further monetary policies in order to reach conditions of financial stability. From a different point of view, the central bank should no longer target a fixed rate of inflation, but rather the price level or, in another variant, the nominal GDP. The two proposals are considered as alternatives, the argument of the proposal to raise the target for the rate of inflation from 2% to something like 4 per cent is mainly due to the will to support the remuneration of the public debt and that the nominal rate cannot be negative. The dilemma of Scylla and Charybdis, arise from the conflict between the monetary stability objective and the monetary policy prophecies, adopted worldwide by central banks, on the trail of the ‘90s Japanese lesson and not on the verified experiences of the ‘10s Japanese lesson.

Figure 3: Global debt growth



Source: Institute of International Finance, McKinsey Global Institute

The central banks, in the present Great Recession and with a monetary stability function have to keep, at the same time, the 2% inflation limit and act as macro prudential agents, pursuing macroeconomic goals and financial stability targets. After the 2012 determination by the BCE to implement M0 through QE, the elastic monetary quantity in the system ends up to inflate central banks financial statements at each issue of public debt, financed by commercial banks, by mean of growing reserves with central banks. An explosive situation without recourse, presently almost identical to the one preceding this Great Recession, when the 2006-2011 excessive debt fallout started worldwide financial crisis.

If the competition becomes global, the single areas of production must compete with all the cost structure of all the production factors, labor included on a World basis. If this becomes a socially given fixed variable, then local production shift toward less expensive areas supplying cheaper production specific factors, as happened with labor costs in Asia. Most of essential production have a common World price, in an integrated World market, the only local labor costs are considered invariable unionized elements, rigid enough to stay out of the global competition. The consequent market response has been *delocalization*, with volume suppliers of just in time logistic chains, on a World single market. Central Banks attitude to monetary counteract the local consequent recessions are unproductive palliatives, without sound results but, banking and foreign exchange imbalances out of control.

The present situation reflects this huge World gap in term of areas imbalances and single nations' external and internal growing debt, in comparison with local net product.

## Conclusions

The present paper, considering a problem affecting most of the financial systems and today's monetary theories, seems not to find a common base to extrapolate from the economics calculus the monetary conflicts in a progressive globalization of both markets and production. All the efforts to find a common currency working mechanism and avoid exchange risks, have been fruitless since the gold debasement. The alternatives, introduced since the first day of the market closure on July 1914, when the gold standard was dismissed, up to the Roosevelt gold complete confiscation in 1933, have left open the issue of a global legal or based currency and after the pseudo gold standard, from 1944 to 1971, the world transactions have been influenced by a single legal tender currency unit, the US dollar, granted a special central banks' reserve privileged function, supporting local currencies circulation on a free base, and not even the introduction of the euro has removed the reserve single function of the dollar. On the other side, the dissolution of the planned economies and the capitalistic affirmation of the huge economic industrial empire in Asia, have removed all the competition hindrances, especially the inefficiencies and the low quality of the Eastern countries industrial output. The Chinese competition and the absence of strong and rigid labor costs have permitted the overcome of Western productions with cheaper industrial advanced production, up to the financial collapse of firms not any more competitive on the global market with consolidated high labor costs.

The first role of central banks, to support the interbank clearing function and financing the liquidity balances of the interbank daily settlements was necessarily expanded to the monetary policies pursuing a coverage of banks losses on not performing loans, and finally a smooth clearing of banks too big to fail or banks to be bailed from the taxpayer to support a great General Recession due to the before listed causes. From a private to a public function from private legal contracts to statutory functions in an ever closer relationship with the Treasury and Public finances. The coverage of bank deposit risk, the bailing out of npl loans and the TARP trouble assets recovery programs, slowly are leading banks to a social accounting function in a non-planned economy using the banking standards of planned economies of the past without a likely exit.

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# IMPLEMENTATION OF BASEL AND SOLVENCY MODEL IN BANKS AND INSURANCE COMPANIES – CASE OF BOSNIA AND HERZEGOVINA

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## Abstract

*One of the participants in financial market operations are banks and insurance companies. In Bosnia and Herzegovina, as developing country, the financial market operations are dominantly performed by banks. The next contributors are insurance companies.*

*It is well-known that operating models in banks are based on Basel framework, while insurance companies align with requirements that are prescribed in Solvency. In both regimes, three main issues are tackled. In both frameworks three pillars are possible to identify. In that context, we can more specifically discuss about capital requirements of companies and risk implications, supervision and market discipline. The special emphasis is on risk, as the issue of inevitable importance to both types of institutions.*

*The objective of this research is to make a comparison between two types of financial institutions. The comparison is based on regulatory frameworks and specifications prescribed in Basel III (for banking sector) and Solvency II (for insurance sector). The special emphasis is on developing country Bosnia and Herzegovina. The research shows the level of acceptance and application of both regimes with possible future directions. The specifics of the country, regarding the demanding regulation, underdeveloped financial market, economy growth are considered as well.*

*The research tries to assess if the financial institutions intermediaries, banks and insurance companies in Bosnia and Herzegovina are ready to adopt the required regulatory framework especially on their way to European Union. The research is conducted between banks and insurance companies in Bosnia and Herzegovina, in its both entities, no matter the size of the company, main line of business or ownership (domestic or foreign capital). All three mentioned elements of Basel/Solvency regime are considered.*

*It shows the level of regulatory framework acceptance, with significant differences in two sectors (banking and insurance). It also underlines the main obstacles in process of business operations alignment with relevant regulatory framework.*

**Keywords:** Basel III, Solvency II, capital adequacy, supervision, risk

**JEL classification:** G21, G22

## **Introduction**

Having in mind their power and importance, soundness of banks and insurers dictate the stability of the entire economy. The financial crisis that broke in 2007-2008 exposed many deficiencies in the regulatory mechanisms of financial institutions both in the EU and the rest of the world. Overwhelming spill-over effects of the crisis have prompted the Bank for International Settlements (BIS) to establish the new banking regulations, known as Basel III aiming, not only to redesign the rules and practices stipulated by its predecessor Basel II, but also to propose a broader reform of macroeconomic governance. When it comes to the regulatory changes in insurance sector, they predominantly relate to the finalization of the Solvency II, often called “Basel for insurers”, which is an European Union law directive that codifies and harmonizes the insurance regulation.

The main aim of this paper is to provide analytical comparison between the key components of the two regulatory frameworks for banking and insurance – Basel III and Solvency II. Additionally, we will build up on the previous research regarding the potential implications of their implementation. Particular attention will be given to the Bosnia and Herzegovina banking and insurance sector.

## **Banking and Insurance Regulatory Framework**

When it comes to financial markets, consistency between cross-sectorial regulations is considered desirable. Although the real and potential advantages are many, the most valuable benefit of cross-sectorial consistency relates to the avoidance of the regulatory arbitrage (BCBS, 2010; EC, 2014). The efforts to assure consistency of regulatory frameworks for banks and insurance companies are evident in the structure and content of Basel II and III and Solvency II regulatory schemes.

As BIS notes, the new regulation, Basel III, aims to strengthen global capital and liquidity regulations with the objective to improve the banking sector's ability to absorb shocks arising from financial and economic stress, thus reducing the risk of spillover from the financial sector to the real economy (BIS, 2010). Basel III was first scheduled to be introduced from 2013 until 2015. However, its implementation was extended repeatedly, with the latest start date scheduled for January 2022.

The Solvency II is a successor of the Solvency I (introduced in the 1970s). Just as Solvency II was about to be finalized, the previously mentioned revisions of Basel II were put in motion. This was particularly problematic, since Solvency II was modeled upon on the structure of Basel II. Consequently, the main aim of the Solvency II shifted - from the initial goal, to improve the competitiveness of the EU insurance industry, to the new imperative – to design the capital rules to prevent a crisis. A number of amendments that followed affected the finalization deadlines and implementation dynamics. Finally, on the first day of January 2016, Solvency II Directive has finally become applicable after 15 years of development.

### ***Basel III and Solvency II pillars***

As it was previously explained, Basel III was designed to tackle flaws of the previous framework Basel II. The main changes introduced by Basel III refer to the additional capital, leverage and liquidity standards. The well-known three pillar structure of the Basel II was

maintained, however several significant interventions are required by Basel III, as presented in Table 1.

*Table 1: Overview of Basel III requirements*

Pillar 1: Capital, Risk Coverage and Leverage Requirements	<p><b>More simple and transparent capital structure with only two tiers:</b></p> <p>1. Tier 1 – consists of Common Equity Tier 1 (equity instruments that are perpetual, i.e. have no maturity and have discretionary dividends) and Additional Tier 1 (securities that are perpetual, i.e. have no maturity, subordinated to all debt, and their dividends can be cancelled at any time)</p> <p>2. Tier 2 – consists of unsecured subordinated debt with an original maturity of at least five years.</p> <p><b>Core Tier 1 Ratio</b> raised from 2% to 4.5% of RWA which brings the total <b>common equity standard</b> to 7% while the <b>capital ratio</b> (Tier 1 and 2) remains at 8%.</p> <p><b>Two mandatory protective buffers:</b></p> <p>1. Capital conservation buffer - set at 2.5% of the bank's total risk exposure and is intended for absorption of losses during critical times.</p> <p>2. Countercyclical buffer - maximum value of 2.5% of the RWA. It is fixed at national discretion but within a range of 0–2.5%</p> <p><b>Introduction of a non-risk based leverage ratio</b> to supplement the risk-based minimum capital requirements, capped at 3% (computed as Tier 1 capital divided by the total on and off-balance assets less intangible assets)</p> <p><b>Also:</b> Greater sensitivity and comparability in calculation of risks; constraints on using internal models, more strict exposure measurements for counterparty credit risk; less reliance on external ratings, simpler methods for calculation and increased requirements for riskier exposures in securitizations activities; and limits for the regulatory capital benefits for banks using internal models of assessment.</p>
Pillar 2: Risk Management and Supervision	<b>Additional requirements regarding:</b> the firm-wide governance and risk management; interest rate risk in the banking book (IRRBB) - enhanced disclosure requirements, stricter threshold for identification of outlier banks and updated standardized approach.
Pillar 3: Market Discipline	Consolidated and enhanced framework, covering all the reforms to the Basel framework and introduction of a dashboard of banks' key prudential metrics.
<p>Also:</p> <ul style="list-style-type: none"> <li>• <b>Principles for Sound Liquidity Risk Management and Supervision</b> supported with two minimum standards: 1) <b>Liquidity Coverage Ratio (LCR)</b> - to promote the short-term resilience of a bank's liquidity risk profile and requires that outflows are fully (100%) covered by inflows plus the liquidity reserve; and 2) <b>Net Stable Funding Ratio (NSFR)</b> - to promote resilience over a long-term horizon and requires that stable-funding weighted assets is fully (100%) covered by stable-funding weighted liabilities.</li> </ul>	

*Source: Authors.*

Although less complex, the Basel III capital requirements are tighter in terms of both quantity and quality in comparison to both Basel I and Basel II. Basel III places particular emphasis on liquidity requirements since the post-crisis analysis showed that struggles experienced in banking sector were caused by the mistakes in implementation of the elementary principles of liquidity management. As a response the Basel Committee developed the Principles for Sound

Liquidity Risk Management supported with two standards (LCR and NSFR) which are internationally harmonized with prescribed values, however, allow the national discretion to reflect jurisdiction-specific conditions.

As previously mentioned, the Solvency II is a successor of the Solvency I, a regulatory framework governing the European insurance industry. Based on the Solvency I requirements, insurance companies were not required to apply a robust risk and governance management. Hence, national supervisors did not get sufficient or comparable signals about the risks and governance problems the insurers faced, which became even more evident with the outbreak of the financial crisis. Modeled upon Basel II, the Solvency II framework is also built on three main pillars as presented in the Table 2.

*Table 2: Overview of Solvency II requirements*

Pillar 1: Quantitative Requirements	Two solvency thresholds: <b>1. Solvency Capital Requirement (SCR)</b> - the risk-based capital allocation that can be determined based on a prescribed standardized formula or on an internal model, which previously must be approved by the regulator. <b>2. Minimum Capital Requirement (MCR)</b> - a segment of the SCR which must reach at least 25%, but not more than 45%, of insurer's SCR.
Pillar 2: Qualitative Requirements and Supervision	Contains qualitative requirements and the details for the supervisory reviews and interventions. It aims to identify the companies with a higher risk profile, which may be ought to hold higher level capital and implement risk reduction measures. Under this pillar, the insurer's are required to adopt the effective risk management system, including the regular "Own Risk & Solvency Assessment" (ORSA).
Pillar 3: Supervisory Reporting and Public disclosure	Companies are required to make public the details of the risks they hold, their capital adequacy, and the risk-management measures they have adopted, with the goal of allowing the market to improve the industry's discipline. More detailed reports must be issued to regulators to ensure companies the SCR is in line with the risks on its books.

*Source: Authors*

Solvency II brought new concept of assets valuation. While Solvency I sees the statutory value of assets as relevant, the Solvency II demands the assets to be acknowledged based on its market value. Additionally, Solvency II calculates the required capital using a total balance sheet approach, taking into account the actual risk on the balance sheet and any offsetting effects, while Solvency I, however, is based on simple ratios of the liabilities or premiums without taking into account the types of risks or business (Al-Darwish et al., 2011). Also, the new Directive allows the solvency capital requirement to be calculated using either a standard formula or an internal model that first needs to be approved by the regulatory authorities. With this measure, Solvency II aims to allow customization of calculation models so that specific risk exposures are apprehended individually for every insurer which leads to more precise measurements of the amount of capital to be held. Generally, Solvency 2 regulatory framework places risk at the very center of management of an insurance business which is evident from the Pillar 2 which defines the qualitative requirements for risk management of both insurers and regulators. Therefore, introduction of Solvency 2 implies broader changes than a simple increase in capital, but rather calls for major adjustments pertaining to the corporate governance and development of an risk-based governance framework.

## ***Basel III vs Solvency II***

The literature comparing the Basel III and Solvency II is rather scarce - majority of the work relate to the qualitative comparisons such as Al-Darwish et. al. (2011), Gatzert and Wesker (2012) and Laas and Siegel (2016) who complement their research with quantitative considerations as well.

As for the conceptual comparison of Basel III and Solvency II, firstly, the Basel III was created by the organization responsible for developing international standards for banking supervision - The Basel Committee on Banking Supervision. On the other hand, Solvency II is a project initiated by the European Commission. Although globally applicable, Basel is an “accord” that independently has no legal power, meaning it has to be transposed into local legislation. In the EU, for the implementation of the Basel III, the European Commission passed two acts: Capital Requirement Directive IV (CRD IV) which must be transposed into the national legislations and; Capital Requirement Regulation (CRR) which is directly applicable. On the other hand Solvency II is the EU Directive and hence, has a status of a legal instrument which is binding in European Economic Area countries.

Also, the main drivers behind Basel III and Solvency II somewhat differ. The main idea behind the Basel III is to upgrade the Basel II in reaction to the most recent financial crisis and therefor its key objectives are: to improve the banking sector’s ability to absorb shocks arising from financial and economic stress, whatever the source; to improve risk management and governance and to strengthen banks' transparency and disclosures. In addition to the mentioned changes in capital, Solvency II also aims to achieve regulatory harmonization across Europe and stronger international competitiveness of EU insurers with improved consumer protection and more modern supervisory process.

It is safe to say that Solvency II is broader than Basel III also because of the fact that it is a “total balance sheet” approach including assets and liabilities. Basel III includes the quantification of off balance sheet assets but not fully and puts focus primarily on credit, market and operational risk. The much more comprehensive total balance sheet approach the Solvency II is introducing takes all risks into the account and specifically observes profile of assets’ maturity in relation to liabilities.

Both frameworks allow the application of the model based regulation for risk management and capital calculation (standardized or own) and recommend the introduction of the Enterprise Risk Management (ERM). Insurers are allowed to use own models, that previously must be approved by the regulator and are required to carry out the Own Risk and Solvency Assessment (ORSA). In Basel III, banks are allowed some liberty in dealing with certain parameters in the model and are required to conduct the Material Risks Assessment, which is a summary of exposures to all risks other than credit, market and operational.

In 2011, the Financial Stability Board (FSB) published an integrated set of policy measures to address the systemic and moral hazard risks associated with systemically important financial institutions (SIFIs): Global Systemically Important Banks (G-SIBs) and Global Systemically Important Insurers (G-SIIs). Both Basel III and Solvency II require additional regulation to be applied by the global systemically important institutions (although FSB stopped identifying the G-SIIs in 2017).

## ***Effects of the Basel III and Solvency II application***



There is considerable amount of previous research aiming to investigate the implications of the Basel III application. Fender and Lewrick (2016) identified some positive macroeconomic effects of the Basel III and found that its implementation is expected to yield sizeable net marginal macroeconomic benefits. King's (2013) findings suggest that NSFR may lead to the shrinkage of banks' balance sheets which may result in increased costs for the broader economy. On the other hand, Dietrich et. al (2013) concluded that NSFR does not have any statistically significant influence on bank profitability. Samitas and Polyzos (2015) provide some major critical arguments claiming that neither economic crises nor contagion are diminished under Basel III which is in alignment with Pakravan's (2014) research who claims that the Basel framework has structural features which can potentially amplify the systemic risk.

Previous research regarding the potential repercussions of the Solvency II is also available. Stoyanova and Gründl (2014) argue that Solvency II could become a driver for mergers and acquisitions in the non-life insurance sector. Lange (2018) also argues that Solvency II measures will lead to further consolidation, however, that it can have a stabilizing effect on the insurance sector during market turmoil. Eling and Pankoke (2013) study the effects of the standard model application and make a strong case for development of internal models. On the other hand Cifuentes and Charlin (2016) found that application of standard formula provides diversification benefits, in relation to operational risk. Braun et al. (2015) consider the effects of the standard formula on portfolio optimization and find that it suffers from severe shortcomings that interfere with economically sensible asset management decisions. These findings are in alignment with the research conducted by Douglas et al. (2017) who believe that the new regulations might encourage life insurers to move to holding safe assets in place of risky which could be driven by changes in the so-called 'risk margin'.

## **Implications of New Regulations Implementation in Bosnia and Herzegovina**

The financial system in Bosnia and Herzegovina (BiH) is fragmented and decentralized. The country is divided into two semi-autonomous political entities—the Federation of Bosnia and Herzegovina (FBiH) and the Republic Srpska (RS) and both entities have their own government, judicial system and stock exchange. Accordingly, regulatory bodies for banking and insurance can be found on both state and entity level. The Central Bank of B&H) and Deposit Insurance Authority operate on the state level. Banking Agency of FBiH and Banking Agency of RS are independent and sovereign authority for bank supervision and licensing in the two entities. In insurance sector, Insurance Agency of BiH operates on the state level, while the real regulatory power lies on the entity agencies Insurance Supervisory Agency of FBiH and Insurance Agency of RS.

In 2017, total assets of the financial sector amounted to KM 30,93 billion. Banks dominate the financial system and account for the largest market share with 88,27% of total assets in the sector, while insurance and reinsurance companies participate with 5,57%. Other financial institutions are rather small and their market share is insignificant. In 2019, total of 24 commercial banks operate in B&H, majority of which in foreign private ownership. Majority of banks are adequately capitalized, however, some banks still have a high share of non-performing loans in total loans. Although the non-performing loans in absolute terms registered a decrease of 6.7%, the level of non-performing loans is still high. In 2017, banks recorded a growth in the credit portfolio of 7.2% on an annual basis. Although the total loans

recorded the highest nominal amount increase, their share in the structure of assets decreased, which was largely contributed by the growth of liquid assets which increased by 9.3% in 2017. In the insurance market of B&H, total of 27 insurance companies and 1 reinsurance company operate in 2019. In 2017, companies with majority foreign capital participated in the total premium with 53,95%, while the total premium amounted to KM 683.29 million. Out of total realized insurance premium in 2017, 79,62% is referred to non-life insurance business and 20,38% to life insurance business. In the structure of total insurance portfolio in 2017 that was comprised of 19 types of insurance, motor third-party liability insurance had participated with 50,07%.

Considering that BiH has a potential candidate status (not yet been granted candidate country status) for joining EU, legal and regulatory framework should be designed to assure the harmonization of the domestic financial sector with the regulatory framework of the EU.

### ***Basel III implications in BiH***

In 2017, a comprehensive set of by-laws were adopted in order to meet the Basel II/III Pillar 1 and 2 requirements. The most important amendments relate to the following: a) definition of capital elements and the appropriate methodology of regulatory capital calculation; b) definition of capital buffer and financial leverage requirements; and c) calculation of capital requirements for credit risk and market risk according to the standardized approach. As for the Pillar 3, entity agencies are in the process drafting of by-laws to define a minimum volume of information which banks are obliged to publish.

Entity level regulatory bodies have initiated activities for implementation of the Strategy for Introduction of Basel III. The Revised Strategy was adopted in February 2013 with the aim of complying with the CRD IV and CRR. In 2016, the QIS has been conducted aiming to assess the effects of the Basel III implementation. The study encompassed 15 commercial banks in FBiH, 7 of which systematically important with 81% share in the total assets and additional 8 that participate with 19% in the total assets of FBiH banking sector.

The study showed, that the new regulation would result in the 3,1% decrease of the regulatory capital. The decrease effect would come as a result of different methodology of the regulatory capital calculation and new capital deductibles. According to the current regulations, the capital adequacy rate (net-capital rate) amounts to 12%. The new capital requirements would bring the total capital rate in the FBiH to 16,47% which would be 0,3% increase in comparison to the current regulatory rate. All banks would meet the regular basic capital and basic capital rate, while two banks would have the total capital rate below 12%. All banks would have capital conservation buffers in amount of 2,5% of the total risk exposure. Current regulation prescribes the financial leverage to be minimum 6%, as a mean of additional capital protection. With the application of new rules, the financial leverage would be 10,2%, and all banks would meet the new requirement.

Within the new framework, decrease in the total risk exposure of 5,3% would come as a consequence of the decrease in the credit risk exposure and inclusion of the market risk exposure. Also, if banks would use only corrected values in accordance with IAS 39 and reserving in accordance with MRS 37, regulatory capital would increase for 5,8% and the total capital rate would be 17,3%. As other alternative, banks could use the standardized approach for calculation of the capital requirements for credit, operational and market risk. In this case operational risk exposure would decrease for 10%.

Additionally, based on the quantitative and qualitative QIS analysis, in terms of liquidity, it would be safe to say that new regulatory framework would maintain acceptable level of liquidity of banking sector in the stress period of 30 calendar days. With the exception of one bank, all banks have showed LCR above 100%. Comprehensive analysis of the potential effects in the segment of long-term, structural liquidity must be complemented with the NSFR introduction implementation.

### ***Solvency II implications in BiH***

In the insurance sector, Solvency II is yet to be implemented. In 2017, the new Law on Insurance was passed in the FBiH that introduced some important changes relevant for the future implementation of the Solvency II measures, namely: a) greater focus is placed on risk management (ORSA); b) stricter capital requirements (two times higher than previous); c) possibility of opening the market for the EU insurers; d) additional supervisory powers to the Supervisory Agency of FBiH etc. Additionally, having in mind the importance of the holistic approach to risk management which Solvency II prescribes, passing of Rulebook on the Risk Management is of particular significance. In RS on the other hand, Insurance Agency of RS established the Strategic Preparatory Framework for Transition towards Regulatory Framework based on Solvency II. In this document, following priorities have been identified: 1) analysis of potential exclusion of small insurers from the Solvency II requirements; 2) GAP analysis of insurer's capacities to implement the Solvency II qualitative requirements; and 3) QIS of Solvency II effects on the insurers and insurance sector.

Although, QIS of the Solvency II application is still to be conducted in both entities, some scientific research is available aiming to measure the potential effects such as Taso (2015), Šain and Selimović (2014), Kozarević et. al. (2010). In general terms, the research shows that the application of Solvency II will initiate the increase in the capital requirements and consequently decrease the available own capital due to the disregard of accruals and different methods of assets valuation. Also, the research shows that it may lead to increase in market risk as a consequence of investment concentration because of underdeveloped capital market.

A number of small, local insurers that operate in BiH will have particular issues to meet the Solvency II capital requirements, since they lack the option to financially restructure from their parent companies. Consequently, the small insurers will probably be urged to consolidate which could lead to stronger market concentration. Consolidation as well as assumptions of better risk measurements could potentially lead to increase in premium.

## **Conclusion**

In order to introduce the new regulatory frameworks Basel III and Solvency II, major changes will have to be implemented in terms of achieving greater transparency and public disclosure in both banking and insurance sector of BiH. New holistic approach to risk management will present great managerial challenge (introduction of ERM concept) particularly for insurance companies.

In summary, banking and insurance sector will face similar hurdles: a) insufficient knowledge and staff competencies in both banks/insurance companies and regulatory bodies; b) stricter capital requirements; c) insufficient data bases and inadequate IT support; d) insufficient statistics that prevents the appropriate development of internal models; e) high costs of

internal models development; f) inconsistent and inadequate internal and external control of the insurers and decentralized supervision on entity levels; and g) underdeveloped financial market.

Although supervisory bodies have been working on raising awareness regarding the Basel III and Solvency II, additional support must be provided in terms of education of staff in both banks/ insurance companies. It is expected that majority of insurers adopt the standardized approach in capital calculations since it is questionable whether the insurers, particularly small ones, would be able to develop internal models due to their high price and insufficient knowledge. This would undermine the main idea behind the Solvency II – to assure more precise and individual approach to determining capital requirements. Banks will face the same challenges in development of internal models for capital calculation.

As for the future steps, entity supervisory bodies are ought to work closely to overcome the identified challenges and assure smooth transition to new regulatory requirements, particularly in terms of drafting and harmonizing the by-laws and implementation of impact studies. Harmonization costs of transition to new frameworks will be considerable and inevitable since significant investments are to be made in terms of capacity building in order to assure adequate software solutions, personnel training and further development of institutional capacities of both financial institutions and regulators. Additional steps must be taken towards creation of a single financial market with centralized supervision in both sectors.

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# ASSET RISK EVALUATION USING SHAPLEY VALUE

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## Abstract

*This paper proposes a method to evaluate the risk of an individual asset in a portfolio using game theory notions. Shapley value is a solution concept of cooperative game theory that divides overall utility of a coalition among the players. It can be shown that it is the only possible fair division, meaning that it satisfies the so-called Shapley's axioms which offer the mathematical representation of fairness. It takes into account the marginal contribution of a player – their contribution to each possible coalition, compared to a coalition without that player. This concept has been used in many fields to assess the fair division of utility, but also to find a fair cost division among entities participating in a project. Even though variance is the most-commonly used risk measure of an asset, there are many other measures that can be used. There are advantages and drawbacks to each measure, and choosing the best one for asset risk is still an open question. It is well known that, when assessing the risk of an individual asset, one must take into account its connection to the other assets on the market. The aim of this paper is to offer a way to represent the risk of an asset as a single measure but still taking into account its connection within the market. This will be achieved using Shapley's value of an asset, where the risk will be treated as a cost that needs to be divided among assets. Using this methodology, it will be determined to what extent individual asset contributes to total risk of a portfolio. The method will be evaluated using the Zagreb Stock Exchange data. Taking into account the advantages of this approach, the authors hope that this measure has its place in portfolio analysis and determining the key components of market risk.*

**Keywords:** Shapley value, risk assessment, portfolio risk

**JEL classification:** C71, G11

## Introduction

Risk determination is one of the most important tasks of portfolio management. Despite all the efforts to construct a risk measure which will reflect theoretically desirable properties, there is still no consensus on such a measure. It is well-known that, when formulating portfolio, it is not sufficient to focus only on measures of risk of each individual asset – one must also consider relations between assets in the portfolio. Different directions of asset returns can mean lower overall risk than the sum of individual risk measures. Markowitz was the first to realize the importance of asset interactions in his famous “Portfolio selection” paper (Markowitz, 1952). He proved that, if risk is measured as a variance of an asset or a portfolio, then negative covariance between assets can be beneficial as it reduces the portfolio

variance. To this day, variance is still the most frequently used risk measure due to its simplicity, especially in theoretical analysis. Over the years this risk measure provoked a series of criticisms leading up to numerous new proposals (Liang and Park, 2010). Still, any attempt to determine the risk of an asset as an independent market object provides only partial risk measure since it does not incorporate the above-mentioned benefits of accounting its influence on risk of a portfolio. Risk valuation that does not acknowledge this influence always misjudges the true risk that is relevant for investment decisions as it ignores the benefits of diversification. Including this information into a risk measure can produce much more informative and useful tool for asset validation and portfolio decision making. Such a measure needs to divide the overall portfolio risk among assets in a *fair* way that reflects all the risk that asset transmits through the entire portfolio. Besides negative ones, it also needs to take into account possible positive effects on portfolio risk reduction.

Cooperative game theory analyses behavior of entities (players) and possible benefits of cooperating instead of playing for their own gain. Forming a coalition (as opposed to separated contest) can produce overall utility that exceeds the sum of individual utilities in a disjoined game. The question of central importance in cooperative game theory is, if players cooperate, in what way should they divide achieved utility (Ferguson, 2014). Division needs to be *fair*, meaning that it should reflect the strength of each individual player participating in a coalition. Depending on properties that one expects from this division, there are many different solution concepts that offer the answer. The best known solution concept is the so-called Shapley value that satisfies Shapley's axioms of fairness (Leyton-Brown and Shoham, 2008). Shapley value assigns the part of cooperative utility to each player. This concept can be applied to many different problems, such as dividing utility among workers in a team, the strength of a politician in a party, or a party in a parliament (Ferguson, 2014). It can also be applied to determine the significance of a path in a graph, such as a road in a road system, and to measure influential nodes in a social network (Narayanam and Narahari, 2011). It can also be applied to estimate benefits of each education level (Slišković and Perić, 2017). Shapley value is not restricted to dividing the gain of a coalition. The same concept can also be used to divide what we consider to be a cost, for example the cost of building a road system (Bird, 1976). In recent years, it is being used to fairly divide the risk in insurance theory, the operational risk of a company (Mitic, Hassani, 2018) or the risk of a particular institution on a financial market (Drehmann and Tarashev, 2013; Cao, 2014). It is not surprising that the same method is proposed for sharing the risk of a portfolio among the assets in the portfolio.

The aim of this paper is to explore the possibilities of Shapley value risk determination in a Croatian stock market. We suggest one possible setup that ensures the fair comparison of risk measures when using Shapley value methodology. We present a model for adequate risk assessment, in a first-ever such research on the Croatian and other Balkan markets. The results presented here should prove helpful for adjusting expectations in similar markets. The rest of the paper is organized as follows. Section 2 summarizes previous research on this topic and other similar topics. In section 3 we give a short overview of Shapley value properties and calculation procedure. In section 4 we present the results obtained and discuss the findings. This section also presents the problems of this method, possible modifications and the obstacles in implementation. Finally, section 5 concludes the paper with future research suggestions.

## Literature review

Shapley value was first used to allocate the gain obtained by working together, but its application was later expanded to problems of allocating cost or blame. This led to a series of suggestions for practical implementation of this theory, among others for operating cost division in insurance industry (Lemaire, 1984). This proposal sparked expansion of research in actuarial community that finally led to exploring the possibility of using this tool for cost allocation in a portfolio of risks in insurance. Afterwards, this idea of allocating risk among portfolio or risky subjects was first applied in systemic risk measuring and risk decomposition among *institutions* in a financial system, followed by measuring a risk of and asset in an asset portfolio.

The research of Shapley value approach in portfolio analysis is in its infancy. Terraza and Mussard (2007) applied Shapely value using several French securities and a Gini coefficient as an underlying risk measure. Mussard and Terraza (2008) and Colini-Baldeschi, Scarsini and Vaccari (2018) propose possible theoretical setup for this methodology application and corresponding solutions. Kocak (2014) constructed a game-theoretical environment using different risk level stocks from Financial Times and Stock Exchange. In this environment related payoffs were structured by consulting stock exchange experts, and Shapely value was used to suggest the optimal portfolio. Auer and Hiller (2018) used simulations to show that Shapley value risk division can lead to a better risk estimate since this risk measure can do a better job explaining the so called low-risk puzzle, i.e. empirical findings that suggest that lower risk investment opportunities tend to outperform the high-risk counterparts. This is not in accordance with financial market theory and it is suspected to be a result of a poorly chosen risk measure. Shalit (2017) used optimal Markowitz global minimum variance portfolio to calculate the Shapley value risk measure for six classes of US assets using Ibbotson SBBI data. He suggested two possible approaches. The first one uses the variance of global minimum variance portfolio for each subset of assets when calculating marginal contribution of an asset to risk. We find this approach to be inadequate since it compares risks at different yield levels. Alternatively, he proposes that marginal contribution should be calculated using portfolio from efficient frontier with a fixed expectation. This raises the question of choosing the expectation level. Also, since some subsets of assets are not able to achieve this level of expected yield, or they are able to achieve higher levels, this approach seems to be *unfair* what is in contradiction to original idea of obtaining the fair risk division.

## Methodology

Game theory is used to examine the interaction between rational individuals (players) and to assess their options in a given situation. It is an umbrella term for different analytical methods and solution concepts used to determine the best possible outcome and to propose the optimal decision in a conflicting environment in which every individual wants to maximize its utility. Depending on whether the player are in conflict or they collaborate, game theory can be divided in cooperative and non-cooperative. While the non-cooperative game theory focuses on decision making in a conflict situation in which each player plays as an individual, cooperative game theory examines the possible surplus utility in case they collaborate. It also offers solution concepts for division of acquired utility.

The basic assumption of cooperative game theory is that there are no obstacles in forming a coalition. Players are free to decide whether they want to play alone or join a coalition and possibly achieve greater utility (Ferguson, 2014). Formally, let  $n \geq 2$  denote the number of players in a game and let  $N = \{1, 2, \dots, n\}$  denote the set of all players. Any subset  $S$  of  $N$ ,



$S \subset N$  is called a **coalition**. An empty set  $\emptyset$  is by convection also considered to be a coalition and it is called an empty coalition. In case all players form a coalition, i.e.  $S = N$ , we refer to it as a **grand coalition**. **Game in a coalition form** is defined by the set of players and by the real-valued function  $v: P(N) \rightarrow \mathbb{R}$  defined on a set of all possible coalitions (i.e. all possible subsets of  $N$ ) that satisfies  $v(\emptyset) = 0$ . Function  $v$  is called the **characteristic function** of a game. The quantity  $v(S)$  represents the value, power or worth of a coalition  $S$ , given that the members of that coalition choose to play together. The above-mentioned condition means that an empty coalition has no value. Sometimes it is also requested that the characteristic function meets the condition of superadditivity, meaning that adding a new member (or several members) to any coalition leads to a value equal or greater than the sum of those two smaller coalitions get when they play separately. Mathematically, this request can be formulated as  $v(S \cup T) \geq v(S) + v(T)$  for any two disjointed sets  $S$  and  $T$  ( $S \cap T = \emptyset$ ). The key question that needs to be answered is, in case a coalition forms, how to divide its joined value among its members. Division should reflect the *power* of each member, meaning that it should reflect the contribution of each member to the total utility achieved in a coalition. Function that divides the utility among the members of a coalition is called a **value function**  $\phi$ . Given the set of players  $N = \{1, 2, \dots, n\}$  that form a coalition and a characteristic function  $v$ ,  $(\phi_1(v), \phi_2(v), \dots, \phi_n(v))$  represents the division of value among players, where  $\phi_i(v)$  represents the value that is assigned to player  $i$ . There are many possible ways to divide the total utility, but the chosen solution concept should satisfy properties that ensure a *fair* division. Shapley proposed four axioms that such a function needs to meet (Shapley, 1953). Those axioms came to be known as Shapley's axioms of fairness (Ferguson, 2014):

1. Efficiency:  $\sum_{i \in N} \phi_i(v) = v(N)$
2. Symmetry: If  $i$  and  $j$  are such that  $v(S \cup \{i\}) = v(S \cup \{j\})$  for every coalition  $S$  not containing  $i$  and  $j$ , then  $\phi_i(v) = \phi_j(v)$ .
3. Dummy axiom: If  $i$  is such that  $v(S \cup \{i\}) = v(S)$  for every coalition  $S$  not containing  $i$ , then  $\phi_i(v) = 0$ .
4. Additivity: If  $v$  and  $u$  are characteristic functions, then  $\phi(u + v) = \phi(u) + \phi(v)$ .

Efficiency axiom states that value function needs to divide the *total* value of a coalition among players. Symmetry axiom requires that, if some two players add equal value to every possible coalition that does not contain them, then value function needs to assign equal value to both of them. Dummy axiom requires zero value to be assigned to a player who adds no value to any coalition. Finally, the additivity axiom says that value of two games played separately should be equal to the value when they are played simultaneously.

Shapley (1953) proved that there is only one possible value function  $\phi$  (i.e. only one possible distribution of gained utility) satisfying given axioms. The value that is assigned to players using this allocation is called **Shapley value** and it can be proved that it is given by represents the cardinality, i.e. the number of elements in a set  $S$ , in our case the number of players in a coalition  $S$ )

$$\phi_i(v) = \sum_{\substack{S \subset N \\ i \in S}} \frac{(|S|-1)!(n-|S|)!}{n!} \cdot \underbrace{[v(S) - v(S, \{i\})]}_{\text{marginal contribution of player } i}. \quad (1)$$

Shapley value can be calculated as an average marginal contribution of given player  $i$  to a coalition  $S$  averaged by all possible permutations in which the coalition can be made.

We will be using Shapley value to decompose the risk of a portfolio. The value function  $v$  that we use is in fact the risk measure and it will be denoted by  $\rho$  henceforth.

## Results and discussion

In order to demonstrate Shapley value application for risk assessment, weekly data on value of five sector indices on Croatian stock exchange (tourism – TUR, food – NUTR, construction – KONS, industry – INDU and transport – TRAN) has been obtained for the period February 21th 2013 until March 15th 2019 (Zagreb Stock Exchange, 2019). The summary statistics for logarithmic returns are presented in the table 1:

*Table 1: Descriptive statistics for observed stock returns.*

	TURI	NUTR	KONS	INDU	TRAN
Mean	0.0038	-0.0025	-0.0024	-0.0005	-0.0013
Median	0.0018	-0.0025	-0.0032	0.0002	-0.0032
Maximum	0.1152	0.0595	0.1550	0.1064	0.1316
Minimum	-0.0680	-0.1575	-0.3001	-0.1223	-0.1492
Std. Dev.	0.0216	0.0225	0.0458	0.0268	0.0334
Jarque Bera ( $p$ - $v$ )	402.59 (0.00)	1882.5 (0.00)	498.79 (0.00)	123.08 (0.00)	66.655 (0.00)

In order to calculate Shapley value decomposition of risk in a portfolio, we need to choose underlying risk measure. As a starting point, we used Markowitz mean-variance model (Markowitz, 1952). The underlying risk measure that we use is variance of global minimum variance portfolio.

Since there are 5 indices that are being used in the analysis, there are  $2^5 = 32$  subsets for which we need to determine coalition value. For an empty coalition, we set the risk measure to zero,  $\rho(\emptyset) = 0$ . For each subset  $S \subset N$  of assets (sector indices), we calculated vector of means and covariance matrix and using those data constructed global minimum-variance portfolio, i.e. portfolio from an efficient frontier with a minimum variance. The optimal portfolios that are calculated using different assets have unequal expected returns, what makes them incomparable. This means that marginal contribution of an asset to risk of a portfolio can't be calculated by simple subtraction of risk in a portfolio that contains that asset and a portfolio without it. In order to make these variances comparable among different subsets, some transformation of the data needs to be done.

It is natural to request that chosen transformation results in risk measure that assigns greater value for a portfolio with a greater variance, compared to one with a smaller variance and

equal expectation. Similarly, portfolio with a smaller expectation should have a greater risk measure, given equal variance.

Since simple division of standard deviation by mean wouldn't meet these conditions, we instead use a  $1 - \mu_S$  as a denominator ( $\mu_S$  represents the mean of the global minimum-variance portfolio consisted of assets in  $S$ ). Therefore, the risk measure that we use is

$$\rho(S) = \frac{\sigma_S}{1 - \mu_S}, \quad (2)$$

where  $\sigma_S$  represent the standard deviation of the optimal portfolio constructed from the assets in  $S$ , and  $\mu_S$  represents the mean of the same portfolio, as mentioned earlier. Since function  $x \mapsto 1 - x$  is monotonically decreasing, the abovementioned conditions are met.

Using this risk measure as a characteristic function, we calculated Shapley value of each asset using formula (1). The results are presented in a Table 2. Additionally, we calculated *normed* Shapley value of each asset:

$$\phi_i(\rho) = \frac{\phi_i(\rho)}{\sum_i \phi_i(\rho)}. \quad (3)$$

This transformation ensures that the sum of calculated values is equal to 1 what makes it easier to interpret the results. The third row in a table are weights in the global minimum variance portfolio constructed using all assets (the grand coalition).

Table 2: Shapley value using risk measure  $\rho$

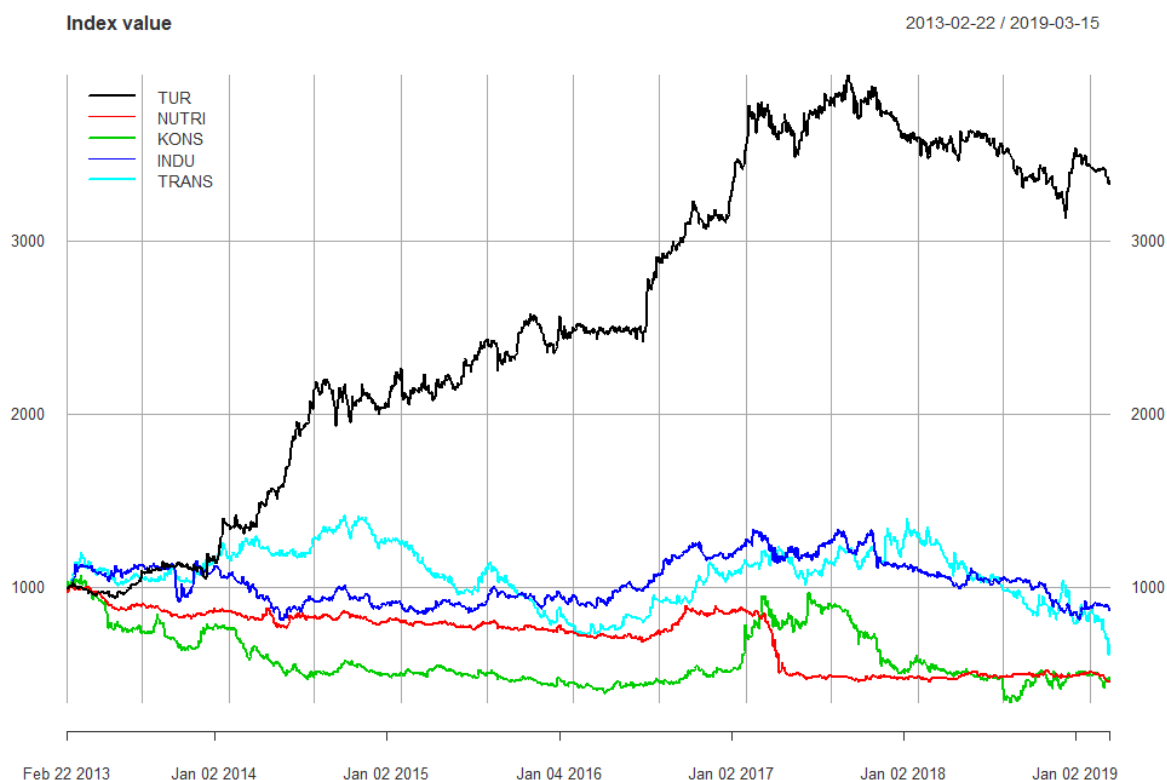
	TURI	NUTR	KONS	INDU	TRAN
Shapley value $\phi_i(\rho)$	-0.000866	0.000241	0.008767	0.002121	0.004539
Normed Shapley value $\phi_i(\rho)$	-0.0585	0.0163	0.5923	0.1433	0.3067
Weight in the optimal portfolio	0.3678	0.2910	0.0101	0.2085	0.1227

Figure 3 shows all five indexes in the observed period.

Our procedure assigned negative value to TURI, meaning that, in general, marginal contribution of this asset to risk of a portfolio was negative. This result is in line with weights in the optimal portfolio consisted from all five assets, with previously observed summary statistics and with the graph of index values. Similarly, risk contribution of NUTR is assessed to be 1,63%. This asset is also heavily represented in the optimal portfolio. The biggest discrepancy between these two methods is obtained for INDU sector. Optimal portfolio results suggest investing 21% of portfolio value in this sector, while Shapley value risk measure estimates that around 14% of risk comes from this asset. Such a great weight of INDU in an optimal portfolio can be explained using correlation matrix. Since TURI is an asset that accounts for the largest percentage of the optimal portfolio value and INDU is an asset with weakest correlation to it, including NUTRI in portfolio can be beneficial as a diversification tool. As in case of TURI, results for KONS are also strongly supported by results in the optimal portfolio. According to Shapley value risk decomposition, KONS is

responsible for almost 60% of overall risk. The optimal portfolio invests only around 1% of its value in this asset, what, once again, confirms the adequacy of this procedure for portfolio risk analysis.

*Figure 3: Index values in observed period*



*Table 4: Correlation matrix for index returns*

	TURI	NUTRI	KONS	INDU	TRANS
TURI	1	0.20700105	0.1462891	0.04414171	0.13677373
NUTRI	0.20700105	1	0.2002607	0.21769169	0.05440403
KONS	0.1462891	0.20026069	1	0.22924272	0.13774942
INDU	0.04414171	0.21769169	0.2292427	1	0.16914072
TRANS	0.13677373	0.05440403	0.1377494	0.16914072	1

Previously described procedure provides Shapley values of each asset represented as single-number measures of risk a particular asset poses for a portfolio. This measure captures not just the volatility of that particular asset, but also the potential risk growth and risk reduction that an asset brings to a portfolio. It averages its marginal risk contribution over all possible portfolios, meaning that it contains all the information of asset interaction with the market. It measures the way the risk of a portfolio reacts when this asset is introduced to that portfolio. Any measure that does not include the information about the way the asset interacts with other assets or a market can be seen only as a partial measure of risk. Since this risk division satisfies Shapley's fairness axioms, we find risk measures obtained

using Shapley value division to be more complete and also more *fair* than any risk measure obtained by treating an asset as an isolated object rather than a market component.

Prior to calculation of Shapely value one must first estimate the characteristic function (value of each possible coalition), leading to an exponential growth in the number of problems that need to be solved. Furthermore, complexity of calculation strongly depends on an underlying model or risks measure that is being used. This procedure can be applied on any risk measure, but one must consider the limitations and disadvantages of the chosen measure. We used variance to capture the risk of a portfolio, but the same analysis can be done using another risk measure, for example some downside risk measure. Using such a measure will lead to a Shapley value division that has more desirable properties. An additional problem that occurs is the problem of comparing the risk at different return levels. The cause of this problem is Shapley value, which is a tool developed to divide the utility in a one attribute environment, while portfolio analysis is generally considered to be a problem with two variables of interest – risk and return. The optimal portfolio for a given coalition does not have to have the same expected yield as the optimal portfolio formed from another set of assets (another coalition). This means that either single-index model for portfolio analysis needs to be used or when using two-index model, an optimal solution needs to be adjusted so that the calculated risks of the optimal portfolios are mutually comparable. This creates room for numerous possible variations on transformation function that is used prior to applying Shapley value calculation procedure.

## Conclusion

Shapley value offers a way to summarize risk of an asset and its possible contribution to risk increase or decrease when entering the portfolio. This is important since it is well known that the volatility of an asset is not the only factor that needs to be considered when choosing whether or not to include that asset in a portfolio. Risk measures that are based solely on information obtained from that asset returns (without regard for other participants in a portfolio or a market) can only be seen as partial risk measure. Shapley value is a tool that can be used to transform these partial risk measures into a more complete measure. This transformation can be done in various ways, creating a room for modifications that will result in a risk measure with desirable characteristics. We propose one possible transformation that can be used. The obtained measure represents a fair division of risk in a portfolio. It is possible that a negative value is assigned to an asset. This means that, on average, this asset reduces the risk of a portfolio when added into it. This is the consequence of taking into account interactions between assets, not just the volatility of an individual, isolated asset. The properties of Shapley value ensure that the risk division estimated in this manner is fair – it assigns risk so that the value assigned to an asset reflects the overall cost of having an asset in a portfolio.

We showed that the results from Croatian Market in proposed setup are in line with what one might expect from a complete risk measure. Since research in this area using Shapley value is still very scarce and the results are promising, this motivates future research with different possible portfolio constructing model or different transformations to achieve comparability. Also, this methodology should be tested using larger data pool from different markets. This can be problematic since the main downside of this method is its complexity – the number of optimization problems that need to be solved prior to computing the Shapely value grow exponentially with the number of assets of interest. Additionally, the methodology could be

expanded for dynamic portfolio construction, but his would also enlarge the complexity of estimation.

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# INNOVATIVE STRUCTURES OF COVERED BONDS: PERSPECTIVE IN FINANCING SMALL- AND MEDIUM- SIZED ENTERPRISES

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## Abstract

*Covered bonds, as innovative financial debt instruments, are already well accepted on developed European capital markets as a source of funds for housing financing. They are traditionally introduced and predominantly used in mortgage finance as a complementary source of funds to the most common funding source used by credit institutions, i.e. deposits, and for the purpose of mortgage lending. In addition to this, covered bonds can be used to finance other private and public activities. Covered bonds can, however, also be observed as alternative debt instruments intended for fund raising in contrast to the conventional, plain vanilla bonds – the senior unsecured debt, and to the off-balance securitisation structures – the asset backed securities. This paper analyses such securities in general, with the research focusing on innovative structures of covered bonds – European secured notes. This paper aims to both find and compare the potential of European secured notes to other similar securities in financing special purposes with the public interest, such as small- and medium-sized enterprises. Such enterprises, due to capital intensity and higher risk or lower profitability, have difficulties in attracting the interest of creditors because, in many cases, the only available external financing for them traditionally are loans offered by banks, whose financing is mostly based on traditional deposits. In that sense, and for the purpose of the research, credit institutions funding structure and loans to non-financial corporations, as well as the funding structure of small- and medium-sized enterprises, debt and issuance of covered bonds and securitisation structures are analysed and compared on the sample of euro area countries and by using methodology of descriptive statistics. The results of such an analysis may be a valuable source of information, used for better understanding of the importance of innovative capital markets instruments, as well as recognising the possibility of their inclusion in financing a wider spectrum of specific purposes.*

**Keywords:** covered bonds, securitisation, European secured notes, SMEs, financing

**JEL classification:** G21, G23, G32, H54, O16

## Introduction

Covered bonds already proved themselves a good diversifier of fund sources for European credit institutions at a time when market conditions enabled them to use such financing as a



cheaper and more available source in terms of volume. The issuing of covered bonds can be observed as a “European” alternative to the technique of off-balance securitisation and issuing of asset backed securities, which originated in the USA. On the other hand, as a source of funds, deposits traditionally dominate the overall debt structure of credit institutions, thereby allowing the other sources to take a mainly complementary role in total. A benefit of fund raising on capital markets for the credit institutions in developed financial systems is an easier approach to additional funds when the need for them arises, such as in situations of credit expansion and larger demand for credits in general, or when deposit base, as a main source of funds, cannot be further enlarged. On the other hand, the credit activity of credit institutions is mainly, and rather, focused on the most profitable and well-assured loans. The most common loans in this sense are mortgage loans, in addition to different kinds of consumer credits, etc. Households, but also larger corporations, are in a privileged position: since credit institutions treat them as safer debtors, such clients can, in general, approach the funds and financial services much easier, especially through credit services. However, small- and medium-sized enterprises are considered riskier clients for credit institutions in general, yet they are, and remain, economy initiators. Despite this, special purposes with public interest have greater difficulties in attracting the funds through loans from credit institutions since such purposes are, in general, far riskier and less profitable for the standards of these institutions and are more expensive for them, according to regulatory treatment. In many financial systems, especially in systems with less developed capital markets and infrastructure accompanying them, bank loans are the only available external source of funds for such purposes. If banks decide to finance such, generally riskier or less profitable clients, they mostly demand different guarantees to insure themselves against risks taken, and this additionally increases the price of their financing. On the other hand, since public interest clearly exists in purposes such as housing, small and medium-sized enterprises, infrastructure projects etc., many of such purposes are financially supported, or guaranteed, by the governments, in order to encourage creditors to finance them. On the basis of such a credit portfolio securities issuing, as well as the other innovative finance solutions of capital markets, allow for diversification and transfer of risks, part or all, from the originator to participants in capital markets, while also ensuring a larger volume of fund raising. Debt securities’ financing allows the other interested capital markets stakeholders, primarily large institutional investors, to engage in financing such “riskier” purposes. With regards to this, the issuing of “on-balance” covered bonds, or “off-balance” securitisation securities, are both recognized as acceptable tools for financing many purposes, but are mainly and predominantly used for housing on the basis of well-assured housing loans; still, the use of such financing techniques is widespread. Finally, innovative structures of such financing take care of financing opportunity for the more sensitive part of credit institutions’ credit portfolio.

The main purpose of this research is to analyse and to compare the structured finance categories used in European countries, with an emphasis on innovative structures – European secured notes - in order to determine their potential in financing small and medium-sized enterprises. The main goal of this research is to form a conclusion about contemporary trends in fund raising through the capital markets. The results of research presented herein can serve as a valuable source of information for scientific community, for governments in relation to the creation of economy policies, for creditors considering a wider usage of structured finance and benefits that such fund raising can bring them, but also for the borrowers – and, consequently, its effects on the total economy. The higher level of integration of capital markets could ensure further diversification in the funding of the economy, as well as reduce the cost of fund raising.

## Literature overview

Previous research papers on the topic of covered bonds and securitisation securities in general, as well as on their efficiency as a source of funds, benefits, potential, wider usage, etc., covered both the professional and the scientific part. Innovative structures that were introduced only recently, were also analysed and presented mostly in professional papers since there is no representative data for serious research on their market. Scientific papers containing a research component more closely connected to the narrow topic of European secured notes are still absent. Therefore, a large space opens for market research interested in obtaining information on both the potential and the interest for such a product, as well as to in pointing out the circumstances in which the usage of such financing is justified.

Issuing of innovative structures such as European structured notes (ESNs) involves an advanced technique, i.e. a mix of best practice of traditional covered bonds model and the securitisation technique. Issuing of covered bonds (CB) is originally a European technique, in opposite to, for the most part, the similar practice of issuing securitisation securities (asset backed securities, ABS), originally by the USA off-balance sheet securitisation technique: therefore, some authors compared those two techniques and securities in different ways. In that sense, Mastroeni (2001), Golin (2006) and Avesani et al. (2007) found many similarities between those two techniques, due to the specific geographic dominance called covered bonds issuance as a form of European securitisation, since its dominant usage in Europe is in opposite to the usage of off-balance sheet securitisation in the USA. In that sense, Jobst (2005) called the covered bonds financing technique an “on-balance sheet” securitisation. Consequently, he analysed spreads of European collateralized debt obligations, mortgage backed securities and *Pfandbriefe* (German covered bonds), finding that the expected spread changes follow a positive trend with asymmetric mean reversion depending on the direction of past spread changes. Rotariou (2009) proved on the sample of German *Pfandbriefe* that covered bonds are more resistant to financial crisis in opposite to the securitisation structures and pointed out advantages of covered bonds for all stakeholders in such circumstances. Sanders (2010) found that covered bonds issuance model can be a better complementary, or an alternative, financing tool to the “off-balance sheet” securitisation technique. Of course, due to the fact that issuance of covered bonds is much more restrictive due to more precise and strict regulation, there are some negative implications of such financing that makes them less attractive to the credit institutions when looking at the complementary funding sources. New, post-crisis regulation took care of that and assured that the covered bonds receive a better capital treatment, as well as their better acceptance as a funding source, and that they are also considered a good and acceptable investment instrument from the perspective of investors, due to the fact that strict regulation, as well as characteristics of covered bonds and their issuance, assure high protection of investors. In addition to this, Jurčević (2014) proved resistance of covered bonds as a funding source to stresses on financial markets and cost and volume effectiveness of the most widespread covered bonds-mortgage covered bonds (MCB) in housing loans financing: financial systems in which covered bonds partook had lower cost of housing loans financing and better credit potential management. The results of aforementioned researches pointed out advantages of such a funding tool in financing special purposes with the public interest as well as the importance of complementary, or alternative, the role of structured finance in banks’ funding.

It can be concluded that ESNs are, as an innovative type of covered bonds, designed with the intent of assisting in financing small and medium sized enterprises (SME) loans. The results of rare researches made especially on the ESN topic presented in the last few years undoubtedly confirm the necessity for wider usage of structured finance in direction of financing such, or similar, purposes. European Commission (2018a) defined the importance of SME loans and connected problems in financing such purposes with the potential of ESNs in solving them. One of the objectives of the capital market union is a greater degree of integration on capital markets and the strengthening of the banking capacity to support the real economy through an increase in longer term and market funding: therefore, the European Commission (2018a) analysed both the ability and the role of ESNs in achieving this objective. The results of the market analysis showed that only small interest for such financing is present at the moment, but that further development of the capital market union could increase interest for ESNs as an acceptable finance tool as well as an investment instrument. For example, Volk (2015) noted that similar innovative securities, SME covered bonds (SME SB), could be a valid investment alternative when the risk of bail-in increases, as SME CB investors would benefit from additional security provided by the SME loans. Erste Group Research (2018) analysed market potential for ESNs and concluded that ESNs could be of greater interest to banks in more European countries with large SME loan portfolio than it was concluded in previous researches. These researches noted that ESNs with SME loans cover asset have a stronger chance to establish themselves in Italy and Spain, where banks have the greatest incentive to issue such securities since lower refinancing costs are expected when compared to unsecured bonds. Moreover, banking systems in those countries increasingly obtain funding from capital markets and, at the same time, a disproportionate share of their loan portfolio consists of advances to SMEs. On the other hand, SME ESNs can be observed as a twin to the already well-established securitisation structure, SME ABSs, so it can be questioned whether ESNs are redundant in this segment, or can offer more advantages for all stakeholders, or have more potential for wider acceptance. European Commission (2018a) concluded that advanced structure of the risk-sharing variety rather than on-balance sheet ESNs could be more useful to European banks since this variety offers risk transfer and capital relief; potentially this can, however, be more difficult to achieve and this structure is similar to the securitisation. However, ESNs could contribute to the capital market union objective, economic growth and lending to the real economy, by ensuring a substantial and positive regulatory recognition for this instrument that focuses on the SMEs (Dieric, 2018).

## **Structured finance and the role of European secured notes in financing small and medium-sized enterprises**

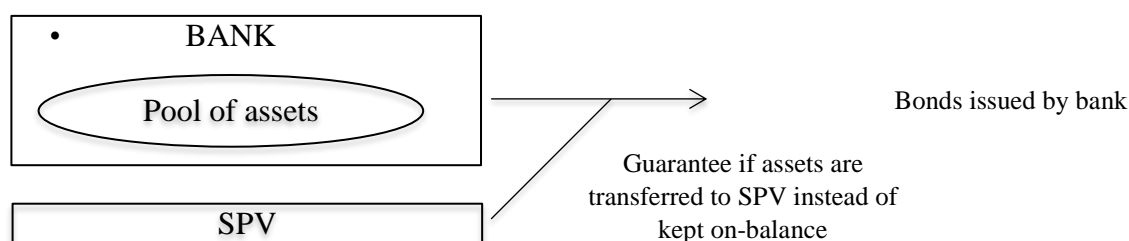
Asset backed securities are issued by off-balance sheet securitisation technique which includes the transfer of underlying asset to SPV. The most important type of securitisation securities are widespread residential mortgage backed securities (RMBS) that take the largest part in total securitisation outstanding debt in general and which in Europe amounted to EUR billion 696.4 (57% in total European outstanding debt). Other types include asset backed securities (ABS) with the share of 17.5% in total European outstanding debt, commercial mortgage backed securities (CMBS) with 4.5%, collateralized debt or loan obligations (CDO) with 9.5%, securitisation of SME loans (SME ABS) 6.5%, securitisation of the whole business free cash flow (WBS ABS) or securitisation of private finance initiative project loans (PFI ABS), together with the share of 5%. However, this technique is predominantly used in the USA, with a share of nearly 90% of total outstanding debt. (AFME, 2018)

On the other hand, the covered bond is, in general, debt security guaranteed by cover assets specifically allocated to this purpose and is held in a segregated cover pool. Most important types of covered bonds, mostly issued through the traditional on-balance model and taking the largest part in the total outstanding covered bonds debt, amounting to EUR billion 2,461 at the end of 2017, are mortgage covered bonds (MCB) with a share of 87% (EUR billion 2,140 at the end of 2017). The rest of covered bond debts hold public sector covered bonds (PSCB) with the share of 12.7% and those with cover in ships (SCB), mixed and another asset (MACB/OACB), altogether with a share of 0.3%. Mixed and other assets may include SME loans as well. Five significant, largest covered bond markets are Denmark, Germany, France, Spain, and Sweden – together they hold a share of 63% in total outstanding covered bond debt or EUR billion 1.538. About 90% of CB new issuance and outstanding debt is from the European market. (European Covered Bonds Council, 2018)

The main goal of the Proposal on EU Covered Bond Directive and Regulation, CON/2018/37, is harmonisation of covered bonds regulations. In the framework of such harmonisation, a proposal on ESNs should also be worked out. ESNs are focused on SME loans (SME ESNs) and are defined as structured covered bonds backed by SME loans that differ greatly from similar securitisation structures, SME ABS, but also from traditional covered bonds and the idea of SME CB. ESNs are, therefore, a new type of collateralized bonds being created in the EU, differing from traditional covered bond structures by the type of collateral backing the notes and with the purpose of funding other assets: primarily SME loans, rather than mortgage and public-sector loans. Bankruptcy remoteness of the segregated assets is one of the main features of successful ESN structure as is the case with traditional covered bonds. However, SME ESNs are structured as a dual recourse instrument: they have recourse to the issuing bank and recourse to the pool of assets if the issuer defaults. However, contrary to covered bonds backed by real estate, the cover asset of ESNs is not predicted to be secured by a real estate-underlying security – and is based exclusively on the performance of the underlying assets since SME loans are actually unsecured. In that sense, there are major differences between SME covered bonds and traditional mortgage and public sector covered bonds – with regard to cover pool credit quality, refinancing risk and interest rate risk. Consequently, no preferential risk weight treatment could be justified for SME ESNs, but differentiating risk weight treatment could be justified if compared with unsecured exposures. However, the uniform nature of the underlying segregated assets and robust legal framework assure ESNs higher quality in comparison to securitisation products or unsecured bonds, which is an advantage for investors. Issuing of the ESNs involves an advanced technique that is a mix of best practice of covered bonds issuing model and securitisation but collateralized with non-traditional assets. Although SME loans are riskier than prime residential mortgage loans due to the higher level of dependence on the business cycle, ESNs issued on such a basis may achieve similar credit quality as traditional covered bonds. Sufficient structural protection can mitigate credit risks in SME ESNs and approach the credit quality to that of covered bonds. In the part of assurance of the safety mechanism, the most important part is the amount of overcollateralisation provided (30% recommended), as default risk is higher and exposures are uncollateralised, depending on the creditworthiness of borrower, quality of the credit collateral, as well as on degree of diversification within the cover pool (i.e. number of borrowing entities and sector concentration). Such criteria for cover assets can contribute to the prevention of cluster risks in the case described. In order to mitigate refinancing risk present in ESNs, a mechanism for the extension of maturities (conditional pass-through structures) can be employed: SME loans have shorter terms to maturity and are repaid faster than traditional cover assets (longer-term loans). (Erste Group Research, 2018: 7)

ESNs were designed in accordance with the idea of capital markets union and the necessity for a new long-term bank-funding tool that could improve the ability of banks to offer more loans, which meet needs of the real economy. At the same time, this idea should have stimulated the growth of SMEs by promoting the use of SME loans as collateral for new ESNs. Two types of ESNs (and their varieties) (For more details: European Mortgage Federation, European Covered Bond Council (May 12, 2015). ECBC Response to the Green Paper on Building a Capital Markets Union: Analysing the Potential of a Dual Recourse Funding Instrument, European Secured Note (ESN), as a Source of Long-Term Financing for the Real Economy in the EU. Retrieved from <https://hypo.org/app/uploads/sites/3/2017/03/ECBC-Response-to-the-Green-Paper-on-Building-a-Capital-Markets-Union-CMU-2.pdf>) were proposed in order to provide different benefits to the issuer, investor, and the borrower. The first idea of ESN, an on-balance sheet dual recourse instrument (Figure 1) with a dynamic cover pool, is in its design closer to the idea of SME covered bonds because the collateral would stay on balance sheet of creditor (issuer) and the investor would have dual recourse to both the pool and the issuer (bank). Dynamic cover pool means that the issuing bank can, and based on contractual or legal obligations often must, replace the non-performing loans with performing loans. In on-balance sheet model bank retains cover pool (asset segregation) on-balance, or in SPV, and has a strict legal obligation to pay the principal and the interest on covered bond regardless of the performance of SME loans in the cover pool. The second type of ESN issuance, an off-balance sheet dual recourse instrument with a static pool, actually involves high quality securitisation technique and is similar to the ABS structure. This structure could provide risk sharing to the issuing institution, in addition to the capital relief, as the asset that is collateral would be transferred to an external entity, SPV, but still retain a form of dual recourse – that is the main difference from the traditional securitisation structures. (EMF-ECBC, 2015: 9-10)

Figure 1: On-balance sheet ESN



Source: Dieric, B. (2018). *European Secured Notes as a new asset class*. In: *European Covered Bond Council (Eds.). European Covered Bond Fact Book, 13<sup>th</sup> ed., Brussels, p. 119.*

Unsecured SME loans were predicted to be eligible collateral for legal-framework-based SME covered bonds in Italy and Spain. However, this practice did not yield results. Moreover, Italy introduced the first ESN framework in 2016 in order to enable issuance of bonds collateralised by SME loans, leasing, factoring, ship loans and other types of commercial assets. The structure of such ESNs was designed to be similar to the SME covered bonds, but laws clearly differentiate between the two products. The success of ESN instruments would rely on both a robust legal framework and a high level of transparency regarding the underlying assets (Dieric, 2018). Due to the potentially lower funding costs of ESN, some issuers may use this advantage and replace some of their senior unsecured debt issuance with ESN. Consequently, on-balance SME ESN can be observed as an alternative version of SME CB and risk sharing structure of SME ESN can be observed as an improved or alternative version of SME ABS. Dual recourse in the case of issuance of ESNs ensures a higher level of security and better protection for the investors, which is the main advantage in comparison

with the traditional securitisation securities. Countries that expressed a certain interest in ESNs are mostly those with the advanced and well-accepted practice of securitisation and (or) structured covered bonds issuance: France, Italy, Spain, Belgium, Netherlands, etc. The aggregate pool of SME (but also infrastructure loans), potentially available for re-financing through the ESNs, is estimated at EUR 4 trillion, but the whole amount cannot be used to issue ESNs, which could significantly limit potential size of the ESN market, together with structural diversification of bank funding, overlap with covered bond market, eligibility criteria for ESNs, etc.; the size of the ESN market could be in the range between EUR 400 billion and EUR 1.2 trillion (EBA, 2018: 21-25).

## **Analysis of importance of small- and medium-sized enterprises for the economy and role of bank loans in their financing**

SMEs play a crucial role in the total European economy, accounting for 99% of the business in the EU, employing 93 million people (2/3 of workers in the EU) and generating EUR 4 trillion of added value (over 20% of EU GDP) (European Commission, 2018b: 8; Eurostat, 2019). Between 75% and 80% of their funding is derived from the banking system, yet the SME sector is struggling with some difficulties in financing. On the other hand, SMEs are relatively conservative in terms of their financial accounting and expertise, and this encourages a preference for basic banking and lending requirements (BIS, 2016).

Credit line or overdraft with the share of 52% was the most relevant source of external financing for EU-28 SMEs in 2018. Leasing and hire purchase, as well as bank loans, are all considered to be the second most relevant, with a share of 47%. They are followed by trade credit, grants, subsidised bank loans, and internal funds. Equity financing, factoring, other sources and debt securities for SMEs are less relevant than the aforementioned types of finance. 5% of the SMEs considered other sources of financing, for example borrowing from family and friends, or shareholders relevant to their enterprise. Moreover, in 2018, the three most often used types of financing of all EU28 SMEs were credit line or overdraft (35%), leasing or hire-purchase (24%), and trade credit (18%). Additionally, 17% of the SMEs used bank loans, 15% internal funds, 8% other types of loans, 8% grants or subsidised bank loans, and 6% used factoring. Equity (2%), other sources (1%), and debt securities (1%) were the least popular types of financing. (European Commission, 2018b: 9-12)

In the total euro area, MFI assets amounted to EUR billion 30,893 in 2018, loans to non-financial corporation amounted to EUR billion 4,395.3 (14%) – i.e. 23.4% of MFIs' total loan portfolio. The majority in the total non-financial corporation loans hold longer-term loans: those with maturity up to 1 year amounted EUR billion 974.0, the ones with over 1 and up to 5 years to EUR billion 842.2, and the loans with maturity over 5 years to EUR billion 2,579.2. On the other hand, euro area MFI liabilities mostly rely on deposits (58.5% share in 2018), second important source of funds were external liabilities (12.5%) and debt securities (11.3%). (European Central Bank, 2019)

Bank loans are one of the most important external sources of funds for European SMEs since they have limited access to funding through the capital market. On the other hand, due to the higher credit risk, SME loans for banks are riskier part of their total loan portfolio, so the business policy of the banks is more rigid: that is also the most important reason why SMEs often have difficulties in access to such funding. For SMEs in the EU-28, the most important factors limiting their access to external financing are too high interest rates and other costs, or

prices and insufficient collateral or guarantee (European Commission, 2018b). However, the main financing obstacle for both creditors and SMEs is connected to bank loans supply. Namely, loans offered to the diversified SMEs are not user friendly since they have difficulties in adapting to different SME needs: this is the most important reason why SMEs in the greatest part of the EU have a mismatch between relevance and real usage of bank loans in financing their business. On the other hand, the banking sector has been struggling with high liquidity in the last few years, so funding is not a problem. Consequently, an obvious mismatch exists between SMEs financing need and the willingness of banks to direct funds for such purposes. In such a situation, an idea of ESNs would be both sensible and more than welcome if such notes could encourage creditors and assure funds for more intensive SMEs lending, tailored to adapt to specific purposes. Table 1 shows the findings of euro area cross-country analysis of importance and usage of bank loans in the total SMEs funding sources and importance of loans to non-financial corporations for MFIs (calculated on the basis of ECBC, SDW data). Furthermore, it presents the importance of chosen funding sources for MFIs in connection with the topic of this paper. The results of such cross-country analysis can help in detecting the potential for structured products development, such as SME ESNs.

*Table 1: Importance and usage of bank loans as a source of SMEs finance, share of MFI loans to non-financial corporations and MFI structure of finance, euro area, 2018, in %*

	<i>Relevance of bank loans for SMEs</i>	<i>Bank loans usage among SMEs</i>	<i>Share of loans to non-financial corporations in total MFI assets</i>	<i>Share of loans to non-financial corporations in total MFI loans</i>	<i>Share of deposits in total MFI liabilities</i>	<i>Share of debt securities in total MFI liabilities</i>	<i>Share of external liabilities in total MFI liabilities</i>
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
EU-28	47	17	-	-	-	-	
Euro area	-	-	14.2	23.4	58.5	11.3	12.5
Belgium	58	26 (max)	13.8	23.0	66.2	7.3	12.9
Germany	44	14	13.4	20.9	62.5	13.3	8.6
Estonia	43	14	28.2	30.1	68.7	1.5	14.5
Ireland	55	18	5.6 (min)	18.4	27.5 (min)	4.4	46.3 (max)
Greece	48	13	26.3	40.3 (max)	60.9	1.9	9.4
Spain	57	20	17.4	28.6	69.3	8.6	4.4
France	64 (max)	25	12.2	19.9	53.3	11.9	14.6
Italy	52	20	18.8	28.9	71.5	8.2	3.0 (min)
Cyprus	55	14	23.7	34.2	61.2	0.6	16.5
Latvia	33 (min)	10 (min)	26.8	33.7	67.1	0.4	15.4
Lithuania	38	18	28.9 (max)	32.6	80.4 (max)	0 (min)	7.3
Luxembourg	43	16	6.8	15.5 (min)	42.3	4.7	35.7
Malta	53	17	11.3	25.3	52.5	0.9	32.7
Netherlands	42	10 (min)	15.7	26.4	50.9	18.1	17.1
Austria	47	18	21.2	31.6	63.9	15.3	5.0
Portugal	57	13	18.2	29.6	72.4	3.7	7.1
Slovenia	61	21	23.2	33.5	78.6	0.2	3.4
Slovakia	44	13	23.8	31.9	75.5	6.6	3.3
Finland	61	16	14.0	23.5	37.3	22.3 (max)	20.0

*Source: Author's calculation and European Commission (2018b). Survey on the access to finance of enterprises (SAFE). Analytical Report 2018, Brussels.*

If results from Table 1 are observed, it can be concluded that SMEs, especially those from euro area countries, with a stronger initiative for continued development of structured finance in the direction of creating a new financing product such as ESNs (i.e. France, Italy, Spain, Belgium, Netherlands, Luxembourg), mostly pointed out bank loans as more relevant (Table 1, a) or widely used (Table 1, b) (cf. values higher than EU average) in the total structure of their finance. At the same time, those countries are specific in that they already have both tradition and experience with advanced structured finance, securitisation technique, or issuance of structured covered bonds. Additionally, in some of the countries, products similar to the proposed ESNs are already used; SME ABS, or structured covered bonds on the basis of mixed and other assets that can include SME loans, are one of them. If absolute values of MFI loans to non-financial corporations in the total loans are observed, those countries take the lead in this part as well, in addition to Germany and Austria. However, the share of loans to non-financial corporations (since there were no comparable data for SME loans only) in total MFI asset (Table 1, c) and in total MFI loans (Table 1, d) suggest that it is not higher than the EU average in those countries, though it is significantly at its highest in post-transition and other South European and Baltic countries which, for the most part, still don't use structured finance (especially not the structured model of CB issuance and securitisation structures), except perhaps MCB issuance, but also in a limited manner. On the other hand, deposits are traditionally dominant in the MFI funding sources (Table 1, e). If their share in total MFIs liabilities is observed, the aforementioned advanced structured finance markets, together with Germany and Austria, have at the same time a significantly stronger practice in using debt securities and external liabilities (Table 1, f, g) in financing MFIs.

## Empirical research of European secured notes potential

In order to determine the European countries in which a potential for ESNs exists, the analysis of credit institutions funding structure and loan portfolio to non-financial corporations has been analysed earlier. In this part, and for the same purpose, an additional analysis of covered bonds and securitisation structures usage follows, conducted on the sample of 7 European markets that have largest potential to issue ESNs (i.e. Germany, Spain, France, Italy, Netherlands, Belgium, UK), chosen according to their current relevance, role and size on the total European securitisation market (near 60% of total European outstanding debt) or covered bonds market (near 55% of total European outstanding debt). This analysis, additionally, takes into consideration the usage of a structured model of covered bonds issuance and/or SME ABS issuance and expressed interest for ESN structure at the same time. Table 2 presents the analysis results and the ranking of countries according to the covered bonds and securitisation usage in connection to the SME portfolio as an underlying asset. Since there is no representative data on ESN issuance or SME CB, results are shown for securitisation structures (SME, but also WBS/PFI) issuance and mixed or another asset CB, as the structures most similar to ESNs – especially off-balance sheet dual recourse and risk sharing model.

*Table 2: Results of analysis of top 5 potential ESNs European markets, amounts in EUR billion and shares in %, 2017*

	CB outst. debt (rank) /share in total *	CB issuance (rank) /share in total *	Structured CB issuance model (yes/no)	Mixed/other asset CB issuance (yes/no; outst. amount)	Securitisati on outst. debt (rank)/ share in total	Securitisati on issuance (rank) /share in total	SME/ WBS(PFI) securitisati on (yes/no; outst. amount)



Germany	366.2 (1)/16%	48.8 (1)/12.5%	No	Yes, -0.5	76.1 (6)/6.2%	12.9 (6)/5.5%	Yes, 7.2/-
France	312.2 (2)/13.7%	43.5 (2)/11%	Yes	Yes, 62.3/-	100.9 (5)/8.2%	36.9 (2)/15.7%	Yes, 0.0/-
Spain	241.9 (3)/10.6%	30.4 (3)/7.7%	No	No	165.9 (3)/13.5%	25.6 (4)/10.9%	Yes, 15.4/-
Italy	146.7 (4)/6.4%	20.8 (4)/5.3%	Yes	No	142.0 (4)/11.6%	29.5 (3)/12.6%	Yes, 14.3/0.3
Netherlands	72.9 (6)/3.2%	12.0 (6)/3%	Yes	No	173.1 (2)/14.1%	15.9 (5)/6.8%	Yes, 4.1/-
Belgium	17.6 (7)/0.8%	1.1 (7)/0.3%	No	No	64.5 (7)/5.3%	12.3 (7)/5.2%	Yes, 19.2/-
UK	94.3 (5)/4.1%	11.6 (5)/3%	Yes	No	304.8 (1)/24.9%	47.2 (1)/20.1%	Yes, 5.9/62.5
Other European	1,031.5	226.8	Yes	No	197.6	54.7	Yes, 12.6/1.1
TOTAL	2,283.3	395	-	62.3/0.5	1,224.9	235	78.7/63.9

*\*Denmark is specific; the largest covered bonds market (MCB) and other European larger CB markets are: Sweden, Norway, Finland, Switzerland, Portugal, Austria, Ireland – but they are not included in this analysis and have not been taken into consideration for ranking since they do not meet the other analysis criteria.*

*Source: author's calculation and AFME (2018) Securitisation Data Report: European Structured Finance, Q4: 2017, SIFMA; European Covered Bond Council (2018). European Covered Bond Fact Book, ECBC, 13<sup>th</sup> ed., Brussels.*

The results of analysis from the Table 2 point out the relevance of countries chosen in the total structured finance market according to both their rank and shares in the total European outstanding debt and new issuance connected to the covered bonds and securitisation in general. The results also take into consideration that most of those countries already have and use structured covered bonds issuance model similar to the idea of ESNs and/or securitisation of SME loans practice. At the same time, UK dominates in WBS/PFI issuance with 98% of total WBS/PFI outstanding debt. With the exception of the countries included in this analysis, other countries that take part in the rest of SME ABS outstanding debt include Greece, Portugal and Ireland. Additionally, a number of small- and medium-size enterprise loans in the ABS market in Europe, as of July 2017, was as follows: Spain 557,000, Italy 316,000, France 293,000, Belgium 258,000, Portugal 84,000, Germany 45,000, Netherlands 32,000, and Luxembourg 2,000 (Statista, 2019). This information justifies and confirms the presumption on the largest potential for SME ESN introduction and usage, in addition to the expressed interest for such financing, regardless of the fact that MFI in those countries generally have a lower share of loans to non-financial corporations (table 1,c). Moreover, indicative for MFI in those countries is that they also, in general, have a higher share of debt securities and external liabilities in the total liabilities (Table 1, f, g).

## Conclusion

In opposition to the secured mortgage loans that are standardised in the sense of purpose, maturity and other conditions, SME loans are not secured by the real asset and are non-standardised, due to the diversity of SME business and their business needs. Therefore, such a riskier part of a bank's credit portfolio is more difficult to use in structured finance models that demand standardisation of cover pool. This is reflected on the cost of issuance, prices and, consequently, in the need for structured securities and their real potential to both attract and direct funds back to the SME sector through granting of new loans, especially when more

than enough liquidity exists in the banking sector. These facts are the most important reason why SME loans are reluctantly used for issuance of covered bonds, but SME loans are not present enough, even in securitisation structures, which do not demand standardisation of cover pools and allow the transfer of risks to the investors. However, both the importance of SMEs for the economy and the question of financing them should be imperative when discussing the creation of advanced techniques and models of securities issuance on the basis of the SME loan portfolio. In that sense, a proposal of SME ESN should be more than welcome; however, regulatory treatment and government interest could be crucial for the wider acceptance and usage of such a financing technique. It is obvious that without the real issuers' and investors' interest accompanied by government intercession and supports the potential of ESN introduction, as another advanced structured technique, cannot be justified. Consequently, issuance of ESNs as another structured finance technique could be regarded as redundant and with doubtful potential, especially in countries that already use securitisation structures or structured covered bond model, despite the obvious advantages and improvements it offers to all stakeholders. According to aforementioned, it is obvious that a remarkably large space, but primarily also a true need, already exist for further structured finance techniques and market development in the part of special purposes financing – therefore, feasibility studies on each market segment should forge ahead in this direction, preceding the introduction of new structures, in order to consider the circumstances in which their introduction in financing is justified, as well as their outlying perspective. However, the contribution to sustainable development and economic growth are, or should be, in the focus of all innovations in finance. A conclusion can be made that innovations in financing, such as the one presented herein, should be given serious consideration, especially due to the fact that entrepreneurship is, and remains, an important initiator of economic growth and development.

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**IT**

# APPLICATIONS OF THE SMART CITIES CONCEPT

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## Abstract

*The aim of the paper is to analyze the application of the Smart Cities concept in three selected cities of Europe - Malibor, Cork and Luxembourg. These towns were chosen deliberately because their size (by the number of inhabitants) roughly corresponds to the regional cities of the Czech Republic. The inclusion of a large city into the selection, although much more successful in the implementation of the Smart Cities concept, would be pointless as it would not reflect the specific conditions of Czech cities. Information was obtained from websites and strategic or other conceptual documents of the selected cities and from interviews with the representatives of the public sphere. In addition to the research of related literary sources, the methods used include semi-structured interviews with the representatives of cities, divisions and the departments that have been involved in urban planning or the Smart Cities concept. The interview results were analyzed, compared and generalized. In order to find the examples of good practice, selected projects aimed at the components of the Smart Cities concept, ie Smart Economy, Smart Mobility, Smart Environment, Smart Living and Smart Governance, were also presented. Projects as well as cities were chosen especially with the goal of gaining inspiration for those cities in the Czech Republic that are equally large in their population. There are several successful cities in the Czech Republic, which can be proudly considered to be Smart Cities. They are however mostly cities of the regional capital level, characterized by higher numbers of inhabitants, developed services, good transport infrastructure and, of course, easier access to financial resources. However, the Smart Cities concept has begun to penetrate even smaller cities, which are aware of the need to respond to current trends. The authors of this article try to inspire these cities and bring them good examples from abroad.*

**Keywords:** Smart City, Smart People, Smart Economy, Smart Mobility, Smart Environment, Smart Living, Smart Governance

**JEL classification:** H10, O10, O20

## Introduction

The world metropolises and smaller cities are facing a number of problems that are closely linked to ongoing urbanization processes. Cities are addressing the requirements for the implementation of sustainable development into their environment and are looking for the starting points through which such development can be achieved. The Smart Cities concept, which is the subject of this work, is an appropriate tool in the hands of cities to address these modern challenges. The subject of Smart Cities has been a subject of interest for several years in the Czech Republic as well. Some Czech cities can already be considered successful in terms of applying the Smart Cities concept, yet there is still considerable room for

improvement. If we neglect financial resources, it is possible to consider the awareness of this issue as a barrier to urban development in the sense of this concept. Therefore, the submitted work can serve as a comprehensive source of information and a source of inspiration for Czech cities.

## **Theoretical background**

Urban planning has existed for many years, but new and new theories are emerging in relation to how society evolves and changes. New theoretical starting points for urban planning and development began to develop after 1987 when sustainability was defined. There has been an awareness of the need to introduce these concepts into urban planning and to clarify what can be imagined under sustainable development.

According to Jepson Jr. & Edwards (2010), different approaches to development have emerged - smart growth, new urbanism, ecological city or compact city. In addition to the above-mentioned theories, the Smart Cities concept has been gradually developed, which has probably reached the greatest success today in addressing urban planning issues.

The Smart Cities concept can be considered as a tool for urban planning as well as a means of achieving regional development. Anthopoulos & Vakali (2012) claim that this concept began to develop at the end of the 1980s and has gradually become a major success. The concept is applied across many cities, both in European and non-European. The approaches to Smart Cities are based not only on national policies but also on the transnational ones (e.g. EU cohesion policy).

It may seem that the Smart Cities concept is similar to the above-mentioned approaches. So what is different about it? Experts do not agree much on this subject. Generally speaking, the views are that Smart Cities are dealt with more comprehensively, involve more variables and promote the use of information and communication technologies. In the early beginnings of Smart Cities development, this term was used in the cities that focused on the use of ICT technology. These should facilitate access to public information and services. Gradually the concept began to penetrate into the areas of business, which was stimulated by the development of new technologies, such as linking separate buildings and activities (Anthopoulos & Vakali, 2012).

Gradually, however, it was realized that not only technology and economics are the key to the development of cities in the sense of Smart City. The concept was also enriched by the emphasis on the so-called "soft" factors considered to be the role of education, culture, social cohesion or innovative policy (Albino, Berardi & Dangelico, 2015).

### ***Approaches to the definition of Smart Cities***

The concept of Smart City is interpreted in many different ways and approaches to its definition are constantly evolving. Therefore, we can not find any single definition that could be considered universally valid as each author presents something different under this term. For example, Hollands (2008) highlights the inconsistency and permanence of this term. He states that a Smart City is often confused with the concepts of intelligent city, digital city, information city or green city. These concepts, however, can hardly be distinguished from each other and they blend together. Moreover, their use does not mean that the city is really "smart" and sometimes it is just a kind of a marketing tool in the hands of cities. The above-

mentioned types of cities are also different in some aspects and do not have a sufficiently comprehensive approach as the one offered by Smart Cities.

The whole concept of Smart Cities is usually associated with the use of modern information and communication technologies (ICT). Some authors also characterize it as a city that is capable of "sustaining" social, environmental, economic and cultural development (GilGarcia, Pardo & Nam, 2015). Technologies are also mentioned by Caragliu, Del Bo & Nijkamp (2011), who puts them into a context together with sustainable development and high quality of life. Technology and especially high-tech fields are also promoted by Bakici, Almirall & Wareham (2013). As in Caraglia, Del Bo & Nijkamp (2011), the authors describe it as a conditioning factor for development in a sustainable sense.

Other definitions include, for example, the one of Harrison et al. (2010: 1), who describe Smart City as "urban areas that use operation data such as traffic jam, energy consumption and public safety statistics to optimize urban services".

In various articles, concepts such as Smart Governance, Smart Human Capital, Smart Environment, Smart Living, and Smart Economy (or their variations) are often included in definitions, as found, for example, in Lombardi et al. (2012). These areas are also mentioned by Giffinger et al. (2007). They also emphasize the importance of the citizens themselves in this concept, who by their activities and decisions influence the resulting form of the city. Harrison et al. (2010) put emphasis on linking physical, social, IT and business infrastructure which is key to the Smart Cities cities. On the contrary, Komninos (2011) mentions innovation, learning, creativity and knowledge.

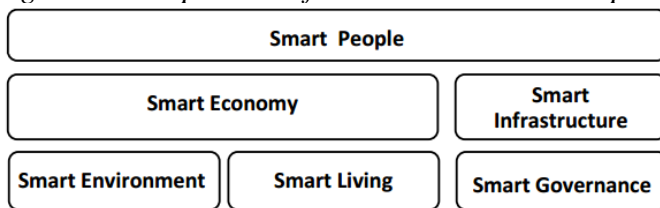
A slightly different approach is given by Eger (2009), who focuses on the "smart" community rather than on Smart City. In his definition, he suggests that technology is not suitable for solving social problems. Instead, cities should try to restore a sense of pride in the environment in which these communities live.

It is also important to mention how the Ministry of Regional Development of the Czech Republic approaches the definition. It understands it as *"a city that is holistically conducting and integrating its long-term qualitative and numerical development strategy, which cultivates the political, social and spatial environment of the city in order to improve its quality of life, its attractiveness and to reduce negative environmental impacts"*. (Ministry of Regional Development of the Czech Republic, 2015: 12).

### ***Smart Cities Components***

The Smart City concept consists of individual elements that create a comprehensive system. These components as well as the Smart City definition are often viewed completely differently. For the purposes of our analysis, we started from the most famous components of the concept of authors Vinod Kumar and Dahiya (2017), who state that Smart City is made up of six pillars: Smart People, Smart Economy, Smart Mobility, Smart Environment, Smart Living and Smart Governance (see figure below). Even these components are very closely intertwined and they react to each other. It is evident that the Smart People element is very important and it will be further explained with the other components.

Figure 1: Components of the Smart Cities concept



Source: Vinod Kumar & Dahiya (2017)

### Smart People

Smart People are the cornerstone of the whole concept because without the participation of people and their innovative ideas this system could not function successfully. How are Smart People characterized? Vinod Kumar & Dahiya (2017) presented a total of eleven characteristics of which only the few most important will be listed. The people living in a Smart City are very flexible and can easily adapt to circumstances. Smart People are creative and can find unique solutions. They are characterized by a high value of the Human Development Index<sup>1</sup>, they are actively involved in the city development and they participate in public life. People in a Smart City have a high level of qualification and they excel in what they do - they are experts in a particular area. The characteristics of Smart People are further extended by Manville et al. (2014) who in addition mention people who excel in their e-skills and who are able to work with information and communication technologies which are key to the development of cities in the sense of Smart City.

### Smart Economy

Giffinger et al. (2007) define Smart Economy as a set of economic conditions that bring a certain competitive advantage. In particular, those are the ability and willingness to create innovation and to work with them, productivity or a flexible labor market that can easily adapt to changing demands. Along with innovation, it is necessary for the city to be creative and to come up with new ideas that make life easier for its residents and visitors alike. Smart City should work with nearby universities and this collaboration should be beneficial for both sides. A smart economy is also characterized by the fact that its creators incorporate external influences into their decisions and their overall thinking and they do not focus only on a given location (Kumar & Dahiya, 2017).

### Smart Mobility

Due to the increasing number of people in the cities, there are numerous transport problems - congestion, increased noise, pollution of the city, etc. Smart City model tries to eliminate these problems and to create a pleasant environment for people's lives. In the context of Smart Mobility, most of the time the use of ICT will be primarily used to shape traffic. However, Benevolo, Dameri & D'Auria (2016) believe that it is important to focus on the city's inhabitants and their behavior in the first place, so that they are willing to consider whether they can use their own car or use public transport within the city. In addition, Benevolo, Dameri & D'Auria (2016) set the basic objectives to be achieved in Smart Mobility: reducing pollution, reducing congestion, increasing human safety, reducing noise, improving transport speeds and reduction of transport costs. They also mention following practical steps that can be taken: the use of electric cars and other means of transport that use alternative fuels (LPG, methane etc.), the sharing of vehicles (cars, taxi services, bicycles ...), the introduction of

<sup>1</sup> The Human Development Index (HDI) serves to assess the development level of the country. It includes three basic dimensions: a long and healthy life, knowledge and a decent standard of living (UNDP, 2016)



parking guidance systems, building bicycle paths, the introduction of integrated traffic lights, the restriction of parking zones, etc.

### **Smart Environment**

The high degree of urbanization places higher requirements on the protection of environment which is negatively affected by the increasing number of inhabitants, especially the effects of increased traffic intensity, higher energy consumption and development activity. Cities consume up to 75% of the world's energy production, causing about 80% of carbon dioxide emissions (Lazaroiu & Roscia, 2012). Manville et al. (2014) state that Smart Cities use "Green Urban Planning" to promote the use of renewable energy sources (water, wind, solar radiation, etc.). Significant importance is also given to information and communication technologies through which pollution is measured, controlled and monitored (e.g. air pollution).

### **Smart Living**

Smart Living expresses the quality of city life. This is conditioned by the creation of a favorable environment in which its inhabitants have an easy access to cultural facilities and educational institutions (including the tertiary ones). Smart City residents feel safe in their environment and a high-quality, affordable housing and healthcare is available to them. Public services are provided at a very good level and as close as possible to their recipients (Dewalska-Opitek, 2014).

### **Smart Governance**

The last part of a Smart City is Smart Governance. Vinod Kumar & Dahiya (2017) report that a city that is considered "Smart" has the following characteristics in this area: the city's administration is transparent and its representatives are able to react flexibly. The city uses the so-called Big Data<sup>2</sup> and other geospatial technologies for its administration. A Smart City has an innovative character and it adapts e-government to its residents for their benefit. Citizens of the city have the opportunity to participate in the formation of the individual city policies and strategic planning. The concept of sustainable development is applied and the city has clear visions and strategies with which the inhabitants are made familiar. Public services are provided efficiently and the city is constantly working to improve them. Smart City is also aware of the importance of ensuring that the Triple Helix<sup>3</sup> is a part of the public administration.

The Intelligent Cities Concept methodology offers a different view of these components. The general Smart Cities framework consists of a total of 16 sub-elements that we can integrate into 4 aggregates. The first are the organizational components. We include the role of cities in the Smart City concept and, in particular, the Smart Governance orientation. This aggregate should always be in line with Local Agenda 21. Another hierarchical set is community-based components focusing mainly on the citizen and his needs (Ministry for Regional Development of the Czech Republic, 2015).

The importance is placed on electronic communication between individuals and the city itself. Infrastructure components are an integral part of the concept, including technologies in the

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<sup>2</sup> Big Data is a relatively new phenomenon that has no steady definition. Big Data can be expressed as a large amount of digital data that operators use to better understand the world around them and give them a competitive edge (Mayer-Schönberger & Cukier, 2013).

<sup>3</sup> The Triple helix model expresses the relationship between universities, government institutions and the private sector that is used to create and disseminate innovation (Leydesdorff, 2000).

following areas: Smart Economy, Smart Living, Smart Environment and Smart Mobility. The aggregate is based on the use of information and communication technologies which allow for the collection, processing and use of information. The last of these aggregates are the resulting components. They are perceived as the highest hierarchical entity the city is trying to achieve. In summary, they can be considered as factors of the city's attractiveness given by reputation and image, openness or economic advantage (Ministry for Regional Development of the Czech Republic, 2015).

## **Methodology of research**

Throughout the world, we can find a number of successful Smart Cities. The most successful cities of the Smart City concept include Barcelona, Vienna or Malmö. However in our research we only focus on European cities of medium size with a population of about 100 thousand because they can be a source of inspiration for the Czech Republic.

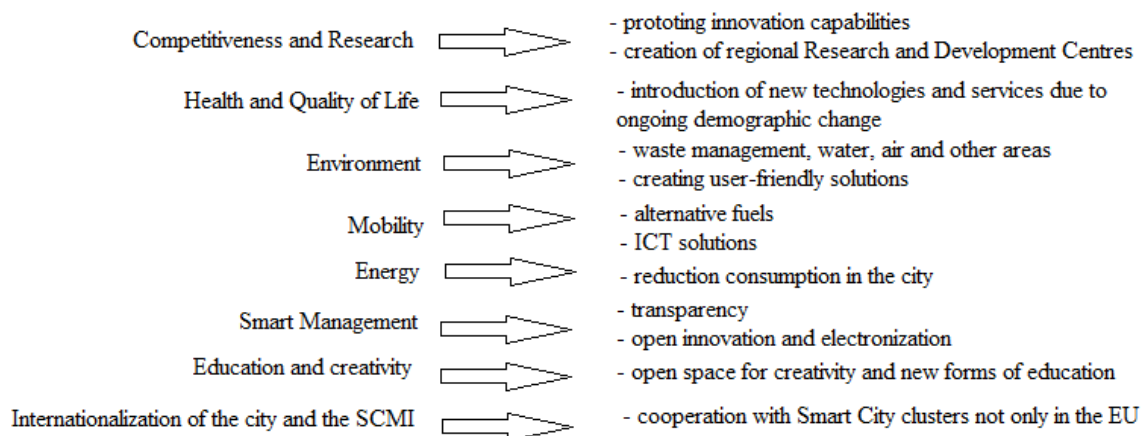
Outside of the websites of the cities themselves and other institutions, the basis for the analysis of these cities is the European Smart Cities (2014) source which is a summary of European medium-sized cities according to the established indicators. Another valuable source of information were the results of the interviews with representatives of the public administration of the selected cities (Maribor, Cork, Luxembourg) who are actively involved in systematic urban development planning. The information from the semi-structured interviews was then summarized and using the method of analysis and comparisons with publicly available information on the websites of cities and individual concretely selected projects. The projects were selected on the basis of recommendations from city representatives and can be considered examples of good practice. Examples of good instead of bad practice were chosen deliberately to serve as sources of inspiration for the Czech Republic.

## **Smart City Maribor**

The emergence of the Smart City idea dates back to 2011 when the Smart City Maribor initiative (SCMI) was launched. At the same time the city has begun working with cities that have a wealth of experience with the implementation of this concept - Eindhoven, Stockholm or Karlsruhe. The aim of the initiative was, first of all, to define the goals it wants to achieve in the future.

The main idea was to promote sustainable urban development, create a smart environment and improve the quality of life of the city's inhabitants and their catchment areas. The city used the concept of a "triple helix" to implement its project which includes a partnership between the City Hall itself, Maribor University and private development institutions. The SCMI may be joined by other partners upon signing of a memorandum which helps to strengthen cooperation and to achieve the set goals more easily. The city of Maribor wants to improve the following areas: competitiveness and research, health and quality of life, environment, mobility, energy, intelligent administration, education and the formation and internationalization of the city and of the SCMI. Specific proposals for measures are presented in the picture below.

*Figure 2: Smart City Maribor - Problem Areas*



*Source: Smart City Maribor (2018), own work*

### ***Specific projects***

The city of Maribor deals with many projects that improve the lives of its. These projects are currently included in a total of four areas – Smart Mobility, Smart Environment and Energy, Smart Living and Urban Planning and Smart Economy and Cooperation. The following subchapter contains a summary of the interesting projects that have already been implemented or those that are on-going.

### **Smart Mobility**

Smart Mobility covers a wide range of different projects. In relation to other priority areas the theme is the best developed and this demonstrates that the city attaches a considerable weight to it. Smart Mobility projects include the TRAMOB project which was aimed at measures for sustainable mobility in the city. The design and implementation were not limited to public authorities - the Faculty of Civil Engineering of the Maribor University and the Maribor Cycle Network were also included in the process. The project aims to increase the fraction of cyclists and pedestrians in the total transportation traffic, promote sustainable mobility and contribute to a better environment through emission reductions. Both investment and non-investment actions were carried out to ensure the set objectives. Among other things it was the construction of new lanes for cyclists (6 km of new bicycle paths), pedestrian walkways in the city center or renovation and furnishing of the Sustainable Mobility Center in Slovenia. The center was designed to be able to coordinate and promote sustainable forms of transportation in the city. At the same time, it also has its own bike service and repair facilities. The project is also dedicated to institutions or firms with a large number of employees and it is trying to design and implement the so-called sustainable transportation between home and workplace - it is primarily about promoting public transport, setting up company buses, car sharing, parking spaces, etc. An important part of the project TRAMOB was to develop a sustainable mobility plan in the city and transport strategies (Smart City Maribor, 2018).

Another transport project is the information for passengers at bus stops. The city of Maribor also operates a unique storage area for bicycles (the so-called wheelbase) strategically located near the central train station. Passengers have the opportunity to leave their bike there without fear of theft. Again the project leads to an effort to change the travel habits of residents and commuters. Nowadays, users of smart phones and other devices expect to have access to free

Wi-Fi. In Maastricht, a Wi-Fi network has been extended to public transport buses where it is available to all passengers (Smart City Maribor, 2018).

### **Smart Environment and Energy**

Excessive waste production, which presents a burden on the environment, arises mainly during a variety of public events where a large number of people are concentrated. The city of Maribor has therefore decided to replace plastic bottles and jars with reusable containers that are more environmentally friendly because they can be easily washed and reused. At the same time, it is also a material that can be recycled. Another project in this area is to develop a web application "My water", which can be used either through a web browser or by installing it on a smart phone. The application allows access to water meter statistics, account control, and fault reporting. In co-operation with the Maribor Waterworks, the city has installed remote water meters that charge water based on the actual consumption. Other benefits of these smart meters include remote reading (ie, no physical access to the device) and detection of faults such as abnormal water consumption (Smart City Maribor, 2018). The above-mentioned projects express the city's desire to be perceived as an ecological city that recognizes the need to improve the quality of the environment and reduce the environmental burden.

### **Smart Living and Urban Planning**

Maribor does not focus only on the population but also on the visitors for whom it tries to make their stay in the city easier and more enjoyable. The Maribor Tour application is aimed to do this. The unique solution to "smart life" was to build a city garden which provides space for relaxation, establishing social contacts and learning. The garden is also used to grow organic produce of bio- quality which is then distributed to local outlets. Wireless internet is provided not only on public transport buses but also throughout the city. The creation of hotspots was also accompanied by the installation of webcams which serve to monitor the current situation in the city. The "Improve Maribor" web service, which is also available as a mobile application, allows to comment, to give suggestions, or to praise or criticise. It establishes a relationship between the citizen and the public administration and represents the facilitation of contact. To manage the whole issue of Smart Living, a single strategic document called the Sustainable Urban Strategy of the City of Maribor was needed. The strategy primarily addresses the analysis of the situation in the city and proposes the priority areas to which the individual measures are assigned (Smart City Maribor, 2018).

### **Smart Economy and Cooperation**

In the field of "smart economy and cooperation", the so-called Participating Budget of the City is an interesting project. Citizens have the opportunity to participate directly in the decision-making process of the city's public finances. In practice a list is created from the proposed projects and the citizen can vote for a particular issue they see as the most important. The projects that receive the most votes will become part of the city budget. Promotion of a "smart economy" is the goal of the "Demola" project which enables collaboration between universities (especially students) and the private sector to be established. Students have the opportunity to design innovative solutions and approaches within the project groups, which they then submit to collaborating companies. The latest project that enables the establishment of Slovenian-Austrian cross-border cooperation is the creation of Podravje.eu. The web portal contains information about retail and real estate in the region to serve both the private and public sectors. The aim of this online database is to make the region more attractive to investors and to establish cross-border cooperation (Smart City Maribor, 2018).

## Smart City Cork

The city is intensively engaged in intelligent solutions and includes not only the city itself but also the whole region. The platform for the development of Smart City projects is the so-called Cork Smart Gateway. The most important objective of the agenda is to see the region as an attractive place to live, work, visit and invest. Cork Smart Gateway is aware of the need to involve citizens in the process as well, so in the past there have been many surveys in which local people have been able to express their views.

### *Specific projects*

The Cork region does not have precisely defined strategic areas to which its projects are headed. However for better clarity, they will be broken down according to the usual approach that defines the individual elements of Smart City (Vinod Kumar & Dahiya, 2017).

### **Smart Mobility**

The first "smart transport" project is the Mix your Journey travel planner which is available to the general public through a website. The tool was implemented by the Council of Cork and its primary objective is to enable people to effectively plan the mode of transportation according to a number of basic parameters, including available travel options, their efficiency and carbon dioxide emissions. The county council has also purchased several vehicles that possess a positive impact on the environment (low emissions, a high proportion of recycled plastic and the possibility of material reuse). These cars are used, for example, by the urban fire rescue brigade. Through the DRIVE4ZERO initiative, Cork supports the introduction of electric vehicles and seeks to inform private institutions and the citizens themselves about their benefits. The initiative is also able to offer interesting benefits, such as zero funding. Thanks to the Transport for Ireland website, passengers can learn real-time traffic information. Passengers can also use a smartphone application or request the arrival / departure information of their connection via an SMS message. Another website that has a positive impact on the environment and traffic in the city is Bike Share which shows users a map of the locations of shared bikes and the number of bikes currently available. Residents or visitors of Cork City can also use a website dedicated to parking options in the city. In addition, it displays information about free parking capacity (Cork Smart Gateway, 2018).

### **Smart Environment**

In the field of environment and energy savings, Cork has developed a wide range of projects and has many local initiatives. This is why only the most interesting projects were selected. Water Survey is one of the main areas of Smart Environment. A Center for Innovation of Water Systems and Services was launched in Cork, which focuses on the modernization of water infrastructure and use of the latest technologies. Bandon, located in Cork County, is often hit by floods. For this reason, a monitoring system for flood risk management has been introduced in the area. In addition, it is also able to warn against floods in time by monitoring the water level of local rivers. The reduction of negative environmental impacts is the goal of SMILE service which is targeted at all local businesses. It allows the exchange of products that can be reused or of products that are unnecessary or redundant. These new resources should be offered either for free or at much cheaper prices. Significant savings in energy have been achieved through the modernization of public lighting, where classical lights were replaced by LED lighting. LED lights also have longer lifespan and frequent maintenance is not necessary. At the same time, they have less than half of the energy consumption which leads to significant energy savings (Cork Smart Gateway, 2018).

### **Smart Living and Smart People**

Smart Living has been supported in Cork lately, for example by building homes and apartments with community services. Wasteful space was reclaimed in this way and the citizens' housing capacity was increased. In addition, these building blocks use photovoltaic energy and biomass sources for their heating, which leads to a friendly and ecological approach. A mobile library is a service that is provided within the city of Cork as well as in adjacent rural areas. This presents the possibility of lending books to citizens who are immobile or have difficulty accessing the physical library. The region's "hand-guided tour" technology is an interesting form of a guided tour for tourists, which allows them to play audio-visual records to familiarize themselves with the history and the attractions of the city and its surroundings. Cork supports the education and creativity of people, focusing especially on school children and students, and thus supports their potential. This is, for example, a technology that helps children with autism, the CoderDojo support, which aims to create a movement of young people who have the opportunity to learn to create websites, programs and computer code, and the DesignerDojo project to educate children in 3D modeling and 3D printing (Cork Smart Gateway, 2018).

### **Smart Economy and Governance**

Cork City is trying to go by the way of eGovernment. An interesting project in this area is the "selective rental system" that manages the current offers of apartments in the city. Citizens have the opportunity to subscribe online to the offer of the apartment they are interested in. The City has launched the so-called Open Data Strategy for the period 2017-2022. The aim is to provide Open Data in order to improve the transparency and accountability of public authorities. The purpose of providing Open Data is also to raise the public's interest in public affairs and to initiate participation in public life. The Cork County Council website is an on-line communication platform for citizens and authorities, which provides a wide range of services and information (environmental status reports, the ability to contact the relevant authority, maps, etc.). Another project, which is a part of the elektronisation of public administration, allows online payment for parking. Smart Economy is covered by many different initiatives that bring the private and public sectors together. An important position is also held by the local university, which initiates the development of the triple helix (Cork Smart Gateway, 2018).

### **Smart City Luxembourg**

Luxembourg is the capital of the small European state of Luxembourg. Since it is the location of many institutions of European significance, the composition of the population is heterogeneous. At the end of 2016, there were 114,000 inhabitants, approximately 80,800 of whom were foreigners (Ville de Luxembourg, 2018). Luxembourg achieved the best result in the European smart gauge. A key factor to this result is the Smart Economy, where the city has a considerable lead over other cities. "Smart economy" is mainly affected by good economic image, productivity and international integration (European Smart Cities, 2014). According to The New Economy (2014), the first step towards realizing the Smart City concept was the creation of the so-called e-City strategy called "Intelligent City, The Future City", which was published in 2002.

#### *Specific projects*

The Smart City of Luxembourg focuses on the following areas: Smart Infrastructure, Smart People, Smart Governance, Smart Mobility, Smart Environment and Smart Living.

### **Smart Infrastructure**

Smart infrastructure includes Wi-Fi solutions, fiber optic networks and sensors. Luxembourg uses a free network that can be used through the Citywifi Free network. A list of hotspots, including their mapping, is also available to citizens. The Luxembourg infrastructure is furthermore formed by optical fibers with a total length of approximately 150 km. They allow to link buildings located in the city with the surrounding infrastructure. Sensors are installed for data collection (for example in the field of the environment), which is then published and made available to citizens (Ville de Luxembourg, 2018).

### **Smart People**

The Smart People pillar support is implemented through the organization of interest groups and with an emphasis on education. Luxembourg operates a web portal where it is possible to register your association, consult its activities, or create events that appear on a public calendar. Associations can relate to various topics such as music, culture, sports, integration, youth, seniors, etc. (Ville de Luxembourg, 2018). The Technolink education project is a website accessible to students, teachers, parents and visitors alike. The success of this project resulted in the construction of the Technolink Center training center. Five years after the launching of this project, each classroom in the city was equipped with a technical equipment necessary to enable pupils and teachers to share their knowledge over the Internet (Technolink, 2018).

### **Smart Governance**

Luxembourg is trying to be a city with transparent public administration which is open to discussion with citizens. An example is the city budget website where citizens can contribute their comments and suggestions (Budget Ville de Luxembourg, 2017). According to Ville de Luxembourg (2018), Luxembourg provides citizens with Open Data in many areas (economy and finance, transportation, environment, education, etc.). An interesting idea is also the introduction of a site where the citizen can monitor the state of their application for a building permit. The other projects implemented by Luxembourg include the possibility to attend meetings of the council from home or the introduction of electronic signature forms.

### **Smart Mobility**

Luxembourg, like other Smart City cities, has been dealing with real-time data provision that would serve not only to citizens but would also simplify city-staying to foreign visitors. In the area of Smart Mobility, Luxembourg introduced systems that make it possible to track real-time departures and arrivals of buses and to be able to report any disturbances. They can also easily learn about the availability of parking spaces in different parts of the city or the number of available shared bikes through the city web site. Through the site, it is easy to find out a range of transportation information, such as where to rent a shared bike, information on the urban public transport and the graphical representation of the network of pedestrian and cycling trails (Ville de Luxembourg, 2018).

### **Smart Environment**

Smart Environment is currently strongly supported by the public administration. Testing and searching for the best solutions in smart lighting, buildings and clever water consumption is currently underway. The effective projects already in place include air quality measurement in relation to road traffic. Each month Luxembourg informs about the actual results that serve as a basis for a unified approach to transportation concepts. The city wants to focus mainly on the development of shared bicycles and pedestrian traffic, in order to modernize public transportation and to use more hybrid vehicles. Luxembourg also operates the so-called Solar

Cadastre, which is built on a map background. Those interested can learn about the feasibility of building solar panels on their roofs (Ville de Luxembourg, 2018).

### Smart Living

The last part of the Smart City concept in Luxembourg is Smart Living. Luxembourg is highly oriented towards tourists who want to make their stay as comfortable as possible and make the orientation easier. This is primarily realized through a virtual reality project that, thanks to 3D glasses, allows visitors to move to the 19th century to see the city from a historical perspective. Another project is the so-called widespread reality, which will be used by the citizens themselves in addition to the visitors. Luxembourg uses a variety of useful applications, such as the “cityapp”. Residents have a wealth of useful information available to them, such as bus connections, parking spaces, theaters, swimming pools, etc. The city also takes the residents with special needs into account, such as the visually impaired, to whom a special application sends a sound record about the arrival of the bus through their iPod or smart phone (Ville de Luxembourg, 2018).

### Conclusion and discussion

On the basis of the studied foreign literature it can be said that despite different definitions of the components and other terms related to the Smart Cities concept, this novel tool for the development of economies has been getting more and more into the awareness of the public. The perceived need to keep up with modern trends can be especially seen in the effort of the policy makers to develop suitable conditions for the implementation of projects based on innovative and “smart” solutions.

The three cities mentioned in the above text (Cork, Maribor and Luxembourg) can be regarded as an inspiration in their approach to the problematics and solution of the Smart Cities concept. Different levels of focus of each city on the various components of the concept became obvious from this comparative study. Maribor decisively dominates in the total number of Smart Mobility-related projects and it represents a model case for other European cities. Maribor also puts much focus on the areas of Smart Environment and Smart Governance. It is important to add that, in comparison to Cork and Luxembourg, the city has been dealing with “smart” solutions for the longest time. In contrast Luxembourg, which is relatively new to these matters, focuses mainly on the area of Smart Economy and it has a considerable lead in this area in comparison to the other cities.

All the described cities face a methodological obstacle in realizing the potential of “smart” solutions due to the lack of previous experience. The comparison is also made difficult by the incompatible ways of gathering and reporting data on the publicly available web pages and applications that result from the projects. There is a distinct correlation between the amount of past experience and the volume of legislative support and tools (strategic documents). Cities with a longer history of experience, such as Maribor, have a much larger number of strategic documents at their disposal to support the implementation of the Smart Cities concept.

*Table 1: Comparison of the cities*

Parameter/city	Cork	Maribor	Luxembourg
Application of the Smart Cities concept	+++	+++	+++
Number of projects in the area of Smart Mobility	+++	++++	+++



<b>Number of projects in the area of Smart Living</b>	++++	++	+++
<b>Number of projects in the area of Smart Environment</b>	+++	++++	+++
<b>Number of projects in the area of Smart Governance</b>	++	++++	++++
<b>Number of projects in the area of Smart People</b>	+++	++	+
<b>Participation of the public in project creation</b>	+++	++	++
<b>Existence of previous experience</b>	++	++	++
<b>Number of strategic documents supporting the introduction of the Smart Cities concept</b>	++	+++	++

*Source: own work*

There is no doubt that cities are currently facing many challenges and obstacles. The concentration of people in the cities is increasing and people move not only to city centers but also to their suburban areas and agglomerations. In addition, the urban population ages in a direct proportionality to the increase of the average age of the population. These phenomena force the cities to respond as existing approaches to solving problems and urban backgrounds are no longer satisfactory. Urban representatives must think about how to deal with waste, transportation, social and housing infrastructure and the environment. For this reason, it is appropriate to apply the Smart Cities concept, through which the cities can be transformed into sustainable and long-lasting viable places.

Specific projects implemented or planned for the above-mentioned European cities touch on a wide range of subjects that are in line with the components of the Smart Cities concept. The priority areas are always based on the needs of these municipalities and are preceded by a thorough analysis of the current situation and the preparation of a strategic plan. In addition, it is important to have a direct focus on the local population, who should be clearly included throughout the process of preparation of the strategy paper.

The previous chapters clearly point to the fact that the Smart Cities concept is not suitable just for big cities such as Barcelona or Vienna. Based on the concepts of the cities, it is possible to say unequivocally that the Smart City concept can be successfully developed even in smaller towns (with a population of around 100,000). However, this view does not mean that this concept could not be enforced in even smaller towns / municipalities than this set number of inhabitants.

These examples of projects can serve the cities as the so-called "good practice examples". The exchange of mutual know-how, realized projects and the sharing of successes and failures could be very important for the development of the Smart Cities concept in the Czech Republic. According to this predicament, considerable importance should be given to the mutual contact between the Czech and foreign cities (as it may be the case with the exchange of experience between the cities within the Czech Republic).

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# **BUSINESS PROCESS MANAGEMENT SOFTWARE FUNCTIONALITY ANALYSIS: SUPPORTING SOCIAL COMPUTING AND DIGITAL TRANSFORMATION**

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## **Abstract**

*Business process management (BPM) is a broadly researched topic among academics for many years. On the other hand, practitioners also pay lots of attention to the area of BPM since its implementation and adoption can bring many benefits to the organization. Still, in recent years, traditional approach to BPM has come across several issues due to the global technological development, as well as the changes in the needs, demands and expectations of customers. In order for the organization to be able to follow and adapt to the changes on the global economic market, it is recommended to introduce principles and components of the social software in the BPM concept within an organization. In that sense, a new term has emerged – social BPM which combines traditional BPM with principles of the social software. However, recently, social BPM broaden its focus on other aspects of BPM, not just the social computing, but cloud computing and using BPM as a means of digital transformation of the organization. Hence, this paper aims to shed some light on the functionality of BPM software that are available on the market in terms of supporting both social computing and digital transformation as well as improving process performance of the organization. Moreover, the presented analysis also focuses on the ways on which using such BPM software can enhance the process performance of the organization. In order to meet the aims of the paper, a desk research has been conducted, analysing various BPM software that are available on the market. The basis for the analysis has been the magic quadrant which represents market leaders, challengers, visionaries and niche players. Out of the quadrant, three software from each quadrant have been analysed, except for the niche player. The presented results are further discussed in the paper.*

**Keywords:** social BPM, social software, iBPMS, BPM software, digital transformation

**JEL classification:** M15

## Introduction

For many years, area of business process management (BPM) has been in focus of many researchers and academics, as well as members of practice. Numerous researches have come to the conclusion that adoption, implementation and active usage of BPM results in many benefits for the organization (e.g. Ruževičius, Klimas, & Veleckaitė, 2012; Buh, Kovačič & Indihar Štemberger, 2015). Out of those benefits, the biggest focus of researchers is on improvement of the organizational performance (e.g. Hung, 2006; Škrinjar, Bosilj Vukšić & Indihar Štemberger, 2008; Hernaus, Pejić Bach & Bosilj Vukšić, 2012; Pradabwong, Braziotis, Tannock & Pawar, 2017). One of the means of achieving the benefits out of BPM is to use a BPM software solution like a tool, system or a suite. Nowadays, there is a large number of different vendors and software solutions available on the market, so the questions about choosing the right one for the certain types of organizations are being raised. In that sense, some authors have presented comparison of available BPM software aiming to provide guidelines for the practice (e.g. Indihar Štemberger, Bosilj Vukšić & Jaklič, 2009; Bosilj Vukšić, Brkić & Baranović, 2016).

On the other hand, in recent few years, a new term has been coined out – social BPM. Basically, it is an answer to certain issues which have been noticed while using traditional approach to BPM as well as BPM software solutions. Those issues mainly refer to the model-reality divide, loss of innovations, lack of information fusion, lack of context, etc. (Schmidt & Nurcan, 2008; Erol et al., 2010; Rangiha & Karakostas, 2013). Hence, the main function of social BPM is to overcome those issues by introducing and implementing principles of social computing into the traditional approach to BPM (Erol et al., 2010).

One of the reasons behind the need of integration of social software and its principles into the concept of BPM is the change in the global economy. On the one side, there is a constant technological development, while on the other, the needs and demand of the customers are also changing, forcing organizations to adapt if they want to successfully stay on the market. One of the ways towards that adaption is digital transformation, either by creating new business models, or changing existing business processes (Spremić, 2017; Pejić Bach, Spremić & Suša Vugec, 2018). According to Spremić (2017), digital technologies, which are including, among others, social and cloud computing, are the key drivers of digital transformation. In that sense, one can see a connection between usage of social BPM and digital transformation of the organization.

This research is part of the PROSPER (Process and Business Intelligence for Business Performance) project (IP-2014-09-3729), fully funded by the Croatian Science Foundation. One of the goals of the named project is to explore social BPM software functionalities and to investigate the ways on which they might help to improve process performance. Having all of the above in mind, following research questions have been raised: (RQ1) What can be considered a social BPM software; (RQ2) What are the top social BPM software solutions available on the market?; and (RQ3) What functionalities should a BPM software have in order to provide support to social computing and consequently, digital transformation?. In order to answer the stated research questions, the goal of this paper is twofold: (i) to define and identify social BPM software solutions, and (ii) to extend the body of knowledge by shedding some light on the functionalities of BPM software which can support social computing and digital transformation as well as enhance process performance of the

organization. Therefore, a desk research and analysis of nine intelligent BPM software solutions has been conducted and the results are presented in the paper.

With the purpose of meeting the stated goals of the paper, the structure of the paper is as follows. After this introduction, a theoretical background is provided, explaining main keywords of the paper such as BPM, social BPM, BPM software, social computing and digital transformation. Next, in the third part of the paper, an overview of the employed methodology has been given as well as an analysis of the nine intelligent BPM software solutions. The paper ends with a short conclusion, summarising the main ideas of the paper as well as recognizing its limitations and presenting ideas for further research.

## **Theoretical background**

This section of the paper provides theoretical background of the main keywords of this paper. It gives a brief description of BPM and social BPM and explains their differences. Next, a theoretical background regarding BPM software solutions and their classification is provided, followed by sections explaining the role of social computing in BPM and in digital transformation.

### ***BPM versus social BPM***

BPM by its definition is mainly focused on enhancing organizational processes by managing business processes of an organization (Harmon, 2007). Malinova, Hribar & Mendling (2014) argue BPM to be embedded into the organizations' strategy, governance, culture, people, methods and systems. However, in recent decade, several issues connected with traditional approaches to BPM have been noticed in practice and described in the literature. Model-reality divide is one of the most common traditional BPM issues, described by, among others, Erol et al. (2010), Brehm and Schmidt (2016) as well as Triaa, Gzara and Verjus (2017). The problem refers to the differences between designed models and their implementation and execution in practice and occurs in cases when employees do not follow the designed processes and execute processes in the way they find more efficient or easier. That is mostly because employees have not been included into the designing phase and are forced to execute processes the way someone else have designed them, which also can be understood as the lack of fusion of information within an organization (Schmidt & Nurcan, 2008). Besides named, another issue refers to the fact that, by not including employees into the BPM, organization may lose valuable ideas and knowledge from the employees since the ones responsible for BPM are not even aware that those ideas and knowledge exist (Erol et al., 2010). On the other hand, sometimes employees do not want to share their ideas and knowledge, either out of fear of their supervisors or lack of confidence, trust or faith that anyone would be interested into what they would like to propose, which is also known as the information pass-on threshold issue (Erol et al., 2010). All of the named issues led to the development of the social BPM concept.

As stated in Kocbek, Jošt and Polančič (2015), there are many different views of social BPM. Kocbek, Jošt and Polančič (2015) argue that most of the authors view social BPM as overcoming the limitations of the traditional BPM by enhancing collaboration in designing business processes within an organization (e.g. Fraternali, Brambilla & Vaca, 2011; Niehaves & Plattfaut, 2011), the others include the implementation and usage of social software and its

principles while performing BPM (e.g. Schmidt & Nurcan, 2008; Rangiha & Karakostas, 2013). However, a recently conducted Delphi study resulted in definition of social BPM, describing it as “the integration of social software into business process life-cycle aiming higher level of communication and engagement of BPM stakeholders into collaboratively designing, executing and improving business processes” (Suša Vugec, 2019: 78). According to Richardson (2012) and the study on social BPM best practices, its usage in the organization may result in several benefits, being: (1) process discovery, (2) process development and (3) process guidance. Richardson (2012) argues that, by including more people, like partners and customers, into the process improvement and design initiatives by using social platforms, may result in new ideas and therefore in process discovery as well as development. Also, since knowledge workers have to consult multiple resources prior to the final decision, using social BPM could result in automatic suggestions of the next steps of a certain process and therefore, guide the process (Richardson, 2012). In that sense, it could be concluded that social BPM can bring benefits to the organization, as well as be one of the important supporting parts of the digital transformation.

### ***BPM software solutions***

BPM software solutions can be classified into several main categories, as proposed by practice: (1) BPM platform, (2) BPM suite and (3) intelligent BPM suites (iBPMS) (Cantara & Dunie, 2014). By the definitions provided by Cantara and Dunie (2014), BPM platforms are the most basic platforms, often chosen by smaller organizations, containing tools which help the achieving desired business results by implementing new applications, run by information technology (IT) team while BPM suites are platforms with wider scope, often used by both IT and other teams, containing tools for continuous process refinement and improvement as well as possibilities for increasing flexibility and agility of the business processes. Furthermore, iBPMS are the most advanced platforms which allow practically any user (e.g. business analyst, professional developer, end users) to improve and transform business processes in a collaborative way, containing tools for advanced analytics, rapid application development and operational intelligence (Cantara & Dunie, 2014; Dunie et al., 2019). Having in mind the definition of iBPMS and the description of social BPM, it could be concluded that precisely iBPMS could provide biggest support for the social BPM, and therefore digital transformation of the organization.

In his research, Harmon (2018) argues that only half of the organizations which are using some kind of a BPM software solutions are satisfied with it; 48% of them would add some kind of decision management capabilities in their BPM suites, while 30% of them would add other advanced capabilities like process mining, robotic process automation, artificial intelligence, capability modelling, and similar. In that sense, iBPMS could also be understood as an answer to those wishes and needs of the customers on the BPM market.

### ***The role of social computing in BPM and digital transformation***

By the definition provided by Mxoli, Mostert-Phipps and Gerber (2016), social computing is an approach to IT which allows various stakeholders to collaborate, communicate and share knowledge and information in an effective way through virtual team and virtual communities. According to Parameswaran and Whinston (2007), social computing includes variety of different platforms like blogs, Wikipedia, social networks (i.e. LinkedIn, Facebook, Twitter,

You Tube, etc.), Peer to Peer networks (e.g. Skype), File sharing networks (e.g. Napster, Kazaa, eDonkey, Gnutella), and similar. Kocbek et al. (2015) argue that there is a great potential in social computing, especially in using social networks for the organizations in doing their businesses in terms of enhancing collaboration, communication and knowledge gathering and sharing, but most of them use them only for promotion or reaching their users.

In terms of BPM, Richardson (2012) argues that traditionally BPM only focuses on engaging small number of people, usually within a certain department or function, which means that other employees, partners and customers do not participate neither in communication regarding BPM nor execution of it. That is also in line with the research by Harmon (2018), which revealed that only 22% of the organizations which are using some kind of BPM software solution are sharing the designed process models with all employees. Having that in mind, one can assume that the percentage of the organizations using social BPM concept, and, therefore, social computing in their BPM approaches is even lower. However, Kerpedzhiev, König, Röglinger and Rosemann (2017) propose a framework of BPM capabilities in the digital age and emphasize the importance of six main themes within a BPM in order for BPM to remain the means of enabling efficient and effective work. Those themes are: (1) data, (2) people, (3) opportunities, (4) networks, (5) context and (6) change (Kerpedzhiev et al., 2017). Duha and Rangiha (2019) also point out that business processes are becoming more and more complex and that it is crucial that adapt to the very dynamic business environment.

On the other hand, Spremić (2007) defines digital transformation as the simultaneous usage of digital technologies in order to improve and/or change existing business processes or creating whole new business models and argues that social computing is one of the primary digital technologies which drive digital transformation. Moreover, Berman (2012) emphasizes the important role which social computing has in the digital transformation of the business models. Besides, there is a number of research dealing with the role of social computing in digitally transforming business (e.g. Cuesta, Ruesta, Tuesta and Urbiola, 2015; Lederer, Knapp & Schott, 2017). The digital future has many names—How business process management drives the digital transformation. In 2017 6th International Conference on Industrial Technology and Management (ICITM) (pp. 22-26). IEEE.). In his study, based on the responses of 184 business practitioners, Harmon (2018) reveals that majority of their organizations are using BPM for either process automation or incremental improvements of the existing business processes. However, 59% of the surveyed organizations are engaged in one or more transformational projects, while 93% are engaged in multiple process improvement projects (Harmon, 2018). Those percentages also indicate the importance of BPM in the digital transformation.

## **BPM software functionality analysis**

Besides defining and identifying social BPM software solutions which are available and highly used on the market, the main goal of this paper is to analyse their functionalities in order to provide deeper understanding of the ways that they can provide support to social computing as one of the digital technologies that drive digital transformation. First, an overview of the employed methodology is given, describing the Magic Quadrant (Gartner, 2019), which served as a basis for the BPM software solutions selection, and social BPM framework which served as a basis for the software solutions analysis. Next, the BPM software solutions are analysed and the results of the analysis are presented.

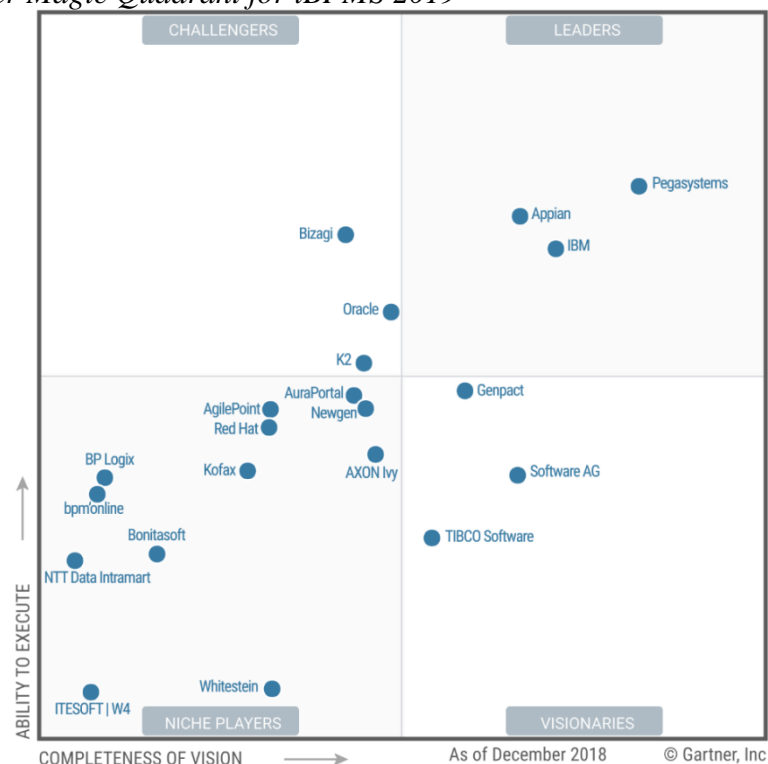


## Methodology

For meeting the goals of this paper, a social BPM software solutions needed to be defined and identified, as well as analysed according to the provided framework. In order to do so, it has been decided to put a focus on iBPMS, since they are, by their previously given definition, the ones closest to the concept of social BPM. Therefore, it could be concluded that iBPMS are the answer to the first research question, i.e. iBPMS could be understood as social BPM software solutions. The selection of the iBPMS which are going to be analysed has been based on the Gartner Magic Quadrant for iBPMS for year 2019, as presented by the Figure 1.

The Magic Quadrant is comprised out of four quadrants, representing four types of iBPMS vendors, being: (1) leaders, (2) challengers, (3) visionaries and (4) niche players (Gartner, 2019). Gartner (2019) defines leaders as technology providers which have a clear and well accomplished vision and have success in positioning themselves for tomorrow, while challengers are the ones which are performing well today and dominate a certain segment of the market, but do not clearly follow or understand where the market is going. On the other hand, visionaries are those who understand the directions of the market, but do not perform well enough (Gartner, 2019). By the Gartner's (2019) definition, niche players concentrate their efforts on a small market segments (if at all have focus) or do not perform better or more innovative than the other players on the market. Therefore, the niche players have been excluded from the further analysis, while all of the market players from the leaders, challengers and visionaries quadrant have been taken into consideration and further analysed. Also, having in mind the second research question, it could be concluded that iBPMSs offered by the leaders, challengers and visionaries are, currently, the top social BPM software solutions available on the market.

Figure 1: Gartner Magic Quadrant for iBPMS 2019



Source: Dunie et al. (2019)

Following available literature on social BPM, PROSPER research group has developed a research instrument for measuring the level of social BPM usage within an organization. The main dimensions and principles are presented by Table 1, which also presents the framework for the analysis of the BPM software solutions in terms of functionalities which BPM software should have in order to support social BPM, and consequently social computing as one of the technologies which is driving successful digital transformation.

Bruno et al. (2011: 302) point out that “social software realizes egalitarianism by abolishing hierarchical structures, merging the roles of contributors and consumers and introducing a culture of trust.” Also, Schmidt and Nurcan (2008) emphasise the importance of interactive development of the structures and models, instead of the ones imposed by the pre-determined experts, while Pflanzl and Vossen (2013) indicate that all process users are equal and have equal rights to contribute, which enhances transparency and alteration of contributions. Therefore, relying on the egalitarianism as the first social BPM dimension, it is concluded that a BPM software should provide support for the process redesign in terms of allowing all individuals included in process to participate in suggesting and making changes in the models in a collaborative way based on trust, multitasking/multiuser modelling and enable creation of model versions.

Erol et al. (2010: 450) emphasises that in social BPM the “decisions are not made by small elites but by combining a multitude of inputs from different users.” Pflanzl and Vossen (2013) also point out that better process solutions could be created based on the collective intelligence of a crowd, rather than individual experts. Moreover, by using social software, a group construction of a common process terminology is enabled as well as the exploitation of the process knowledge from all stakeholders (Erol et al., 2010). Hence, the second dimension refers to the collective intelligence, which indicates that BPM software should provide support for teamwork, communication and collaboration.

According to Schmidt and Nurcan (2008: 629), within a social BPM, the “information is not classified, structured, organized by specialist but by the community of users.” Furthermore, Pflanzl and Vossen (2013) state that there is no regulation within a social BPM, instead business community is responsible for planning and controlling in a bottom up fashion, allowing employees to be self-organized and to interactively design and change processes. One of the ways of achieving that is by using cloud solutions. In that sense, BPM software should provide support for cloud solutions which could be available to all stakeholders.

Kocbek et al. (2015) explain social software in terms of Enterprise 2.0 tools, being, for example, blogs, wikis, social networks, real-time communication tools, etc. Erol et al. (2010) indicate that social software enables flexible and more effective design of business processes since the content produced in social software is continuously assessed by all process users as well as increase trust and encourage participation of less skilled users. Pflanzl and Vossen (2013) point out social feedback through user discussions and ratings as one of the benefits of offering stakeholders to use social software for BPM purposes. Additionally, Pflanzl and Vossen (2013: 167) state that “by using social software, individuals create content such as text and diagrams, and context information in the form of annotations, reputation and social links, which are both considered valuable.” Consequently, the fourth social BPM dimension refers to the social production, indicating that BPM software should provide support for social software in terms of inclusion of social networks features within a BPM software.

*Table 1: Social BPM dimensions, principles and software functionalities*

Dimension ID	Dimension	Principle	Software functionality
<b>SBPM1</b>	Egalitarianism	Approach to BPM relies highly on the idea of giving all participants the same rights to contribute to business process design and change.	Support for process redesign (changes in the models, collaborative multitasking/multiuser modelling, creating model versions).
<b>SBPM2</b>	Collective intelligence	Business processes are designed and modified based on the ideas and knowledge of a group (collective) rather than individual experts or external influence.	Support for teamwork, communication, collaboration, defining roles, powers and responsibilities for working with models and software.
<b>SBPM3</b>	Self-organization	Employees are self-organized and interactively design and change business processes in bottom-up rather than top-down fashion.	Support for cloud based solutions, available to all stakeholders, encourage changes in bottom-up way.
<b>SBPM4</b>	Social production	Stakeholders use social software and Enterprise 2.0 tools (e.g. blogs, wikis, social networks, Lync, Yammer) to suggest and create process content and context.	Support for social software i.e. social networks usage within a BPM software.

Source: Authors' work according to Schmidt and Nurcan (2008), Erol et al. (2010), Bruno et al. (2011), Pflanzl and Vossen (2013) and Kocbek et al. (2015)

### Analysis and results

Aiming to provide an answer to the third research question, nine iBPMSs have been selected for the analysis against software functionalities based on the framework provided by the Table 1. Those iBPMSs are: (1) Pega Infinity 7.4, (2) Appian 18.2, (3) IBM Digital Business Automation Enterprise and Express 18.1, (4) Bizagi Digital Business Platform v. 11.1, (5) Oracle Integration Cloud 18.3.1, (6) K2 Five 5.1, (7) Genpact Cora SeQuence 2.3, (8) Software AG Digital Business Platform 10.0 and (9) TIBCO Software. The results of the iBPMS analysis according to the social BPM dimensions and functionalities are presented by the Table 2.

Table 2: iBPMS analysis according to social BPM dimensions and software functionalities

Magic quadrant	Dimension ID / iBPMS	SBPM1	SBPM2	SBPM3	SBPM4
Leaders	Pegasystems	√	√	√	√ <sup>d</sup>
	Appian	√	√	√	√ <sup>a</sup>
	IBM	√	√	√	√ <sup>d</sup>
Challengers	Bizagi	√	√	√	√ <sup>a</sup>
	Oracle	√	√	√	√ <sup>b</sup>
	K2	√	√	√	√ <sup>d</sup>
Visionaries	Genpact	√	√	√	√ <sup>d</sup>
	Software AG	√	√	√	√ <sup>b</sup>
	TIBCO Software	√	√	√	√ <sup>c</sup>

Source: Authors' work based on Dunie et al. (2019), Quirk (2019), Genpact (2019 a, b), Wähner (2014), Ward-Dutton (2014)

Note: <sup>a</sup> personalized and contextualized work portals; <sup>b</sup> user feedback; <sup>c</sup> process notifications; <sup>d</sup> real-time responses and user presence information

As it is visible from the Table 2, all of the observed iBPMSs provide software support in process redesigning, which includes changing the business process models as well as multiuser and multitasking ways of working on the process models. For example, Genpact provides possibilities for creating and managing multiple versions of processes in a constantly developing business environment as well as an option for running processes in a collaborative end-user interface (Genpact, 2019). That kind of a result has been expected since the main goal of any BPM software solution is to provide software support for process design, and, by their previously provided definition, iBPMSs are supposed to be based on collaboration. In that sense it is also not a surprise that all of the observed iBPMSs support teamwork and collaboration as well as advanced communication. For example, IBM provides unified platform which enables multiple roles to collaboratively build intelligent applications, while K2 provides collaboratively designing for both professional developers as well as, so called, citizen developers (e.g. end users, business analysis, etc.) (Dunie et al., 2019). Next, all of the observed iBPMSs's vendors offer some kind of a cloud version of their solutions. For example, Appian, Oracle and K2 are strongly focused on cloud solutions, as well as Bizagi, which has a full design-time cloud collaboration (Dunie et al., 2019). In terms of social networks functionalities, all of the observed iBPMSs have some kind of a social networks functionality, but there are differences between them since not all of them understand social networks functionalities the same way. Majority of observed iBPMSs provide real-time responses and presence functionality (e.g. Pegasystems, IBM, K2, Genpact), others have process notifications (e.g. TIBCO Software) and user feedback (e.g. Oracle and Software AG), while some have personalized and contextualized work portals (e.g. Appian and Bizagi). However, there is still lots of room for improvement in that segment in terms of creating enterprise social networks which would be BPM based and provide roles overview, chats, and other forms of knowledge sharing among both employees and outside stakeholders. While performing the analysis, it has been also noticed that almost all of the observed iBPMSs offer comprehensive and free online education and training for their users in various forms, from basic user guides to webinars and online classes (e.g. Appian, K2, Bizagi). Some of them, (e.g. Appian) also offer paid trainings on premises which provides more customized for of training. Hence, the answer to the third research question is that BPM software solution should provide support for the collaborative process redesign in the cloud which also strives to incorporate functionalities of internal social networks such as process work portals, unified communication and collaboration tools, knowledge sharing, shared classrooms for virtual trainings and education, etc.

## Conclusion

This paper has presented the functionalities of social BPM software through analysis of nine iBPMSs. The analysis has been based on the Gartner's magic quadrant methodology and its report on iBPMSs. Theoretical background in this paper has presented an overview of the BPM and social BPM as well as the related software solutions and emphasized their importance as well as importance of social computing technologies in digital transformation of organizations. The results of the analysis revealed that all of the observed iBPMSs provide support for process redesigning as well as for teamwork, communication and collaboration. Furthermore, the analysis revealed that, although it should be the foundation of iBPMSs, functionalities of social networks are still not included in every social BPM software solution in the same way; while some have portals, other have only some segments of social networks functionalities.

This study shed a light on the functionalities of BPM software in terms of social BPM. However, the authors also recognize its limitations. Although the analysis of the software functionalities has been performed to the best of authors' knowledge, one of the big limitations of this study is the fact that the authors did not had the chance to work with the observed intelligent BPM suites. Due to that, the study has been based on the secondary data, from various sources available online and therefore relies on the interpretation and not personal experience. Therefore, further research might broaden this study, examining software solutions personally and in a more detailed way. Another research direction which could be followed is to examine the link between usage of intelligent BPM suites and success of the digital transformation.

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# MANAGEMENT



# ATTRIBUTION PROCESS, ERRORS AND CONFLICT MANAGEMENT STYLES

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## Abstract

*Individual differences affect how individuals perceive others, their behaviour and situations. In this process of perception, attributions help us to explain how individuals assign and understand the causes of their own or others behaviour. Therefore, it is necessary to note the importance of attribution as well as the presence of attribution errors that an individual mostly makes unconsciously and that are often present in the situation of conflict. This paper provides insight into the importance of attribution, attribution biases and their role in conflict and connection with specific conflict management styles. Results of empirical research on a sample of 182 students from the University of Zagreb provide additional data on the connection between the attribution process, attribution errors and conflict management styles.*

**Keywords:** attribution, attribution errors, conflict, conflict management styles

**JEL classification:** D74, D83, M1

## Introduction

Conflict situations are part of everyday life, and as such are inevitable. Researches show employees lose significant time at work due to conflicts and estimate that managers spend at least 25 percent of their time resolving workplace conflicts (Gutman, 2009). In spite of their negative sides, conflicts can be managed, and over time, conflicts have become an interesting area of research as it is recognized that conflicts can have positive outcomes. Furthermore, effective conflict management can be crucial for the development of healthy work climate and good interpersonal relations. However, in order to successfully manage them, it is necessary to understand elements affecting their occurrence and individual behaviour in conflict situations.

Individuals cooperate with different people that have mutually exclusive ideas, opinions, and goals, but also different personality, perception and attribution. Attribution presents „a cognitive process through which we attempt to understand the reason behind the behaviour of others: why they have acted as they have in a given situation and what the causes are for their behaviour“ (Kimhi, 2011:59). In other words, attribution theory helps us to understand how

individuals make sense of the world around them, and explain underlying causes or motivations of individual behaviour.

In situations of conflict, as Sillars and McClaren (2015) emphasize attribution process occurs when individuals assign blame and evaluate the intentions of others behaviour or assess if a conflict can be managed cooperatively. In this process, they often exhibit attribution biases that can exacerbate conflicts, as individuals are often subjective, trying to justify themselves, and see the causes of their mistakes or problems in others or the situation.

As attribution errors are seen as an important element of conflict and influence individual behaviour in a conflict situation (Canary & Spizberg, 1990; Keaveney, 2008) with this research we aim to provide a deeper understanding of this relation and analyse how attribution errors are connected with individual conflict management style. More specifically, in this paper, we analyse presence of four attribution errors: (i) fundamental attribution error; (ii) self-serving bias; (iii) actor-observer effect and (iv) ultimate attribution error, and their connection with five conflict management styles: (i) competition, (ii) collaboration, (iii) avoidance, (iv) accommodation, and (v) compromise. Theoretical implications are tested through empirical research on a sample of 182 students.

## **Attributions and their role in social perception**

The world is filled with a multitude of different events and information that affect individual perception, i.e. how people perceive the world, events and other individuals. Individuals invest a lot of effort and time trying to explain different stimuli from their environment and to explain the behaviour of other people and events. Social perception helps us to understand this process by which individuals organize and interpret their sensory impressions in order to give meaning to their environment (Robbins & Judge, 2009) and create their own impressions and opinions (Larsen & Buss, 2008). Attributions present an integral part of perception. They allow us to explain why some experiences, emotions, or behaviours are associated with certain individuals or situations (Graham & Folkes, 1990). As previously defined, it is a process by which individuals ascribe and explain causes to events as well as to their own and others behaviour and a process that guides individual perception, attitudes, and action towards others or situation (Martin & Fellenz, 2010). According to Kelley and Michela (1980), people interpret behaviour in relation to its causes and these interpretations play a very important role in determining their reaction.

Attribution theory is a scientific discipline that studies how people interpret emotions, events or motives of other people, and how their behaviour changes under the influence of certain interpretations (Birnberg, Hanson Frieze, & Shields, 1977). People have an innate tendency to make their own environment meaningful, trying to understand why other people behave in a similar or completely different way (Brooks & Clarke, 2011). With attributions, people want to have control over their own lives and improve the ability to predict future events, often neglecting the causes that have brought about something (Eberly, Holley, Johnson, & Mitchell, 2011). In addition, attribution theory reveals us how attributions can affect the emergence of specific behavioural, emotional and cognitive consequences (Aronson, Wilson, & Akert, 2005). When people have the ability to understand why something has happened, they become more aware and can more easily understand the situation. Therefore, it can be concluded that attributes serve as an explanation of the way in which people form their own and others' behaviour, based on various factors such as previous experiences, various

information, beliefs, and similar (Brooks & Clarke, 2011).

An important cognition in the field of attributions is the one by Heider (1958), whose theory differs among internal and external attributions depending if an individual explains behaviour and the source of that behaviour as determined by the person (internal) or by the situation (external) (Aronson et al., 2005). Internal causes are considered to be under that personal control while external causes are not, and the situation forced an individual to act in a certain way (Robbins & Judge, 2009).

Kelley model of covariation helps to define the cause of behaviour as external or internal, through three fundamental attribution cues: namely (i) distinctiveness (whether an individual shows different behaviours in different situations); (ii) consensus (individual response is the same as with others in the same situation); and (iii) consistency (same response over time). (Eberly et al., 2011).

Information on distinctiveness shows the degree to which current behaviour or event is unique to a particular person or situation (Eberly et al., 2011). If behaviour or event is manifested in different situations, the difference is low. The consensus information points to the degree to which behaviour or event is widespread, which would mean that consensus is high if most people experience an event or behaviour (Eberly et al., 2011). The consistency information refers to the degree in which the event or behaviour is consistent with that in a previous similar context (Eberly et al., 2011). That is, if someone behaves similarly in situations that occur one after the other, the degree of consistency is high. When information on all three dimensions is gathered one can attribute individual's behaviour either to internal or external causes. For example, if the observed behaviour or event has high consistency and low consensus and distinctiveness, an internal cause will be attributed because it is clear that it is something that is specific to a particular person.

## **Attribution biases**

Causal attributions are subject to the same types of biases that any other types of social judgments are (Jhangiani & Tarry, 2014). Although it can be predicted that people can make relatively logical assessments of cause and responsibility, researchers have found there are often systematic biases in how attributions are made (Spitzberg & Manusov, 2008). Observers sometimes come up with causal explanations that deviate from normative standards or from explanations created by other observers (Semin & Fiedler, 1996). These attribution biases are seen as errors and mistakes people make when trying to evaluate their own or behaviour of others (Funder, 1987). In the process of attribution, bias is certainly present in the vast majority of people and as people are largely unconscious of it, discovering and understanding attribute bias can result in more rational and accurate information processing (Myers, 2008) and greatly contribute to better interpersonal relations.

Some of the most commonly used attribution biases include (i) fundamental attribution error, (ii) self-serving bias, (iii) actor-observer effect, and (iv) ultimate attribution error.

The phenomenon known as the fundamental attribution error states that the influence of the situation is underestimated while at the same time the degree in which behaviour reflects individual attitudes and personality is overestimated (Myers, 2008). It is reflected in the situation when people connect observed behaviour with the personality of others, regardless

of the situation they are (Martin & Fellez, 2010). One of the reasons why individuals make this error lies in perceptual prominence, i.e. focusing on a person rather than on the situation surrounding an individual (Burton, Taylor, & Barber, 2014). Such a process of attribution can very often support the creation of stereotypes, so Semin and Fiedler (1996) consider that the prominence of some negative and extreme examples can affect the bias of perception, and that individual will create possibly wrong and even bad image of a larger group of people resulting in further negative attitudes towards that group. In addition, this bias can occur also in heavily constrained situations and is then known as the correspondence bias (Jhangiani & Tarry, 2014).

When it comes to their own behaviour, people will more often act opposite, using situational attributions to explain their behaviour (Aronson et al., 2005). This phenomenon is called the actor-observer bias. It emerges as individuals tend to make more personal attributions when explaining the behaviour of others as opposed to explaining individual behaviour. In other words, they make more situational attributions for their own behaviour than for the behaviour of others (Pronin, Lin & Ross, 2002). This can be explained by the fact that, when the actor and the observer think about the cause of a particular behaviour, the observer will see the cause of the behaviour in the actor and his personality, while the actor will see the cause in the situation.

Self-serving bias is present when individuals, in explaining their own success, attribute it to themselves, and when explaining failure, they blame others and situational causes (Aronson et al., 2005). In general, individuals make more internal, stable, and global attributions for positive events than for negative events, and such positivity helps them to strengthen their desire to see themselves positively and may serve an adaptive function (Mezulis, Abramson, Hyde, & Hankin, 2004). Also, Barron (1988) emphasizes that often, instead of logical, individuals use self-sustaining causal attributes, which are divided into those that strengthen the ego, such as attributing all of the success to internal causes, and those that protect the ego, such as attributing all failures to the external causes. Also, people often use attributes for their own benefit to protect themselves, or avoid negative emotions.

In a group environment, it has been shown that bias can be present when explaining group members' behaviour (Myers, 2008). This would mean that people will attribute positive behaviour of their own group to internal causes, and undesirable behaviour to external and situational causes. Contrarily, the desired behaviour of the other group is usually attributed to external causes seen as "exceptional cases", while undesirable behaviours are attributed to internal and dispositional causes. This attribution is known as the ultimate attribution error or the group serving bias. An additional problem lies in the fact that it is often the source in the emergence of various prejudices and stereotypes.

## **Conflicts and conflict management style**

Conflicts exist in all forms of communication networks and in all types of relationships, both in private and business environment (Townsend, DeMarie, & Hendrickson, 1998). Social conflict is defined as "a situation of opposing tendencies, behaviours and feelings with at least two opposing sides, each party evaluating the other party as a threat or an obstacle in achieving its goals" (Aleksić, 2011: 435). In addition, according to Carell, Jennings and Heavrin (1997), one side, most often, must interfere with the goals and desires of the other. From the above, it can easily be concluded that conflict most often occurs between at least

two individuals who have different thoughts, perceptions, and goals. It can also be stated that there is a "fight" between the two conflicting sides because those sides are in opposition (Friedman, Tidd, Currall, & Tsai, 2000). In such "relationship", one side perceives differences between itself and the other party, and most often wants to achieve goals at the expense of the other one, which leads to conflict (Friedman et al., 2000).

In order to prevent conflicts from triggering exclusively negative outcomes, and in order to take advantage of potential opportunities and benefits they can bring, one of the most important "issues" is the way conflicts are managed and solved by using conflict management styles. When specifically speaking of styles, the most well-known classification of conflict management styles identifies five basic styles using the matrix which takes into account two dimensions: assertiveness and cooperation. Assertiveness refers to the degree to which individuals want to achieve their own goals, and cooperation to the extent individuals want to achieve the goals of the others involved in the conflict. Based on these dimensions, it is possible to distinguish between following styles: (i) competition, (ii) collaboration, (iii) avoidance, (iv) accommodation, and (v) compromise (Thomas, 1977).

Characteristics of those styles are as follows (Thomas, Thomas, & Schaubhut, 2008):

- Competition (low cooperativeness, high assertiveness) - attempt to satisfy one's own concern at the other's expense. Individuals use it for their own dominance and in the case where speed in action is necessary.
- Collaboration (high cooperativeness, high assertiveness) – attempt to find a solution that completely satisfies the concerns of all parties included in the conflict.
- Avoidance (low cooperativeness, low assertiveness) – individual neglects concerns of everyone included in the conflict by sidestepping or postponing a conflict issue
- Accommodation (high cooperativeness, low assertiveness) – individual sacrifices one's own concern in favour of the others. This style is an attempt to show that differences between the conflicting sides are as minor as possible and to emphasize the similarities.
- Compromise (intermediate in both cooperativeness and assertiveness) – attempt to find a middle-ground solution that only partially satisfies the concern of the parties involved in a conflict.

Selection of conflict management style will depend on the degree of importance of a particular dimension for an individual. In other words the extent to which an individual, when taking care of personal needs, takes into account needs of others. Rarely, however, a particular conflict management style is applicable in all situations and individuals will always use the same style. The choice of style depends on the parties involved in conflict, the causes of the conflict as well as the suitability of a particular conflict management style. Also, as research has shown (e.g. Canary & Spitzberg, 1990; Keaveney, 2008) a high proportion of personal attributions is present in conflict, and attributions can have a significant role in the situations and outcomes of conflict (e.g. Cohen, 1991). For this reason, we further investigate the role of attributions in conflict and connection of attribution errors with specific conflict management style.

## **Methodology of research**

For the purposes of this work, an empirical research was conducted with the main goal to analyse the connection between attribution errors and conflict management style. By using a

self-report anonymous survey, we wanted to test if certain attribution errors are more common for a certain conflict management style. The survey was done on a convenience sample of 182 students from the University of Zagreb. As regards to their demographic characteristics out of 182 respondents, 80.22% were female, and most of the respondents (73.63%) were aged between 18 and 25.

Survey questionnaire consisted of three parts. The first part covered questions related to conflict management style, and questions were taken from the measurement scale developed by Falikowski (2001).

The second part of the questionnaire referred to questions that tested for the presence of four attribution biases. Respondents were presented with a real-life situation and were asked to consider the situation in question and to provide their perception, or what is the "correct" answer for them. Question items were developed by Follett and Hess (2002) and Gill and Andrevchik (2014). A sample question was a situation when a young boy in his twenties in an inappropriate manner talks to a teenager and it is a very intense situation that could potentially lead to physical conflict. Respondents were asked to assess the situation in question and choose between two alternatives, the one they find correct. First one stated that a teenager is guilty as he probably was first to assault a young boy (this would attribute young boy's behaviour to a given situation) while the second stated that the young boy is aggressive by nature (which reflects his personality). In this example, respondents could do all four attribution errors. The fundamental attribution error if a young boy is seen aggressive by nature and his aggressiveness cannot be seen as a product of the situation. The ultimate attribution error is if all young people are considered aggressive thus, this young boy is also aggressive. The actor-observer effect will depend on the observer point of view as respondents that observe similar behaviour will see the cause in one's personality. The self-serving bias might be present with respondents who had previously found themselves in a similar situation.

Last part of the questionnaire referred to demographic characteristics of the respondents.

## Results

When looking in general, results indicate that the most dominant conflict management style is a collaboration, present among more than a third of the respondents (36.36%). This is followed by competition (20.98%), accommodation (20.28%), and compromise (19.58%), while avoidance is present as a dominant style at only 2.75% of the respondents.

Furthermore, to assess their self-perception, individuals were asked directly if when meeting someone unknown they orient more on the person or the situation. 71.62% respondents indicated they are more oriented on the situation, while 28.38% are more affected and think about someone's personality. This result was expected as people first notice someone's behaviour. Especially as to get to know one's personality it takes a lot of effort and time. On the other hand, this result also explains the cause of creating many prejudices and stereotypes, because it is sometimes necessary to act differently than a person would otherwise act based on their personality.

As previously indicated in order to assess the presence of different attributions, respondents had to answer questions that describe various daily situations in which respondents have

already been found in the real world, or there is an extremely great possibility that they could be found in such a situation. Depending on their answers, respondents were grouped into those that in most of the situation are oriented on internal (person) or external (situation) causes of behaviour. The distribution of different styles according to the orientation on causes is as presented in the next table.

*Table 1: Orientation on internal or external causes of behaviour and conflict management style*

	Competition	Collaboration	Avoidance	Accommodation	Compromise
Person	19.96%	38.25%	1.78%	19.17%	20.84%
Situation	21.81%	36.06%	3.56%	21.05%	17.52%

According to the obtained data, it is evident that the style cooperation is dominant among respondents oriented on internal causes of behaviour (person), as well as among respondents oriented on external causes of behaviour (situation). Styles competition, accommodation, and compromise are present in approximately a fifth of respondents in both causes of behaviour. According to the representation of conflict styles from the most represented to the least represented, respondents oriented on person use collaboration, compromise, competition, and accommodation, while respondents oriented on situation's factors use collaboration, competition, accommodation, and compromise.

Taking into account all questions related to attribution errors it was noted that respondents make attribution biases. Most often, they exhibit fundamental attribution error and especially in examples where conclusions are made without thinking about the situation that has arisen and the participants. Also, often present has been the ultimate attribution error, especially in cases that tackle common prejudices and stereotypes against other people. The self-serving bias is present in cases where respondents "try" to justify themselves or when they are considered to be different, usually better, than other people. The actor-observer effect usually accompanies this bias as it is about someone's perspective.

Furthermore, two questions assessed if respondents had a more liberal or more conservative attitudes when it comes to some every day events or problems. Results show that 52.75% of respondents can be characterized as more conservative. When analysing answers regarding their conflict management style, results show that people who have a predominantly collaborative style are at most represented among individuals with both liberal (37.91%) and conservative attitudes (36.64%). Styles competition, accommodation and compromise are present in about a fifth of respondents, among both types of attitudes.

When considering conflict management styles it is possible to conclude that respondents who are focused on someone's personality, as well as more liberal views of the world and the people surrounding them, use dominantly styles of collaboration and compromise. For this reason, they often use the fundamental and ultimate attribution bias. Due to their determination to understand someone else's personality, with a simultaneous lack of time to really get to know them, they easily make the aforementioned attribution mistakes that "generalize" and put in groups depending on one or several similar random features, and ultimately create various prejudices.

On the other hand, respondents who focus on the behavioural effects of other people, and conclude based on the situation they see, most often use styles of competition, accommodation and compromise. They are also more inclined to establish control, to a greater

or lesser extent, have more conservative opinions and views on situations. Therefore, the most common attribution error they make is the actor-observer effect because it is extremely difficult for them to remain objective enough and not to conclude only from what they see at first glance. Due to the expressed subjectivity, such respondents make conclusions about people most often, on the basis of the situation.

## **Conclusion**

Attributes are an important part of social psychology, therefore their importance is completely unquestionable when it comes to social behaviour and interpersonal relationships. On the other side, diversity among people leads to conflicts in interpersonal relations, where attribution can have a significant impact on conflict resolution.

In the conducted empirical research, the results showed that one-third of the respondents use the style of collaboration, which is convincingly most dominant, while the styles of competition, accommodation and compromise are used by approximately one-fifth of the respondents. The avoidance style is present in less than 3% of respondents. In addition, the obtained data led to the conclusion that the respondents clearly focused on one's behaviour, and in some cases, there is a double priority for the behavioural orientation as opposed to personality. The most commonly present is the fundamental attribution error, followed by the ultimate attribution error, especially in cases where various prejudices and stereotypes are present. The self-serving bias is present when respondents "try" to justify themselves or when they are considered differently, often more positive than other people.

Taking into account all research results, the indication of the connection of one conflict management style with one or more attribution errors can be seen, but difficult to prove. The conducted research has shown that people who are focused on the personality of other people and have more liberal views on the environment, use styles of collaboration and compromise. Because of this, they often make the fundamental and ultimate attribution error. On the other hand, people who are oriented on the behaviour of other people and conclude based on the behaviour others exhibit, use dominantly styles of competition, accommodation and compromise. For this very reason, they often make the actor-observer error as well as the self-serving bias in negative situations.

As with every research, it is necessary to mention several limitations of this research. The sample was convenient, composed of selected students of the University of Zagreb, so it is impossible to generalize results at a much higher level. In addition, 96.71% of respondents are aged 18 to 29, which would mean that the results could vary depending on the age, but also gender, as our sample was gender biased (80.22% of the respondents were female). Furthermore, the questionnaire itself and measures were self-reports, potentially leading to the problem of subjectivity.

Future research should be more oriented and focused, with additional measures and instruments such as experiments that would put respondents in real time situation and more concretely assess the presence of attribution and attribution biases in concrete conflict situations. Still, we hope this research provided some initial insight into the connection between attribution process, errors and conflict management styles.



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# RESEARCHING IMPACT OF COST SYSTEM GENESIS ON PROFITABILITY LEVEL OF MANUFACTURING ENTERPRISES

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## Abstract

*In this paper, the relationship between five levels of cost systems development and operations net profit margin is researched. Also, the impact of enterprise size and length of enterprise operations on the market are the two main parameters. This research is conducted on a sample of manufacturing enterprises that are classified into the processing enterprise sector and whose headquarters are in the Federation of Bosnia and Herzegovina (FB&H). The levels of cost systems development are determined with the support of an Artificial Neural Network - „feedforwardnet“. We used Levenberg-Marquardt algoritam servea for finding optimal solution of an overdetermined system of nonlinear equations in the least-square sense. Upon the completion, calculations of the impact of cost systems development levels onto the operations net profit margin level was conducted. The research results show a high coefficient of regression between the observed parameters. In this paper, mathematics functions that express the relationship between the level of cost systems development and the net profit margin of business acitivities level is presented. For data processing, we used two softwares: Metlab (in the part of statistical processing of economic data) and EasyFit. This paper also contains recommendation for future studies within this field.*

*Through this research, we wanted exactly to bring focus onto the fact that quality management of a legal entity requires a good information foundation. It is not possible to improve the management system of a legal entity without the development of an accounting system that will be able to support that. Where, there is a limit up to which investments into development of a more advanced information system yields more benefits than expenses related to its development and maintenance.*

**Keywords:** cost systems development, profitability level, manufacturing enterprises, Federation of Bosnia and Herzegovina

**JEL classification:** M41, M49, C40

## Introduction

There are five phases of enterprise profitability management life cycle. Each of those phases is determined by the level of the enterprise cost system development level. Considering, the genesis of the cost system is presented in the process of making accounting function tasks complex. In order to satisfy the growing information needs of management, a cost system design is being perfected. The improvement of the system for managing costs is the foundation of growth of the accounting information potential. Namely, the more advanced phase of the profitability management process demands, from the accounting system, a more inclusive and more accurate resource and activity cost monitoring in use and that occur with the purpose to manage profitability in the long run. Actually, the genesis of the accounting function is mostly founded on the development of a cost system. A better cost system contributes to a more effective decision-making, a more accurate planning, a better analysis, and a control of enterprise operations. This implies that a higher level of cost system development should have a direct impact onto the level of enterprise operational performances.

## Previous studies

Robin Cooper and Robert Kaplan (1991) have written about the multi-phase cost system development in their book *The Design of Cost Management Systems*. The named authors, as the most renowned theoreticians of today in the field of management accounting and cost management systems, have specified the four-phase model of cost system development:

1. *The first phase* – cost systems that offer scarce data of poor quality;
2. *The second phase* – cost systems focused on external reporting;
3. *The third phase* – cost systems relevant for management also;
4. *The fourth phase* – integrated cost systems.

Gary Cokins (2001) has written about the need to upgrade the Robin and Kaplan's model of cost system evolution. He has suggested the fifth phase that focuses on the support to business decision-making. The fifth phase represents the reflection of direction of cost system development to managing enterprise profitability and value. According to Cokins (2001), in the fifth phase, a cost system rises above calculations and distributions of accurate and relevant cost information ensuring flexibility in configuration of starting assumptions within the business decision-making process. It is directed towards making business decisions on the bases of foreseen costs and calculated profitability. This achieved through cost prediction of costs, planning and re-budgeting upon determination of real cost dynamics. Using balanced scorecard is recommended for managing the business strategy and for realization of planned business performances.

The main characteristic of the fifth phase is the evolution from the *operative* to the *management* excellence. Collecting data, and calculations of costs and profitability for each individual transaction, represents a pre-phase of its conduction. In this way, operative managers have anticipated information of effective business decision-making. Reporting on costs and profitability is not done upon completion of transactions or periodically. Those information are available ahead for adequate operational decision-making during the conduction of business transactions. (Oracle 2008, p. 5): *Profitability and cost management is not a post-factual analysis or a "top-down" plan. Rather, it is incorporated into each individual function.*

According to Oracle (2008: p.10-12.), Profitability and Cost Management (PCM) is key for managing business performance. Oracle identifies five (5) degrees of PCM evolution within an enterprise. According to our opinion, these degrees of cost system evaluation are completely compatible with Gary Cokin's opinion and his presentation of the five-phase model of cost system genesis.

Besides the mentioned studies, there are no significant scientific accomplishments regarding creation of an adequate methodology for determination of cost systems development levels in certain countries. Scientific studies are mostly reduced down to a description of current states regarding development of some segment of the cost accounting model.

When we speak of studies on cost systems development levels in B&H, in the article (Dys)functionality of accounting cost systems in manufacturing companies of Tuzla canton, by authors Puškarević, S., and Gadžo, A., (2014), dysfunctionality of a cost system, from the aspect of adequacy of created information for the needs of enterprise operational management in a transitional economy, was proven on a sample of 103 manufacturing enterprises in the Tuzla Canton of the Federation of Bosnia and Herzegovina. Same authors state, in their paper „Development of Concept of Calculation Cost Model for the Companies of the Transitional Economies“ (2012), that conducted research has justified the set hypothesis, showing that the specifics of transitional economy could be adequately embraced in development of the cost calculation model concept.

## **Theoretical basis of the study**

Establishing a parallel between the five levels of cost system development, and accounting systems and enterprise profitability management life cycle based on them, we may sum up a theoretical postulate of this interrelation. They are summarized by the authors, based on Cooper & Kaplan (1991), Cokins (2001) and Oracle (2008) research.

The first level of cost system development and accounting system based on it, is characterized by the following:

- Scarce data of poor quality,
- Business transactions, often recorded with errors,
- Inaccurate calculation of product cost price,
- Allocated distribution of general manufacturing costs,
- Profitability analysis by products is not conducted,
- Inadequate information basis for external reporting,
- Cost system is not directed towards management needs,
- Characteristic for small and new enterprises.

Complementary to the first level of cost system development is the first level of profitability management:

- Manager/owner base business decision-making on intuition, poor use of accounting information,
- Managers focused on increasing the scope of manufacturing and sales,
- Small scope of products, distribution channels and buyers simplifies the management process,
- Poorly emphasized business planning,
- Oriented towards short-term realization of business results,

- Do not have access to timely accounting information.

The second level of cost system development and accounting system based on it, is characterized by the following:

- Cost system focused on external reporting,
- Accurate recording of costs by natural types,
- Absorption system of product cost price calculation (in accordance with IAS 2),
- Distribution of general manufacturing costs is conducted through one rate, usually based on direct labor costs,
- Profitability analysis is conducted by products, and analysis of sales scope and realized gross margin by buyers is conducted on occasion,
- Adequate information basis for external reporting,
- Cost system is not directed towards management needs,
- Characteristic for small and medium enterprises that have been operating for some time.

Complementary to the second level of cost system development is the second level in profitability management approach, and it is characterized by the following:

- Making business decisions is partly based on accounting information,
- Management efforts are directed towards growth and development of a business through introduction of new products and services, finding new buyers, adaptation to the market demands,
- Managers pay more attention to managing internal business processes,
- Managers pay more attention to operational planning, acquiring funding for investments, managing cash flow,
- Have information about key operational indicators,
- Orientation towards short-term realization of business results, however, management starts to think about medium-term goals also, period of return of investments, future anticipated profitability, and such.

The third level of cost system development and accounting system based on it, is characterized by the following:

- More modern cost system for the needs of internal users along with quality external reporting,
- Different techniques of cost calculation for different needs of business decision-making are adopted,
- Final product cost price calculation is perfected, as well as cost price calculation for other cost carriers,
- Distribution of general manufacturing costs is based on either absorption system using a greater number of allocators, or on activity based costing (ABC),
- More accurate profitability analysis system by key success indicators,
- Cost system is growingly adapting to management needs,
- Characteristic for well running medium sized enterprises that have been operating for a long time, and for enterprises that are classified as large.

Complementary system of profitability management on the third level is characterized by the following:

- Profitability management is growingly based on scientifically founded methodology through using a large number of accounting information in the process of business planning, decision-making, analysis and control,

- Management has knowledge and experience gained from a great number of years of operations on the market,
- Managers understand what key drivers of profitability are in their operations,
- Profitability management is medium-term oriented,
- They understand that different buyers have different value for an enterprise and that they should be managed as well,
- They require adequate accounting information in the function of transition onto a system of profitability management by buyers.

The fourth level of cost system development and accounting system based on it, is characterized by the following:

- Integrated cost system which has one database for the needs of internal and external reporting (using ERP software),
- A large number of cost accounting modern techniques developed,
- Cost price calculation of cost carriers (products, buyers, distribution channels, and such) is based either on ABC or on Time-driven activity-based costing,
- A well-developed cost allocation system by buyers and distribution channels,
- A well-developed complete operational cost management system,
- Characteristic for well-organized and well running large enterprises.

Complementary approach to profitability management at the fourth level assumes:

- Choice of business decisions is based on the analysis of various scenarios,
- Management uses Activity-based management and periodic profitability reporting,
- A high level of using accounting data created according to needs of different hierarchy levels of management,
- Profitability management is long-term oriented,
- Profitability management is focused on managing profitability of buyer portfolio in an enterprise,
- Management manages the whole chain of enterprise value in the function of increasing Customer Equity value,
- Management has reached the “*operation excellence*” level.

Finally, the fifth level of cost system development and accounting system based on it, is characterized by the following:

- Accounting reporting in real time,
- Accounting system, along with quantitative data, collects and processes a large number of quantitative non-financial and qualitative data,
- Predictable accounting ability is emphasized,
- Collecting data, and calculation of costs and profitability for each individual transaction, represents a pre-phase of its conduction,
- Flexible and easily adaptable accounting system design, made in accordance with the business strategy and information needs of users,
- Characteristic for large, well running enterprises and multi-national enterprises that have been operating for a long time.

Complementary approach to profitability management at the fifth level is characterized by:

- Business decisions are made on the basis of anticipated profitability analysis of each business transaction or action of an enterprise,
- Management is oriented to long-term profitability management, and they know what is the future potential of profitability in several years operations to come,

- Management is always searching even for the smallest savings, and possibilities to improve business,
- Management manages all activities in the value chain in the function to create as large as possible current value of CE buyer portfolio,
- Management manages with “*management excellence*” characteristics,
- An enterprise has all characteristics of an “*knowledge organization*”,
- The focus is placed on strategic operational management, anticipation of future economic shifts, their timely adaptation, and tactical and operative management excellence.

## **Research structure**

### **Research subject, hypothesis and aims**

The research subject represents the determination of connection between cost systems development levels in manufacturing enterprises in B&H and profitability indicators, where it is attempted to valorize how would a shift, from a lower to a higher level of development, contribute to realization of better business performances.

The central research hypothesis is: “A higher level of cost system development within an accounting information system of manufacturing enterprises in FB&H, from the processing industry sector, has a positive impact on financial profitability indicators.”

The research aims may be summed up through the following operational goals:

- Determine the level of cost system development of manufacturing enterprises from the processing industry sector in FB&H;
- Quantify connections between cost systems development levels of processing enterprises and profitability indicators;
- Determine the relationship between the enterprise size and cost system development level;
- Determine the relationship between length of operations of an enterprise and cost system development level.

### **Research sample and methodology**

Research population consisted of all processing enterprises in FB&H. Where, the research sample consisted of 120 enterprises, from which 63 positively replied. The primary data, necessary for determination of cost system development level have been collected using the survey method. After that, for all surveyed legal entities in the sample, we have collected data on realized income from regular business activities and the amount of net profit (loss) from regular business activities. The data have been collected from the Financial Information Agency Ltd Sarajevo, which collects official financial reports from all legal entities based in the Federation of B&H.

The cost system development level is measured against four criteria set by Cooper & Kaplan (1991) and Cookins (2001). These criteria and their characteristics per cost system development levels have been explained within the theoretical basis of this research. The criteria are (Image 1.):

1. Quality of data,



2. Quality of external financial reporting,
3. Quality of cost distribution by cost carriers, and
4. Quality of support to operative/strategic control.

*Image 1. Classification criteria for cost system development*

<b>System Aspects</b>	<b>Stage 1</b> Broken	<b>Stage 2</b> Financial reporting driven	<b>Stage 3</b> Customized / stand-alone	<b>Stage 4</b> Integrated	<b>Stage 5</b> Decision Support
<b>Data Quality</b>	<ul style="list-style-type: none"> <li>• Many errors</li> <li>• large variances</li> </ul>	<ul style="list-style-type: none"> <li>• No surprise</li> <li>• meets audit standards</li> </ul>	<ul style="list-style-type: none"> <li>• Shared databases</li> <li>• stand-alone systems</li> <li>• informal linkages</li> </ul>	<ul style="list-style-type: none"> <li>• Fully linked databases and systems</li> </ul>	<ul style="list-style-type: none"> <li>• Fully linked databases and systems</li> </ul>
<b>External Financial Reporting</b>	<ul style="list-style-type: none"> <li>• Inadequate</li> </ul>	<ul style="list-style-type: none"> <li>• tailored to financial reporting need</li> </ul>	<ul style="list-style-type: none"> <li>• Stage 2 System for financial transactions and periodic reporting</li> </ul>	<ul style="list-style-type: none"> <li>• financial reporting systems</li> </ul>	<ul style="list-style-type: none"> <li>• financial reporting systems</li> </ul>
<b>Product/ Customer Costs</b>	<ul style="list-style-type: none"> <li>• Inadequate</li> </ul>	<ul style="list-style-type: none"> <li>• inaccurate</li> <li>• hidden costs and profits</li> </ul>	<ul style="list-style-type: none"> <li>• PC-based ABC models</li> </ul>	<ul style="list-style-type: none"> <li>• integrated ABC/M systems</li> </ul>	<ul style="list-style-type: none"> <li>• integrated ABC/M systems</li> <li>• predictive costing</li> </ul>
<b>Operational/ Strategic Control</b>	<ul style="list-style-type: none"> <li>• Inadequate</li> </ul>	<ul style="list-style-type: none"> <li>• financial feedback only</li> <li>• delayed/ aggregated</li> </ul>	<ul style="list-style-type: none"> <li>• Kaizan costing; pseudo profit centers, timely non-financial</li> </ul>	<ul style="list-style-type: none"> <li>• Operational &amp; Strategic Performance measurement systems</li> </ul>	<ul style="list-style-type: none"> <li>• Operational &amp; Strategic predictive scenario</li> <li>• links to scorecards</li> </ul>

*The upgrade of the four-phase cost system development by Cooper&Kaplan (1991)*

*Source: Cokins, 2001:27.*

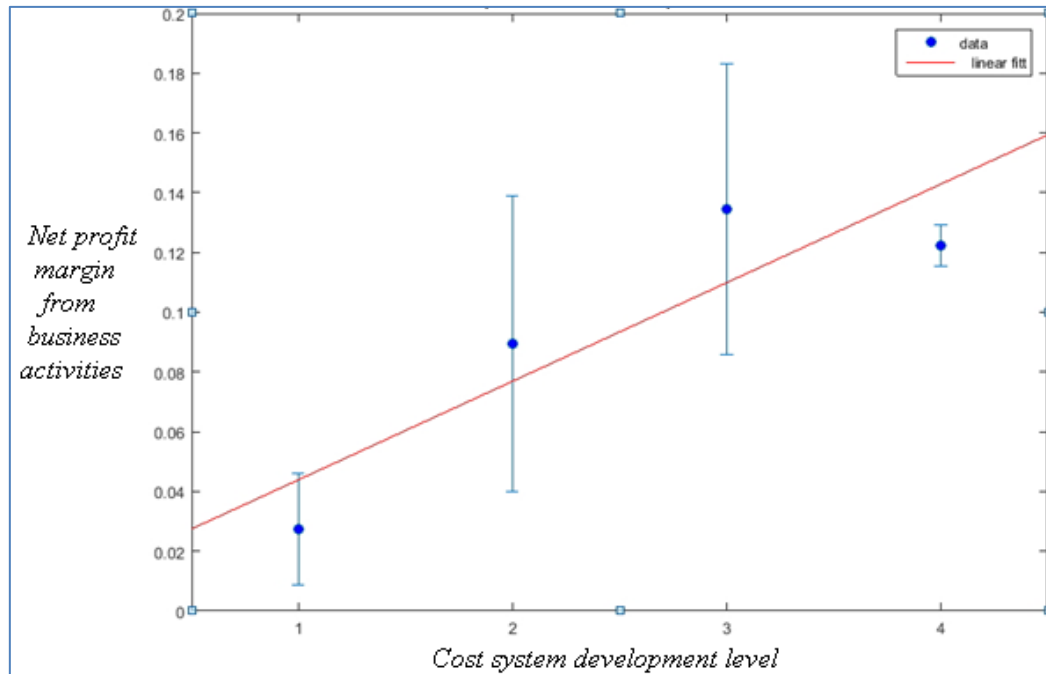
Within our research, we have asked a series of questions for each criterion, which, in the end, represent the level of development of an individual criterion. Enterprise classification by level of cost system development, by all four criteria, we have conducted using the Artificial Neural Networks –ANN. It is an adaptive statistical model for data processing inspired by structure and activity of a biological nervous system. ANN has conducted mapping between input-output from connections that have been presented to them in sets of data during training of the network. These sets of data have included a matrix of 200 possible variations in given answers, classified by levels of cost system development. We have created a feedforwardnet neural network with 20 neurons in the hidden field. Classification of data for training, validation and testing is random. The network uses 60% of data for training, and 20% for validation and 20% for testing. When training, the network uses Levenberg-Marquardt algorithm, and it works through Mean Squared Error method. Lavenberg-Marquardt algorithm serves for finding optimal solution of an overdetermined system of non-linear equations in the last-square sense. For data processing, we used two softwares: Metlab and EasyFit.

## Research results

The research results of the dependency level of net profit margin from business activities and cost system development level, are presented through error bar graph (Graph 1.). On this

graph, there are means and deviations (+/- STD) of net profit margin from business activities, against the cost system development level.

*Graph 1. Relationship between net profit margin from business activities and cost system development level*



*Source: author's interpretation*

After that, we have fitted the equation of the line. Fitting represents determining the function which starts between given dots, minimizing the deviation error through the least squares method. In that way, we got the function (with given coefficients) that expresses the relationship between cost system development and the level of net profit margin from business activities.

$$f(x) = p1 * x + p2$$

Coefficients (with 95% confidence bounds):

$$p1 = 0.03298 \text{ } (-0.01877, 0.08473)$$

$$p2 = 0.01095 \text{ } (-0.1308, 0.1527)$$

Goodness of fit:

SSE: 0.001447

R-square: 0.7899

Adjusted R-square: 0.6848

RMSE: 0.02689

The dependency between levels of the net profit margin from business activity and the level of cost system development is high, and we may see this from the value of coefficient R-square and Adjusted R-square, with a small mean square error of 2.68%. This proves the central research hypothesis, which states: “A higher level of cost system development within an accounting information system of manufacturing enterprises in FBiH, from the processing industry sector, has a positive impact on financial profitability indicators.”

The research results show that the greatest number of enterprises was classified into the II level of cost system development (55.55%), then the III level (31.75%). The first level of development was recorded in 6.35% of enterprises, while the IV level of development was recorded in the same ratio. The fifth level of development of a cost system was not recorded in any enterprises in the sample. Through this, we have achieved the research aim 1, which states: “Determine the level of cost system development of manufacturing enterprises from the processing industry sector in FBiH.”

The relationship between cost system development level and enterprise size, their mean of net profit margin from business activities (through standard deviation of net profit margin from business activities and mean), is presented in Table 1.

*Table 1. Comparison between cost system development level and value of net profit margin from business activities, and other characteristics*

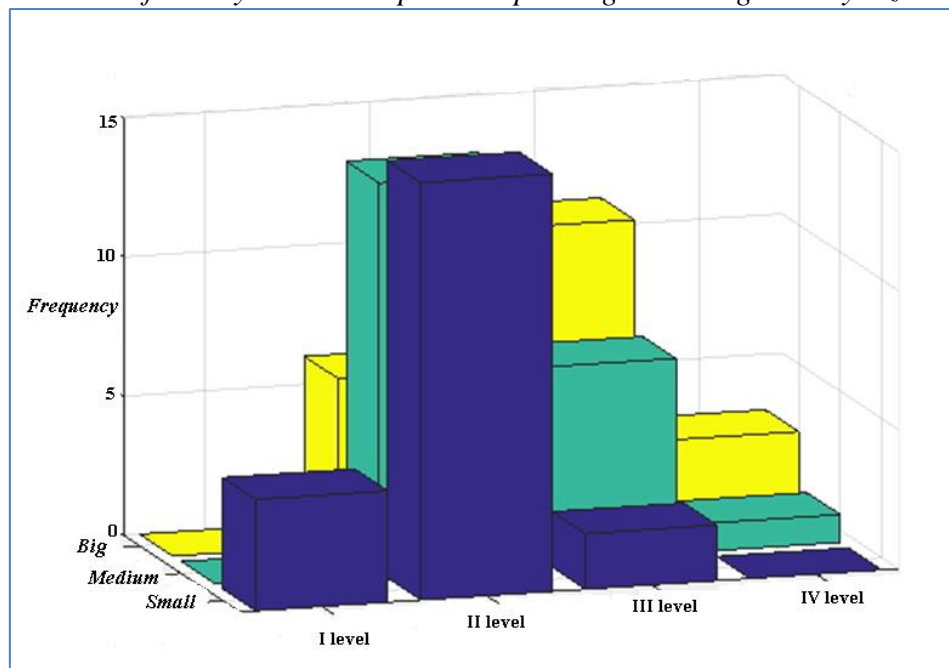
Cost system development level	Enterprise size	Net profit margin from business activities mean	Standard deviation	Median
<b>I level</b>	S	0.0274	0.0187	0.0286
	M	-	-	-
	L	-	-	-
<b>II level</b>	S	0.1461	0.0117	0.1221
	M	0.0685	0.0539	0.0482
	L	0.0540	0.0377	0.0710
<b>III level</b>	S	0.1900	0.2533	0.1900
	M	0.1135	0.0662	0.1215
	L	0.0996	0.0789	0.0581
<b>IV level</b>	S	-	-	-
	M	0.1273	0	0.1273
	L	0.1175	0.0622	0.1392

*Source: author's interpretation*

In accordance with the research aim 2, we have quantified connections between cost system development levels in processing enterprises in FBiH and profitability indicators (net profit margin from business activities). For the I level of cost system development, the net profit margin from business activities mean is 2.74%. For the II level of cost system development, the net profit margin from business activities mean is 8.95%, for the III level of development, it is 13.43%, while for the IV level, it is 12.24%. This shows us that there is an optimal relationship between investments into a more advanced cost system and benefits that come out of that.

On Graph 2, we see that all enterprises that have the first level of cost system development are small enterprises, the II level of development dominates in small and medium enterprises, while the III and the IV level of development found mostly in large enterprises, and somewhat in medium enterprises.

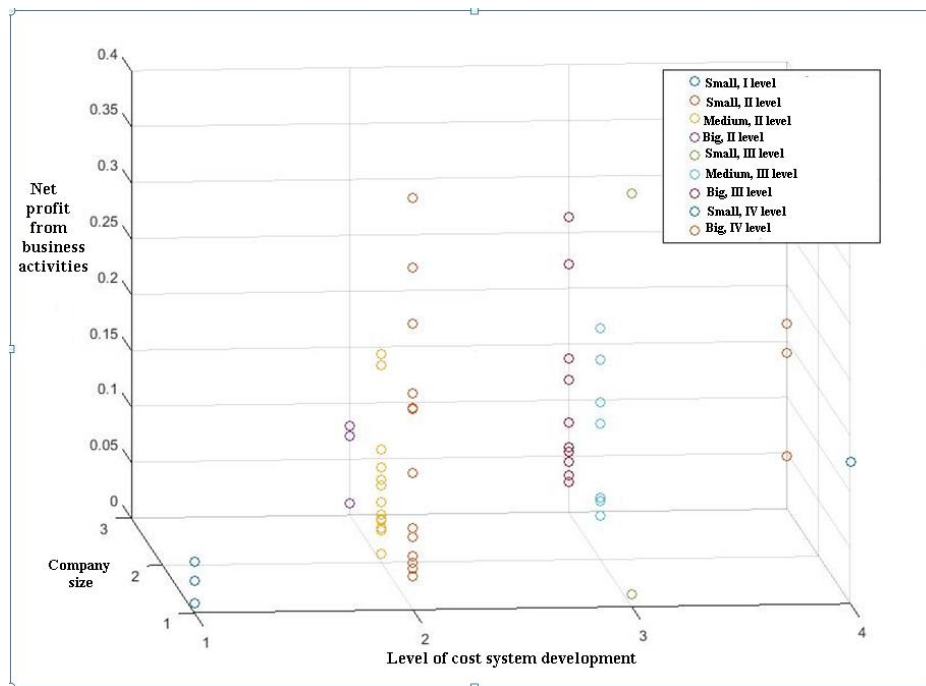
*Graph 2. The level of cost system development depending on the legal entity size*



*Source: author's interpretation*

In order to fulfil the third research aim with as much quality as possible: “Determine the relationship between the enterprise size and cost system development level”, we have conducted additional testing. Correlation between the cost system development level, enterprise size, and net profit margin from business activities for each enterprise in the sample is presented in the following Graph (Graph 3).

*Graph 3. Correlation between the cost system development level, enterprise size, and net profit margin from business activities*

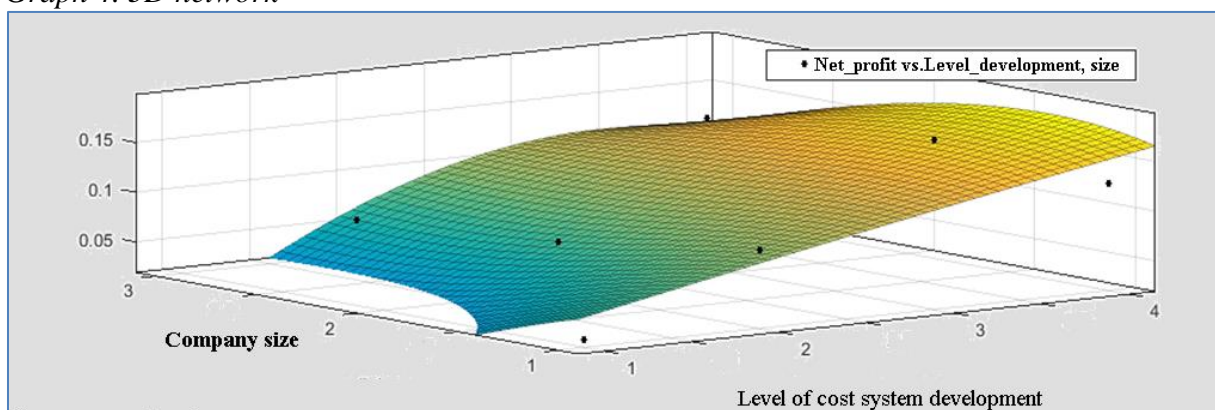


Source: author's interpretation

Considering that all variables in the programme had to be numeric, the enterprise size marked as 1 are small, 2 are medium, and 3 are large enterprises.

It is visible that there is a trend of increased profitability with a higher level of cost system development. Upon finding the net profit margin from business activities mean, depending on the enterprise size and cost system development level, we have gotten the following Graph that follows the countours from the previous one (Graph 4).

Graph 4. 3D network



Source: author's interpretation

Between the received data, there is a curve drawn which fits the best to given values in accordance with the least squares method. The general form of the fitted equation is as follows:

$$f(x,y) = a + b \cdot \sin(m \cdot \pi \cdot x \cdot y) + c \cdot \exp(-(w \cdot y)^2)$$

Coefficients (with 95% confidence bounds):

With received coefficients:

$$\begin{aligned} a &= -0.1893 \quad (-0.5524, 0.1738) \\ b &= 0.2755 \quad (-0.006287, 0.5572) \\ c &= 0.2583 \quad (-0.02673, 0.5434) \\ m &= 0.04599 \quad (0.01945, 0.07253) \\ w &= 0.487 \quad (-0.161, 1.135) \end{aligned}$$

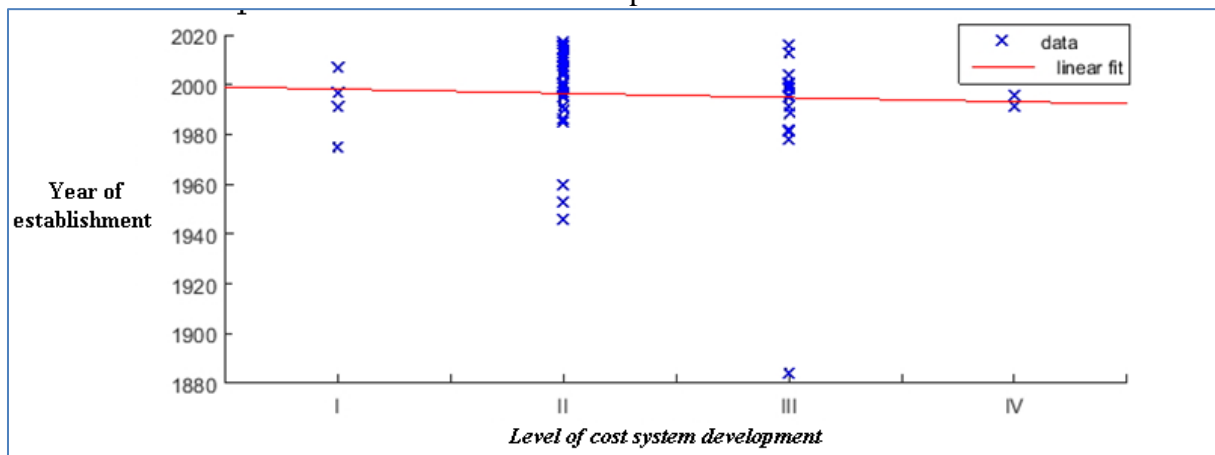
Goodness of fit:

SSE: 0.005928  
R-square: 0.6657  
Adjusted R-square: 0.3315  
RMSE: 0.0385

From the conducted analysis, we may conclude that the net profit margin from business activities level grows in enterprises with a higher level of cost system development. Also, we may conclude that the higher profitability, within their cost system development level, is realized by small and medium enterprises. Considering that the shape of the fitted curve is recognizable, we may predict the most probably value of realized profit for some other cases, for example, if we improve the cost system to the V level of development. It is visible in both fitted curves that large enterprises, that use the fifth level of cost system development, would realize a smaller net profit margin from business activities in comparison to medium enterprises at the same level of development. Besides the others, high costs of servicing such system, due to the enterprise size, would impact that.

Research results of the correlation between the level of cost system development and the year of founding an enterprise are presented in Graph 5.

Graph 5. Correlation between the level of cost system development and the year of founding an enterprise



Linear model Poly1:

$$f(x) = p1 * x + p2$$

Coefficients (with 95% confidence bounds):

$$p1 = -1.678 \quad (-8.951, 5.595)$$

$$p2 = 2000 (1982, 2018)$$

*Goodness of fit:*

*SSE: 2.436e+04*

*R-square: 0.003535*

*Adjusted R-square: -0.01307*

*RMSE: 20.15*

It is evident from the Graph that enterprises that have been operating for longer periods of time on the market have a greater level of cost system development. However, that correlation is very weak and it is not statistically significant. In other words, we may not state that enterprises that have been operating longer on the market have a more developed cost system. With this, we have fulfilled the fourth research aim: “Determine the relationship between length of operations of an enterprise and cost system development level.”

## **Conclusion**

The quality of cost system organization represents a pre-condition for improvement of business performances in an enterprise, from the aspect of cost management, and from the aspect of managing income. Understanding and accurate observation of costs, by the enterprise management, enables anticipation of future alternative directions of activity that have their own implications on financial operational indicators. We have proven that through the confirmation of the central research hypothesis, which is: “A higher level of cost system development within an accounting information system of manufacturing enterprises in FBiH, from the processing industry sector, has a positive impact on financial profitability indicators.” In the research results, we have also presented the function that maintains the interrelation between cost system development levels and the net profit margin from business activity levels. Also, we have also presented the function that maintains the relationship between enterprise size, cost system development level, and net profit margin from business activity. It is interesting to observe that investing into a more developed cost system gives better effects in small and medium enterprises, while this is not the case in large enterprises. In the research sample, higher profitability was observed in small and medium enterprises within the same level of cost system development. This corresponds with some authors advocating that small and medium sized enterprises should have a well-developed accounting system, regardless of their size (El Louadi, 1998.). Managers in practice often see investing into improvement of the accounting system as an expense, and not as an investment. In practice, a small amount of attention is paid to the development plan of the accounting information system, as well as the whole information system of an enterprise. Through this research, we wanted exactly to bring focus onto the fact that quality management of a legal entity requires a good information foundation. Where, more than 70% of information needed for business decision-making comes from the accounting information system of an enterprise. It is not possible to improve the management system of a legal entity without the development of an accounting system that will be able to support that. Where, there is a limit up to which investments into development of a more advanced information system yields more benefits than expenses related to its development and maintenance. Our recommendations for future studies would be primarily to conduct the same research on much greater sample of legal entities, and from various economic fields, and to further develop theoretical concepts that

observe the relationship between the cost system development levels, the whole accounting system, and the applied type of profitability management.

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# THE INCIDENCE OF FLEXIBLE WORKING ARRANGEMENTS – DOES CONTEXT MATTER?

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## Abstract

*Flexible work arrangements are used and promoted as primary attraction and retention tools more than ever. Although the work-life balance movement can explain their increasing incidence in organizations, previous research did not sufficiently explore the role of contextual factors. The main goal of this study is to examine the effect of different contextual variables i.e. firm size, firm age, industry, sector and ownership type on prevalence of flexible work arrangements. Time-lag data on FWA practices in large-sized Croatian organizations was collected in 2014 by a questionnaire survey using CRANET methodology on a sample of 171 large-sized organizations in Croatia. Results confirm the importance of the context. More specifically, ownership type was proven as the most important contextual factor since foreign-owned companies seem to provide more flexible or alternative work arrangements; especially those related to work-life balance. Other than ownership, sector and industry were confirmed as important determinants of several types of FWAs presence as well. Foundation year, on the other hand, was not confirmed to be important contextual variable in applying flexible working arrangements.*

**Keywords:** flexible work arrangements, context, company ownership, sector, CRANET

**JEL classification:** M12, M51, M52, M54

## Introduction

Flexible work arrangements (FWAs) can be defined as a set of employment forms which are used to increase organizational flexibility and to improve employee work-life balance (Kalleberg et al., 2003; Kotey and Sharma, 2016; Stavrou et al., 2010). Such arrangements enable flexibility in terms of **time**, i.e. when the work is done, **location**, i.e. where the work is done, and the **amount** of work being done (Allen et al., 2013; Kelliher and Anderson, 2009). Indeed, increasing usage of FWAs is unsurprising, as evidence suggests that they have numerous positive effects on organizations and employees (Baltes et al., 1999).

Employers' use of FWAs has increased due to multiple factors: legal obligations in some countries, better cost flexibility for organizations, desired level of workforce stability, and, additionally, they are often used to attract talented workers that often have potential work-life conflicts, and preferences of employees which expect more individualized lifestyles (Berkery et al., 2017; Kattenbach et al., 2010; Stavrou, 2005). Despite the fact that FWAs have proliferated in both developed and less developed countries (e.g. Gialis and Taylor, 2016), the prevalence of various alternative arrangements remains rather uneven and under-researched with regard to different industries, companies of different sizes or ownership type (e.g. Kalleberg et al., 2003; Powell and Cortis, 2016; Svalund et al., 2018). In order to address the issue of contextual factors and their relationship to FWA presence, we formulate our main research question which will be further investigated in both theoretical and empirical part of the paper: *How important is the context of organizations for the implementation of FWAs, and if so, which contextual factors matter?*

It is natural to conclude that flexible arrangements are implemented for the benefit of employers and employees. However, the role of context has been largely ignored in previous research (Stavrou et al., 2010). It is important to explore the incidence of specific FWAs across different contexts for two reasons. First, it could partially answer the questions of why and when flexible arrangements are used by uncovering effects of contextual variables. Second, it could lead to an opportunity for job seekers to identify attractive employers. As flexible forms of work will become increasingly important for attraction and retention of talented workers in the following years (SHRM, 2016), this research question becomes important for many other labour market stakeholders as well.

### **Overview of previous findings on FWAs in different contexts**

The main reason for the wide application of FWAs is that both employers and employees benefit from using them (Klindzic and Maric, 2019). As Kotey and Sharma (2016) explain, employers need such arrangements in order to manage fluctuations in production, as well as for increasing job satisfaction and attracting potential future employees. Employees are hired for work when organizations need them, which results in increased efficiency of organizations (Berkery et al., 2017; Giovanis, 2018; Klindzic and Maric, 2019). On the other hand, from employees' perspective, flexible arrangements give them an opportunity to adjust their non-work and work responsibilities by deciding how much they work, when they work, and where they work (Allen et al., 2013) resulting in an increased satisfaction with work results (e.g. Hazak et al., 2017) or more easily achieved work-life balance (e.g. De Menezes and Kelliher, 2011).

In addition to already mentioned factors, the use of FWAs depends on several contextual factors such as cultural, institutional, ownership structure, country, industry sector, organizational size etc. (Stavrou et al., 2010). Research so far has largely explored previously mentioned aspects as control variables while conclusions drawn from those studies were mostly mixed. Available insights are briefly presented in the following section with regard to a number of selected variable of interest – sector (private versus public sector), industry (manufacturing versus services), company age/foundation, company size, and ownership type.

**Sector-wise**, it has been generally established that the application of FWAs is much more prevalent in the private than in the public sector (e.g., Coyle-Shapiro and Kessler, 2002; Stavrou, 2005) which is why it is widely believed how a positive relationship between FWAs and competitiveness may be more likely among the former than the latter (e.g. Cooper and Kurland, 2002). In a comprehensive EU-wide study conducted by Stavrou (2005), however, organization sector was only significant in limited cases. Although public sector companies have traditionally lacked access to alternative working arrangements, comparative study by Branine (1999) reported an increase of FWAs in public sector across several European countries (e.g. UK, Denmark, France). Similar trends were also reported in public sector of New Zealand (Donnelly, Proctor-Thomson and Plimmer, 2012), and Australia, where non-profit sector employees have significantly higher levels of control over work time, compared to public sector and especially to private sector where employees have the lowest level of control over work time (Powell and Cortis, 2016).

**Industry** as a contextual variable has generated mostly consistent results with regard to FWA incidence while only sporadic evidence exists with regard to industry as a non-significant moderator variable between FWA incidence and competitiveness/performance relationship (see Stavrou, 2005). A number of recent studies reveal that FWAs are more prevalent in service than manufacturing and primary industries (Kotey and Sharma, 2016; Svalund et al., 2018). More precisely and with regard to specific types of industries, Zeytinoglu et al. (2009) demonstrate that employees in the construction, education, health and other service sectors have greater access to flexible work schedules than those in the manufacturing sector. Additionally, Kotey and Sharma (2016) provide evidence of higher incidence of FWAs in IT, business and scientific services industry.

These findings are consistent with earlier studies which confirm the service sector as the more conducive to flexibility (e.g. Ichniowski et al., 1997; Stavrou, 2005). This is explained by the fact that for specific job positions in the service sector, employees do not have to be physically present at all times to provide services and can complete work assignments away from work, especially where they can access their workplace or clients via the internet. On the other hand, FWAs such as working from home are expected to be less prominent in industries and job positions where employees have to be present at the workplace (Kotey and Sharma, 2016) such as assembly line in manufacturing industries. Furthermore, the cost of providing FWAs is lower if tailored to job requirements, so tight scheduling in the transport and rental industry, for example, also limits opportunities for flexible use of leave entitlements (Kotey and Sharma, 2016). It should be mentioned, though, that traditional alternative work arrangements such as shift work or weekend work are typically found in manufacturing sector which allows continuous production as workers are assigned to work in different time periods during one day (Kerin & Aguirre, 2005).

The **size of the company** is usually measured by number of employees and is a key feature of an organization that is correlated with many dimensions of its internal structure, including its degree of bureaucracy, use of firm internal labor markets, formalization, and other aspects of control systems (Kalleberg et al., 2003.). Several studies conducted in different countries suggest that with the increase of firm size, capacity to meet employee FWA requests improves due to the fact that access to resources increases as well (e.g. Berkery et al., 2017; Kalleberg et al., 2003; Kotey and Sharma, 2016). Additionally, as the firm grows, it becomes necessary to use FWAs to attract skilled employees in order to stay competitive in the labour market by

offering a better work-life balance (Kotey and Sharma, 2016; Kotey and Slade, 2005). Large firms can offer flexible arrangements more easily due to the fact that other employees can temporarily replace employees who use FWAs (Dex and Scheibl, 2001). Previous research therefore suggests that larger firms use FWAs more often than smaller firms and, more importantly, larger firms have been hypothesized to enjoy a stronger positive relationship between FWAs and performance, on the basis of Perry-Smith and Blum's (2000) discussion on "institutional pressures". As Perry-Smith and Bloom (2000) argue, this type of flexibility may be particularly beneficial for larger firms that are otherwise subjected to inertial forces and rigidity that limit change.

On the other hand, research based on firms in Scotland implies that small businesses mainly use part-time work and shift swapping, which suggests that smaller firms may not have disadvantages in this area (Maxwell et al., 2007). The FWAs most likely to be provided in SMEs, Kotey and Sharma (2016) find, are flexible use of leave entitlements and flexible working hours but SMEs rarely allow paid parental leave or opportunities for job sharing. The cost of providing paid parental leave would far exceed the benefits for SMEs due to their limited resources, the authors explain. Finally, it should be mentioned that the EU-wide research conducted by Stavrou (2005) revealed firm size as a non-significant moderator of the FWA incidence and competitiveness relationship.

Interestingly, **company age** has not been explored very often as a contextual variable in the FWA research. Kotey and Sharma (2016) suggest that with the increase of company age, the incidence of alternative of flexible working arrangements would increase as well. Perry-Smith and Bloom (2000), on the other hand, find only partial support for the hypotheses that the relationship between work-family bundles and firm performance is stronger for older firms. Generally speaking, it has been established that, over time, firms lose some of their ability to compete, hence age is negatively related to performance (e.g. Jones et al., 2010). It would be, therefore, expected that older companies, in attempt to regain competitiveness and soothe their rigidity, would reexamine their HR practices and seek to implement certain degree of flexibility, especially with regard to alternative work arrangements.

Finally, the last contextual variable of interest – the **ownership type**, generated the lowest number of insights. The question of ownership usually refers to either domestic or foreign-owned companies, and again in foreign-owned ones, usually the multinational companies (MNCs) are seen as forerunners of change. As explained by Morris et al. (2009), MNCs are increasingly seeking more globally integrated HRM practices, although regulation of HRM practices across subsidiaries may be difficult due to the influence of external factors in local governments.

Previous findings offer only partial consistency about FWAs across different contexts (e.g. company size, industry, sector) with several contextual variables being absent from the available empirical analysis (e.g. ownership type, firm age). Also, it is not possible to draw firm conclusions based on a relatively small number of past studies. Thus, further research is necessary in order to shed a light on effects of contextual factors on the presence of different flexible arrangements.

## **Empirical research on FWAs in different contexts**

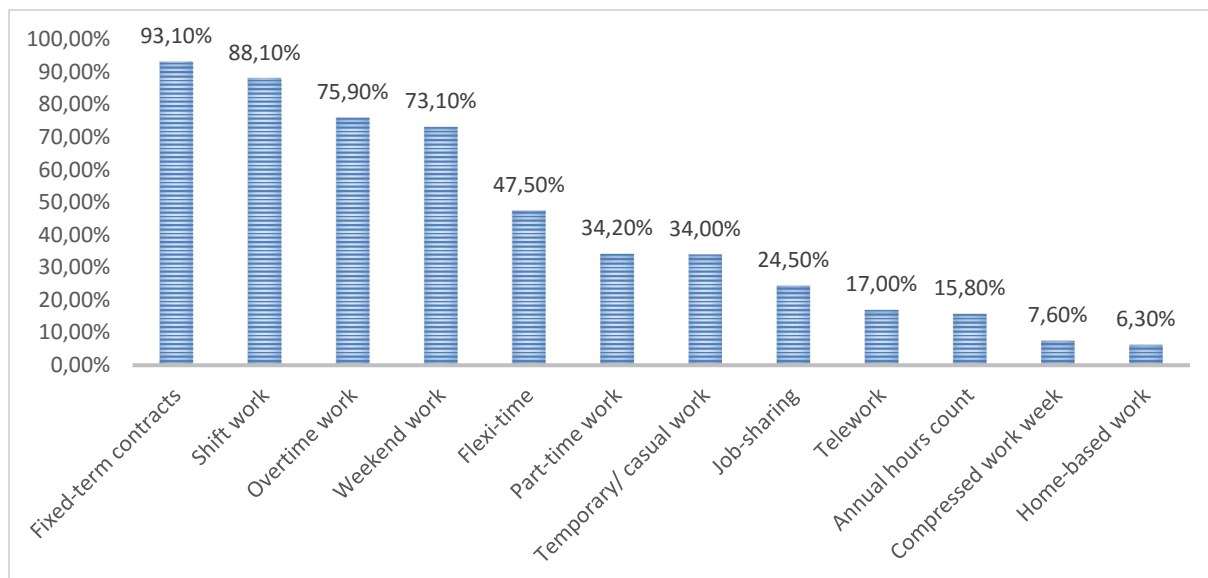
### ***Research methods***

The primary data on FWA practices in large-sized Croatian organizations was collected by a questionnaire survey using CRANET methodology in 2014. The CRANET questionnaire is an instrument that has been used to collect data from more than 40 countries, with some modifications since it was first constructed in the late 1980s. The questionnaire consists of 6 distinctive parts with an intention to measure an extensive number of HRM indicators. More specifically, the following areas are covered in the CRANET questionnaire: general HR activities, recruitment and selection, employee development, compensation and benefits, employee relations and internal communication, background data about the company (e.g. year of establishment, employees' profile, industry, integration processes). Additionally, background information about respondents is included at the end of the questionnaire.

For the purpose of this research, one question about different FWAs as well as several background data on the company profile were used in the analysis (explained in more detail in the next paragraph). Survey questionnaires were sent to HR managers by e-mail and were supplemented with a brief cover letter explaining the purpose and importance of the research. A total of 171 organizations participated in the survey. Relative frequencies and mean values calculations, as well as Chi-square tests for determining the statistical significance of differences were calculated using the IBM SPSS Statistics 23 software package.

**Flexible working arrangements measures.** Respondents were asked to provide information on whether 12 different FWA practices exist on a formal basis in their workplaces for any group of employees. The variable was originally constructed as rank variable where respondents were asked to assess the percentage of employees covered by a particular type FWAs, however, all practices in our analysis were recoded and measured as dichotomous variables with 1 for 'yes' (FWA exists in the company for any given group and for any coverage of employees) and 0 for 'no' (FWA does not exist in the company). Flexible working arrangements analyzed in this study were: weekend work, shift work, overtime, annual hours contract, part-time work, job-sharing, flexi-time, temporary/casual work, fixed-term contracts, home-based work, telework, compressed work week. The incidence of various FWAs in Croatian large-sized companies are presented in Figure 1.

*Figure 1. The incidence of flexible work arrangement in large-sized Croatian companies*



Generally speaking, the descriptive analysis revealed that out of 12 observed FWA practices, fixed-term contracts, shift work, overtime work and weekend work are amongst the most frequently applied practices in Croatian large-sized companies, i.e. in approximately or more than 75%. On the other hand, annual hours count, telework, compressed work week and home-based work were found in less than 25% of the companies in the sample. Other practices (i.e. part time work, job sharing, flexi-time, temporary work) had medium presence in Croatian companies i.e. in more than 25% but less than 50% of examined companies.

**Contextual variables measures.** A total of five contextual variables previously discussed in the theoretical overview were explored in the empirical research as well, i.e. sector, industry, company size, company age (foundation year) and ownership type. (1) Company size is measured in total number of employees. All companies are additionally divided into those that employ (a) less than 250, (b) between 250 and 500, and (c) more than 500 employees. (2) Industry sector differentiates between manufacturing and service organizations. (3) Sector divides organizations on for-profit private sector and the public sector organizations. (4) Company age/foundation refers to the period in which company was established; companies are grouped into “before 1990” and “after 1990”. (5) Ownership structure differentiates between domestically-owned and foreign-owned companies.

Of all companies in the sample, more than 75% of them are private sector companies, approximately 60% are domestically-owned and come from the service industries, 45% of companies employ 500 or more people, while companies founded before 1990 and after 1990 are equally distributed in the sample.

### ***Research results***

After performing Chi square tests several statistically significant differences in implementing FWAs in different context were detected. Results are shown in Table 1.

Table 1 The relationship between flexible working arrangements incidence and selected contextual variables

Type of FWA	Data distribution and p-value+	Company size			Company foundation		Industry		Sector		Ownership	
		<250)	250-500	>500	< 1990	> 1990	Manufacturing	Services	Private	Public	Domestic	Foreign
<b>Weekend work</b>	Distribution	0,588	0,814	0,740	0,763	0,727	0,697	0,752	0,736	0,750	0,821	0,641
	p-value	(0,059)**			(0,613)		(0,426)		(0,866)		(0,038)*	
<b>Shift work</b>	Distribution	0,765	0,914	0,920	0,91	0,868	0,953	0,837	0,887	0,857	0,924	0,744
	p-value	(0,044)*			(0,408)		(0,023)*		(0,629)		(0,011)*	
<b>Overtime work</b>	Distribution	0,636	0,709	0,849	0,795	0,747	0,903	0,670	0,758	0,765	0,778	0,763
	p-value	(0,035)*			(0,489)		(0,001)*		(0,939)		(0,865)	
<b>Annual hours count</b>	Distribution	0,152	0,189	0,141	0,178	0,125	0,150	0,163	0,168	0,161	0,129	0,243
	p-value	(0,764)			(0,373)		(0,825)		(0,928)		(0,145)	
<b>Part-time work</b>	Distribution	0,267	0,407	0,328	0,324	0,371	0,259	0,394	0,368	0,267	0,344	0,429
	p-value	(0,401)			(0,554)		(0,088)**		(0,298)		(0,411)	
<b>Job-sharing</b>	Distribution	0,313	0,250	0,214	0,306	0,214	0,310	0,206	0,256	0,200	0,150	0,297
	p-value	(0,564)			(0,215)		(0,145)		(0,522)		(0,082)**	
<b>Flexi-time</b>	Distribution	0,485	0,481	0,458	0,486	0,452	0,492	0,465	0,517	0,344	0,459	0,641
	p-value	(0,953)			(0,676)		(0,738)		(0,082)**		(0,075)**	
<b>Temporary/ casual work</b>	Distribution	0,303	0,382	0,329	0,405	0,250	0,364	0,327	0,358	0,290	0,262	0,368
	p-value	(0,717)			(0,046)*		(0,659)		(0,477)		(0,264)	
<b>Fixed-term contracts</b>	Distribution	0,909	0,964	0,915	0,932	0,945	0,934	0,929	0,958	0,879	0,967	0,946
	p-value	(0,491)			(0,747)		(0,901)		(0,091)**		(0,606)	
<b>Home-based work</b>	Distribution	0,003	0,093	0,057	0,081	0,056	0,016	0,093	0,051	0,094	0,033	0,054
	p-value	(0,491)			(0,557)		(0,055)**		(0,365)		(0,606)	
<b>Telework</b>	Distribution	0,212	0,148	0,155	0,149	0,167	0,115	0,204	0,193	0,063	0,082	0,395
	p-value	(0,706)			(0,765)		(0,145)		(0,077)**		(0,000)*	
<b>Compressed work week</b>	Distribution	0,091	0,074	0,071	0,055	0,069	0,049	0,093	0,101	0,00	0,033	0,184
	p-value	(0,938)			(0,715)		(0,314)		(0,065)**		(0,011)*	

+ p-values refer to the Chi-square test; \* p < 0,05; \*\* p < 0,10



The analysis of the context and differences in incidence of FWAs in various contextual settings revealed that **ownership structure** is the most important determinant of FWA incidence in Croatian large-sized companies. In 12 analyzed types of FWAs as many as 6 statistically significant differences in incidence of implementation of FWAs were generated with regard to ownership. More precisely, weekend work ( $p=0,038$ ) and shift work ( $p=0,011$ ) are more present in domestically-owned companies, while job-sharing ( $p=0,082$ ), flexi-time ( $p=0,075$ ), telework ( $p=0,000$ ) and compressed work week ( $p=0,011$ ) are more present in foreign-owned companies.

Other than ownership, sector and industry were confirmed as important determinants of FWAs presence as well. **Manufacturing businesses** apply shift-work ( $p=0,023$ ) and over-time work ( $p=0,001$ ) more than service industries, while the opposite holds true for part-time work ( $p=0,088$ ) and home-based work ( $p=0,055$ ). Sector-wise, it seems that **private sector** is a leader in applying modern trends in job design such as flexi-time ( $p=0,082$ ), fixed-time contracts ( $p=0,091$ ), telework ( $p=0,077$ ) and compressed work week ( $p=0,065$ ). Even though we examined only **large** companies, further differences can be found among themselves where, e.g. the incidence of shift work ( $p=0,059$ ) and over-time work ( $p=0,035$ ) is increasing with company size. Finally, aside from temporary work that was more present in companies founded before 1990 ( $p=0,046$ ), no other differences were found in implementation of FWAs with regard to **company foundation** period.

## Discussion and recommendations for future research

In response to our research question the results of this study indicate that, when it comes to FWA application, indeed – to a certain extent, context does matter. More precisely, **ownership structure**, though not being present in available research as a variable of interest, proved to be more significant in determining the existence of a certain FWAs more than other variables. FWAs such as weekend work and shift work were found to be more present in domestically-owned companies, while arrangements related to flexibility in scheduling hours (flexi-time and compressed work week), flexibility in the place of work (telework) and flexibility in the number of hours worked (job-sharing), were more present in foreign-owned companies. This could be explained by the fact that in the Central and East European region, the multi-national companies are considered to be the main disseminators of high performance HRM practices typical for successful organizations worldwide (Karoliny, Farkas and Poór, 2009). Additionally, Pološki Vokić and Vidović (2016) explain that even though FWAs do not generate additional cost for companies, these options are being less considered in domestic companies perhaps due to lack of trust in employees, combined with national culture of high uncertainty avoidance.

Even though the vast majority of research demonstrates that FWAs are more prevalent in service than in manufacturing and primary **industries** (Zeytinoglu et al., 2009; Kotey and Sharma, 2016), our research only corroborates the fact that FWAs such as work from home and other flexi-place arrangements are less prominent in industries and job positions where employees have to be present at the workplace. All other FWAs, with the exception of home-based work and part-time work, were almost equally distributed among industries. Moreover, shift work and weekend work appear to be even more present in manufacturing and primary industries. Unlike service workers, employees in manufacturing have to be physically present at all times to complete work assignments (Zeytinoglu et al., 2009) and are more likely to work in shifts in order to complete production plans.



It is usually posited that the application of FWAs is much more prevalent in the **private** than in the public sector (Coyle-Shapiro and Kessler, 2002), which is confirmed by our research as well. Private sector is a leader in applying modern trends in job design such as flexi-time, fixed-time contracts, telework and compressed work week. Even though it is sometimes argued that public sector is more likely to adopt work-life programs because they have no financial performance pressures (e.g. Ingram and Simons, 1995), traditionally, flexibility has not been required in public sector (Stavrou, 2005). The private sector, however, needs to be able to offer job flexibility to employees, helping to retain their loyalty in good times, and to avoid having to fire them in periods of economic downturn (ILO, 1997 after Stavrou, 2005).

Finally, it is usually hypothesized that provision of FWAs will increase with **size of the firm**, as capacity to meet employee's FWA requests improves with access to more resources. Even though FWAs are applied in order to attract skilled employees and enhance competitive positions (Kotey and Sharma, 2016), we found only a limited number of differences in their provision with regard to firm size. In our case, the incidence of shift work and over-time work increases with company size, which is probably related to the fact that the largest companies in the sample were manufacturing ones. It is, however, advisable for large companies to tailor job design around FWAs, especially since a range of such policies can provide enhanced flexibility, allowing a firm to maintain sustainable fit with an unstable and changing environment (Wright and Snell, 1998) as well as to benefit from reducing rigidity and inertia (Perry-Smith and Bloom, 2000).

Some research limitations do exist among which two should be explained: **the cross-sectional** nature of the primary data and the **self-report data** in the sense that one manager provided data for the company he/she works in. However, given the factual type of our variables of interest (the presence of certain HR practices and company characteristics) we believe that self-report did not generate inaccuracy. The cross-sectional nature of study, however, should be converted into longitudinal in the future. It would be interesting to capture the trends in providing FWAs in different context as well as to measure additional data in term of their effects of employees' satisfaction as well as employers' outcomes i.e. organizational performance.

There are many interesting avenues for future research of FWAs. Clearly, alternative forms of employment are becoming more popular and context does have an effect on their implementation. Accordingly, it would be interesting to explore interactions between different contextual factors, incidence of particular FWAs, and different outcomes. This especially provides significant opportunities for multi-level research of mentioned interactions.

## Conclusion

This study confirmed the importance of contextual variables for incidence of FWAs. Specifically, it was demonstrated that ownership type was the most important contextual factor since foreign-owned companies seem to provide more flexible or alternative work arrangements. Likewise, sector and industry were confirmed as important determinants of several types of FWAs presence as well. There is a higher incidence of flexible arrangements in private sector, when compared to public sector. In case of industry, more FWAs were used in services, when compared to manufacturing. Size of the firm was found to be only partially important for the use of flexible arrangements, as only shift work and over-time work

increased with company size. Foundation year, on the other hand, did not generate many statistically significant differences.

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# ECONOMY OF COMMUNION, HUMAN CAPITAL AND SUSTAINABLE DEVELOPMENT OF FAMILY BUSINESS

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## Abstract

*Up until the end of the 20th century, professional, scientific and business literature did not contain the religious dimension as a fundamental value for achieving sustainable development of family business. The emergence of the Economy of communion (EoC), the business model of a more equitable distribution of profits and responsibility for future generations paved the way for serious research into complex issues associated with the integration of religious perspectives into the substantive framework of the corporate world. In the knowledge society, natural resources and labour are no longer a fundamental economic resource, but it is human capital that serves as a means of creating new values and has become the main competitive advantage in the demanding market. The purpose of this paper is to achieve a better understanding of how the EoC can contribute to the sustainable development of family businesses by re-evaluating human capital and promoting intangible and spiritual values in the business process. The primary goal of this paper was to explore the new values of post-materials management (e.g., the culture of giving and consumption culture, gratuity, distribution of profits, ecology and responsibility for future generations) and their impact on the sustainable development of family businesses. Research has shown that companies of the EoC need to make changes in the field of human capital valuation in a way that work enhances the opportunity for professional development, dedication of each person to work and the opportunity for personal spiritual growth and development, and thus the sustainable growth and development of the whole society.*

*In the context of the new values of post-materials management, profit and growth are not the ultimate goal of business activities, but elements of a wider circle of values.*

**Keywords:** *economy of communion, human capital, corporate sustainable development, culture of giving, family businesses*

**JEL classification;** B55, J24,

## Introduction

The purpose of this paper is to achieve a better understanding of how the EoC with a new appreciation for human capital can contribute to the sustainable development of family businesses in the Republic of Croatia. The primary goal of this paper is to explore the new values of post-materials management (e.g., the culture of giving and consumption, gratuity, distribution of profits, ecology and responsibility for future generations) and their impact on the sustainable development of family businesses. This paper consists of 5 main chapters. The first chapter (Introduction) briefly introduces the reader to the topic, purpose and goals of this

work. The second chapter (Literature review) provides a systematic review of relevant literature, i.e. the one relevant to the subject matter of the paper. Chapter 3 (Research methods) describes research methods and identifies research questions. The fourth chapter (Results of the survey) presents the results of the research with a focus on research issues. Chapter Five (Conclusion) summarizes the key knowledge of the entire work with recommendations for practical application and future research.

## **Literature review**

This chapter describes the theoretical framework of the subject topic; human capital, the concept of the EoC, sustainable development and family businesses. It consists of four main topics (sub-chapters). The first topic deals with the EoC through its historical development and a brief description of the concepts; gratuity, consumer society, culture of giving and ethical behaviour. The second topic discusses the term; market value of the company (intellectual capital, human capital and structural capital) in the companies of the EoC. Furthermore, the third topic covers the notion of sustainable development and the degree of influence of the EoC on sustainable development. Finally, the fourth topic discusses the notion of family business and the role of family economy in family business.

### ***The Economy of communion – a historical overview and values***

The EoC was inspired by an original idea Chiara Lubich had during her stay in the town of the Focolare Movement, near San Paola, Brazil, at the end of May 1991. While passing through San Paolo, Chiara was moved by the extreme poverty and numerous "favelas" (barracks) surrounding the city like "the crown of thorns"; a powerful impression made even stronger due to the huge contrast between these barracks (where people from its community live) and many surrounding lavish skyscrapers. The social problem, always strongly felt by her and the entire movement (the Brazilian in particular), is now presented to her, by an inspiration, in all its cruelty and drama. Chiara arrives into town with strong emotions: she feels the urge to immediately do something concrete for these people. The prerequisite for economic and entrepreneurial activity remains therefore efficiency (to produce goods). In those first days, the idea was further clarified: good businesses should be put into communion and focused on three precise goals:

- (a) on self-financing of the company
- (b) on expansion of the so-called "culture of giving"
- (c) on the poor in contact with the community of the Focolare Movement, as Chiara has repeatedly emphasized recently, the ultimate goal of the project

Magzan & Miletić (2010) recognize the companies of the EoC by their departure from the prevailing market logic and use the terms of reciprocity and giving in order to achieve the main purpose of the market which is to belong to the community by cooperating in a positive and constructive way for its development. "Bruni (2013) defines the companies of the EoC as the ones which build their identity on gratuity and without defined "sophisticated contracts" and develop "the entrepreneurial culture of gratuity "which must be embedded in the overall entrepreneurial vision.

Živković (2012) states that the culture of giving notices the entities in the business process, their specific needs, enables exchange between entities on the market where they receive and retain the best values and give others their values for a certain cash equivalent and create new value on the market from which economic development is generated. Marshall (1987) argues

that people are able to provide others a lot more than they normally do, and economists should discover these hidden potentials and use them to develop society as a whole. "Work is a good thing for man - a good thing for his humanity because through work man not only transforms nature, adapting it to his own needs, but he also achieves fulfilment as a human being and indeed, in a sense, becomes "more a human being". (John Paul II, 2003)

### ***Market value of the company and the Economy of communion***

A strategy that will give an answer to how to improve the position of a business entity in relation to competition in the present and the future sets the key concepts of *competitive ability* and *competitive advantage* at the heart of the matter. "The cost of conducting business in large corporations does not decrease," Edvinsson (2003) concludes, adding that the importance of physical labour as a production factor in achieving business efficiency and competitiveness that has moved from the field of visible and tangible to the area of invisible and intangible values and that has produced *the effect of the exponential multiplier of the recipes of knowledge* is now being re-examined. However, it is necessary to define the terms: intellectual capital, human capital, structural capital, client capital in order to better understand further theoretical framework. Financial capital implies tangible assets, and intellectual capital intangible assets which require a special approach and new methods of measurement. Intellectual capital shows the total intellectual property of an organization and represents "accumulated knowledge that an organization possesses in its people, methods, patents, designs and relationships and is a much broader notion than knowledge" (Srića & Spremić, 2000). Intellectual capital also represents the knowledge of employees, as a broader concept in relation to information and data. It is this knowledge that increases the value of a company. Intellectual capital includes three basic concepts: *human capital*, *structural capital*, and *client capital*. Human capital is synergistic with innovation and creativity with employees and includes other important components such as: loyalty, motivation, teamwork, adaptation to change (Srića & Spremić, 2000). According to Holjevac (1998), human resources are gaining increasing importance in the company in order to be a decisive competitive force in the future. Human capital is mobile, i.e. it leaves the company at the end of working hours on a daily basis to appear again tomorrow in the same work environment. It is hard to own it because of its freedom of movement. Employees become the human capital of the company only when they transform their knowledge and skills into action (Jelčić, 2001). We can therefore conclude that the quality and intensity of the creation of tangible and intangible assets for the company (new clients, image, and new products) is a measure of the success of human capital, which consists of *competencies*, *relationships* and *values*.

*Competencies* represent the professional ability of employees observed in certain circumstances and a plan of action: how, what and when.

*Relationships* in this context are seen as an economic category for the purpose of creating value (relationships with clients, colleagues, and to achieve synergistic effect.)

*Values* are related to the concept of employees about what is appreciated and valued in a company. These very concepts have a great influence on the value systems and form the corporate culture of a company.

Work is definitely one of the dimensions of a human being that brings about the sense of completeness, growth in humanity, meaning, satisfaction, and areas of experimentation of our creativity which brings us joy and awareness of our dignity. However, the experience of work is usually filled with hard work, pain and a lack of personal relationships. For this reason, we must strive to overcome the problems in the perception of human labour (physical and intellectual). We will not be able to overcome this challenge with intervening in the field of

economic, financial, technological or even political parameters, but with the awareness that we are primarily facing a crisis of anthropological dimensions, which also means cultural and spiritual dimensions. For a long time, too much importance was attached to the difficulties that earthly, secular work could pose on spiritual life. However, right here *in these jobs* and through them, and *not in spite of them*, God invites most Christians to consecrate the world and themselves to a life filled with prayer that will give life and meaning to these tasks (J.L. Illanes, 1981). All the obligations in the work that we do, when we devote ourselves with the right intentions, can become the place where we will each day exercise mercy, renunciation, the spirit of service to others, joy and optimism, understanding, friendship.

It is precisely the EoC that emphasizes this ability of devoting ourselves to others, which means to working for the benefit of our close ones. "If we really want to consecrate our work, we must start by fulfilling the first condition: do it, and do it well, with human and supernatural seriousness." (Escriva, 2013). Placing communion, mutual love and gratuity at the centre of economic and civic life of the EoC will enable us to truly love the world of work and workers of our time.

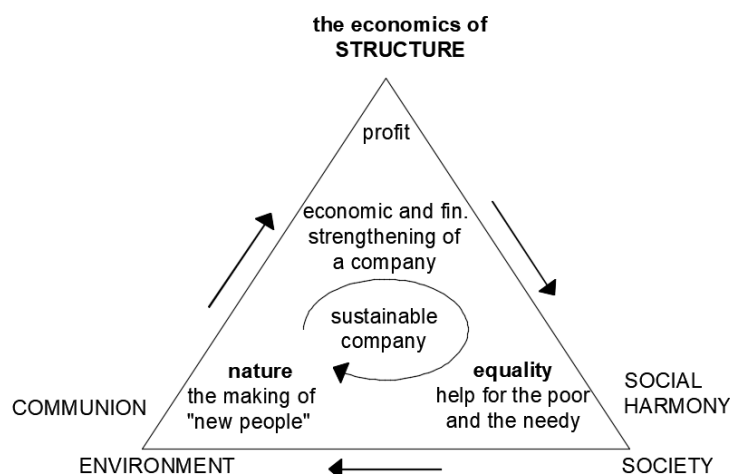
### ***Sustainable development and the Economy of communion***

In today's world economy, natural resources are used in a very inefficient way, i.e. they are consumed as if they were available in unlimited quantities and for an indefinite period of time, which is unfortunately a major misconception of the consumer society that regards profit as a priority, even when the health of the users of these goods is at risk. There are different definitions of the term "sustainable development", and we will list only a few:

Sustainability is ensuring that economic, environmental and social developments go hand in hand (Dee, N and Gill, DE and Livesey, 2011). Sustainable development needs to be profitable in order to be effective. The second definition is based on the concept of sustainable growth, originally developed by Higgins (1977). According to Encyclopaedia of Business (2012), "the sustainable growth rate (SGR) of a firm is the maximum rate of growth in sales that can be achieved, given the firm's profitability, asset utilization, and desired dividend payout and debt (financial leverage) ratios. The variables in the model include: (1) the net profit margin on new and existing revenues (P); (2) the asset turnover ratio, which is the ratio of sales revenues to total assets (A); (3) the assets to beginning of period equity ratio (T); and (4) the retention rate, which is defined as the fraction of earnings retained in the business (R)." The third definition of sustainable growth is that "income from a firm's operations in future accounting periods that can support debt repayment" (Answer.com, 2012). It implies a rate of growth expected from retained earnings without external financing, and without altering financial leverage. Sustainable growth models assume that the business wants to: 1) maintain a target capital structure without issuing new equity; 2) maintain a target dividend payment ratio; and 3) increase sales as rapidly as market conditions allow (Encyclopaedia of Business, 2012).

The project of the EoC and the model of sustainable development have some points in common: *care for nature, i.e. the environment, care for society* (helping the poor and the needy), and the *economic component* expressed through profit and financial stability of business entities. It is necessary for all three elements to be evenly included in the process for efficiency to be at its full potential. For a better overview of the connection between the concepts of the EoC and sustainable development, and as an expression of their compatibility, below is Figure 1 which represents an equilateral triangle.

*Figure 1- The sustainability triangle of the EoC*



*Source: Hrvoje Lovrić: Poslovni uspjeh – teorijska i empirijska analiza (Business success - theoretical and empirical analysis, master's thesis), the University of Zagreb, The Faculty of Economics and Business in Zagreb, 2004. p. 192.*

Part of the triangle referring to social harmony implies not only one-time assistance to the needy, but permanent allocation of one-third of the profit for that purpose, which is defined for all companies operating on the principles of the EoC. The second part of the triangle refers to the environment in which companies of the EoC invest their workers' time and money and thus meet the conditions of sustainable development. The third part, economic gains and positive financial operations are a necessary condition that the companies of the EoC must meet, otherwise they cannot help others.

### ***Family businesses and the EoC in the Republic of Croatia***

Family businesses represent the most common form of corporate organization and management in the world economy, which is also the case in the Republic of Croatia. Unfortunately, Croatia's scientists and institutions do not pay enough attention to family businesses, which results in a very limited number of more serious empirical research in this area. The definition of family in the Republic of Croatia gained another new dimension. By holding a referendum on 1 December 2013, the majority of the citizens made a change to the Constitution of the Republic of Croatia, now containing a new Article 62. Paragraph 2: "The family is under special protection of the state. Marriage is a living community of a man and a woman. Marriage and legal marital relationships, extramarital community and family are regulated by law."

Given that there is agreement on the fact that family participation in ownership structure and leadership is what makes family entrepreneurship different from other forms of entrepreneurship, further research will continue from there. It should also not be neglected to assume that, in family businesses, the goal is to increase the involvement of family members and thus strengthen the family's control in family business.

Senegović (2012) concludes that family entrepreneurship can be seen as a new value in which the family is enriched by business experience, and the company gains the dimension of trust and communion. Such a positive blend of family and business, if properly guided and



directed, can build a viable system that will be successful for centuries to come and will successfully overcome property transfers of more generations. Weber, Lavelle, Lowry et al. (2003) see flexibility as an important competitive advantage of family businesses, which enables them to constantly adapt to new market challenges and quick decision making for even the most important financial decisions, unlike those businesses where ownership is shared. Below we will outline some of the main characteristics of family and business and try to compare them with the characteristics of the companies of the EoC.

The family has some of the following characteristics:

- ✓ closeness between family members,
- ✓ connected by strong emotions, loyalty, sense of belonging,
- ✓ offer one another safety and support,
- ✓ lifelong membership (or even longer)
- ✓ parity of family members
- ✓ subjectivity, etc.

On the other hand, business is an expression most frequently used as a simplified general word for each undertaking which contains business, entrepreneurship, trade and earnings.

The main characteristics of a company are:

- ✓ uncertainty,
- ✓ (moderate) risk undertaking,
- ✓ experimenting, searching, researching,
- ✓ a community of people with different interests,
- ✓ defined tasks and goals,
- ✓ expected results required,
- ✓ memberships lasts as long as target goals are achieved,
- ✓ emotional relationships are less important, rationality, etc.

By comparing these two terms, we can conclude that they are in conflict with each other, but when placing them under the same term: a family business, we get a new value that has existed for thousands of years and continues to operate on the world market. What is the secret to success? What are the similarities to companies of the EoC? The companies of the EoC have some main characteristics:

- the culture of giving,
- gratuity,
- friendship and communion,
- care for the needy,
- a sense of welfare for all the stakeholders in the business,
- longevity and security

We can conclude that there are points in common between the families and the companies of the economy of communion: closeness between family members, sense of loyalty and belonging (friendship and communion), provide each other with a sense of safety and support (concern for the needy, a sense of welfare for all the stakeholders in the business, longevity and security). However, there are still elements present in companies of the EoC which are not represented in family businesses, namely: *the culture of giving and gratuity*. It is these very elements that are necessary in order for family businesses to become companies of the EoC and enable the long-term sustainable economic development of a certain economy.

## Research methods

The primary goal of this paper is to explore the new values of post-materials management (human capital, the culture of giving and spending, gratuity, profit distribution, ecology and responsibility for future generations) and their impact on the sustainable development of family businesses. For the purpose of achieving the primary goal, the following research questions (RQ) have been designed:

RQ 1. How does the new approach to human capital in family businesses of the EoC affect the sustainable development of the local community?

RQ 2. How does the EoC affect the sustainable development of family businesses?

In an attempt to answer these research questions, an analysis of the content of the relevant literature will be used, focusing on the research conducted by the companies of the EoC in the Republic of Croatia (Živković, 2012) and the research of the companies of the EoC in Italy and Brazil (Vieira & Guevara, 2018). For the purpose of triangulation of the research results, special analytical methods will be used: historical, statistical and comparative methods. For a thorough research and analysis it is important to use both: the first for the exact data it will produce and lead to one conclusion and the other for conclusions I will reach alone on the basis of an analytical approach to research (the Faculty of Philosophy, Rijeka, 2009)

## Research results

This chapter presents research results which focus on RQ answers. The two primary goals of data collection and analysis were; to explore how the new approach to human capital in family businesses of the EoC contributes to the sustainable development of the local community and to explore how the EoC can contribute to the sustainable development of family businesses in the Republic of Croatia. Two key RQs have therefore been designed:

RQ 1. How does the new approach to human capital in family businesses of the EoC affect the sustainable development of the local community?

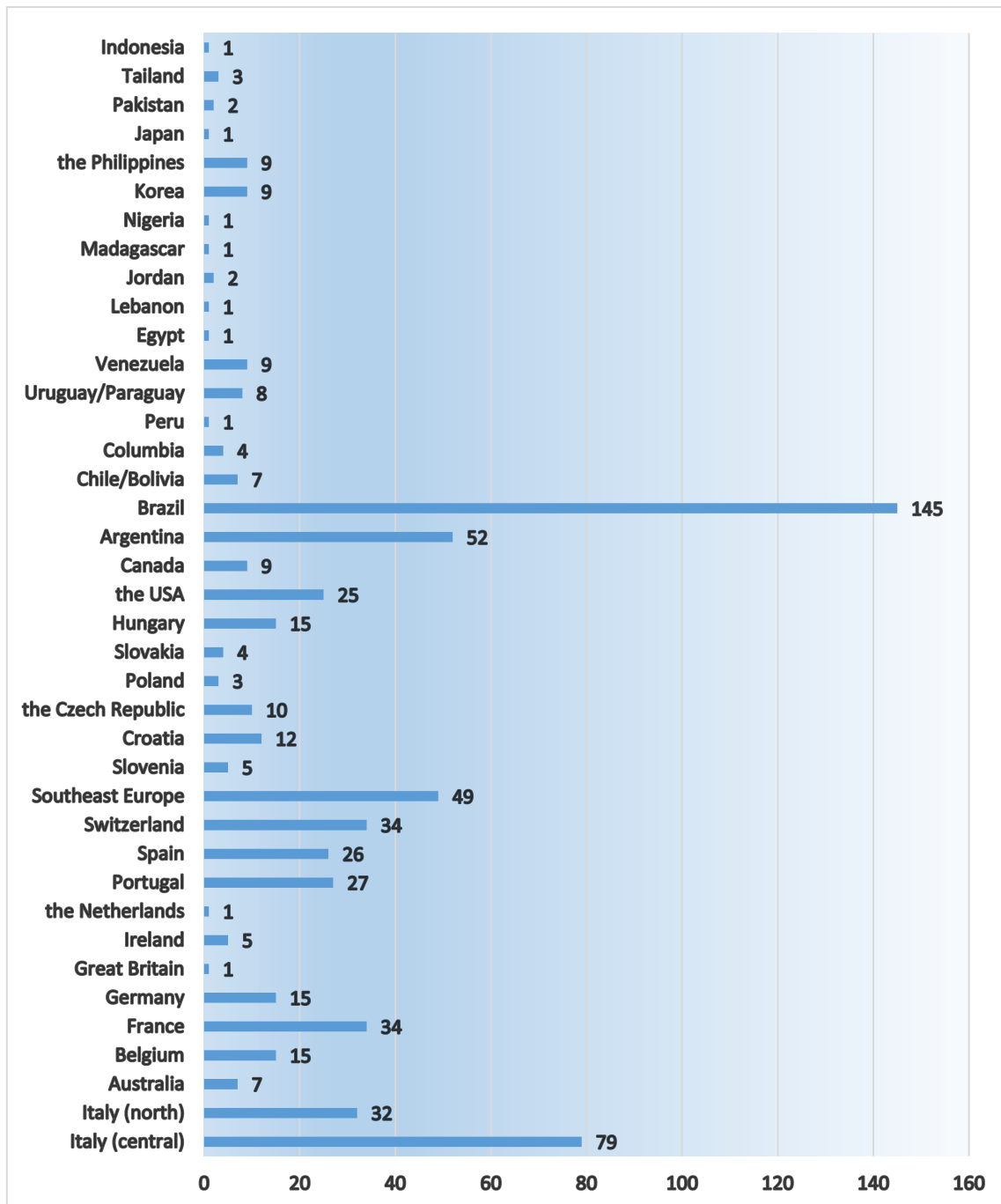
RQ 2. How does the EoC affect the sustainable development of family businesses?

RQs are the framework for analysing the research conducted by the authors Živković (2012) and Vieira & Guevara (2018) and secondary sources of relevant data. RQs are based on four main concepts: human capital, EoC, sustainable development and family businesses.

### ***Results for RQ1. How does the new approach to human capital in family businesses of the EoC affect the sustainable development of the local community?***

In this section, the authors analysed only the selected results of the research conducted in two scientific papers: “Economy of Communion in freedom promoting the culture sustainable local development; culture, management and values“, (Vieira & Guevara, 2018) and in “Utjecaj ekonomije zajedništva na održivost sustava (*The impact of the economy of communion on development sustainability*)” (Živković, 2012). In order to make a comparison with the results of secondary research and to get a better overview of the territorial presence of the companies of the EoC by states, we attach Figure 2 (Živković, 2012) below.

*Figure 2 - The number of companies of the EoC by states*



Source: *Economia di Comunione, Raporto 2009./2010., Segreteria Internazionale Economia di Comunione, Rim, Italiya, page 8.*

Image 2 clearly shows that the largest number of companies in the EoC is in, quite understandably, Brazil, which is where the process of establishing the companies of the EoC began, particularly in the cities of Sao Paulo and Recife. This is precisely why we have chosen a work that deals with the case of companies that participated in the latest research from the surroundings of Sao Paulo and Santa Catarina. "The study involved thirteen organizations that are on the market, and most of them are more than twenty years, and others between five and ten years. (Vieira & Guevara, 2018). According to the data collected, the variable culture is very present in the EoC, and there was a strong correlation between the variables; current culture, desired culture, values of organizational and desired organizational values. However, the correlation of these variables with the variable of sustainable

development is weak. We can conclude that "organizational management must draw inspiration from fraternity at all levels" (Vieira & Guevara, 2018). There is also a need for change in the area of human capital valuation in such a way that "work needs to be understood as an opportunity for professional growth, spiritual and ethical, generating to improve the quality of life and respect in all levels. Work should be considered as the possibility of transforming oneself into shared or shared bread. "(Vieira & Guevara, 2018). Such approach to human capital will also enable a greater impact of EoCs' "internal values" on sustainable development of the local community.

Croatia is represented by twelve companies of the EoC, which is not a bad result when considering the total population. In early 2013 the City of Križevci held an International Symposium on EoC, which proves the importance of Croatian companies of the EoC and their impact on the environment.

In the city of Križevci, Croatia, there is a strong centre of the EoC called "Mariapoli Križevci". A special example of one member of this project is the "Zraka Sunca" kindergarten, which operates in the EoC with positive business effects and influence on the local community. At the core of this business is the culture of giving, taught in this kindergarten since the beginnings of child development. Approach to children, education and the values promoted in children's upbringing and education are in line with the foundations of the EoC; children are taught to accept diversity, the need to give, a deeper understanding of the economy, and a special approach to nature. This approach to the evaluation of human work and every employee, and their approach to work and the dedication of day-to-day work to kindergarten, directly affects the local community by setting new, immaterial values; love, giving, communion as the foundation of sustainable development of the local and wider community.

### ***The results for RQ2. How does the EoC affect the sustainable development of family businesses?***

According to research data (Živković, 2012), the financial stability of the companies of the economy of communion is based on the optimal proportion of cost allocation; 51% for the needs of formation of new people and 49% for new EoC projects, which contributes to the sustainable development of the EoC, while maintaining low administrative costs.

Companies of the EoC, as we have seen from secondary research, conduct their business very responsibly while taking care of all their customers and suppliers and other stakeholders involved in the process of production and distribution, with special attention to nature and environmental protection, while family companies in their basic form constitute a new value in which the family is enriched by business experience, and the company gains the dimension of trust and communion and makes a sustainable system that can exist for centuries if it makes a successful transfer of ownership to the next generation.

By comparing data from secondary sources, we can conclude that the EoC through its model of socially responsible behaviour and concern for the company's financial stability affects family businesses on the road to achieving sustainable development in the Republic of Croatia.

## **Conclusion**

Consumer society is caught up in an uncontrollable tendency to consume material goods as an expression of the dehumanization of human relations and procedures and further alienation of man and society to which he belongs. Based on this problem, the purpose of this paper was to

explore and enable a better understanding of the EoC as a new model of conducting business, human capital valuation and its impact on the sustainable development of family businesses in the Republic of Croatia. The basic goal of this paper was to recognize new values of the post-materials management (e.g., human capital, the culture of giving and spending, gratuity, profit distribution, ecology and responsibility for future generations) and their impact on the sustainable development of family businesses.

For the purpose of achieving the goal of this paper, two fundamental research questions have been designed:

**RQ1.** How does the new approach to human capital in family businesses of the EoC affect the sustainable development of the local community?

**RQ2.** How does the EoC affect the sustainable development of family businesses?

Using secondary sources and the results of the research of the EoC in Croatia (Živković, 2012) and Brazil (Vieira & Guevara, 2018), we found answers to our questions (RQ1 and RQ2);

**Conclusion RQ1.** There needs to come a change in the area of human capital valuation in a way that work enhances the opportunity for professional development, dedication of every person to work, and the possibility for personal spiritual growth and development, and thus sustainable growth and development of the whole society.

**Conclusion RQ2.** The EoC through its model of socially responsible behaviour and concern for the company's financial stability affects family businesses on the road to achieving sustainable development.

The potential constraints of this work arise from the relatively small scope of research subjects and the lack of relevant literature that deals with the notion of the EoC. Research results can be a good incentive for family businesses in the Republic of Croatia for adopting the model of the EoC as a path of sustainable development at a time of general recession and business stagnation. Recommendations for further research are: to involve a large number of business entities from different business sectors and to further explore the impact of free time on sustainable development.

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# OPERATIONS STRATEGY: LITERATURE REVIEW AND CASE STUDY OF IKEA

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## Abstract

*This theoretical paper reviews operations strategy literature with the purpose of identifying the applicability of various concepts in the field of operations strategy. The literature in this field is very rich and consists of competing views from various authors. Therefore, it seems to be necessary to elaborate and encourage continued improvement of the domain operations strategy. This review provides an extensive analysis of different perspectives on operations strategy related to the process of operations strategy, the top-down versus bottom-up approach, resource-based approaches, the role of service in operations strategy, the industry and organizational context, and the role of innovation and technological development. Additionally, this paper provides a case study analyzing the operations strategy of the furniture retailer IKEA based on theoretical concepts.*

**Keywords:** Operations strategy, top-down versus bottom-up approach, resource-based approaches, service operations, innovation and technological development

**JEL classification:** D02, D21, F61, L21, L81

## Introduction

The evolving business environment, constant improvement of information technology, and increased globalization has forced organizations to take a strategic approach to operations management (Hayes, Pisano, Upton and Wheelwright, 2005). Hayes and Pisano (1994) state that a clear strategy can be significant for an organization's success. Organizations need a strategy that defines the type of competitive advantage that an organization is striving for and articulates how to achieve this advantage. According to Stevenson (1999), operation can be seen as the core function of a manufacturing organization as there is no reason to start a business without creating something that can be proposed to the market or customer. Hence, without the operations function there would be no need for other functions like finance, marketing, and human resource. An operations strategy can become a competitive advantage in order to achieve organizational goals (Swamidas and Newell, 1987). Although there is no generally accepted definition of operations strategy, it is required to define competitive objectives and priorities related to operations, which are in line with an organization's overall business strategy. It should further pursue these operational objectives and priorities through consistent patterns of actions (Skinner, 1969). In line with that, Slack and Lewis (2002: 16) define operations strategy as a "pattern of decisions which shape the long-term capabilities of any type of operations and their contribution to overall strategy, through the reconciliation of market requirements with operations resources". This definition emphasizes the importance of integrating the operations strategy in the overall organization strategy. Mintzberg (1978) confirms this importance by arguing that an organization strategy offers options of competitive positions on the market, while the operations strategy offers options of how to

achieve and defend the competitive position. Thus, an essential part of operations strategy is to formulate strategies on how to use resources in order to support the overall strategy of an organization in the long-term (Krajewski, Ritzman and Malhotra, 2013).

## **Fundamental theories**

The objective of this section is to describe the research foundations of operations strategy. The first part provides details about operations strategy as a process. The second part elaborates on the top-down and bottom-up approach in designing an operations strategy. The third part covers resource-based approaches, including the notions of industrial commons, decision-making, and management competence. The fourth part discusses the relevance of service for the operations strategy. The fifth part focuses on the industry and organizational context. The last part concentrates on the literature that deals with the impact of innovation and technological development on operations strategy.

### ***Process of operations strategy***

Wheelwright and Hayes (1985) developed a four-stage model demonstrating the strategic role of operations. Following this model, an organization's operations capabilities are displayed from an internal view, while the strategic evaluation of rivals is displayed from an external view. The authors demonstrate the importance of operations strategy to create a vision, which includes the significance of operations resources for the overall business of an organization. The first stage of their model represents an *internally neutral* orientation toward operations. Organizations seek to minimize any negative impact operations may have and have a reactive approach. In this stage operations strategy is not viewed as being a competitive advantage. The second stage represents an *externally neutral* orientation towards operations. Organizations seek to compete with rivals by performing as well as them and adopting the best practices of the industry. This stage is considered being a beginning of striving for competitive advantage through operations strategy, although it is not yet linked to the business strategy. The third stage represents an *internally supportive* orientation towards operations. Organizations strive being the best in their industry and expect operations to actively support and strengthen the competitive position. At this stage, operations contribution derives from and is dictated by the overall business strategy. Hence, it supports and is in line with the business strategy. The fourth and the most progressive stage represents an *externally supportive* orientation towards operations. Operations strategy is expected to significantly contribute to the organizational competitive success. In this stage, the business strategy rests to a significant degree on operations capabilities, but is not fully dictated by it. At this stage, organizations may perform better in comparison to industry best practices.

Stalk, Evans and Shulman (1992) believe that manufacturing companies are more likely to be successful if they are able to develop operations capabilities that are based on their main business processes, continuously invest in them and manage them centrally. They further suggest that the key in transforming and managing business processes is to link them to the customer needs, because operations capabilities are only strategic when they begin and end with the customer. This approach implies that continuous development and revision of operations capabilities are essential to maintain competitive advantage. The most crucial aspect of capability-based strategies is to have a competitive strategy that is innovative and consists of business processes striving to create value for the customer while maximizing profits at the same time.



Hayes and Pisano (1994) define operations strategy as a market and time-specific decision model in structural and infrastructural sectors that support competitive objectives of the organization. Hence, they argue that operations strategy is more than aligning operations to current competitive objectives. It is also about choosing and producing capabilities, which the operations function of an organization will need in the future. While being long-term oriented, an operations strategy should have a time perspective of two to five years. That is why the authors promote more strategic flexibility in order to face fragmented markets and strong global competition. Since the implementation and development of flexibility in operations strategy involve constant improvements of an organization's technologies, processes, knowledge, capabilities, and skills, strategic flexibility is considered being a dynamic capability that enables an organization to change and adapt over time in order to maintain its long-term competitiveness.

Porter (1996: 68) defines strategy as "the creation of a unique and valuable position, involving a different set of activities". Porter argues that strategy is a combination of goals, which the organization seeks to achieve, and policies applied to achieve the goals. The nature of strategic positioning is to select activities that lead to more profitability because they differ from competitors and thus create a long-term competitive advantage. Organizations can only achieve superiority when they are unique and do things in a way that is difficult to duplicate for their rivals. Since a competitive advantage is not inevitably stable, Porter distinguishes strategy and operational effectiveness. Both elements can create a competitive advantage, but operational effectiveness is relatively easy to copy by competitors. Operational effectiveness means producing, creating, delivering, and selling a service or product better than rivals. However, engaging in these activities alone is not enough, organizations have to coordinate their activities and achieve a *fit* in order to produce superior value. This will also make it more difficult for rivals, as they not only have to try to imitate practices and capabilities, but also how they are coordinated. In conclusion, the key principles of Porter's strategic positioning include, creating a valuable and unique position, making trade-offs in competing, and creating a *fit* among the company's activities.

Kaplan and Norton (2008) argue that strategy management is a closed-loop process in which each part of the system influences another part. The closed-loop management system includes five stages: (1) strategy development; (2) strategy translation; (3) operations planning; (4) monitoring and learning; (5) strategy testing and adaption. The authors emphasize the importance of understanding the interrelation between operations and strategy within the closed-loop management system. The system starts with the process of developing a strategy, which includes to clarify the organization's mission, vision, and values. In addition, the existing and anticipated situation has to be analyzed, which includes evaluating the company and competitors, as well as social, economic, and market conditions. Developing a strategy is a three-step approach, which includes to determine where you are today, where you would like to be in the future, and how you are going to get there. The closed-loop management system starts with a top-down approach but also includes a bottom-up approach, since the effect of the strategy on operations will be monitored and tested in order to adapt and improve the strategy. The authors note that a successful execution of strategy depends on two basic rules, including understanding the management cycle that links strategy to operations, and being aware of which tools should be applied at each stage of the management cycle.

### ***Top-down versus bottom-up approach***

Since operational activities of an organization should support organizational objectives, developing an operations strategy has usually been designed as a top-down process within the guidelines of the overall business strategy (Kim, Sting and Loch, 2014). This top-down approach is generally acknowledged and dominates empirical research on the process of developing an operations strategy (Ward, Bicklord and Leong, 1996; Schroeder, Anderson and Cleveland, 1986). However, besides the top-down approach an alternative bottom-up approach is existing, which emerges in the absence of an overall or strategic business unit strategy. The bottom-up approach is based on the assumption that developing an operations strategy is a very complex process and not reflected accurately by the top-down approach (Barnes, 2002; Slack and Lewis, 2011).

The top-down approach can be defined as a planned alignment of actions and intentions from top management with the objective to achieve specific goals and outcomes (Kim and Arnold, 1996). Top management agrees on long-term goals of the organization and determines a plan how to achieve these goals prior to any actions. The plan consists of as many details as possible in order to convert it into actions (Burgelman, 1983; Mintzberg and Waters, 1985). Although some strategies might result in the desired outcome, there are usually differences existing between the planned strategy and the actual outcome. Based on the outcome, top management then adjusts or reinforces the strategy in order to meet the goals (Kim and Arnold, 1996).

The basis of the bottom-up approach are patterns of unplanned actions resulting in realized outcomes that were originally not intended by top management. Although top management may offer some broad direction, middle management can initiate strategic actions that serve their own objectives while supporting the direction of top management at the same time (Burgelman, 1983; Mintzberg and Waters, 1985). According to Slack and Lewis (2011: 13), the essence of the bottom-up approach to operations strategy development is that it shapes “objectives and action, at least partly by the knowledge it gains from its day-to-day activities”.

Besides the top-down and the bottom-up approach, Kim et al. (2014) postulate an iterative approach to operations strategy development. This approach is an integration of organizational objectives, competitive priorities, and a plan of actions that partly emerged from bottom-up learnings and partly induced by top-down planning. This approach has the advantage of guidelines from top management while encouraging input and creativity from middle management and individuals throughout the whole organization. Thus, the top-down and bottom-up approach serves complementary in the development of an organization’s operations strategy.

### ***Resource-based approaches***

Collis and Montgomery (1995) provide a framework that can be used by organizations to differentiate themselves from its rivals, which is based on the Resource Based View (RBV) concept by Edith Penrose in the article *The theory of the growth of the firm* published in 1959. Collis and Montgomery claim that an organization’s resources cannot be evaluated in isolation since their common value depends on the interaction with different market forces. In consequence, resources that are valuable in a specific industry or at a certain time do not necessarily have the same value in another industry or context. Overall, the framework suggests a combination of the analysis of phenomena internal to the organization and the analysis of the competitive environment and the industry of the organization. Particularly, it is

suggested that organizations should aim to define their valuable resources, which facilitate to perform better compared to its rivals.

Pisano and Shih (2009; 2012) elaborate on strategy implications of country competitiveness in the case of the United States. The authors address the decision of manufactures to outsource research, development and manufacturing activities to specialists abroad in response to reduce low-value-added activities and the high demand to focus on core competencies. As time went by, short-term outcomes were positive and suppliers were able to take over more complex tasks. In consequence, manufactures decided to go further in continuing the outsourcing strategy. However, organizations did not realize that competitive competencies got lost in line with the outsourcing process and were not aware of the consequences. Within the manufacturing sector outsourcing has led to the decline of US made high-tech products, knowledge, services and highly skilled workforce. Pisano and Shih stress the notion of *industrial commons*, which refers to the complex interrelation of research and development, manufacturing and engineering capabilities to sustain innovation in an organization. The availability of local suppliers and technical skills facilitates the development of innovative manufacturing solutions. However, outsourcing economic activities is not easily to reverse and remains an important challenge for many manufactures.

Porter and Rivkin (2012) take up the issues elaborated by Pisano and Shih and confirm the difficulties related to the short-term focus of business leaders in today's decision-making. They point out that time horizons have shortened and leaders do not enough focus on long-term strategies and decisions. For instance, executive compensation practices rewarding quick solutions and the focus on short-term results of organizations can entice decision-makers to locate business activities to other locations that are more beneficial at this specific time, instead of making investments that are more sustained and location-specific to foster long-term productivity of an organization.

Sadun, Bloom and van Reenen (2017) argue strong management competence being the basis for developing a corporate strategy, and creating and guiding organizational capabilities. According to the authors management practices are often underrated as a source to generate synergies within the organization. However, organizations with strong managerial practices related to performance targets, effective monitoring, and incentives perform much better on metrics related to productivity, growth, and profitability. These findings persist over time suggesting management practices being a source of competitive advantage, which has to be equally weighted with the concept of strategy.

### ***The role of service in operations strategy***

Service-profit chain (SPC) is an important framework to explain the relationship between service operation and organizational profit. The original framework was introduced by Heskett, Jones, Loveman, Earl Sasser and Schlesinger (1994) who assumed that profit is driven by perceptions of service quality, which in turn are driven by employee efforts and operational inputs. Hence, the framework links service operations to customer perception and in turn links customer perception to organizational profitability. Overall, the aim is to provide an integrated framework to understand how operational investments in service quality are connected to customer perception and behavior, and how to turn in into profit. Operational investments in service quality can be related to technology, delivery, more employees, more service points and many more.

According to Wise and Baumgartner (1999), the process of producing value by adding services to products is named *servitization*. It is an element of the business strategy of manufacturing firms with the purpose to achieve market differentiation. Thus, it is crucial to understand the interrelation between *servitization* and operations strategic decisions related to the core business products. Integrated product-service propositions are distinctive, long-lived and easier to maintain against competition in low-cost economies. The most important financial drivers include stability of income and higher profit margin. Further, some organizations have recognized *servitization* as being an effective way to enter new business areas.

Lafley and Martin (2017) point out new important aspects in relation to customer behavior that have to be considered as part of an organizations operations strategy and enrich the concepts discussed by Heskett, Wise and Baumgartner. Especially for retailers whose business relies on strong customer loyalty to gain competitive advantages, it is necessary to understand the link between customer loyalty and organizational profitability. The authors describe factors as part of a profit service chain to establish clear relationships between customer loyalty, employee loyalty and satisfaction, productivity and profitability. They suggest to consider customer psychology strategically by arguing that customers are not always acting rational but sometimes just appreciate automaticity. Thus, designing a process for the customers which makes it easy to buy a product can already help to create the desired sustained competitive advantage. The authors further propose four basic rules to provide organizations a competitive edge, including (1) become popular early, (2) design for habit, (3) innovate inside the brand, and (4) keep communication simple.

### ***Industry and organizational context***

Industries are usually characterized by dominating organizations that focus on improving their products and services, and entering organizations striving to develop new products and technologies in market segments. In this context, Christensen, Raynor and McDonald (2015) emphasize the potential of disruptive innovations for entrants or smaller organizations to successfully challenge the business of dominating organizations. Disruptive innovation stimulates the creation of new markets and business niches and introduces new product values overriding the current market supply. In contrast, sustaining innovations do not really impact the current market, may provide improvements to the current product, but not necessarily create new ones. Thus, new market players are often the main initiators of disruptive innovations and target market niches, while established organizations tend to focus on increasing sales and services to already existing customers.

Fisher, Gaur and Kleinberger (2017) emphasize the importance to consider the life cycle of an organizations and suggest that different life cycles require different strategies. For instance, retailers can grow quickly in their early stages by opening new stores, but eventually might run out of real estate or face other obstacles. In this case the discipline is needed to focus on driving more sales through their existing stores. Increasing sales can also be made through changes in the way they run existing stores by applying analytics and the use of technology. The management is responsible to detect the point when the high-growth strategy has to be replaced by a strategy that suits to a low-growth situation. The authors recommend retailers in such a situation to break their drive for growth and adjust their strategy to the changing reality. This maxim does also apply to organizations outside the retail industry and even to whole countries.

### ***The role of innovation and technological development***

Pisano (2015) links strategy to innovation and argues that a major reason for innovations to fail is the absence of a clear innovation strategy, which is effective when it is aligned to the overall organizational strategy. Pisano claims that a successful innovation strategy is based on strategic decisions that focus on two dimensions, including technical innovation and business model innovation. Based on these dimensions, Pisano introduced *The Innovation Landscape Map*, which offers four innovation typologies. *Routine* labels innovations that fit the existing business model and technological competencies. *Disruptive* labels innovations that are mainly based on a new business model, but not necessarily new technology. *Radical* labels innovations that are primarily driven by technological change. *Architectural* labels an innovation strategy that pursues technological and business model innovations simultaneously. Pisano concludes that it is important to ensure a proper alignment of the implementation of new operations technologies with the innovation strategy of an organization. In order to build and enhance the business value for an organization, this alignment has to be consistent and has priority in all strategic decisions.

In recent years, the global economy and market requirements have changed rapidly along with increasing demand for highly complex and latest technological developments, leading to the development of more complex and smarter products. Porter and Heppelmann (2015) highlight that related to the adoption and development of new technologies, value creation, growth, competitiveness and sustainability play an increasing role. The production of connected and smart products are bringing about great changes in the product development processes of the whole organization. The authors underline that organizations are facing many challenges in order to remain competitive in a quickly changing environment. These changes include constantly introducing new products, technologies and processes in a way that is more effective compared to their competitors. The authors conclude that the new industrial paradigm along with the introduction of digital and smart products has changed the way organizations compete and provide services.

Indeed, it is likely that technological developments will have a significant impact on provided services. According to Sawhney (2016), knowledge-based business services have started to experiment with technology-enhanced routinization in order to reduce inconsistency in decision-making and increase productivity. Thus, technological developments have the potential to create the opportunity for scalability and mass-production of knowledge-based services.

Porter and Heppelmann (2017) describe in their article how the introduction of Internet of Things (IOT) will change the way smart products are developed. In line with that, the authors argue that the business itself and organizational structures will be changing due to the increasingly importance of data that is gathered from smart products. The authors elaborate on why organizations need an Augmented Reality (AR) strategy and define AR as a combination of Real Reality (RR) and computer graphics involving computer generated elements, which appear as layers over the real environment. As well-known examples of AR they mention the head-up display used in vehicles and mobile apps for product visualization in real environment. AR is assumed to have the potential to impact the way humans make decisions, learn, and interact with the real world. Hence, AR can help to foster more effectively unique human skills that machines are still struggling to get done. Concerning complex manufacturing processes AR can have several advantages, including the reduction of errors, enhancement of efficiency, and improvement of productivity. Porter and Heppelmann (2015) already stressed the impact of technological development on how organizations compete. The introduction of AR will reinforce this trend along with its ability being the human interface

with IOT technologies. The authors conclude that AR will increasingly become substantial to every organization's strategy.

## **Case study: IKEA**

The purpose of this case study is to present a comprehensive analysis of the operations strategy of the company IKEA. The case study focuses on compiling information of various concepts related to operations strategy by prominent business academics in order to promote a greater understanding of operations strategy. Thus, the case study adds value to the previous literature review and illustrates how existing operations strategy concepts can be utilized in practice and support the process of developing an operations strategy.

Prominent business academics such as Michael Porter, Philip Kotler and Gary Hamel studied the strategy of IKEA, which is seen as the reason for IKEA to emerge to a global player in one of the fragmented industries in the world. Hamel (1996) counts IKEA to the category of companies that are rule breakers, intent on overturning the industrial order, and can be classified as industry revolutionaries. He continues to argue that not just deregulation, technology upheaval, globalization, and social change are the driving forces for change, but also actions of companies. Likewise, a company has either the option to adapt its strategy to future revolutionary challengers or revolutionize its own strategy by being a pioneer. Hamel (1996: 70) concludes that "strategy is revolution; everything else is tactics". In line with that, Teece et al. (1997) stress the importance for an organization of having dynamic capabilities that help to govern how to build, integrate and reconfigure internal and external skills to address changing business environments. These capabilities can be classified as managerial or organizational competences to address business opportunities, by understanding the organizational environment developing an innovative strategy.

According to Porter (1996), the strategic positioning of IKEA is targeted at customers who are young and want to buy stylish furniture for an affordable price. A customized set of activities gives this immanent marketing concept a strategic approach, which differ from its competitors. IKEA's strategic approach does indeed reflect Porter's notion that "the essence of strategy is choosing to perform activities differently than rivals do" (1996: 64). There are two basic aspects distinguishing IKEA's strategy from its rivals, including the low-cost position and the extra services provided to the customers. The low-cost position rests on its low cost modular and the *customers do it themselves* principle. In line with this principle, IKEA applies a self-service model. An essential part of it is that every product is displayed in showrooms, helping the customer in the decision-making process. In the adjoining warehouse sections, customers are expected to do their own pickup and delivery. Extra services include in-store child care, restaurants and snack bar, and extended opening hours. Altogether, IKEA's strategic position and customer services are aligned to its customers, who are young, likely to have children, do not have much time and are not wealthy. Hence, IKEA is a focused competitor on the market, targeting the special needs of a subset of customers and designs its activities accordingly.

Kotler (1999) examines the IKEA case in a different way and sees the reason of its success story as a result of identifying market opportunities and developing targeted value offerings. Ingvar Kamprad, the founder of IKEA, observed after the Second World War that many young families were struggling to buy furniture because of high prices, due to high quality and retailers who did not actively compete with each other. Kamprad identified this market situation as an opportunity and found a way to offer good-quality furniture at substantially lower prices. His cost-reducing strategy consisted of a combination of the following five

sources of saving: (1) buy large volumes of furniture; (2) furniture is designed and shipped in knockdown form; (3) customers select assembled furniture in showrooms, pick up the furniture in the warehouse and drive them home; (4) customers assemble the furniture by themselves; (5) stores work on low markup and high volume. In that way, IKEA was able to undercut its competitors by 20 percent and still make a large profit.

In accordance with the marketing perspective by Kotler (1999), Dawar (2013: 102) places the customer and the market at the core of the business and points out that “the strategic question that drives business today is not *What else can we make?* but *What else can we do for our customers?*”. In order to gain competitive advantage, many organizations create an innovative image that represents a certain kind of quality the customer associates with its products or services. Another way to gain competitive advantage through innovation is to understand the needs of the customers and trying to solve their problems. These problems are often related to risks and costs over the entire cycle of the product. Likewise, a company like IKEA innovated in several ways and gained bigger market share, by understanding their customers’ needs and solving potential problems.

An analysis of Porter’s five competitive forces that shape strategy provides further insight into the development of IKEA’s strategy. Porter (2008) proposes that in any industry, the rules of competition are coined by five forces, including “the threat of new entrants, the threat of substitute’s products or services, the bargaining power of buyers, the bargaining power of suppliers, and the rivalry among the existing competitors”. In case of IKEA, the threat of new entrants is little, as the market is saturated with the existing players, financial investments are high, and the required expertise is difficult to acquire. As long as IKEA does not change the target market, there is little threat of substitutes as there are not many or no alternatives to products or services available at IKEA. Buyers have enough bargaining power in this industry as there is enough competition and IKEA built up its strategy on competitive prices. Hence, customers can switch to another retailer, though loyalty has to be considered as a factor preventing customers to switch. As IKEA fosters and maintains long-term partnerships with suppliers, which are beneficial for both sides, the bargaining power of suppliers is very low. Finally, it has to be constituted that the rivalry among the existing competitors in the discount furniture industry is very high. However, through its clear and differentiated position IKEA has managed to become a global market leader.

## Conclusion

This paper reviews the essential operations strategy literature with the purpose to identify the applicability of various operations strategy concepts in the field of operations strategy. Competing perspectives on operations strategy from various authors are presented. Researchers focusing on the process of operations strategy are mostly concerned with the best way to implement a chosen strategy and address the importance to align operation and business strategies. In regards to the top-down or bottom-up approach it seems to be unreasonable to assume that one of them is always preferable, since the best approach largely depends on specific organizational contexts and thus very from company to company. Resource-based approaches emphasize that organizations have a bunch of resources that are valuable, inimitable, rare, and non-replicable. The challenge for organizations is to manage these resources into long-term competitive advantages. Another perspective underlines the importance that even manufacturing organizations may realign their operations strategy and consider services they are providing to their customers besides physical products. An organizations operations strategy also depends on the life cycle of the organization. It is

suggested that different stages of the life cycle require different strategies. Finally, the role of innovation and technological development place continual demands on operations strategy. It is argued that strategy should be linked to innovation and a major reason for innovations to fail is the absence of an innovation strategy that is aligned to the overall organizational strategy. The increasing demand for highly complex and latest technological developments has changed the way organizations compete and provide services. The case study on the operations strategy of IKEA promotes a greater understanding of operations strategy and serves as an interesting example on how existing operations strategy concepts can be utilized in practice and support the process of developing an operations strategy.

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# EVALUATING CRISIS MANAGEMENT PLANS: EMPIRICAL STUDY OF CROATIAN MEDIUM AND LARGE SIZED FIRMS

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## Abstract

*Effective crisis management begins far before the crisis strikes, whereas one of the main crisis preparedness instruments are adequate crisis plans. Not only do the firms need to prepare strategic plans, but it is also necessary to plan for the unexpected situations. Crisis management plans serve as a course of action; which managers can adhere to in crisis situations. It is expected that larger firms, due to greater volume of activities and employees are often exposed to various risks, and frequently possess larger organizational knowledge and resources, and will more likely have in place crisis management plans. Previous research studies had found that larger organizations are more crisis prepared, and accordingly more often have implemented crisis management plans as an instrument of crisis management. Therefore, this exploratory research aims to shed light on the inadequately explored state of crisis management plans in Croatian based firms, where primary goal is to empirically evaluate whether there are statistically significant differences present between the medium and large sized firms and existence of crisis management plans use and perception. Results indicate that there are no statistically significant differences present between existence of adequate crisis plans, as well as available budgets for crisis situations, and level of present organizational culture which encourages crisis management. Moreover, this paper indicates benefits, recommendations and further activities which could foster implementation of crisis management plans and measures of additional development. In essence, a well prepared and updated crisis management plan, along with well-trained crisis management team forms basis for the implementation of effective crisis management.*

**Keywords:** crisis plans, crisis management, crisis planning, crisis preparedness, crisis response

**JEL classification:** M21 Business Economics, M20 General

## Introduction

Believing that firms are safe from crises is a path towards an inadequate response in the awe of one. Each firm therefore requires strategies for predicting and solving problems. Accordingly, crisis management activities begin far ahead than the crisis strikes, whereas one of the main crisis preparedness instruments are adequate crisis preparedness plans. Therefore, crisis preparedness, among other definition, can be seen as widespread organizational awareness and familiarization with crisis plans and crisis training (Koronis and Ponis, 2018: 36).

Crisis management plans enable and contribute to the efficient management of crisis and minimization of damage (Spillan, Parnell and Mayolo, 2011: 64). Subsequently, the capacity of organization for crisis aversion depends on the level of organizational crisis preparedness, whereas the level of crisis uncertainty and vulnerability of the organization determine the

level of crisis management plan details and span of responses which need to be prepared (Parnell, Koseoglu and Spillan, 2010: 111). Hence, it is necessary to previously assess the organizational crisis preparedness level, i.e. determine and evaluate the crisis plans, because only the sound and previously tested crisis management plans can protect the organization in the event of real crisis (Lockwood, 2005: 2).

Crisis management plans reduce the uncertainty by facilitating support to firms in crisis situations, and providing guidelines to management and employees on how to behave in certain crisis situations (Valackie, 2010: 104). Classification of crises sources allows managers to create a framework within which they evaluate vulnerabilities and subsequently prepare plans in advance for crisis circumstances (Spillan, Parnell and Mayolo 2011: 62).

Crisis management plan consists of planning activities for the cases of certain crisis, with assignment of roles and employee's responsibilities. The importance of crisis management plans is in a fact that firms which do not have crisis management plans are according to previously conducted research longer in crisis, which makes crisis management planning and crisis management plans an important measure of crisis preparedness (Jaques, 2007: 154). In essence, firms are responsible for planning and protection from crises in every scenario (Spillan and Hough, 2003: 398). Crisis plans are needed in every firm, and especially in those firms having complex systems and advanced technologies, with high level of risk (Heineman, 2011: 1-3).

Not only do the firms need to prepare strategic plans, but it is also necessary to plan for the unexpected situations. Even though it is not possible to predict all scenarios, the existence of crisis management plan is of crucial importance for the organization from the anticipative crisis management aspect, by improving decision making capabilities in times of crisis, even if the written plan of crisis response can significantly differentiate from the crisis situation and crisis defense scenario (Larson and Fowler, 2009: 132-136). Crisis management plans serve as a course of action; which managers can adhere to in crisis situations. Effective crisis management plans improve crisis response, reduce the needed reaction time and provide guidelines in crisis.

According to the conducted research in U.S., crisis management plans are present in 79% of firms, where managers have stated that they are planning for crisis, which implies that they are aware of negative crisis effects and apply crisis planning activities as an answer to challenges (Lee, Woeste and Heath, 2007: 335-336). Furthermore, research by Johansen, Aggerholm and Frandsen (2012: 270), as well as Rousaki and Alcott (2007: 35) had proved that there is a strong relation between organizational size and crisis management, whereas larger organizations are more crisis prepared, and accordingly more often have implemented crisis management plans as an instruments of crisis management. Another study has found that crisis planning is inadequately in focus and not developed in small firms, in contrast to large firms which often have developed crisis management plans (Spillan and Hough, 2003: 398). Large number of medium and small firms do not plan for crisis, because their management is convinced that crisis situations cannot happen to their firm (Spillan, Parnell and Mayolo, 2011: 75), which constitutes a form of denial of business reality. As a reason for not implementing crisis plans in small firms, managers often cite inadequate resources due and lack of time for planning for the future, which accordingly leads to improper comprehension of business environment and inadequate long term strategic orientation (Spillan and Hough, 2003: 399). Also, small firms do not have formal crisis management and accordingly do not have crisis planning in large due to the financial costs, which managers of

small firms are often not willing to spend on crisis management formalization and education of employees (Herbane, 2010: 45-49).

In addition, in small firms, risk management systems are not developed and crisis management is seen as a low priority for management and often inadequately funded in small firms, as opposed to large ones (Lalonde and Boiral, 2012: 287-288), hence crisis management departments are more often present in multidivisional structures due to greater need for alignment (Rousaki and Alcott, 2007: 31).

More so, according to research conducted by FEMA (2011:14), reasons why small firms do not undertake crisis preparedness measures in 25% of cases are due to managers' opinion that they are rather willing to face the crisis, than to plan for and prepare for one. Also, according to the same research, 17% of small firms believe that the costs for preparedness and prevention are too high, while at the third place of unpreparedness with 11%, were the answers that managers did not know what to do in order to adequately prepare for and protect from crises. Accordingly, small sized firms were not included in the research sample.

Therefore, this exploratory research aims to shed light on the inadequately explored state of crisis management plans in Croatian based firms, where primary goal is to empirically evaluate whether there are statistically significant differences present between the medium and large sized firms and existence of crisis management plans (planning activities) use and perception. It is expected that larger firms, due to greater volume of activities and employees are often exposed to various risks, and frequently possess larger organizational knowledge and resources, and will more likely have in place crisis management plans. Also, this paper indicates benefits, recommendations and further activities which could foster implementation of crisis management plans and measures of additional development.

The article is organized as follows: after introduction, literature review discusses the importance, benefits and potential challenges in using crisis plans and effective crisis planning. Afterwards, methodology of conducted empirical research is presented, followed by research results, analysis and findings. Lastly, concluding section of the paper provides insights into key findings and discussion of important implications and recommendations.

## **Literature review**

Crisis management plan is often a set of smaller plans which for instance include plans of crisis communication with an aim of preserving the firm's reputation (that is PR preparedness activities, media presentations, reporting for stakeholders) (Tafuya, 2013: 148-150). Furthermore, according to Lockwood (2005: 2), successful crisis plan contains organizational programs such as: risk management, disaster recovery plan, crisis communication and business continuity plan, emergency recovery plan.

Crisis planning has vast positive impact on dealing with crisis, where together with training for crisis and simulations, plans help prepare employees for crisis scenarios and increase their motivation (Enander, Hede and Lajksjo, 2015: 5-7). Constant updates are necessary, so that the firm would not fall into false sense of security (Valackie, 2010: 103). Updating crisis management plans and testing through simulations presents an important crisis management activity (FEMA, 2011: 11). For instance, crisis communication planning should nowadays include strategies, policies and guidelines for various social media use and promptly responding in times of crises, often characterized by rumors which need to be properly

addressed (Eriksson, 2018: 353-354). Risk management is also necessary to include in crisis management plans. Managing business continuity should among other activities include business recovery plans (Light, 2008: 20), whereas developing business continuity plans requires time and resources, and should encourage culture of crisis detection and risk reporting (PWC, 2009: 5-9).

Furthermore, integration of crisis management with strategic management is needed for effective crisis planning (Elsubbaugh, Fildes and Rose, 2004: 116-117; Shaw, 2004: 20), where crisis management planning needs to be a part of strategic management process (Crandall, Parnell and Spillan, 2010: 6). The advantages of effective crisis planning are manifested before, during and after the crisis, which demands analytical, strategic approach. Accordingly, crisis management plan is conceived as a response to current and future challenges which might occur. The following steps could be made when constructing a crisis management plan (Tafoya, 2013: 142):

- The plan consists of stating the possible scenarios which are based on the gathered insights into business and available findings from the environment, risk identification and its possibility of occurrence.
- The next step contains describing the activities in case that certain crisis happens with respect to containment strategies, recovering from the consequences, ensuring good relations with stakeholders, conducting activities for recovering organizational strength, brand position and firm's reputation.
- Finally, methodologies and data are listed for the evaluation of influence of certain crisis on the entire firm's business.

Additionally, it is possible to include various stakeholders in crisis plans and simulation preparations, where the advantages are better information, better cooperation, easier access to resources and faster recovery from crisis situation (Pearson, 2002).

Initial crisis management response plan, among other measures consists of important contact numbers, reminders what needs to be done in case of certain crisis and directions on how crisis response should be conducted, whereas crisis management plan does not only present certain steps which need to be done, but a framework for help in crisis (Selart and Johansen, 2013: 100). Just how important crisis management plans are, is evident from the US government's promotion of idea according to which every firm should have a crisis plan for emergency situations (Shaw, 2004: 25). The instruments needed in crisis management planning include: crisis assessment, crisis training, certifications, testing of plans (Sapriel, 2003: 354).

Large number of managers agree with claim that crisis management plans are important for the firm (FEMA, 2011: 2). Nevertheless, according to some authors, merely the existence of crisis management plans and activities of crisis management teams are not enough for providing effective crisis response (Sapriel, 2010: 30). In certain number of crisis plans there are shortcomings, since crisis plans are positioned and placed too optimistically and do not take into account real problems, but use crisis management plans as an instrument of fulfilling the form and creating the image of complete organizational crisis preparedness (Sellnow and Seeger, 2013: 10).

In general, in crisis management it is not sufficient to rely only on crisis management plan and its effectiveness (Rousaki and Alcott, 2007: 31). However, crisis management plan serves as a good starting base in times of crisis. Hence, even though majority of organizations have detailed crisis plans, only a very small number of those plans are applicable in times of crisis

(Valackie, 2010: 104). For instance, large number of crisis management plans were never tested prior to crisis escalation which poses a certain problem to organizational crisis preparedness (Sapriel, 2003: 354). The stated concept of inadequacy of crisis management plans for crisis situations is also advocated by authors Gilpin and Murphy (2008: 5-30), according to whom the effective crisis management is not considered a result of planning, but a set of activities which can influence the environment to which a firm can adapt.

In preparation and implementation of plans, the problems concerned with outdated plans occur, difficulties with inadequate format of crisis management plans, as well as inadequate knowledge of crisis management plans within the crisis management team members (Robert and Lajtha, 2002: 184). Also, crisis plans should prepare firms for and include various types of crises, not merely the expected ones (Avery, Graham and Park, 2016: 79).

Crisis plans help firms face the unexpected situations, reduce the response time in crisis and provide initial guidelines for acting in crisis. Even though it is not always possible to prepare crisis plans and adequate responses for every crisis, crisis planning activities help develop flexible, crisis preparedness oriented organizational structure (Snyder, et al., 2006: 380).

## **Methodology**

In order to test the assumptions, a cross sectional, multi industry study, with research survey method (Likert type scale questions) approach was used. Target respondents were senior managers, most knowledgeable of business strategy and crisis management. Survey sample comprised of a  $n=1040$  randomly generated from a total population of  $N=1651$  firms doing business in Croatia (medium sized ( $N_1=1292$ ) and large sized ( $N_2=359$ ) firms) listed in Croatian Financial Agency (FINA) national register of business entities ([www.fina.hr](http://www.fina.hr)) for the year 2012. The criteria for defining large and medium sized firms was based upon Croatian Accounting law (Official gazette, 2007), which defined medium sized firms (total assets greater than 32,5 million and less than 130 million kuna's, revenues greater 65 million kuna's and less than 260 million kuna's, average number of employees greater than 50 and less than 250) and large sized firms (total assets greater than 130 million kuna's; revenues greater than 260 million kuna's, average number of employees greater than 250). Applying the proportional stratification method, final sample comprised of two stratum  $n_1=811$  medium sized firms, and  $n_2=229$  large sized firms. From September to December 2013, a total of 114 online completed questionnaires were obtained (response rate of 11%). The same sample framework was also used in a published article "The impact of organizational crisis preparedness on firm business performance" (Labaš, 2017).

Survey questions were evaluated based on a work and research survey constructed by Rousaki and Alcott (2007) called "Modified crisis readiness scale". The same measurement instrument was used in a research conducted by Parnell, Koseoglu and Spillan (2010). The initially constructed scale by Rousaki and Alcott (2007) consisted of three dimensions, from which for the purpose of this research study, selected parts of a construct related to crisis management planning, also called "Organization's Internal Functionality (OIF)", were used. The scale was based on a work by Reilly (1987) and an insight into previous literature which consisted of: fast response to a crisis, organizational awareness, availability of crisis management resources and appropriate strategic planning. Accordingly, the OIF construct evaluates the organizational capabilities to provide needed resources, access to information, enable strategic crisis planning and provide timely and adequate crisis response all with an aim of improving resilience and crisis preparedness (Rousaki and Alcott, 2007: 28-29; Parnell, Koseoglu and

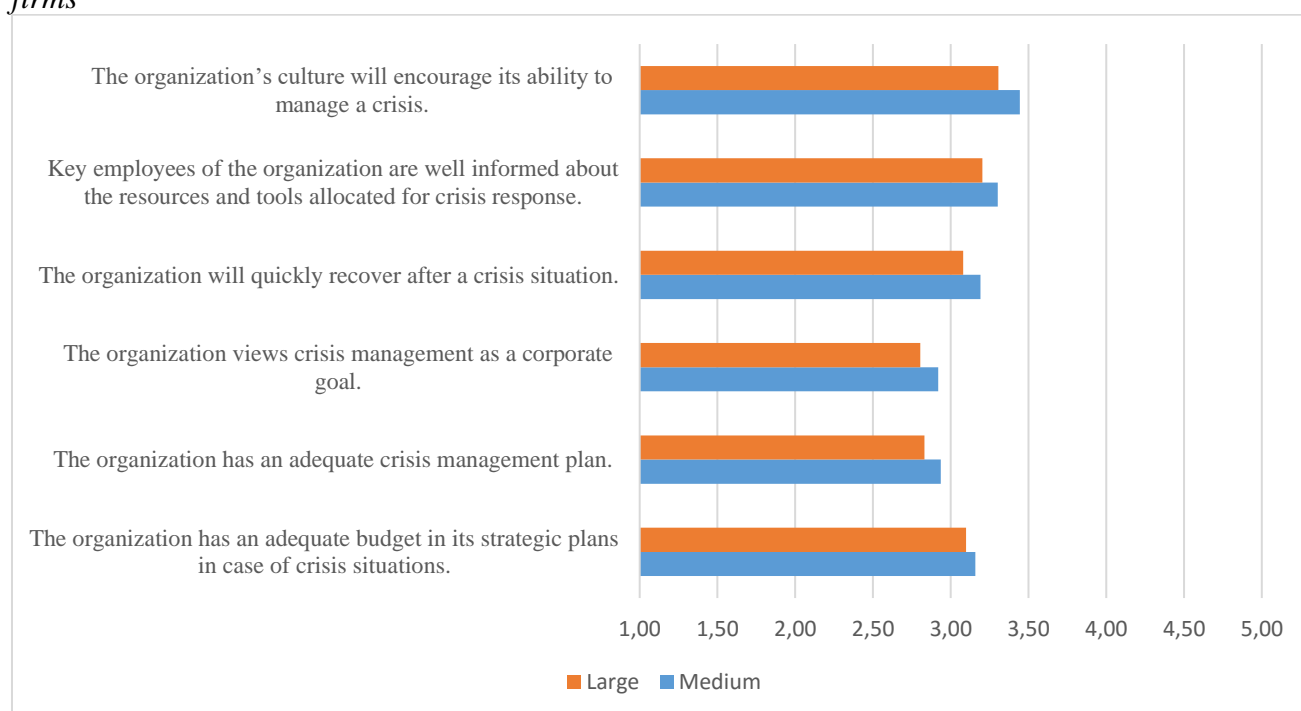
Spillan, 2010: 111-112). Questions/ statements included in this evaluation using a five point Likert scale were:

1. The organization has an adequate budget in its strategic plans in case of crisis situations.
2. The organization has an adequate crisis management plan.
3. The organization views crisis management as a corporate goal.
4. The organization will quickly recover after a crisis situation.
5. Key employees of the organization are well informed about the resources and tools allocated for crisis response.
6. The organization's culture will encourage its ability to manage a crisis.

## Results and analysis

The following graph presents statistical results for mean response values, for researched variables/questions when comparing medium to large size firms responses.

*Graph 1: Crisis planning and resilience activities in medium and large sized Croatian based firms*



*Source: author's research*

One of the main aims of this paper was to empirically determine if larger sized firms, as compared to medium sized Croatian based firms have higher rated level of existing crisis plans. Accompanying questions analyzed organizations ability to quickly recover after crisis situation, as well as crisis planning activities (adequate budget in strategic plans in case of crisis situations; well informed key employees about the resources and tools allocated for crisis response) and awareness (crisis management as a corporate goal; encouraging organizations culture towards crisis management). In order to test the stated assumptions for statistically significant differences between the two stratum (medium and large), the non-parametric rank order Mann-Whitney U Test of two independent groups for equality of distributions was applied. Test assumption was as follows:

The distribution of scores for medium and large sized firms are not equal.

*Table 1: Mann-Whitney U Test Statistics*

	VAR 1 The organization has an adequate budget in its strategic plans in case of crisis situations.	VAR 2 The organization has an adequate crisis management plan.	VAR 3 The organization views crisis management as a corporate goal.	VAR 4 The organization will quickly recover after a crisis situation.	VAR 5 Key employees of the organization are well informed about the resources and tools allocated for crisis response.	VAR 6 The organization's culture will encourage its ability to manage a crisis.
Mann-Whitney U	1543,000	1349,500	1458,000	1517,000	1369,500	1397,000
Wilcoxon W	2624,000	3695,500	2539,000	3863,000	2450,500	2478,000
Z	-,126	-1,286	-,646	-,292	-1,176	-1,017
Asymp. Sig. (2-tailed)	,900	,198	,519	,771	,239	,309

*Grouping Variable: Size*

*Source: author's research*

Mann-Whitney U Test statistics indicate that there are no statistically significant differences in ranked distributions between groups with respect to firms size (medium and large) regarding variable “VAR 1. The organization has an adequate budget in its strategic plans in case of crisis situations” (Mann-Whitney U=1543,  $p=0,900$ ,  $\text{sig}\leq 0,05$ , 2-tailed). The same outcome of statistical testing is observed for variable “VAR 2- The organization has an adequate crisis management plan” (Mann-Whitney U=1349,5,  $p=0,198$ ,  $\text{sig}\leq 0,05$ , 2-tailed). Exact procedure was used to test the remaining variables. Since all obtained analyzed responses were not statistically significantly different, we fail to reject the null hypothesis ( $H_0$ ), and it can thus be inferred that both groups (medium and large sized firms) have similarly rated/developed level of crisis plans and crisis planning and awareness variables.

## Conclusion

Crisis management plans are anticipative measures of organizational crisis preparedness, which provide basic guidelines on how to respond in crisis and for the crisis management teams to behave. The aims are to initially minimize and contain the damage from operational perspective, as well as respond to stakeholder groups and protect organizational reputation at the strategic level. The existence of crisis management plan improves the process of adequate decision making in times of crisis, by reducing the uncertainty of the decision making



process. The final goal of crisis management plans is to overcome the crisis and restore the damages which crisis incurred to organization. Effective crisis management plans need to be regularly updated, tested and kept available at all times to employees, because only then do they fulfill their full purpose in time of crises. Complete crisis management plan consists of several partial plans and integrated parts (risk management plan, crisis communication plan, business continuity plan, etc.). On the other hand, certain managers do not see crisis management plans as very useful, which could result in inadequate responses in crisis with respect to firms which do have previously specified crisis plans and scenarios.

Conducted exploratory, empirically based research evaluated the state of crisis management plans in Croatia and indicated that there are no statistically significant differences between existence of adequate crisis plans, as well as available budgets for crisis situations, and level of present organizational culture which encourages crisis management. Two groups similarly view crisis management as a corporate goal, have comparable expectations on speed of recovery after crisis situations, and level of informing key employees about the resources and tools allocated for crisis response.

Since the obtained results and analyses indicate a room for improvement, managers should be more aware of the importance and necessity of crisis plans and crisis planning. Successful leaders of both medium and large sized Croatian based firms should in times of success and growth, think more of investing resources and time in development of crisis management plans and making them integral part of strategic planning.

In certain firms, due to lack of information about benefits of crisis planning, firms do not have crisis plans in place. As opposed to preparing in advance, a number of managers are willing to risk the crisis and deal with consequences once crisis happens. Such approach leaves firms exposed to various risks, and due to the inability to prepare for crises, could in worst case, even lead the firm to bankruptcy. More so, even in the number of firms which already conduct crisis plans and preparedness activities, additional improvement is possible.

Results of the FEMA conducted research state that large number of firms are not familiar with relatively small costs of crisis preparedness activities (FEMA, 2011: 3). Therefore, if firms would be more informed on costs and benefits of planning, it could be possible that larger number of firms would embrace crisis preparedness (FEMA, 2011: 8). For instance, even though medium and small firms largely do not have the capacities and resources necessary for implementation of crisis plans, they have available several counseling options through chamber of commerce, insurance companies, external consultants and partnerships with firms which have already implemented crisis management plans (Lockwood, 2005: 5).

Also, it is false to assume that crises are caused by potentially inadequate crisis plans, whereas the real reasons of crises lie in employees and managers errors, poor decisions making, as well as in inadequate culture (Jaques, 2007: 152). An important determinant of successful crisis planning are adequate organizational culture and values, which together with crisis plans improve crisis response (Hale, Dulek, Hale, 2005: 126-127).

One approach on how to reduce the skepticism of certain managers towards planning for crises is to emphasize within the firm the advantages of planning and crisis management capabilities in order to foster general crisis management acceptance. For instance, by explaining that the costs for crisis prevention are not nearly as high as potential damages caused by crises and that the crisis preparedness does indeed help the organizations. To

summarize, well prepared and updated crisis management plan, along with well-trained crisis management team forms basis for the implementation of effective crisis management. Planning for crises should therefore be a constantly adaptive and flexible process, led by crises managers.

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# CORPORATE GOVERNANCE IN THE POST-TRANSITION ECONOMIES

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## Abstract

*The inefficient corporate governance determines the business performance of companies. The problem of inefficient corporate governance is due to the institutional weaknesses and lack of tradition as well as the shortage of appropriate case studies even more important in the post-transition economies. Post-transitional institutional weaknesses translate into competitive disadvantages at the firm level. This is especially important for small open economies, such as Slovenia and Croatia. That is why case studies of good and bad practices of corporate governance in these economies are important. This paper highlights some differences regarding corporate governance practices between Slovenia and Croatia. By analysing these practices we add to the theory of corporate governance in post-transition economies as well as we offer important managerial implications. The purpose of our paper is to identify some advantages and weaknesses of the existing corporate governance practices in order to suggest how to improve the corporate governance process. As a method of analysis we use a comparative case study approach. The strategic role of the supervisory board and active role of the financial creditors determined a corporate governance process and the implementation of better practices. Our study suggests that thorough, transparent and independent reporting system is crucial for efficient corporate control. We suggest that in order to improve internal control, the internal audit department should be directly subordinated to the executive board. The independence of internal audit committee and supervisory board had a strong impact on the efficiency of corporate governance also. Good corporate governance and corporate responsibility are one of the crucial elements of the resolution of the financial and economic crisis.*

**Key words:** company, supervisory board, corporate governance, independence, reporting

**JEL classification:** G34, M10, M14

## Introduction

We have been faced with some specific characteristics of the corporate governance process in the post-transition economies that cannot be compared with Western European developed economies; such characteristics include undeveloped formal and informal institutions, the significant role of the state due to the incomplete privatisation process, the underdeveloped financial and labour markets and certain structural changes. Both countries, Slovenia and Croatia have been faced with the triple transition process: the transition to an independent state, the reorientation from former Yugoslavian to the Western developed markets and the

transition to the market economy. One should consider that Croatia suffered due to the Yugoslav war much more than Slovenia. Therefore, Slovenia had significant head start in the transition process and also in the EU integration process.

By the year 2008, before the last world economic crisis, Slovenia economy has reached 90% of EU-27 GDP measured by purchasing power. The catching up convergence process has turned around and by the year 2016 the Slovenia GDP has decreased to only 83% of the average EU-27 (Umar, 2018). Therefore, during the last world economic crisis we have been witnessed the process of real divergence instead of convergence of Slovenian economy with the most developed EU economies. We argue that one of the main reasons for such negative trend was inefficient corporate governance process. The last world economic crisis revealed the weaknesses of Slovenian post-transition corporate governance model. Just before the economic crisis in the period 2004-2007 the amount of debt of non-financial institutions in Slovenia has doubled (Umar, 2009). On one hand this was expected because of the falling real interest rates due to the implementation of Euro as a national currency at the end of 2006. On the other hand this was a period of non-transparent consolidation of ownership structure (Lahovnik, 2009). Many Management buy outs in this period have been a result of inefficient corporate control. In many cases MBO's were financed by short term bank loans in spite of the fact that such practise is against basic financial standards as well as against usual corporate governance principles. Good corporate governance and corporate responsibility were one of the crucial elements of the resolution of the financial and economic crisis.

The discussions on corporate governance in Slovenia date back as far as 1993, when Slovenia adopted its first legal framework in this field. Since then Slovenia acceded to European Union and OECD. It adopted new directives and some new ones are still being integrated into Slovenia's legal system. By corporate governance standards this period of twenty-five years of experience is a short history. This is very evident in the fact that there is a lack of jurisprudence to draw on, which could help us as guidance to what is right and what we is wrong. It is important to know where both countries come from and how far they yet have to go.

On the other hand Croatia has been staying behind with the implementation of Euro and OECD membership. It was in the negotiation EU process before the last world economic crisis. Therefore, Croatia was in a weaker position in comparison to Slovenia with regard to the institutional development of corporate governance. In the last period the topic of corporate governance has taken on a completely new dynamic in view of some of the developments and practices that have been evolving for some time.

The main goal of this paper is to compare similarities and differences in the corporate governance process between both countries. The method of analysis is comparative static based on the case studies of two companies. Both companies are the largest employer in each country, have the same majority owner and two tier corporate governance systems. Therefore, the differences in corporate governance system can be attributed to the institutional differences and practices of corporate governance.

Our research is exploratory in nature. Therefore, we chose a comparative case study approach. The comparative case study analysis enables collection of rich data to address the complexity of the corporate governance issue (Costley, Elliott, Gibbs, 2010). The reasons for employing a qualitative method and an inductive approach are the following. First, the research topic concerns complex constructs of corporate governance in post-transition institutional context.

Second, corporate governance issue covers many perspectives, levels of analysis and objectives. Therefore, the inductive approach enables a thorough understanding of the research context. Due to the exploratory nature of our research, the case study approach was considered as a suitable research methodology (Yin, 2009). We wanted to gain a rich understanding of the context of the research. Case study research has a considerable ability to generate answers to the questions what, why and how (Myers, 2009; Silverman, 2011). Basic questions are how and why (Silverman, 2011; Myers, 2009) corporate governance practices differ between both countries. Triangulation was assured by comparing interviews, analysis of secondary data as well as with the exploration method.

## **Theoretical background**

Mason and Simmons (2014) contend that a gap in research knowledge exists with regard to the corporate social responsibility and its enactment through corporate governance systems. Therefore, they emphasize the importance of holistic approach to corporate governance and corporate social responsibility that integrates company, shareholder and wider stakeholder concerns. Some other scholars support holistic approach also. Hoerisch, Freeman and Schaltegger (2014) identify three challenges of managing stakeholder relationships for sustainability: strengthening the particular sustainability interests of stakeholders, creating mutual sustainability interests based on these particular interest, and empowering stakeholders to act as intermediaries for nature and sustainable development. They address these challenges by three interrelated mechanisms: education, regulation, and sustainability-based value creation for stakeholders. Other group of scholars argue that we need to understand value creation and business as creating value for stakeholders. Understanding the economics of markets is important, but at the centre of starting, managing, and leading a business is a set of stakeholder relationships that define the business (Parmar et al., 2010). Business firms are faced with increasing social and environmental demands and are requested to act responsible for issues of public concern. Therefore, these developments challenge the received theory of the firm and its strict separation of public and private domains. Corporations become political actors (Scherer, Palazzo and Matten, 2014).

Instrumental stakeholder theory proposes a positive relationship between fairness toward stakeholders and firm performance. However, we need to consider that some firms are successful with an arms-length approach to stakeholder management, based on bargaining power rather than fairness (Bridoux, Stoelhorst, 2014). Ferrero, Hoffman and McNulty (2014) suggest that by accepting limited liability, Friedman must also accept a view of business as embedded in social interdependency, which serves as the logical and moral foundation for corporate social responsibility. Therefore, to achieve consistency with his economic principles, Friedman must either abandon limited liability or modify his doctrine on corporate social responsibility and his related shareholder model of business.

The problem of inefficient corporate governance is due to the institutional weaknesses and lack of tradition as well as the shortage of appropriate case studies even more important in the post-transition economies. This is the most obvious in state owned enterprises due to the inefficient corporate governance (Georgieva, Riquelme, 2013). Post-transitional institutional weaknesses translate into competitive disadvantages at the firm level and strongly determine the corporate governance process on the micro level (Young et al., 2014). This is especially important for small open economies, such as Slovenia and Croatia. That is why case studies of good and bad practices of corporate governance in these economies are important. By

analysing these practices we add to the theory of corporate governance in post-transition economies as well as we offer important managerial implications.

## Methodology, results and managerial implications

By analysing characteristics of corporate governance qualitatively we used the same criteria that are used in corporate governance assessment made by EBRD experts which aims at measuring the state of play (status, gaps between local laws/regulations and international standards, effectiveness of implementation) in the area of corporate governance (EBRD, 2016). The following five criteria are being used: (1) structure and functioning of the board; (2) transparency and disclosure; (3) internal control; (4) rights of shareholders and (5) stakeholders and institutions (see Figures 1 and 2).

Figure 1: Corporate governance in Slovenia

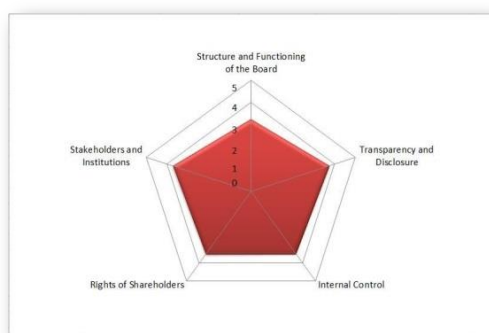
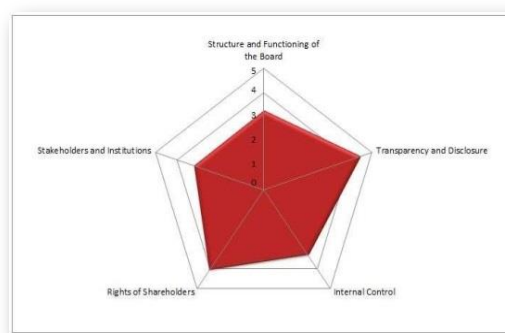


Figure 2: Corporate governance in Croatia



Source: EBRD, Corporate Governance Assessment 2016

Note: The extremity of each axis represents an ideal score, i.e., corresponding to the standards set forth in best practices and international standards (e.g., OECD Corporate Governance Principles). The fuller the ‘web’, the closer the corporate governance legislation and practices of the country approximates best practices.

Key: Very weak: 1 / Weak: 2 / Fair: 3 / Moderately Strong: 4 / Strong to very strong: 5

We decided to use the case study approach in order to gain a possibility of deeper holistic view. The qualitative approach enables us to explore the relationship between executive, supervisory board and the owners. The comparison of two cases in the neighbouring post-transition countries was made to describe, crystallize and explain the dynamics of corporate governance. Our study is of exploratory nature. We triangulate different data sources such as literature review, business reports review and informal qualitative approaches in order to overcome the weakness and intrinsic biases. We met both conditions required for using such inductive approach: contemporary and thorough understanding of the corporate governance issue as well as the close involvement into the research process (Saunders, Lewis, Thornhill, 2003). Therefore, we used the observations method also. By the selection of representative companies for comparison we reduced the fundamental weakness of case studies which refers to the inability to generalize. A summary of the comparison of the results of the qualitative research is shown in table 1.

Table 1: A comparison of corporate governance



Criteria	Slovenian company	Croatian company
<b>Structure and functioning of the supervisory board</b>	Supervisors have to make a statement regarding their independence with regard to the supervised company. Nomination procedure regarding the selection of the supervisors is not required. The structure of the supervisory board is well balanced regarding functional knowledge as well as the nationalities and less balanced regarding gender diversity. The materials are required to be submitted at least one week before the session. With the approval of supervisors this time frame may be shortened in special circumstances or extraordinary events. All supervisors need to give a formal approval for the correspondence session. Two independence committees support the work of the supervisory board: audit committee and HR committee. Self-evaluation of the work of the supervisory board is implemented each year.	There is no nomination procedure regarding the selection of the supervisors. The structure of the supervisory board is well balanced with the exception of the gender diversity. The issue of independence should be better defined and solved. Audit committee is mandatory. Supervisory board does not have its own secretary and the self-evaluation of work has not been implemented regularly. There are no representatives of the workers elected by the independent workers' body in the supervisory board.- If we considered the frequency of session we could assume that the strategic as well as the control role of the supervisory board was not fully implemented.
<b>Transparency</b>	Regular public notification regarding all relevant business information through SEO-net is mandatory. In the annual report the compliance with the Code of corporate governance is explained. Any reasons for potential inconsistencies with the Code of corporate governance should be thoroughly explained. The annual report includes thorough non-financial information also. Special attention is given to the conflicts of interests.	Public notification regarding all relevant business events is usual practice. However, the non-financial information regarding the structure and diversity of the board could be more thorough. Regular outside audit of the business is required and implemented.
<b>Internal control</b>	Independent audit committee of the supervisory board is structured by internal and external members. At least one external member should be an expert in the field of accounting. Audit committee of the supervisory board has at least one annual meeting with the external auditor without the presence of the executive board. Internal audit committee reports directly to the supervisory board. The company reports regarding business relation among dependant companies. External evaluation of the internal audit system has been done periodically. Company has designed an internal whistleblowing system also. The system is anonymous. However, the institutional protection of whistle-blowers is not implemented properly.	Supervisory board does not have its own independent audit committee that would be structured by internal and external members of the supervisory board. Internal audit is not autonomous department in the organisation structure that would report directly to the executive as well as to the supervisory board. External evaluation of the internal audit system is not required periodically. The external auditor has not been changed regularly in the past. The obvious conflict of interests regarding external »independent« auditor has existed and has not been solved until the year 2017. The internal whistleblowing system has not been designed and the institutional protection of whistle-blowers is not implemented.
<b>Rights of shareholders</b>	By the nomination of the supervisory board the shareholder meeting has exclusive right to elect the external auditor. Derivative measures can be implemented with the support of 10% of capital. The agenda of the shareholder meeting has to be determined and announced at least 30 days before the meeting. Each shareholder can execute the right to discuss, ask questions and provide proposals at the shareholder meeting.	Regulated according to the EU law- The agenda of the shareholder meeting has to be determined and announced at least 21 days before the meeting. The conflict of interests is not regulated transparently enough. Reporting regarding dependent companies is not appropriate. It is required by the Code of corporate governance but the absence of practice reporting this issue at the shareholder meeting thoroughly is obvious.
<b>Stakeholders and other institutions</b>	Participation of the employees in the process of corporate governance is high. The council of workers has been elected half of the members of the supervisory board until 2012. After 2012 this number has been reduced to one third of the members of the supervisory board. The council of workers provides opinion and proposals regarding issues of the employees. The Code of corporate governance designed by the Stock exchange and Association of Slovenian Supervisors is followed. Any inconsistencies regarding Code of corporate governance are reported.	There are no representatives of workers elected by the council of workers in the supervisory board. Code of corporate governance is complementary to the law and it is followed formally. However, reporting regarding the potential inconsistencies of implementation of the Code of corporate governance is weak. Reasons regarding inconsistencies are not explained thoroughly enough.

By setting the performance criteria the system and practice of corporate governance have determined significantly the competitive advantages of companies in both cases. In a case of Slovenian company the agency problem has existed until 2012 due to the structure of the supervisory board. Managers manifested a hubris hypothesis due to the unrealistic belief held they will be able to manage the assets of the acquired firms more efficiently than the acquired firm's current management (Jensen, 1988; Roll, 1986). In a case of Slovenian company hubris can explain why company has made so many failed acquisitions and why company infected by hubris simply overestimated different synergies and paid too much for their acquisition

targets. The acquisitions made by the Slovenian company have been financed by using high financial leverage. The high financial leverage on one side and failed realisation of synergies on the other has a strong negative impact on business performance and rating. Therefore, after the year 2012 the company has been in the process of extensive triple restructuring process: ownership, financial as well as operating restructuring. After the structure of the supervisory board had changed the supervisory board elected a new executive board. The strategic as well as control role of the supervisory board have been strengthened. For example, the managerial performance criteria have been changed. The new criteria have been specific, measurable, attainable, relevant and timely defined. With the help of the Human resource committee the managerial performance have been evaluated on the yearly basis. Some limitations regarding investment decisions have also been implemented. For example, any investment decisions regarding real estates in the amount of more than 5 million Euro had to be approved by the Supervisory board.

In a case of Croatian company the main weakness was insufficient control of operations until 2017. External auditor was in a typical conflict of interests due to the dependence on the audited company. Most of income was realised with only one company. The supervisory board has not had appropriate strategic and control role until 2017. Therefore, the independent audit committee as well as independent human resource committee have not been established and put into practice. The quality of the reporting system was due to the absence of independent audit system much lower in comparison to the Slovenian company. The reporting system regarding relations with the dependant companies has been weak and even misleading. In 2017, the company went into radical ownership, financial and operating restructuring process. The financial creditors decided to implement new control mechanisms.

## **Conclusion**

By analysing these two case studies we found out that both companies struggled significantly due to some weaknesses in the corporate governance system. The improvement of corporate governance was an indispensable condition for the business restructuring of companies. The strategic as well as the control role of the supervisory board have been strengthened in order to implement equity, financial and operational restructuring simultaneously. The improvement of reporting and control mechanisms in both companies has been the result of more active role of stakeholders. The more active role of the creditors in the process of business-financial restructuring was important also. We argue that the absence of long-term strategic owners represents a serious problem for the post-transitional economies. Stable ownership structure is a necessary condition for introducing efficient practices of corporate governance. The data collected with case study comparative analysis has important managerial implications also. We suggest that in order to improve internal control, the internal audit department should be directly subordinated to the executive board. Comparative case study analysis highlights the importance of the independent audit committee of the supervisory board which is essential for efficient corporate control. Supervisory board should also establish independent Human resource committee to measure and evaluate the performance of executive board. In the case of the absence of independent committees as well as independent information system the efficient corporate control by the supervisory board is mission impossible.

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# THE ROLE OF THE IN-DEPTH INTERVIEW IN THE IMPLEMENTATION OF THE MANAGEMENT BY MISSIONS (MBM) MODEL

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## Abstract

*The in-depth interview, as an instrument of exploratory research for collecting primary data, is one of frequently used method for conducting qualitative research in social sciences. Given that the in-depth interview is carried out for collecting data that goes into "depth" of the research, it is considered as a very useful method for identifying some specific problems. Therefore, this method of market research is often used in management research, as well as in the examination of different management approaches, which is the subject of this paper.*

*The purpose of the paper is to examine the applicability of the in-depth interview in assessing the implementation level of the Management by Missions (MBM) model in the case study of the Spanish multinational company in the agricultural sector. MBM is one of a newer management approaches that implies the implementation of company's mission—as the fundamental purpose of the company existence—at all organizational levels, aiming to increase the level of employees' identification with the company they are working for, and consequently to achieve higher levels of organizational effectiveness. Specifically, the paper tries to answer the question of how in-depth interviews can help to assess the implementation level of the MBM model, to identify the problems and challenges the company faces when implementing the MBM and to generate suggestions for improving the implementation process of MBM.*

*This paper presents some of the results of qualitative exploratory research conducted by in-depth interviews on an intentional sample of five employees of multinational company in the agricultural sector, i.e. expert sample. These respondents work in different positions, departments and organizational levels in the company, and thus they have different roles in the MBM implementation process. In this paper, we wanted to find out how conducting in-depth interviews can help in identifying problems that the company may encounter in the process of MBM implementation, with the aim of further improving its implementation. In this case, in-depth interviews proved to be a very good method, as the small sample of respondents enabled us to undertake a deeper analysis of the interviews. Conducting in-depth*

*interviews uncovered some specific challenges in MBM implementation in multinational company in the agricultural sector and solving them would certainly improve not just the implementation of MBM in that particular company, but could serve as guidelines for further development of the MBM model. Ultimately, we summarize the results of our research with concluding comments and discuss its limitations and recommendations for future work.*

**Key words:** in-depth interview, qualitative research, management by missions (MBM), multinational company, management model

**JEL classification:** J24, M14, M54

## Introduction

Qualitative research are increasingly being applied in the field of organization and management, since their importance is recognized for a deeper understanding of the various phenomena that they explore (Boje, 2001; Cunliffe, 2011; Gioia, Corley, & Hamilton, 2013; Pratt, 2008). In doing so, the in-depth interview is one of the fundamental research methods, a technique or procedure used to collect primary data through conducting qualitative research (Della Porta, 2014; Ritchie, Lewis, McNaughton Nicholls, & Ormston, 2014). The aim of in-depth interviewing is to explore the experience of respondents and the meaning they make of that experience. We can benefit from in-depth interviews if the main objective is to achieve a deep understanding of problems we research. In order to distill a deeper meaning, the observers need to understand the behavior in context, because it affects the way they carry out that experience (Granot, Brashear, & Cesar Motta, 2012).

Researchers use in-depth interviews because it allows them to get “deep” answers to their questions from “experts” on the issue (the interviewee). Additionally, the open-ended questions of a well-conducted in-depth interview obtain better quality information for some specific purpose. Additionally, in contrast to other qualitative data collection methods, in-depth interviews are well suited for asking questions about polarizing, sensitive, confidential, taboo or highly personal topics. And finally, in-depth interviews can be used throughout the whole research process and at multiple points along the path of learning about a research topic or issue, but they are especially useful for exploring and explaining phenomena (Guest, Namey, & Mitchell, 2013).

As the characteristics of the in-depth interview help researchers to come to a deeper understanding of a particular problem, this technique is also often used in management research and in examining different management approaches. For that reason, the purpose of this paper is to examine the applicability of in-depth interview in assessing the implementation level of the *Management by Missions* (MBM) model in the case study of the Spanish multinational company in the agricultural sector. We try to answer the question of how in-depth interviews can help to assess the implementation level of the MBM model, to identify the problems and challenges the company faces when implementing the MBM and to generate suggestions for improving the implementation process of MBM.

Interpretative research philosophy is in this paper advocated as one of the dominant research philosophies in modern social research, and its backbone is an inductive methodological approach (Saunders, Lewis, & Thornhill, 2009; Tkalac Verčič, Sinčić Ćorić, & Pološki Vokić, 2014). This research philosophy is dominant for researchers who feel that situations are

unique and complex and represent the function of a particular group of circumstances and personal influences (Tkalac Verčič et al., 2014). For that reason, it is inevitable that in the exploration of new phenomena, such as MBM managerial approach is, and especially if in-depth interviews as a qualitative technique are used, interpretative research philosophy is dominating. It implies that in this research philosophy there is a certain level of research subjectivity, as well as different ways of data interpretation. "Interpretation plays an important role in research, and particularly in qualitative research, because interpretations are needed to arrive at understanding" (Ghauri & Grønhaug, 2002, p. 137).

In this paper, we first describe a theoretical framework of MBM as well as the characteristics and usefulness of the in-depth interview as an instrument in management research. We are introducing a management approach which is far from being well established, and therefore this is one of the contributions of this paper. Although this paper is not designed as an empirical, but primarily as a methodological one, we also present some results of qualitative exploratory research conducted by in-depth interviews on an intentional sample of five employees of multinational company in the agricultural sector with headquarter in Spain. Finally, we discuss the application of the in-depth interview as a research instrument in the MBM model and present some conclusions.

## **Management by Missions – in brief**

Development of management theory and practice suggests significant changes in last few decades. There is no doubt that *Management by tasks*, as the typical "command and control" management system, is no more appropriate for contemporary business practice. Even *Management by Objectives* (MBO), although still an accurate and applicable management system, cannot answer the crucial question of WHY the company exists and what an organization's ultimate purpose is (Cardona & Rey, 2008). A fully functional and in some way complete MBO system is therefore the one upgraded with the MBM approach. Such a combination does not answer only the question "what to do", but also "why to do that".

MBM is one of a newer management approaches that implies the implementation of company's mission—as the fundamental purpose of the company existence—at all organizational levels, aiming to increase the level of employees' identification with the company they are working for and consequently to achieve higher levels of organizational effectiveness.

According to Cardona & Rey (2008, p. 65), the final goal of MBM is to ensure that the company's members work with a sense of mission and that an emotional commitment is felt by people towards the company's mission (Campbell & Yeung, 1991, p. 17). However, "even in companies with a strong mission, many people lack a sense of mission" (Campbell & Yeung, 1991), because they are not attached to organizational mission. These are the organizations that most often have a well-defined and written mission, but which is usually just a dead letter on paper has no real impact on employees. The essence and challenge of MBM is to "turn the mission and the values into a living reality for all the organization's members and a mission-driven leadership that fosters employee commitment and identification with the mission" (Cardona & Rey, 2008, pp. 143–144).

Unlike the traditional practice of managing mission, in MBM the responsibility for creating the mission relies not only with the top management, but with all the employees. MBM is

therefore a kind of systemic transformation of management (Pires, Rey, Mas-Machuca, & Bastons, 2016), considering that all organizational members are creating and evaluating organizational mission(s). The main idea that lies behind MBM is to cascade the basic (main) corporate mission to lower organizational levels—to organizational units, subunits, working teams and even individual members of the team (Cardona & Rey, 2008). This is also the biggest challenge of MBM—to make the main corporate mission operational at all organizational levels, and to achieve that MBM deploys the mission as particular shared missions to different levels of the organization (Cardona & Rey, 2006). According to Cardona and Rey (2006, p. 167), "lower-level missions must share in the higher mission, while sharing means taking part and taking responsibility for something that is part of a whole. Each lower-level mission is, basically, an area of responsibility oriented towards the achievement of a higher-level mission. For example, the mission of a team member must be oriented towards the mission of the team. Thus, everyone has her part to play, one way or another, in achieving the company's mission."

MBM is also closely connected to the issue of values, which today is a mandatory topic for any organization. MBM somehow extends the discussion on organizational values in a way that the mission is articulating the values of the organization (Bruni-Bossio, 2018; Cardona & Rey, 2008; Malbašić, Rey, & Potočan, 2015). According to MBM, the company's mission "should express a balance of values that aligns with what the board hopes the organization will achieve" (Bruni-Bossio, 2018), meaning that company should evenly develop values from four different values categories: business values, relational values, development values and contribution values (Malbašić et al., 2015).

Given all the above, MBM seems to be a potential solution for contemporary business problems and especially those connected with organizational behavior, with a final impact on organizational performance. It is therefore reasonable to discover ways of improving the implementation process of MBM and one such improvement could be made through in-depth interviews.

## **Usefulness of in-depth interviews as an instrument in management research**

Interviewing is undoubtedly one of the most widely used techniques for conducting systematic social inquiry, as psychologists, sociologists, anthropologists, administrators, politicians, economists and so on, and all of them treat interviews as their window on the world (Klenke, 2016). Because of its characteristics and given results, sometimes the interview is employed to gather preliminary data before a survey is designed (Qu & Dumay, 2011).

The in-depth interview, as its name implies, is an individual (one-on-one) conversation designed to elicit depth on a topic of research interest. It includes interaction between a well-trained person (interviewer), who conducts the interview, and a suitably knowledgeable participant (interviewee) of the research (Boyce & Neale, 2006; Clow & James, 2014; Hair, Wolfinbarger, Bush, & Ortinau, 2010; Malhotra & Birks, 2007; Ritchie et al., 2014; Styško-Kunkowska, 2014). This type of qualitative collection of primary data is used for projects and research in all fields of social sciences. And there is a good reason for the pervasiveness of this method: it is versatile across a range of study topics, adaptable to challenging field conditions, and excellent for not just providing information but for generating understanding as well (Guest et al., 2013).

The characteristics of the in-depth interview are as follows (Clow & James, 2014; Della Porta, 2014; Guest et al., 2013; Hair et al., 2010; Malhotra & Birks, 2007):

- *In-depth interviews are conducted one-on-one.* This format of collecting data requires that the interviewer shapes the questions keeping in mind both the research problem and the objectives of an interview.
- *In-depth interviews utilize open-ended questioning.* Questions that the interviewer has to ask are already planned, but they can also lead the conversation into a topic of interest.
- *In-depth interviews use inductive probing to get depth.* The single most defining characteristic of in-depth interviewing is inductive probing, asking questions that are based on the interviewee's responses and simultaneously linked to the research problem and objectives.
- *In-depth interviews look and give the interviewee a feeling like they lead a conversation with the interviewer.* Well skilled interviewers conduct in-depth interviews that appear highly conversational, making the technique seem deceptively simple to outside observers.

Because of better understanding of research problems and research objectives, in-depth interviewing is often used in research fields of management (Flory, 2005; Kim, 2016; Marzo & Scarpino, 2016; Niu & Fan, 2015; Premalatha, 2016; Tiu Wright, 1996; Wen, Li, & Liang, 2016), leadership (Klenke, 2016), supply chain management (Macdonald & Corsi, 2013; Tieman, 2011), key account management (McDonald, Millman, & Rogers, 1997), accounting (Lambert & Sponem, 2012; Qu & Dumay, 2011), marketing (Moore & Lutz, 2000; Petek & Konecnik Ruzzier, 2013) or economics in general. It is one of the most common qualitative methods of collecting data. It is an effective tool to obtain a rich understanding of a new phenomenon (Tieman, 2011), research that can extract the context, the strategies, the capabilities (Torres de Oliveira & Figueira, 2018) of a certain company which is very important in economy research.

Because in-depth interviews can offer us further insights into different understanding of each manager in the same company, depending of their involvement in decision making and so on, which is very important for our study and different points-of-view of each interviewee. For the purpose of this paper, we conducted a qualitative research by undertaking in-depth interviews with five employees in multinational company in the agricultural sector with headquarter in Spain and the results are presented below.

### **Analysis of in-depth interview results from a case company**

This part of paper present the results of qualitative exploratory research conducted by in-depth interviews in October 2015 on an intentional sample of five employees of company in the agricultural sector, i.e. expert sample. Interviews with top experts enabled collecting rich primary data. These respondents work in different positions, departments and organizational levels in the company, and thus they have different roles in the MBM implementation process. Each in-depth interview was audio recorded and took about 45 minutes. Below is the overview to some respondents' answers about the MBM implementation process and effects of the MBM implementation process.



To the question about the main reason/motive for the implementation of MBM in observed company, respondents gave different answers. With regard to the main reasons for the implementation of MBM some of them said following: *"We understand that making profit is not the only important thing, but that we also have some other purposes."*, *"Motivation of employees to keep them in this company"* and *"clarifying company's goals and getting employees to meet those goals."*

When asked to briefly describe the process of MBM implementation in the company they are working for, each respondent, with regard to the position he/she has in a company, described their own steps in process of MBM implementation. The respondents from higher organizational levels describe this process in three important steps: the first step was to realize that the company has a purpose that is not only making profit; the second step was to decide what the purpose (the mission) of the company is and the third step was to ensure that all business activities are performed in accordance with the defined mission and to introduce employees to the mission. Other respondents were not sure which steps were in this process and they mentioned workshops for employees and a letter that was sent to all employees.

To the question "Which employees do you consider most crucial for the success of the implementation of MBM?", all respondents claim that top management is most crucial for the success of the implementation of MBM. Only one respondent considered that middle management is also important for the success of the implementation of MBM.

Another question was about the critical/crucial phase in the implementation process of MBM. The respondents from higher organizational levels considered that the first phase is crucial in that process because the key questions are whether the company has a mission or not and what the company's mission is. Other respondents were not sure which steps were in the implementation process of MBM, so they did not know what the crucial phase in this process is.

"What were the main problems during implementation of MBM in this company?" was the next question. With regard to the main problems during implementation MBM, some of them mentioned *"A choice of strategy for the implementation of MBM (start from the top management)"*, *"Communication between top management and lower levels"*, *"Employees do not like changes and they needed a lot of time to understand a new philosophy"* and *"Unclear missions which are difficult to understand."*

Apart from asking questions concerned with the implementation of MBM, another group of questions was connected with the effects of MBM implementation. First of these questions were: "In your opinion, does MBM really help business/employees in this company or is it only a theoretical exercise?" One respondent considered that *"a negative change has taken place in the sense that employees are less proud of what they are doing here and we have lost a lot of time in convincing employees of the company's purpose."* The second respondent considered that *"MBM model helps employees to achieve their goals."* The third respondent considered that *"MBM helps top management in developing the company and achieving the goals, but for the rest of employees it is only the theoretical framework."* Other respondents claim that MBM is only a theoretical model, indicating that some employees do not understand even the main purpose and the concept of MBM.

To the question "What are the main changes in this company that you can notice after implementation of MBM?", one respondent considered that *"the most changed is a way of making decisions in a short time and design of office space, which is based on the mission."*

The second respondent claims that *“MBM has caused changes in employees—they are happier and the organizational climate is better.”* Other respondents do not see significant differences in business before and after implementation of MBM.

When asked to specify some former problems in a company that have been solved by implementing MBM, one respondent said that *“by implementing MBM, everyone thinks in the same way and have changed the way of defining goals—they are now defined by the mission.”* Another respondent claims that *“MBM has solved private problems between some employees.”* Other respondents could not say if implementation of MBM has solved any problems in the company.

To the question “To what extent does MBM help in increasing sales, market share and effectiveness in general?” respondents again gave different answers. One respondent considered that *“MBM helps create the company's image because everyone works and thinks in the same way.”* The second respondent claims that *“MBM can help top management in making good decisions, but not for other employees.”* The third respondent considered that *“everything can be improved if the mission from the top management is well presented to all employees.”* Other respondents claim that *“MBM can improve the company's results, but everything goes very slowly.”*

The last question that is highlighted here concerned some indicators which show the effects of MBM implementation. Most respondents didn't know about the indicators that measure the success of MBM implementation or they considered that company does not measure MBM implementation. One of them claimed that *“employees would be more motivated if they knew how MBM is measured.”* Another respondent considered that *“there is an indicator that is directed towards employees—who will go for a course, who will be promoted, etc.”*

To summarize, we noticed different opinions about implementation of MBM between respondents from higher and those from lower organizational levels. The first ones had been more involved in the implementation process of MBM and had a mostly positive opinion about this process. On the other hand, for respondents from lower organizational levels many things about MBM were unclear and they did not see the purpose of MBM implementation. Therefore, this particular company needs to ensure that every employee is familiar with MBM, because MBM implies the implementation of company's mission at all organizational levels, to each particular employee.

## Conclusions

This paper presents the results of qualitative exploratory research conducted by in-depth interviews on an intentional sample of five employees of multinational company in the agricultural sector, i.e. expert sample. As we already mentioned, these respondents work in different positions, departments and organizational levels in the company and thus they have different roles in the MBM implementation process. Analyzing answers of respondents who participated in in-depth interviews showed there are obviously some problems of implementation of MBM in this particular company. In case of observed company, in-depth interviews helped in identifying some problems in the process of MBM implementation.

Considering the specifics of MBM, it is appropriate to use the interpretative position, which allows a specific way of qualitative data analysis, especially because MBM is still a concept

in development and not well established and known business practice. Performing interviews in such situations means coming to different knowledge in a roundabout way, talking about a variety of issues, which researchers are systematizing in data analysis, by doing the data reduction, as the process of selecting, focusing, simplifying, abstracting and transforming the data (Ghauri & Grønhaug, 2002). This paper advocates a management approach that is not yet sufficiently represented in the collection of data through interviews. Use of the management approach is therefore one of the novelties aims to bridge the gap in the lack of works of this and similar type.

Taking into account the results of in-depth interviews provided during the process of MBM implementation, the whole process of MBM implementation can be further improved. In this particular case, in-depth interviews proved to be a very good method, as the small sample of respondents enabled us to undertake a deeper analysis of the interviews. This is especially the case because the problem being explored is relatively new and not widely investigated in the literature, and therefore inductive approach to the research is more appropriate. Conducting in-depth interviews uncovered some specific challenges in MBM implementation in observed agricultural company and solving them would certainly improve not just the implementation of MBM in that particular company, but could serve as guidelines for further development of the MBM model.

It is also necessary to point out one potential problem in conducting in-depth interviews, related to the subjectivity of both researcher and respondents. The problem arises if the researcher composes preliminary interview questions based on his/her assumptions that do not have a basis in reality/factual circumstances and uses the same to guide the respondents towards giving their answers during the in-depth interview process. On the other hand, given the personal experiences of the respondents, it is possible to overcome some of these issues. The respondents' responsibilities are different, so accordingly they experience different business situations. This is especially noticeable when an in-depth interview is conducted with a smaller number of respondents, which is often the case.

In future research, it would certainly be useful to consider the implementation of the MBM business model in some more companies. Additionally, it would be good to apply some other ways of analyzing interviews, such as the Gioia methodology (Gioia, 2019; Gioia et al., 2013), as well as some other ways of qualitative research with corresponding methods. With this work we wanted to point out the importance of conducting well-prepared in-depth interviews that could help in the implementation of complex business models such as MBM.

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# AN INQUIRY INTO CAUSES AND CONSEQUENCES OF THE REORGANIZATION OF LOCAL PUBLIC ENTERPRISES IN SLOVENIA

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## **Abstract**

*The focus of the paper is on the evaluation of the reorganization of existing public enterprises in Slovenia in the field of water and wastewater management under the adopted Public-Private Partnership Act, where the public policy makers intended to design policies aiming to improve the efficiency of local public utilities delivery. Before the implementation of Public-Private Partnership Act, the role of private capital in public enterprises was not sustainable in legal terms, the regulation was not clear on what status of public enterprise actually means, and there were also shortcomings in the relationship between the founder of public enterprise and the public enterprise itself, creating severe agency problems. Namely, the implementation of the Public-Private Partnership Act affected also the legal status of public enterprises, where solely public ownership of those entities was prescribed, and legal status of public enterprises was defined if they wanted to avoid obligatory concessions and subsequent competition in service provision. This meant that owners of public enterprises, either central or local governments, needed to buyout the private investors in public utilities' providers.*

*Nevertheless, although the legal provisions are rather clear, and the majority of drinking water providers and wastewater treatment providers retained their public status even afterwards, it is not entirely clear, whether buyout was implemented in full and what motives guided municipalities in buying the ownership shares, which was necessary for the reorganization of existing public enterprises into public enterprises with 100% ownership of municipalities; whether the motives were economic motives of rationality and efficiency, or whether the motive was just to avoid tendering for concessions etc. The objective of the paper is therefore to get an insight into the actual status quo of reorganization process in the field of water and wastewater management and to find the actual motives, advantages and disadvantages of reorganization of existing public enterprises. It is evident that public ownership and control has increased, nevertheless the outcomes of reorganization are not so clear, and lack of empirical studies exists. Consequently, this study focuses on public utilities' providers in Slovenia at the local level, specifically to those in the field of water and waste water management.*

*The paper is based on a case study analysis, using primary data, collected through a structured interview for selected water and wastewater utilities providers. The results indicate that the most important motive in the case of mixed ownership to transform into 100% municipal ownership was to avoid public tender for concessions. On the other hand, publicly owned public enterprises see important motives for retaining the status in larger ability to control and in easier regulation of service provider. The results of the study indicate that the reorganization process brought mostly advantages, however, selected public enterprises do not see any essential changes in the effectiveness of their business due to implementation of new legislation. These results bring useful information to municipalities, local public utilities' providers and public policy makers to formulate better policy proposals, to implement good governance and to be able to manage delivery of public utilities more effectively. Besides, the study portrays also the evidence on the legal and organizational structure of utilities' providers and the outcome of the reorganization process.*

**Keywords:** public policy, local public utilities, public-private partnership, public enterprise, water and waste water management, remunicipalization

**JEL classification:** H41, H42, H44

## Introduction

Public enterprise has always been the most important and the most common form of providing public utilities especially from the European perspective, especially in the areas of water, waste, telecommunications, rail transport, air transport, etc. Despite the importance and frequency of its existence, public enterprise has significantly changed its status form in the past twenty years (Greiling and Grüb, 2014: 209; Lane, 2002: 56-57). The creation of a common EU internal market and the increased impact of globalization on the countries of continental Europe have prompted the need to transform existing public enterprises. The transformation involved internal transformation usually into joint stock companies and changes in market rules through the process of deregulation (Aulich, 2011: 250; Bognetti and Obermann, 2012).

In Slovenia, public enterprises have also become principal forms of local public services provision. To enable and encourage mutual help and cooperation between entities from the public and the private sectors, which would lead to economical and efficient provision of public services, Slovenia adopted the Public-Private Partnership Act in 2006, that came into force in 2007 (Bauby and Similie, 2010: 116-117). Besides establishing forms, rules and procedures for implementation of public-private partnership, this act also prescribed the transformation of existing public enterprises, which in the specified period should made the appropriate changes in their organizational status or should their founders consider adaptation of their current status to the new legislative conditions.

The paper focuses on the water and wastewater utilities' providers in Slovenia, specifically on drinking water supply and wastewater treatment. In Slovenia, the majority of water sector is managed by public sector, on municipal level. In 2013 new legislative provisions were set. The regulation of local public utilities was transferred from central to municipal level (Cerkvenik, 2015). The majority of water and wastewater utilities' providers in Slovenia tend to be public enterprises, that usually jointly provide utilities for several municipalities,

whereas some municipalities tend to have their own public enterprises and some smaller municipalities still rely on overhead plants in water and wastewater treatment (Rakar, 2012).

Although the legal provisions are rather clear, and the majority of providers retained their public status even afterwards, it is not entirely clear, whether buyout was implemented in full, and what motives guided municipalities in buying the ownership shares, which was necessary for the reorganization of existing public enterprises into public enterprises with 100% ownership of municipalities. Subsequently, the questions are whether the motives were economic motives of rationality and efficiency, or whether the motive was just to avoid tendering for concessions, etc. Furthermore, this study would like to evaluate one of the initial purposes of the reform, that is to influence the level of efficiency in service delivery in the field of water and wastewater treatment. It is evident that public ownership and control has increased, nevertheless the outcomes of reorganization are not so clear, and lack of empirical studies exists. Consequently, this study focuses on public utilities' providers in Slovenia at the local level, specifically on drinking water supply and wastewater utilities' providers, and explores the experiences of the reorganization process.

## **Theoretical background**

In line with EU directives, a certain degree of competitiveness should exist in public utilities. Although EU directives do not explicitly dictate the privatization of public enterprises, they nevertheless seek to liberalize public services, which of course signifies a greater role for the private sector and also a change in the ownership of public enterprises (Aulich, 2011: 250; Boggetti & Obermann, 2012; Greiling & Grüb, 2014: 209; Lane, 2002: 60). This trend influenced the transformation of existing traditional public enterprises across Western Europe, only at different time periods, and ended with various forms of institutional framework of transformed public enterprises. Most of the existing public enterprises were transformed into joint stock companies, which today is actually the basic form of a public enterprise, with the share of public ownership ranging from minority shares to total ownership (Lane, 2002, pp. 60-61).

Nevertheless, in the last decade a trend towards remunicipalization has increased, where municipalities take the provision of local public services back in their own hands (Gradus & Budding, 2018: 2-3; Wollmann, 2018: 426). Public ownership represents many benefits for local communities, such as lower costs for consumers, lower tax burdens, easier economic development, jobs provision etc. With remunicipalization, municipalities strive to achieve greater municipal democracy and autonomy. However, transforming corporate ownership to public ownership does not necessarily lead to more democratic, equitable and sustainable economic system (Berlo et al., 2017: 1; Hanna, 2019: 44-46). Usually, the remunicipalization is intentional and is done by ending contract with private provider earlier or not renewing it after it expires. Such remunicipalization is very often a consequence of dissatisfaction with private provider, like rising costs, worsening service quality, public mistrust of private provider, corruption etc. However, sometimes municipalities are forced to remunicipalize due to high costs of monitoring, short-term contracts, reducing efficiency gains etc. (McDonald, 2018: 62).

Municipalities have proceeded remunicipalization in two ways; by repurchasing shares that were previously sold to private companies and by reinsourcing services that were previously outsourced. When the concession is expired, municipalities decide about remunicipalization,



as an opportunity to bring services back in-house without transaction costs incurred with termination of contract. When the concession has not expired yet, there can be difficulties with the outgoing private provider about the compensation. Very high compensations are demanded and this is a strong deterrent to determination of contract (Hall et al., 2013: 206; Wollmann, 2018: 422). The negotiation process about the compensation is one of the key elements that a municipality has to consider when deciding for remunicipalization. Beside negotiation process, also users' involvement is one of the key elements. The involvement of users is essential, as they are key actors in the process and a municipality guarantees a democratic and efficient public service. It is also fundamental to evaluate the private provider's performance and the benefits and risks of returning to public provision; especially when considering the current situation of the public service in terms of investment needs and financial costs for guaranteeing an efficient performance. However, the remunicipalization process can vary according to local context, the condition of public service, the involvement of the local government, the duration of the contract, the degree of private participation etc. (Valdovinos, 2012: 115-116).

## **Amendments of the Institutional Framework of Public Enterprises in Slovenia**

The analysis of the coherence of the position of public enterprises in Slovenia with EU legislation showed that providing commercial public utilities through public enterprises, actually presented an economic activity. The problematic fact was that most public enterprises used budgetary resources for their activities (Trpin, 2007: 3-4). Another problem in this regard was the lack of clarity in the definition of the concept of a public enterprise. This was solved by the Directive 2006/111/EC on the transparency of financial relations between member states and public enterprises. This Directive has affected the legal definition of a public enterprise in individual EU member states. On the basis of this Directive, in 2007, the Transparency of Financial Relations and the Separate Record of Various Activities Act was adopted in Slovenia (Official Gazette of the Republic of Slovenia, No. 53/2007, 65/2008), which significantly changed the definition of the concept of public enterprise. In accordance with this law, the public enterprise was defined broadly, not only on the basis of the ownership, but also on the basis of the proprietary rights. In 2007, important changes in the field of transformation of existing public enterprises in Slovenia came with the implementation of the Public-Private Partnership Act (Official Gazette of the Republic of Slovenia, No. 127/06) (Brezovnik, 2009: 180; Trpin, 2007: 5-6). The law demanded reorganization of the existing public enterprises and awarding concessions to public enterprises which had transformed into private law companies.

Before the adoption of the Public-Private Partnership Act, the inclusion of the private sector in traditional public sphere of public services was allowed by the Public Utilities Act (ZGJS, Official Gazette of RS, no. 32/1993) for the provision of commercial public services used in the form of concessionary relationship and in the form of capital investment in the activities of private law; and by the Institutions Act, which has allowed awarding concessions for non-commercial public services provision (Institut for Public-Private Partnership, 2017).

According to Public Utilities Act a public enterprise was a form of the commercial public services provision. Public enterprise did not have its own status, because this regime directly relied on the regulation of commercial companies. A public enterprise could have, as a commercial company, also shared or mixed ownership. The status of a public enterprise

therefore did not differentiate from commercial companies, the significant difference was only in the proprietary rights, where the state or local government had special founder's rights, independent of the ownership structure of the company. Under the Public Utilities Act provisions, public enterprise can be established only for the provision of commercial public services or for the implementation of activities that are carried out in the same manner as public utilities (Brezovnik, 2009: 181; Trpin, 2007: 6). In 2007 the The Transparency of Financial Relations and Maintenance of Separate Accounts for Different Activities Act (ZPFOLRD, Official Gazette of RS, no. 53/2007, 65/2008) changed the definition of a public enterprise. According to this Act public enterprise is any enterprise over which the public authorities may perform a dominant influence. Therefore, a public enterprise is any organization with legal form of public institutions, public commercial institutions, public enterprises established under the Public Utilities Act and enterprises, in which public authorities have a dominant position (Brezovnik, 2009: 182; Trpin, 2007: 6-7).

In 2006, Slovenia adopted the Public-Private Partnership Act that entered into force in March 2007. The Act had a strong influence on the legal status of public enterprises (especially Articles 141, 142 and 143), especially for further organisation and operation of the public enterprises providing public services. It has determined the rules of transformation of existing public enterprises, which shall *mutatis mutandis* apply also to public institutions and public commercial institutions (Brezovnik, 2010: 24). In the sense of public institutions' regulation, Tičar and Zajc (2010: 211) highlight the importance of a repeal of Article 80 in the 1999 Public Finance Act by the Public-Private Partnership Act. The Article 80 of Public Finance Act specifically regulated the privatization of public institutions (also public commercial institutions and public enterprises). It had prohibited all privatization initiatives, since it did not allow the transfer of capital investments or establishment rights of the state or municipality in public institutions. Privatization was possible only if allowed by a specific law on the performance of a public service, but since 2002, no such laws had been adopted. This restriction was then removed with the implementation of the Public-Private Partnership Act in 2007.

The Act provides the definition of the legal status of public enterprises. The aim of the new regulation is to differentiate between "true" public enterprises that shall remain exclusively publicly owned to perform public service activities, and other public enterprises that shall be transformed into commercial companies. There are two options for the public enterprises in which there are private equity stakes. One option is that a public enterprise can be transformed into a commercial company in accordance with the Companies Act, and the other option is that the public enterprise status can be retained, provided that the private equity stakes are in a way nullified (Kocbek, 2011: 86). Public enterprises where private investors had shares needed to be transformed into commercial companies and public enterprises that wanted to remain public had to transfer the private ownership to the State or local community. The decision had to be taken by the founder of the enterprise within three years from the adoption of the Act, which is by March 2010. Under the new regulation a public enterprise may be only an enterprise which is wholly owned by the state or local government (Hrovatin, 2010: 102; Brezovnik, 2010: 24; Trpin, 2007: 6).

The Act also regulates awarding concessions to public enterprises, which are transformed into a commercial company. First, the founder shall award concessions without public tender to the commercial companies that were created out of the public enterprises with no stakes of persons of private law. This had to be done within one year, by March 2008. Second, public enterprises transformed into commercial companies must obtain a concession in compliance

with the legislation. The concession should be awarded within one year by the founder of the enterprise as a result of the bidding process on the public tender (Hrovatin, 2010: 102; Brezovnik, 2010: 24; Trpin, 2007: 13).

## **The Analysis of Institutional Changes Under New Legislation for Public Enterprises in the Field of Water and Wastewater Management**

To determine the actual institutional changes under new legislation for Slovenian public enterprises in the field of water and wastewater management, structured interviews with selected public enterprises were conducted in March 2018. The study explores the compliance of the reorganization process with the new legislation and the experiences of the reorganization for local public utilities' providers.

### ***Research Method***

A study on reorganization of Slovenian public enterprises in the sector of water and waste management was done with primary data collection through on-line survey that is a basis for structured interviews with selected local public utilities' providers. A case study with four different companies is performed, and the purpose is to reveal the differences and similarities in the reorganization process between selected local public utilities' providers. Regarding the purpose of the research, three research questions try to be answered: 1. Did the ownership of existing public enterprises changed after the PPPA?, 2. What motives guided existing public enterprises for retaining 100% public ownership or transformation into 100% public ownership? and 3. What advantages and disadvantages are detected in the reorganization process of public enterprises according to PPPA?

This case study represents only the first stage of the research, where actually the on-line survey was tested. In the next stage, the survey will be sent to all local public utilities' providers in the area of water and wastewater management in Slovenia, to get the complete insight of the reorganization process results. The survey will be supplemented with in-depth interviews, where necessary. A structured interview is divided into 5 thematic units. The first unit covers the basic data of the respondent and the second unit covers the provision of public utilities in the area of drinking water supply and wastewater treatment, using the combination of open ended questions and multiple choice answers. The third unit covers the ownership structure of the public utilities providers before the adoption of the new legislation, also using the combination of open ended questions and multiple choice answers. The fourth unit covers the changes resulting from reorganization of existing public enterprises and the compliance with the applicable new legislation. A combination of multiple choice answers, open ended questions and Likert scale 1 – 5 is used. The fifth section covers the price setting of the local public utilities in the area of drinking water supply and wastewater treatment, similarly using a combination of multiple choice answers, open ended questions and Likert scale 1 – 5.

### ***Research Sample***

In Slovenia, a municipality may provide commercial public services via the municipal administration body, by establishing public institutes and public enterprises, by awarding concessions and in any other way determined by law. In-house integrated service provision and public commercial institute are a very rare forms of local commercial public services provision (Pevcin and Rakar, 2015: 705-706). Concession is the only possible form providing

commercial public services, performed by private law subjects. By its nature, it is a form of public-private partnership (Institut for Public-Private Partnership, 2017). Public enterprise is the most widespread form of local commercial public services provision. Public enterprise is used for the provision of one or more services of increased volume or when economic public service is a monopoly. In both cases, services are required to be performed profitably (Pevcin and Rakar, 2015: 705-706).

The fact that public enterprise presents the most common form of local public utilities' providers also in the field of water and wastewater management is confirmed with the results of the analysis conducted by the Slovenian Institut for public utilities. The results in Table 1 show that more than four fifths of all service providers are public enterprises.

*Table 1: Organizational form of local public utilities' providers in Slovenia*

Public utility	Organizational form		
	Public enterprise	Concessionaire	Overhead plant
Drinking water supply	85,4 %	12,5 %	2,1 %
Wastewater treatment	83,7 %	16,3 %	0 %

*Source: Institute for public utilities, 2016, 2017*

For the purpose of testing the on-line survey, four public enterprises were selected, and this presents the backbone of our case study. The difference between the selected enterprises is in their ownership before the reorganization process and in the number of municipalities for which they provide drinking water supply and wastewater treatment. Two enterprises with a mixed ownership (public and private) before the adoption of PPPA have transformed into 100% publicly (municipally) owned public enterprises, of which one is providing public utilities to one municipality and the other to three municipalities. The other two selected public enterprises had 100% public (municipal) ownership already before the adoption of PPPA and have retained their status of public enterprise also after the adoption of new legislation. One of these two public enterprises is providing public utilities to one municipality and the other to five municipalities. All four selected public enterprises are established as a Limited Liability Company and provide both drinking water supply and wastewater treatment. The share of revenues from provision of drinking water supply and wastewater treatment differs from around 40% to 60% of total revenues of enterprise.

*Table 2: The general information of the research sample*

	Legal status	Providing drinking water supply and wastewater treatment	Ownership before PPPA	Ownership after PPPA	No of municipalities for provision of public utilities*	Share of revenues from provision of public utilities* in total revenues of enterprise
Public enterprise 1	LLC	yes	mixed	100% public	1	59%
Public enterprise 2	LLC	yes	mixed	100% public	3	37%

Public enterprise 3	LLC	yes	100% public	100% public	1	40%
Public enterprise 4	LLC	yes	100% public	100% public	5	60%

Source: Survey, 2018

\*drinking water supply and wastewater treatment

### Research Results

The ownership before and after the adoption of PPPA

In both cases of mixed ownership of public enterprise before the PPPA, the public ownership was more than 60%. During the reorganization processes both public enterprises transformed into 100% municipal ownership, with one municipality as an owner. In both cases of 100% municipal ownership before the PPPA, the public enterprises retained their legal status after the adoption of PPPA with more than just one municipality as an owner.

Table 3: The ownership before and after PPPA

	Ownership of the public enterprise before PPPA		Ownership of the public enterprise after PPPA		Ownership of the commercial public infrastructure before PPPA	Ownership of the commercial public infrastructure after PPPA
Public enterprise 1	mixed	Public: 63%	100% public	1 municipality	No	municipal
		Private: 37%				
Public enterprise 2	mixed	Public: 63%	100% public	1 municipality	No	municipal
		Private: 37%				
Public enterprise 3	100% public	4 owner municipalities	100% public	3 municipalities	100%	100%
Public enterprise 4	100% public	5 owner municipalities	100% public	5 municipalities	No	municipal

Source: Survey, 2018

Before the PPPA, public enterprises 1, 2 and 4 had no ownership over the commercial public infrastructure for providing drinking water supply and wastewater treatment. Public enterprise 1 had public infrastructure in maintenance and in business management; public enterprise 2 only in business management; and enterprise 4 in rental, maintenance and in business management. Public enterprise 3 had 100% ownership over the commercial public infrastructure, which was retained also after the adoption of new legislation as municipalities are owners of the public enterprise. In the cases of public enterprises 1, 2 and 4 the ownership of the commercial public infrastructure was transferred to municipal ownership after the PPPA.

Motives for retaining 100% public ownership or transformation into 100% public ownership

One of the aims of the analysis is to find out what motives guided municipalities in buying the ownership shares, which was necessary for the reorganization of existing public enterprises into public enterprises with 100% ownership of municipalities; whether the motives were economic motives of rationality and efficiency, or whether the motive was just to avoid tendering for concessions etc.

*Table 4: Motives for 100% municipal ownership of a public enterprise\**

Motive	Public enterprise 1 (transformed)	Public enterprise 2 (transformed)	Public enterprise 3 (retained)	Public enterprise 4 (retained)
To avoid public tender for concessions	5	5	1	1
To use in-house orders	4	5	4	2
Easier to obtain EU funds	3	3	1	2
To avoid employee dismissal	2	4	1	2
Greater control over the provider	4	5	4	4
Simpler regulation of the provider	4	5	4	4
More possibilities for influencing the business	4	4	4	4
Greater rationality and efficiency of business	4	5	2	4
Management problems in a mixed-ownership enterprise	4	5	4	4

*Source: Survey, 2018*

\*Likert scale 1-5: 1- I totally disagree, 2- I disagree, 3- I neither agree nor disagree, 4- I agree, 5- I totally agree

Table 4 shows that the most important motive in both cases of mixed ownership to transform into 100% municipal ownership was to avoid public tender for concessions. As expected, in the cases of retaining the 100% municipal ownership, this motive is not important, as they don't need public tender for concessions. For mixed ownership important motives were also to use in-house orders, greater control and easier regulation of service provider, larger rationality and efficiency of business activities, and also governance problems in mixed-ownership enterprise. Similarly, also publicly owned public enterprises see important motives

for retaining the status in larger ability to control and in easier regulation of service provider, and, interestingly, in larger possibilities for influencing the day-to-day business activities. In none of the cases studied, the possible availability of EU funds and possible staff reductions are not found as important motives.

#### Advantages and disadvantages of reorganization process of public enterprises according to PPPA

Reorganization process brought some advantages. The analysed public enterprises see the biggest advantages that municipality can monitor the business activities of the enterprise under the decree; in better co-operation between the enterprise and the local community; and in the fact that institutional, corporate and governmental rights are prescribed by a municipal decree.

*Table 5: Advantages of reorganization process of public enterprises\**

Advantage	Public enterprise 1	Public enterprise 2	Public enterprise 3	Public enterprise 4
Faster job performance	2	3	2	4
Better use of labor and capital	2	4	2	4
Better organization of work	2	4	2	3
Lower labor costs	2	3	2	3
Lower transaction costs	2	3	2	3
Better co-operation between the enterprise and the local community	4	5	2	4
Municipality has full control over the performance of public utilities' providers	3	5	3	4
The municipality monitors the business of the enterprise under the decree	4	5	4	4
Total profit from a public enterprise is transferred to the budget and devoted to investment in infrastructure	3	2	2	2
Institutional, corporate and governmental rights are prescribed by a municipal decree	4	4	4	3
Acquisition of additional financial sources for the municipality	3	4	2	3
Developing expertise and increasing the quality of the services' provision	2	4	2	4
Easier to obtain European funds	3	4	1	3

*Source: Survey, 2018*

\*Likert scale 1-5: 1- I totally disagree, 2- I disagree, 3- I neither agree nor disagree, 4- I agree, 5- I totally agree

In contrast, also some disadvantages of the reorganization process can be observed, but they are less important and of smaller magnitude than advantages. The analysed public enterprises didn't find any outstanding disadvantage among the listed ones. They agree that lack of experiences of the municipalities in providing control over the concessions can be observed, that arrangement of a concession relationship requires the regulation of many legal acts, and

that regulatory price policy can present a disadvantage. Interestingly, selected public enterprises however do not see any essential changes in the effectiveness of their business due to implementation of new legislation, even if they see predominantly advantages of new legislation.

*Table 6: Disadvantages of reorganization process of public enterprises\**

Disadvantage	Public enterprise 1	Public enterprise 2	Public enterprise 3	Public enterprise 4
Higher costs due to public tenders for concessions	4	2	2	3
Higher costs for the municipality in terms of controlling the concessionaire	3	2	2	3
Higher costs for the provider due to the supervision of the municipality	3	2	3	3
Higher price of public utility	3	2	3	3
Lower quality of public utility	1	1	4	3
Regulatory price policy	4	3	3	3
The municipality does not have the possibility of control over the concessionaire through founding and corporate rights	4	2	2	3
The arrangement of a concession relationship requires the regulation of many legal acts	3	4	2	3
Lack of experience of the municipality to provide control over the concession in terms of maintaining the quality of service for citizens, maintaining and increasing the value of the property for the municipality at justified prices of services	2	3	5	3

*Source: Survey, 2018*

\*Likert scale 1-5: 1- I totally disagree, 2- I disagree, 3- I neither agree nor disagree, 4- I agree, 5- I totally agree

## Conclusion

The focus of the paper is on the evaluation of the reorganization of existing public enterprises in Slovenia in the field of water and wastewater management under the adopted Public-Private Partnership Act, where the public policy makers intended to design policies aiming to improve the efficiency of local public utilities delivery. Namely, the implementation of the Public-Private Partnership Act affected also the legal status of public enterprises, where solely public ownership of those entities was prescribed. This paper is therefore based on the case study analysis of four different enterprises, and the purpose is to reveal the differences and similarities in the reorganization process between selected local public water and wastewater utilities' providers.

The paper tries to answer to three research questions: 1. Did the ownership of existing public enterprises changed after the PPPA?, 2. What motives guided existing public enterprises for



retaining 100% public ownership or transformation into 100% public ownership? and 3. What advantages and disadvantages are detected in the reorganization process of public enterprises according to PPPA? The answer to the first research question shows that analysed existing public enterprises either transformed into 100% public ownership or retained 100% public ownership. Thus, this might indicate that the reorganization of existing public enterprises and trend towards remunicipalization of public utilities could also be observed in Slovenia.

Regarding the second research question, results indicate that the most important motive in both cases of mixed ownership to transform into 100% municipal ownership was to avoid public tender for concessions. But this motive was not important for the two cases where the 100% municipal ownership was retained, as they don't need public tender for concessions. Other important motives were also the ability to use in-house orders, greater control and easier regulation of service provider, larger rationality and efficiency of business activities, and also governance problems in mixed-ownership enterprise. Similarly, also publicly owned public enterprises see important motives for retaining the status in larger ability to control and in easier regulation of service provider, and, interestingly, in larger possibilities for influencing the day-to-day business activities. In none of the cases studied, the possible availability of EU funds and possible staff reductions are not found as important motives.

The answer to the third research question indicates that the reorganization process brought mostly advantages, like e.g. larger monitoring ability of municipalities over service providers, larger ability to cooperate etc. Interestingly, selected public enterprises however do not see any essential changes in the effectiveness of their business due to implementation of new legislation.

As this paper includes only the first stage of the research, with only four cases, it is difficult to make general conclusions about the reorganization process. Therefore, there are still open questions present e.g. on the legal status of public enterprises, which motives led municipalities to buy equity stakes in public enterprises. A more comprehensive analysis, which follows in the next research step, will give a more specific insight to the organizational structure of public enterprises and an insight into the reorganization process. The results of such analysis will give evidence about the final outcome of the reorganization, whether it was implemented in accordance with the law and what concrete institutional changes and experiences has it brought.

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# THE IMPACT OF R&D EXPENDITURES ON CORPORATE PERFORMANCE: THE CASE OF WORLD R&D COMPANIES

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## Abstract

*Research and development (R&D) investment is widely recognised as one of the crucial elements of generating competitive advantage of contemporary companies. The global competition, which is becoming increasingly harsh and forces companies to provide value-added products, processes and services, constitutes a reason why R&D investment is indispensable in the contemporary business operations as they facilitate to keep the companies' position in the market in terms of their competitiveness. The main aim of this paper is therefore to examine the impact of R&D expenditures on corporate performance. Using a multiple regression analysis, a panel dataset of 1,700 world R&D companies for the period 2015-2017 is analysed. The empirical results reveal that R&D expenditures are not effective in the short-term period and bring certain benefits to companies in the long-term period. The findings of this paper provide several important theoretical and practical implications.*

**Keywords:** R&D expenditures, operating performance, market performance, world R&D companies, multiple regression analysis

**JEL classification:** O30, L25, G14

## Introduction

Nowadays, research and development (R&D) investment is becoming one of the crucial elements of generating competitive advantage of companies, which makes them to invest persistently in R&D activities (Chang et al., 2017; Ravšelj & Aristovnik, 2017, 2018). This stems from the transition of the global economy from industrial economy towards the knowledge-based economy, which drastically changed both the business environment as well as the functioning of different stakeholders. This is reflected in the global competition, which is becoming increasingly harsh and forces companies to provide value-added products, processes and services. This constitutes a reason why R&D investment is indispensable in the contemporary business operations as they facilitate to keep the companies' position in the market in terms of their competitiveness. Therefore, it is not surprising why R&D investment has an important role in terms of the overall investment activity in the business sector.

According to the Resource-based theory, companies possess strategic resources, which provides them an exceptional opportunity to develop competitive advantages over their competitors (Barney, 1991; Penrose, 1959). This implies that investment activity should represent one of the most important activities, as it is central to the functioning of any company. In this context, the Knowledge-based theory considers the R&D investment as the most crucial and unique resource of the company (Grant, 1996). This puts forward the role of R&D investment in creating competitive advantage and improving operating performance. Finally, the Efficient market theory, which assumes a perfect information on the market, represents a theoretical foundation for explaining the relationship between companies' investment activity and their market performance (Malkiel & Fama, 1970).

The motivation for R&D investment therefore stems from the potential benefits resulting from such investment. Namely, companies have a strong belief that the result of R&D investment is reflected in enhanced core competencies and commercialization of innovation outcomes such as new products, processes and services, which allows them to achieve greater competitiveness on the market. Consequently, this should ultimately be reflected in better corporate performance (Kim et al, 2014). Accordingly, the main aim of this paper is to answer the main research question how R&D expenditures influence the corporate performance. The remaining sections of this paper are organized as follows. In the next section, a literature review and hypotheses development is presented. The following section describes the data and research methods. The next section provides empirical results. The paper ends with conclusions in which the main findings are summarized and discussed.

## **Literature review and hypotheses development**

The impact of R&D expenditures on operating performance has been widely studied in the literature. Some of the empirical studies establish that R&D expenditures have an immediate beneficial impact on current operating performance. This is confirmed by several empirical studies for the companies operating in the United States (Apergis & Sorros, 2014; Eberhart et al., 2004). Similar evidence is provided also for the companies operating in the global electronics industry, whereby the impact of R&D expenditures is positive only for gross profit, while remaining negative for return on equity (ROE) and return on assets (ROA) (Shin et al., 2009).

Contrary, many empirical studies establish a significant and positive impact of R&D expenditures only for future operating performance measured by different accounting-based performance indicators. The empirical evidence from Turkey shows R&D expenditures have a positive impact on long-term operating performance for the period longer than one year (Ayaydin & Karaaslan, 2014; Kiraci et al., 2016). Similar evidence can be found for Indian companies (Busru & Shanmugasundaram, 2017). A one-year lag between R&D expenditures and operating performance is also revealed also for Japan, while for China and Taiwan the empirical studies establish a two-year lag (Hsu et al, 2013; Rao et al., 2013).

The literature review suggest that R&D expenditures play an important role in enhancing operating performance. However, the findings of different empirical studies are inconclusive. Some of the studies suggest that there is an immediate positive impact of R&D expenditures on operating performance, while the others suggest that there is rather lag effect between R&D expenditures and operating performance. Nevertheless, the predominant belief is that

there should be whether not significant or negative impact of R&D expenditures on current operating performance, while the impact becomes positive for the operating performance in the future periods. This implies that R&D expenditures made in the current period are effective in long-term period rather in the short-term one (Asthana & Zhang, 2006). According to the above discussion, the following research hypothesis is proposed:

- **Hypothesis 1:** R&D expenditures deteriorate current operating performance and improves future operating performance.

There are also some empirical studies in the literature examining the impact of R&D expenditures on market performance. The empirical evidence for the companies operating in the United States suggests that R&D expenditures have a positive impact on market performance regardless. The results are similar for manufacturing and service firms as well as for domestic and multinational corporations (Bae & Noh, 2001; Chan et al., 2015; Ehie & Olibe, 2010; Ho et al., 2005). There are also some empirical studies, which extend the investigation also on other countries. Bae and Kim (2003) establish a significant and positive impact of R&D expenditures on market value in the United States, Germany and Japan. Similar findings can be found also for companies operating in Taiwan (Wang, 2011), the European Union (Duqi et al., 2011) and Turkey (Başgoze, P., & Sayin, 2013).

Unlike previous empirical studies, Cazavan-Jeny and Jeanjean (2006) establish a negative impact of R&D expenditures on market performance on a sample of French companies. As a reason for such unexpected results, they argue that legal enforcement may play a role in the relationship between R&D expenditures and market performance. Nevertheless, Vithessonthi and Racela (2016) provide explanation why the impact of R&D expenditures on corporate performance is negative in the short-term and positive in the long-term through the application of net present value. Namely, R&D investment is often considered as a long-term investment in different R&D projects that are usually estimated to have a positive net present value. In the short-term, the cash flows associated with the R&D projects can be negative and consequently harm corporate performance in terms of profitability. However, in the long-term, assuming that the R&D projects' expected net present values are positive, R&D investment should increase market value. Moreover, competitive companies with innovative products, processes and services can attract investors' attention and increase their market share (Usman et al., 2017). According to the above discussion, the following research hypothesis is proposed:

- **Hypothesis 2:** R&D expenditures are positively valued by the market and improve current and future market performance.

## **Data and research methods**

The data for the empirical analysis is obtained from the EU Industrial R&D Investment Scoreboard 2017 and 2018, which provides economic and financial information on the top R&D corporate investors extracted directly from companies' annual reports for the three-year period 2015-2017. The empirical study is limited on this three-year period due to the availability of information regarding the companies' market value and covers the companies operating in major world economies, namely the European Union, the United States, China and Japan. In order to obtain a representative sample of world R&D companies for the empirical analysis, meaning that they are continuously engaged in R&D investment, the

balanced panel dataset of companies having more than 1 million of net sales for the entire period 2015-2017 is created. The final sample consists of 1,700 companies for three-year period resulting in 5,100 company-year observations. Table 1 presents the distribution of the companies by the major world economies, whereby the distribution of the sample coincides with the overall structure of the companies covered by the EU R&D Investment Scoreboard.

*Table 1: Sample distribution of world R&D companies by major world economies*

Economy	Number	Share (in %)
European Union	1,611	31.59
United States	1,728	33.88
China	840	16.47
Japan	921	18.06
<b>Total</b>	<b>5,100</b>	<b>100</b>

*Source: European Commission, 2017, 2018; author's elaboration.*

There are two dependent variables employed in the empirical analysis. The first dependent variable is operating performance, which is measured as return on sales (ROS). It is defined as the ratio between operating profit and net sales and actually indicates whether companies effectively use their sales to generate profits (Al-Matari, 2014). The second dependent variable is market performance, which is measured as price to sales ratio (PSR). It is defined as the ratio between the market capitalisation and annual net sales and actually measures how much investors are willing to pay for each monetary unit of sales (Fisher, 1984). Further, the main independent variable of interest is R&D intensity (RDI), which is defined as the ratio between the amount of R&D expenditures and the amount of net sales during one-year period and represents a comparable basis for companies of different sizes (Czarnitzki & Delanote, 2015). As regards operating performance, it is expected that R&D expenditures have a negative impact on current operating performance and a positive impact on future operating performance. As regards market performance, it is expected that R&D expenditures have a positive impact on current and future market performance. Finally, two control variables are also considered in the empirical analysis. The first control variable is capital expenditures intensity (CEI), which is defined as the amount of capital expenditures divided by net sales. According to the existing empirical studies it is expected that capital expenditures intensity (CEI) has a negative impact on operating performance and positive impact on market performance (Chung, 1998; Manrique & Martí-Ballester, 2017). The second control variable is company size (SIZE), which is defined as the natural logarithm of net sales. For company size (SIZE) is expected to have a positive impact on operating performance and negative on market performance (Kim et al., 2018; Nunes et al., 2009). The summary of variables employed in the analysis is presented in Table 2.

*Table 2: Summary of variables employed in the empirical analysis*

Abbreviation	Variable	Definition
<b>Dependent variables</b>		
ROS	Return on sales	The ratio between operating profit and net sales.
PSR	Price to sales ratio	The ratio between market capitalisation and net sales
<b>Independent variable</b>		
RDI	R&D intensity	The ratio between R&D expenditures and net sales.
<b>Control variables</b>		
CEI	Capital expenditures intensity	The ratio between capital expenditures and net sales.
SIZE	Company size	The natural logarithm of net sales.
YEAR	Time variable	Dummy variable that takes 1 for year studied, 0 otherwise.

*Source: Author's elaboration.*

For the purposes of examining the impact of R&D expenditures on corporate performance, indicator for operating performance and market performance is regressed against the main independent variables of interest. Accordingly, the dependent variables return on sales (ROS) and price to sales ratio (PSR) are regressed against the R&D intensity ( $RDI_t$ ) and lagged R&D intensity ( $RDI_{t-1}$ ), which are estimated in separated models. Moreover, the following control variables are included in the multiple regression models. These are capital expenditures intensity (CEI) and company size (SIZE). In order to control for year effects, also time dummy variables (YEAR) are taken into consideration. Accordingly, the following multiple regression models are estimated:

$$ROS_{i,t} = \alpha_0 + \beta_1 RDI_{i,t} + \beta_2 CEI_{i,t} + \beta_3 SIZE_{i,t} + \sum YEAR_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$ROS_{i,t} = \alpha_0 + \beta_1 RDI_{i,t-1} + \beta_2 CEI_{i,t} + \beta_3 SIZE_{i,t} + \sum YEAR_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$PSR_{i,t} = \alpha_0 + \beta_1 RDI_{i,t} + \beta_2 CEI_{i,t} + \beta_3 SIZE_{i,t} + \sum YEAR_{i,t} + \varepsilon_{i,t} \quad (3)$$

$$PSR_{i,t} = \alpha_0 + \beta_1 RDI_{i,t-1} + \beta_2 CEI_{i,t} + \beta_3 SIZE_{i,t} + \sum YEAR_{i,t} + \varepsilon_{i,t} \quad (4)$$

All of the proposed regression models can be estimated using different econometric specifications, namely pooled regression model, random effects model and fixed effects model. In order to determine statistically, which econometric specification is the most suitable for the data used in the empirical analysis, a three-step procedure is applied. First, LM test is used in order to decide between random effects and pooled regression model. Second, F test is applied in order to compare between pooled regression and fixed effects model. Third, the Hausman test is conducted in order to choose between a random effects and a fixed effects model (Hausman, 1978). The results suggest that the fixed effects model is the most preferable model for all of the multiple regression models. In order to alleviate the problem of heteroscedasticity, the heteroscedasticity-robust (White) standard errors are employed in the multiple regression models.

## Empirical results

The paper tries to examine the impact R&D expenditures on corporate performance. Table 3 shows descriptive statistics for world R&D companies for the period 2015-2017. Since companies represent a very heterogeneous group of units, there may be some outliers in the data. In order to eliminate the effect of possibly spurious outliers all of the continuous variables are winsorised at 5% and 95% level by each year. Furthermore, the procedure of winsorisation is often considered also as robust statistics (Reifman & Keyton, 2010). The mean value of return on sales (ROS) indicates that on average world R&D companies effectively use their sales to generate profits. Further, the mean value of price to sales ratio (PSR) shows that it is at a relatively high level compared to the current profitability of companies. The mean values for R&D intensity (RDI) and capital expenditures intensity (CEI) suggest world R&D companies devote more funds for R&D investment rather than for acquiring or upgrading their physical assets such as equipment, property and industrial buildings.

*Table 3: Descriptive statistics of variables*

Variable	Mean	SD	Min	Max
ROS	0.058	0.168	-0.545	0.293
PSR	2.474	2.597	0.224	11.692
RDI	0.096	0.119	0.005	0.489
CEI	0.057	0.049	0.009	0.218
SIZE	21.271	1.639	17.847	24.230

Source: European Commission, 2017, 2018; author's elaboration.

Table 4 shows the shows the Pearson correlation between variables (except year effects) included in the empirical analysis. The Pearson correlation matrix reveals that R&D intensity (RDI) is negatively correlated with return on sales (ROS) and positively correlated with price to sales ratio (PSR). The capital expenditures intensity (CEI) is negatively correlated with return on sales (ROS) and positively correlated with price to sales ratio (PSR), while the correlation between company size (SIZE) and corporate performance indicators is invertible. This is in line with the initial expectations. Nevertheless, the simple correlation between the explanatory variables does not indicate any strong linear relationship suggesting that there is no issue of multicollinearity in the data.

Table 4: Pearson correlation matrix of variables

	ROS	PSR	RDI	CEI	SIZE
ROS	1				
PSR	-0.321***	1			
RDI	-0.637***	0.715***	1		
CEI	-0.169***	0.244***	0.190***	1	
SIZE	0.423***	-0.472***	-0.621***	-0.087***	1

Note: Levels of significance: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

The empirical results are presented in Table 5. When investigating the relationship between R&D expenditures and operating performance, the empirical results show the following. The regression coefficient of R&D intensity ( $RDI_t$ ) is negative and significant and suggest that a 1% increase in R&D intensity ( $RDI_t$ ) leads to a 1.162% decrease in return on sales (ROS). Further, when examining the impact of R&D expenditures on future operating performance, the regression coefficient of one-year lagged R&D intensity ( $RDI_{t-1}$ ) is positive and significant, suggesting that a 1% increase in lagged R&D intensity ( $RDI_{t-1}$ ) leads to a 0.275% increase in return on sales (ROS). When investigating the relationship between R&D expenditures and market performance, the empirical results show the following. The regression coefficient for R&D intensity ( $RDI_t$ ) is positive and significant and suggest that a 1% increase in R&D intensity ( $RDI_t$ ) leads to a 3.155% increase in price to sales ratio (PSR). Further, when examining the impact of R&D expenditures on market performance in the subsequent year, the regression coefficient of one-year lagged R&D intensity ( $RDI_{t-1}$ ) suggest that a 1% increase in lagged R&D intensity ( $RDI_{t-1}$ ) leads to a 1.051% increase in price to sales ratio (PSR), whereby the regression coefficient is not significant. As regards the control variables, the results show the following. First, the regression coefficient of capital expenditures intensity (CEI) is negative for operating performance and positive for market performance. Second, the regression coefficient of company size (SIZE) is positive for operating performance and negative for market performance.

Table 5: Regression results for the relationship between R&D expenditures and corporate performance



Variable	Predicted Sign	Model 1 ROS	Model 2 ROS	Model 3 PSR	Model 4 PSR
RDI <sub>t</sub>	-/+	-1.162*** (0.177)		3.155* (1.568)	
RDI <sub>t-1</sub>	+/+		0.275* (0.133)		1.051 (2.146)
CEI	-/+	-0.211** (0.076)	-0.335** (0.124)	3.310** (1.047)	2.689 (1.501)
SIZE	+/-	0.050*** (0.015)	0.133*** (0.022)	-1.199*** (0.128)	-0.589** (0.193)
Constant	?	-0.887** (0.327)	-2.781*** (0.466)	27.490*** (2.747)	14.806*** (4.171)
Year	?	Yes	Yes	Yes	Yes
R <sup>2</sup>		0.3812	0.1372	0.3045	0.2698
Observations		5,100	3,400	5,100	3,400
LM test		2987.47***	943.35***	3333.41***	1268.46***
F test		25.78***	62.91***	69.58***	35.81***
Hausman test		97.04***	229.96***	296.07***	217.54***

*Note: 1) Levels of significance: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . 2) Heteroscedasticity-robust standard errors are in parentheses.*

*Source: European Commission, 2017, 2018; author's elaboration.*

The presented empirical results provide supportive evidence for the research hypotheses of this paper. On the one hand, the first research hypothesis that R&D expenditures deteriorate current operating performance and improves future operating performance is fully confirmed. On the other hand, the second research hypothesis that R&D expenditures are positively valued by the market and improve current and future market performance can be confirmed with certainty only for the relationship between R&D expenditures and current market performance, which is actually an approximation for long-term corporate performance.

## Conclusions

This paper is focused on examining the impact of R&D expenditures on corporate performance. The results of the empirical analysis explain that R&D expenditures represent an important determinant of operating and market performance. As regards operating performance, R&D expenditures have an adverse impact on current operating performance and positive impact on future operating performance. This implies that at the initial stages, the impact of R&D expenditures on operating performance is negative due to the insufficient profits generated, which are not high enough to overcome the R&D expenditures and due to the inability of companies to provide innovation outcomes in the same year when R&D activity is performed. Later on, the impact of R&D expenditures on operating performance becomes positive, suggesting that after one year, when R&D expenditures are made, companies can benefit from scale production and marketing of their R&D outputs. As regards market performance, the results reveal that R&D expenditures are positively valued by the market and consequently improve market performance, whereby this effect becomes not significant for the market performance in the subsequent year. This suggests that after one year, R&D expenditures become mature and do not have impact on market performance. Nevertheless, the results further support the idea that R&D expenditures are not effective in the short-term period and bring certain benefits to companies in the long-term period as suggested by market performance, which captures investors' expectations about companies' earnings in the future.

The results of this paper provide additional empirical support to the main theoretical foundations, which are commonly used when explaining the impact of R&D expenditures on corporate performance. According to the Resource-based theory, companies possess different unique resources, which can improve corporate performance. Furthermore, the Knowledge-based theory emphasizes that especially R&D expenditures can be seen as a main driver of generating competitive advantage over the competitors. The results suggest that higher levels of R&D intensity lead to lower levels of operating performance in the same year as a result of high uncertainty and risk. On the other hand, higher levels of R&D intensity lead to higher levels of operating performance in the future period, which supports these two theories. This result is further supported by the positive impact of R&D expenditures on market performance as a measure for long-term corporate performance and supports the Efficient market theory, which states that all kinds of investments should be immediately reflected in the market performance. This implies that some time is needed to gain the benefits of innovation outputs indicating that R&D expenditures bring negative returns in the short-term period and positive returns in future periods. Thus, the presented findings provide new insights of the complex relationship between R&D expenditures and corporate performance and represents a meaningful complement to the existing empirical studies in this research area.

The findings of this study provides also several important practical implications. The overall findings suggest that company should wait at least one year to obtain beneficial effects from R&D investment in terms of operating performance. On the other hand, market performance is enhanced in the year when R&D investment is made. These findings are beneficial especially for managers, who are often inclined to pursue short-term goals and short-term corporate performance, which is not necessarily to generate corporate performance in the future period. Namely, it is important that managers are aware that R&D investment does not bring immediate positive effect on operating performance. The benefits of R&D investment on operating performance should become more evident in the future period. Therefore, focusing on short-term corporate performance shall not constitute a justified reason for managers not to invest in R&D activities. The recommendation for managers is that they have to be patient when investing in R&D activities, since such investment is not immediately reflected in better operating performance. At the same time, managers should be aware, that R&D investment is positively valued by the market and immediately enhances market performance, which often represents an approximation for corporate performance in the long-term period. Briefly, in this case, managers are actually exposed to a trade-off between short-term and long-term corporate performance. This is the reason, why it is important for managers to have a comprehensive picture about the effects of R&D investment on corporate performance, as they can take appropriate investment decisions on this basis. The results are also beneficial for policy makers in order to stimulate R&D investment on a company level as well as to reduce the risk of failure of such investment. This includes promoting R&D investment with appropriate public support mechanisms as well as establishing a stable and predictable business environment without unnecessary administrative barriers. This is of crucial importance since R&D expenditures are expected to be one of the key determinant driving the corporate performance of contemporary companies.

Although this paper provides some new and interesting findings, some limitations are recognised and future research avenues are presented. First, the research period is limited on the period 2015-2017 due to the lack of data on market performance in the EU Industrial R&D Investment Scoreboard. Moreover, the limited research period makes difficult to use

sophisticated econometric approaches as well as to consider longer lag period between R&D expenditures and corporate performance. Finally, this empirical study is based solely on database, which include only financial items of individual companies. Therefore, it would be beneficial to extent the research period as well as to conduct surveys or interviews in order to obtain some further interesting insights.

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# AN ANALYSIS OF FACTORS AFFECTING THE MUSIC INDUSTRY'S COMPETITIVE ADVANTAGE IN THE DIGITAL ERA

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## Abstract

*Digital music sales are climbing but overall music revenue is decreasing. Piracy from MP3 digital file seems to be the villain with Thailand's music industry following a global trend dropping from \$US 304 million in 2010 to \$US 279 million in 2014. Within the fast-evolving technology of market place, digital music becomes a key component of this growth. New technological ideas, innovative models and distribution channels must be adapted to accommodate the change. Piracy issues especially the wide spread of MPEG-1 Layer 3 aka MP3 digital files, an audio coding format for digital audio which uses a form of lossy data compression but still contains the near perfect sound quality from the original recorded WAV file while its size is ten times smaller. However, they are always stumbling blocks to the industry's sustainable growth. This study therefore presents a research model about the structure of the factors including technology capability and new product development that affect the competitive advantage of digital music industry. Quantitative data was obtained from a proposed sample of 270 questionnaires. Data analysis was conducted using Partial Least Square (PLS-Graph) software to apply Structural Equation Modelling (SEM).*

**Keywords:** Digital Music, Competitive Advantage, Technology Capability, New Product Development, SEM

**JEL classification:** M20, O10, O32

## Introduction

Since the Phonograph cylinders a device that can record and reproduce sound invented by Thomas Edison in 1877, music industry had never been the same. (AES, 2014) From Music business and industry history demonstrates the technology as a significant tool to increase music value in the term of a great business. From the phonograph cylinders, the first commercial medium, to unphysical sale, music download in internet, it spends more than hundred years to develop from analog to digital technology. The key of the changes is the user's convenience, not always the quality (Brylawski et al., 2014). Music business value now also increase to huge revenues compared to the early year of the music business. The technology capability and the new product development could have great impacts on the industry's competitive advantage.

The first beginning that technologies definitely take a part of music industry is the phonograph cylinders invented by Thomas Edison in 1877. Music industry had taken advantage of recording music on cylinders. Even though these cylinders could not record long length of music but they were the first music medium used in music business (The Thomas Edison Papers, 2012). A phonograph cylinder specially used for recording and reproducing sound is an important factor to start the music business path. Rising of the discs and discs player made the popularity of phonograph cylinder to gradually decline, and in the

year of 1912 the marketing of phonograph cylinder had ended. The quality of discs was much better than cylinder in sound volume and operated ease. The process of discs recording production supported making mass market. This new technology discs became popular all over the world. Gramophone invented by Emile Berliner was made the first recording with 5-inches discs under license in 1889. The new development of Berliner company Gramophone by used 7 inch discs without labels made other progress in music industry but sound quality of reproduction was poor. The new 7 inch discs technology allowed to speedily copying record. From 1897 to 1898, Berliner Company manufactured 11,211 gramophones and 408,195 records. The big number of orders came from Europe (Gronow & Saunio, 1998).

During the mid of twentieth century, there were various recorded music formats introduced to technology industries besides the phonograph cylinders and gramophone discs. In 1964 Philips record company releasing compact cassette tape in 30 minute long format was so success in commercial market. Since tape cassettes introduced around 1960, they were dominant the all music recorded commercial. (Rogers, 2013) However, cassette tapes as principle music recoded mediums gradually reduced the role in the music business market due to the new technology digital compact discs. The first commercially digital compact discs and players distribution to public began in 1982 by two companies, Philips and Sony (Immink, 1998). The record market significantly response the new technology digital compact discs. The Quality of sound play back was so satisfied to customers and the record discs could be copied faster by digital technology. As the result, record companies could timely response the markets' demand. After first commercial available in Japan by Philips and Sony companies, in 1983, the digital compact discs and players were first sold in the United States; 800,000 CDs and 30,000 players sold in only that year (Peek, 2010) Many electronic companies completed each other to build the new player types. Sony Company first introduced the portable CD players to the market and other companies made the follow. These creativity and innovation were so popular among all ages and so much supports the selling recorded music discs to around the world rapidly. Until 2001 the CD album business remained the top of selling but later years the digital technology made the massive transform in the way of selling recorded music (Williams, 2011).

Meanwhile, with the new introduction of the digital distribution of music such as MP3, sales of CDs began to decline in the 2000s overall by 20% (Smith, 2009). The techniques of MP3 are that it compresses a huge music file into somewhat a small tiny one than expected, to be specific 10 times when the quality drops just likely to be 10 percents. MP3 actually stands for "MPEG-1 Audio Layer 3(IETF, 2008). MP3 is one of the greatest examples of digital music technology, which means sounds when it is played are stored in alphanumeric form. CDs are also digital but older music formats such as LP records and cassette tapes used analog technology. The MP3 compression format creates files that don't sound exactly like the original recording, it is a lossy format. In order to decrease the size of the file significantly, MP3 encoders have to lose audio information. The small size of MP3 files enabled widespread peer-to-peer file sharing of music ripped from CDs, which would have previously been nearly impossible. Digital music distribution began with the illegal file-sharing activities of the late 1990s (Klym, 2005) and exploded when the software tool 'Napster' arrived on the scene in 1998 (Lamont, 2013). It however wasn't until Apple's iTunes Music Store release in 2003 that legal downloading of digital music began and by 2006 iTunes had taken control of 80% of the legal digital music downloading market in the U.S. (Klym, 2005). However, illegal copying and sharing of files has continued to explode with streaming a new threat to the Thai music industry. In 2014, Thailand's music market dropped from US\$304 million in 2010 to US\$279 with experts indicating this trend will continue at nearly one percent per year

through 2019 (“Digital platforms lift Thai media,” 2016), with digital music piracy being the No. 1 threat to the Thai music industry. The researchers therefore have decided to undertake a study how competitive advantage is affected by new product development and technology capability that would help the recording industry survive.

## **Literature Review**

### ***Technology Capability***

There are many interpretations of what technology capabilities consist of but according to the German Development Institute (GDI, 1994) it is stated that adequately developed technological capability that is essential is the knowledge of the technologies available, the ability to evaluate and select such technologies, to utilize, adapt, improve, and, finally, to further develop them. This is consistent with Meyer-Stamer (GDI, 1994) which describes the Four Pillars of Technological Capability (embraced by the GDI) as the capacity to gain an overview of the technological components on the market, assess their value, select which specific technology is needed, use it, adapt and improve it and finally develop technologies oneself. Technological capabilities can also vary between sectors (Eckaus, 1991; Zahlan, 1990). In the industrial sector, the elements of technology capability - production engineering, manufacture of capital goods, and research and development, etc. - are different from those essential for the services sector. Huang (2011) investigated technology competencies and stated it plays a significant role in firm innovation and competitiveness. Research from Taiwan's information and communication technology (ICT) industry suggested that capabilities of exploring or exploiting technological opportunities, core technology capability, and autonomy of R&D decisions are particularly important to firm innovation in a highly competitive environment.

### ***New Product Development***

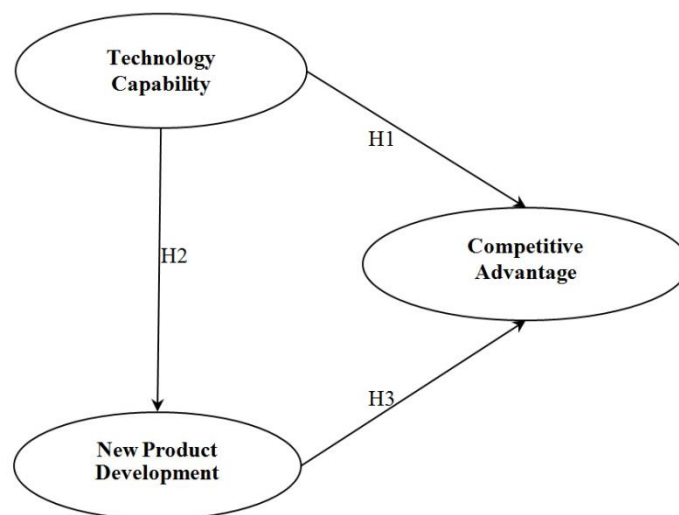
Feng and Wang (2013) investigated the impacts of three types of supply chain involvement (SCI) on three types of new product development (NPD) performance from 214 Chinese manufacturing companies. It was discovered that internal involvement is positively associated with customer and supplier involvement. It was also found that three types of SCI influence three types of NPD performance differently. Specifically, internal involvement is important in improving NPD speed, while customer and supplier involvement have significant effects on NPD cost and NPD speed. Moreover, internal and customer involvement enhance market performance indirectly, whereas supplier involvement improves market performance both directly and indirectly. Trainor, Krush, & Agnihotri (2013) examined how a firm's behavioral tendencies, along with its existing business resources, contribute to the formation of new product development (NPD) capability using survey data from more than 150 US-based firms. Findings suggested that a firm's competency in marketing intelligence and its tendency to engage in partner-style relationships have both direct and interactive effects on NPD capability. This capability is further shown to positively relate to organizational performance, and this relationship is moderated by technological uncertainty.

### ***Competitive Advantage***

Porter (2001) identified two basic types of competitive advantages consisting of cost advantage and differentiation advantage. A competitive advantage exists when the firm is able to deliver the same benefits as competitors but at a lower cost (cost advantage) or deliver

benefits that exceed those of competing products (differentiation advantage). Thus, a competitive advantage enables the firm to create superior value for its customers and superior profits for itself. Awwad, Al Khattab, and Anchor (2013) stated that competitive priorities included quality, cost, flexibility and delivery. In the research, the results of the data analysis indicated a significant relationship between competitive priorities and competitive advantage and suggested that recognizing and nurturing this relationship provides the master key for a firm to survive in a turbulent environment. Therefore, operational and marketing strategies should place emphasis on competitive priorities such as quality, cost, flexibility and delivery to achieve, develop and maintain competitive advantage. Chang (2011), focused research on the relationships between corporate environmental ethics and competitive advantage, and concluded that companies should invest more resources to enhance their environmental ethics. By so doing, this will help to improve their competitive advantage as well as driving green innovations.

*Figure 1. Conceptual Framework*



### ***Proposed Research Hypotheses***

H1: Technology Capability has a direct influence on Competitive Advantage

H2: Technology Capability has a direct influence New Product Development

H3: New Product Development has a direct influence Competitive Advantage

## **Methodology**

### ***Sample and data collection***

Sample size suggestion usually depends on how the model is complicated, but typically ranges between 5 to 20 questionnaires per observed variable, with entire sample size should exceed 200 cases (Hair et al, 2006). Therefore, a ratio of 15:1 is acceptably reliable for a structural equation model analysis (Schumacker & Lomax, 2010). Thus, the study's sample size of 270 individuals for 18 observed variables ( $18 \times 15 = 270$ ) was highly reliable. The questionnaire was administered to 270 individuals in digital online music industry. The questionnaire was established from the theories and related reviewed literature as a tool to measure the proposed research model.



## Measurement

Five experts in the involved industry were asked to check the questionnaire's reliability to ensure that the prospective questionnaire's responders can be collected with reliability and consistency according to the method of the Item-Objective Congruence (IOC), the screening of the survey questions. If the result of  $\sum x/n$  is above 0.5, it will be considered as valid. There were 27 questionnaires were responded as a trial prior to the actual survey to check as samples if the questionnaire has a tendency of reliability and consistency. The reliability value was calculated by using Cronbach's  $\alpha$  (Cronbach, 1951) to ensure internal consistency within the items. According to Best and Kahn (2003), when calculating Cronbach's Alpha ( $\alpha$ ), if it ranges from 0 to 1 and a value of  $\geq 0.70$ , it reflects good reliability of the questionnaire. According to the pre-test, Cronbach's Alpha ( $\alpha$ ) averaged 0.936, indicating reasonable reliability (Hair et al, 2006). All questionnaire items used a 7-point agreement scale response format (Likert, 1972), with 1 representing the manager strongly disagrees with the item's statement, while 7 representing the manager strongly agreed with the item's statement.

## Statistical Analysis Overview

The researchers adopted the survey method for data collection, whose hypotheses were investigated by the use of the software SmartPLS (Partial Least Square) 2.0 to examine the general fit of the proposed model with data and to identify the overall casual relationships among constructs. Measurement and data collection implies an evaluation of the measurement model, which for the study included: 1) the individual item reliabilities, 2) the model's convergent validity, and 3) discriminant validity.

## Analysis and Results

According to the analysis result of scale validity and reliability, scale investigation has been conducted using internal consistency measurement coefficient cronbach's alpha to calculate the average value of the correlation coefficient. It was found that alpha coefficients ranged from 0.8415 to 0.9362 and the total is 0.8993. Individual item reliability was examined by looking at the loadings, or correlations, of each indicator on its respective construct. For reflective indicators, it is generally accepted that items must have a factorial load ( $\lambda$ ) of 0.6 or above (Table 1) (Hair et al, 2006).

*Table 1: Convergent validity of the latent variables*

Items/Constructs	Cronbach's Alpha	Loading	t-stat
<b>Competitive Advantage (COA)</b>	<b>0.9362</b>		
COA1		0.9113	100.3193
COA2		0.9016	80.8348
COA3		0.8619	34.1078
COA4		0.8552	51.0915
COA5		0.8713	66.4991
COA6		0.8225	41.3822
<b>New Product Development (NPD)</b>	<b>0.8415</b>		
NPD1		0.7765	36.9997
NPD2		0.8011	41.0699
NPD3		0.7417	28.2963
NPD4		0.7375	21.3268
NPD5		0.7347	23.1217

Items/Constructs	Cronbach's Alpha	Loading	t-stat
NPD6		0.6582	17.8155
<b>Technology Capability (TEC)</b>	<b>0.9203</b>		
TEC1		0.8051	37.9299
TEC2		0.8354	36.3355
TEC3		0.8234	42.7848
TEC4		0.8571	51.5587
TEC5		0.8699	57.5915
TEC6		0.8820	66.0163
<b>Total</b>	<b>0.8993</b>		

Table 2 and Figure 2 and 3 show factor analysis results affecting manufacturers' e-waste management intention with the Composite Reliability (CR) greater than 0.50 with the AVE values also greater than 0.50. Hooper et al. (2008) indicated that items with low multiple R2 values ( $\leq 0.20$ ) should be removed from an analysis as this is an indication of very high levels of error. Hair et al. (2006), used higher criteria and suggested that the R2 values should be greater than 0.2, representing the reliability of the measurement (Lauro & Vinzi, 2004; Henseler et al, 2009) Reliable measurements can be found in the column of interest which is higher than the cross construct correlation values in the same column.

Figure 2: Final Model (PLS Algorithm)

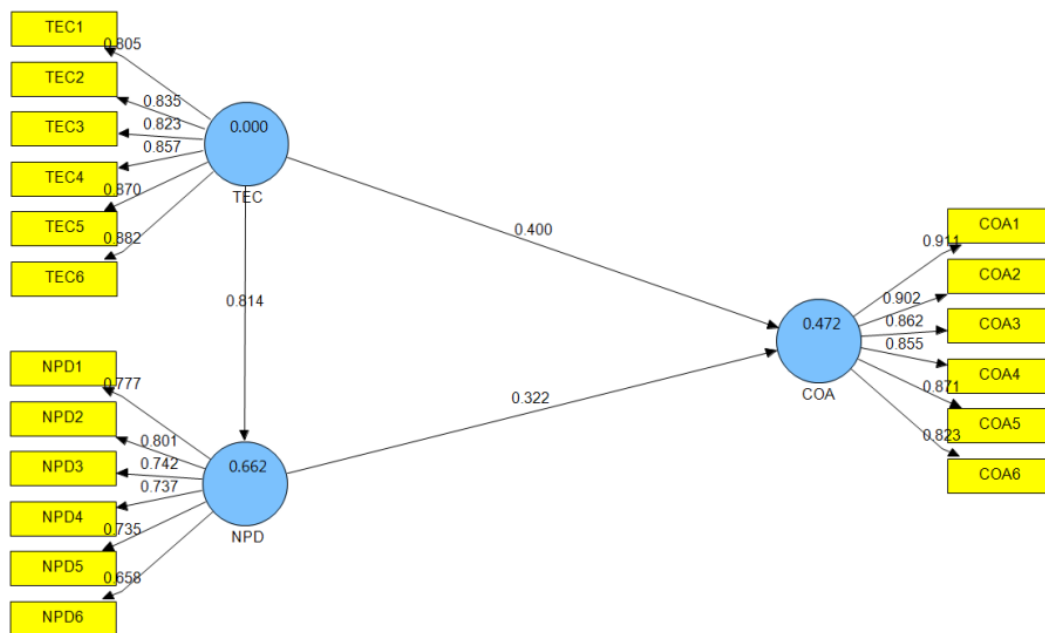


Figure 3: Final Model (Bootstrapping)

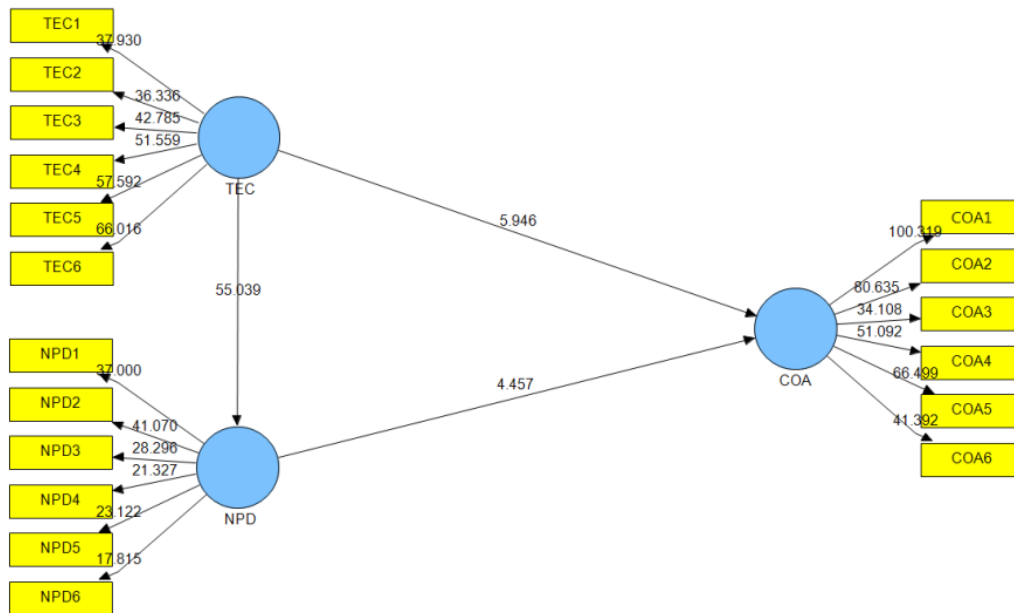


Table 2: Statistics showing the discriminant validity

Construct	CR	R <sup>2</sup>	AVE	Cross Construct Correlation		
				COA	NPD	TEC
COA	0.9497	0.4721	0.7859	<b>0.8865</b>		
NPD	0.8805	0.6621	0.5520	0.6467	<b>0.7430</b>	
TEC	0.9378		0.7155	0.6612	0.8137	<b>0.8459</b>

An Influence of each of the variables that affect competitive advantage (COA) is shown in Table 3 below.

Table 3: Direct (DE), indirect (IE), and total (TE) effects of the independent variables

Variables	R <sup>2</sup>	Effect	Independent Variables	
			TEC	NPD
Competitive Advantage (COA)	0.4721	DE	0.3995	0.3216
		IE	0.2617	N/A
		TE	0.6612	0.3216
New Product Development (NPD)	0.6621	DE	0.8137	N/A
		IE	N/A	N/A
		TE	0.8137	N/A

All hypotheses had statistical significance which is considered to have high reliability (Table 4) by  $|t| \geq 3.291^*$ , means significance at  $p \leq 0.001$  (Lauro & Vinzi, 2004; Henseler et al, 2009).

Table 4: Results of hypotheses testing

Hypotheses	coef.	t-stat	Results
H1: Technology Capability influences Competitive Advantage	0.399	4.45*	<b>Supported</b>
H2: Technology Capability directly influences New Product Development	0.813	5.94*	<b>Supported</b>
H3: New Product Development directly influences Competitive Advantage	0.321	55.03*	<b>Supported</b>

## Discussion and Conclusion

Based on Porter's Generic Strategies model, three basic strategic options are available which are Cost Leadership, Differentiation and Focus that business using to gain competitive advantage. He also developed business analysis model called Five Forces, three forces from 'Horizontal' competition which are 1.) The threat of substitute products or services, 2.) The threat of established rivals, and 3.) The threat of new entrants; and two others from 'Vertical' competition which are 1.) The bargaining power of suppliers, and 2.) The bargaining power of customers. The Five Forces Model which is quite simple but so powerful that can be used to analyze the competitiveness of a business environment, identifying potential profitability of business strategies, and helping to determine an industry's weaknesses and strengths.

As well as music industry that is also struggling with the basic principles of running a business, creating, and maintaining a competitive advantage. Because of the aggressive rise of the competition, data availability, and innovation; Music Industry in the Digital Era should focus now more than ever on long-term strategic planning in order to sustain the competitive advantage and to improve its position in the market. While taking advantage of digitalized technologies that can provide the necessary differentiation and cost control, applying digital marketing in which competitive advantage can utilize best on use of technology and resources. Competitive advantages in the digital era, the music industry should realize what its SWOT are (strengths, weaknesses, opportunities, and threats). These are keys to setting up your own business and secure the successes. Competitive advantage in terms of digital marketing is an extremely perspective way of dominating the market, offering services that are distinct enough to sustain your market position. Traditional methods of market research and strategy are now more pertinent than ever and adjacent new opportunities, especially when merged with leading technologies. However, businesses have a long way to go to make their digital transformations as smooth and effective as possible, resulting in a profitable position in a market.

Technology has become a big role that shapes the music industry today. Decades ago, only a big label can produce the artists and their songs to the mainstream market. They poured a lot of investment on mass media like television, radio and magazine. Nowadays, only a decent laptop, with a microphone and a soundcard allow any musician to produce a label standard music work like before, and they do not need any mass media to help promote them as they have the greatest PR tool with them already, the social media like Facebook and YouTube which actually it is the same tools the mainstream industry uses today. While the new product development needs to be considered, it is obvious that when the industry faced the crisis was when recording format was stuck with CD and MP3 for many decades without any development. When the music streaming was introduced to the music users, the industry strived back on track again. However, to prevent the same situation like in the past, the new music product development plan should be well-prepared before the life cycle of the music streaming reaches the end. From this research, it has been established that the competitive advantage of the digital music industry occurs because of technology capability and new product development. Furthermore, due the technology capability also influences the new product development. These two variables are speculated to have a direct and positive influence on the competitive advantage of the digital recording music industry today. Therefore, it is an implication that survival and the sustainability of the recording industry depend on these two variables.

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# FAMILY BACKGROUND AND FINANCIAL LITERACY AS A PREREQUISITE FOR ENTREPRENEURIAL INTENTION OF UNIVERSITY STUDENTS

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## Abstract

*University students are young and highly educated individuals with high entrepreneurial potential. Still, there are not many of them who are willing to accomplish their own entrepreneurial ideas. Empirical research shows that the most common causes for termination of entrepreneurial activities are inadequate profitability and insufficient knowledge to run a business venture which makes students' financial literacy extremely important issue. A large scale scientific project was carried out to explore the level of financial literacy and the likelihood of taking risks among the student population in Croatia. This paper presents main results of the quantitative part of the research, as well as detailed analysis of qualitative-based focus group research that was performed in order to examine how the family background can shape an individual's level of financial literacy and entrepreneurial orientation later in life. In the current situation of low level of awareness of financial topics among students and fairly conservative risk attitude of Croatian students, it was found that supportive family background is the cornerstone for the development of future entrepreneurial activities of young individuals. The importance of financial literacy in the context of strengthening youth entrepreneurship and the emphasis of entrepreneurial competencies included in the educational system remains a challenge and opens new research direction for further analysis.*

**Keywords:** entrepreneurship, financial literacy, family background, focus group, risk attitude

**JEL classification:** D14, G11, L26

## Introduction

The promotion of entrepreneurship has become increasingly important in both developed and developing countries as the boost of entrepreneurship and nurturing entrepreneurial traits acts as a driver of countries' competitiveness and economic development. SMEs account for more

than 99% of total EU enterprises population, with micro enterprises contributing to this percentage with 93% (European commission, 2017). Croatian economy is not exception to this trend; it consists of more than 120 thousand business entities and is dominated by micro (up to 10 employees) and small (up to 50 employees) enterprises. Small enterprises account for 98.6% of total number of Croatian companies and employ more than half of all employees in Croatian business sector (FINA, 2018). The importance of small enterprises should be emphasized since the development of SMEs represents the main tool in stimulating the growth of national economy, contributes to business dynamics, sustainable economic growth and generation of new employment opportunities.

The decision to become an entrepreneur is individual-based and subject to several conditions among which the most important being access to resources and available human capital. Practice shows that only a smaller percentage of the working population actually engage in entrepreneurial self-employment. Scholars on the other hand generally argue that entrepreneurial behavior is intentional and can be predicted. Ajzen (1991: 181) defines intentions as "indications of how hard individuals are willing to try, of how much of an effort they are planning to exert, to perform the behaviour". Entrepreneurial intention can be therefore defined as one's willingness to undertake entrepreneurial activity or the intention to start own business. Strong entrepreneurial intention is likely to result with an attempt to start a new business.

Entrepreneurial activity is related to motivation of potential entrepreneurs which might be driven by two main reasons: entrepreneurs either recognize a potential business opportunity or they are forced out by necessity. Starting the entrepreneurial activity motivated by necessity is often related to adults on the labor market who lost their jobs but also to young people who did not yet find their first job and started receiving steady income. Considering the fact that in March 2019, the youth unemployment rate in Croatia was 21.3% while the EU average was 14.5% (Eurostat, 2019), additional encouragement of entrepreneurial activities among young population in Croatia was necessary. The idea of being an entrepreneur motivated by the recognition of business opportunity is still not sufficiently fostered in Croatia, and it is not supported by acquiring sufficient entrepreneurial competences within the regular educational system either. According to the results of GEM study, the world's largest empirical study of entrepreneurial activity, only one-third (33.1%) of adult population in Croatia recognizes business opportunities to start a new business project, while the EU average is 44.2%. Leader in recognition of opportunities is Sweden where 81.6% of Swedes recognize the entrepreneurship as a business opportunity (Singer et al., 2019).

Empirical research shows that the most common causes of termination of entrepreneurial activities are inadequate profitability and insufficient knowledge to run a business venture. Betancourt (2017) stated that entrepreneurial culture and financial education are two fundamental issues for the success of entrepreneurial activities and that understanding financial risks offers greater chances for success in the market. Entrepreneurs with lack of sufficient knowledge on financial issues or those who are overconfident about their knowledge could make poor financial decisions at the beginning of their ventures. Therefore, one of important factors to boost the entrepreneurial skills could be the financial literacy as a prerequisite of responsible financial management behavior in an entrepreneurial activity. Wise financial behavior, as one part of financial literacy, can increase the chances for the entrepreneur's venture attempt to be successful in the market, while impulsive decisions have higher chances of failure.



From the aspect of entrepreneurial finance which considers the amount of financial resources necessary for starting a new business, entrepreneurs are again faced with financial issues. Financial topics and even the process of financing can sometimes be resolved in the family; in that sense past exposure to entrepreneurship in the family could be a good starting point for university students to structure their attitudes to their future entrepreneurial activity and financial decisions. Moreover, research shows that more educated people are at the same time more active in entrepreneurship, especially in the segment of opportunity-based entrepreneurship (Singer et al., 2019). Family experiences and well-designed educational system could encourage young university students to take over the role of entrepreneurs more often than it is currently present.

This paper explores selected factors that might affect the entrepreneurial intention of university students. Entrepreneurial activity is often associated with high risks and unpredictable outcomes. Students' interpretation of term "risk" was researched by an extensive research on financial literacy of Croatian students (Šubić et al., 2019), where research results indicate that 60% of students identify risk as an uncertainty, while only 26% of participants recognize risk as an opportunity and additional 13% of students as an excitement. According to their risk attitude, Croatian students are fairly conservative and it is necessary to examine factors that might have impacted this conservative view which might inhibit entrepreneurial activity in the future. Namely, this paper questions whether the attitude towards entrepreneurship is motivated by the lack of financial knowledge or stems from students' past experiences. Research by Šubić et al. (2019) has shown that two thirds of Croatian students are very interested in expanding their financial knowledge and therefore this paper will contribute to broader understanding of the relationship among financial literacy, family background and entrepreneurship.

## **Theoretical background**

Entrepreneurial intention can be the result of many factors and although it has been empirically tested by many authors, new research might still be valuable (Fayolle & Liñán, 2014). For example, research on entrepreneurial traits has a long history in the United States, but the US have a strong entrepreneurship tradition while cross-cultural studies and studies in non-US cultural, social, and economic contexts regarding this topic are rare (Ozaralli & Rivenburgh, 2016).

University students are young and highly educated individuals with high entrepreneurial potential. Hisrich & Peters (2002) argue that students have mixed feelings about considering entrepreneurship as a career and that very few intend to pursue an entrepreneur career immediately after graduation. In an attempt to modify the attitudes of young people towards entrepreneurship and to encourage entrepreneurial activity most university educational programs nowadays include some form of entrepreneurship education and business plan competitions. Understanding the factors that will motivate students to take risk and choose self-employment may become critical for developing policies and programs that will support entrepreneurial activities.

Comprehensive frameworks have been developed for explaining and predicting entrepreneurial behaviours. According to Ajzen's theory of planned behavior model, society's norms and values are materialized in individuals' understanding of subjective norms, which can be a predictor of intentions to behave in certain ways (Ajzen, 1991). For example, it has been confirmed that having an entrepreneurial student peer group has a positive effect on

students' entrepreneurial intention (Falck, Heblich & Luedemann, 2012). The understanding of similar social factors that shape students' intentions to start their own business is necessary in order to increase entrepreneurial activity in the future. Students' entrepreneurial intention can also be related to their social and economic status, since research has found higher entrepreneurial intentions among students that faced economic challenges (Kristiansen & Indarti, 2004). It has been confirmed that entrepreneurial intention can be related to established entrepreneurial culture; students in such cultural surroundings had a higher entrepreneurial intention (Boissin et al., 2009). Demographic factors such as sex have been found to impact entrepreneurship intention as well, namely male students were more likely to become entrepreneurs than female students (Plant & Ren, 2010; Nguyen, 2018). Younger individuals showed higher intention for entrepreneurial activity than older students (Israr & Saleem, 2018), implying that individual's age is negatively related to entrepreneurial intention. The decision to start a new venture seems to be influenced by personality traits such as optimism, innovativeness, risk-taking propensity (Ozaralli & Rivenburgh, 2016; Israr & Saleem, 2018) and especially the level of individualism (Falck, Heblich & Luedemann, 2012).

Family background as a predictor of student entrepreneurial intention has received significant attention. As argued by social cognitive theory, parents act as role models for their children (Bandura, 1986). Role modeling in this case refers to learning by examples rather than from direct experience. In terms of entrepreneurial intention, this means that students with more entrepreneurial oriented parents see them as their initial role models and therefore might show generally more positive attitude towards entrepreneurship. Exposure to entrepreneurship has been found to positively influence entrepreneurial attitudes and behavior by numerous authors (e.g. Hisrich, 1990; Matthews & Moser, 1996; Drennan, Kennedy & Renfrow, 2005; Falck, Heblich & Luedemann, 2012). Students whose mothers were working as entrepreneurs had significantly more intentions to start a business (Israr & Saleem, 2018). Evidence suggests that family business tradition has a positive effect on student's entrepreneurship orientation, although students with prior entrepreneurial exposure more often choose starting their own business than continuing their family business (Cieřlik & van Stel, 2017). Lindquist, Sol and Van Praag (2015) argue that parental entrepreneurship increases the probability of children's entrepreneurship by about 60%. However, the impact of such exposure can depend upon its intensity (Van der Zwan et al., 2013).

Family business experience and the positiveness of such experience is related to perceived desirability of starting a business, although perceived feasibility of starting one's own business is highly dependent upon the positiveness of such experience (Drennan, Kennedy & Renfrow, 2005). Students whose parents were working as entrepreneurs showed a more positive attitude towards risk taking and entrepreneurial orientation (Marques et al., 2018), just as exposure to start-up experiences increases both short and long term entrepreneurial intention. Still, not all previous findings unanimously support the finding that family members owning and running businesses stimulates a high propensity towards entrepreneurship. Such relationship has been shown negative in the research by Marques et al (2012) or insignificant (Nguyen, 2018). As shown earlier by Drennan, Kennedy & Renfrow (2005) positive entrepreneurial orientation can be related to positive family member entrepreneurial experiences, namely those who found a positive view of their family's business experience perceived starting a business as both desirable and feasible.

Family background in terms of parent's education or parent's occupation (Israr & Saleem, 2018) also positively influenced entrepreneurial intention. The research on family background included childhood experiences as well, where difficult childhood experiences are positively

related to perceived desirability and feasibility of starting one's own business (Drennan, Kennedy & Renfrow, 2005). Parents background in terms of immigration from rural to urban areas versus urban origin was not found to influence entrepreneurial intention (Nguyen, 2018).

The importance of examining entrepreneurial intentions has been especially recognized in the Southeastern European countries. In less developed countries, many policy makers and governments see entrepreneurship as a way to stimulate economic development and tackle serious economic and social challenges. A comparative research covering business students from several Southeastern European countries has concluded that in these countries social norms act as an important determinant of entrepreneurial intentions (Rajh et al., 2016). The role of family support has been found to be related directly to entrepreneurial intentions.

Financial literacy is not a commonly researched predictor of entrepreneurship, although its role in entrepreneurial success has been recognized by several authors (e.g. Nunoo & Andoh, 2012; Cossa, Madaleno & Mota, 2018). Huston (2010) tried to define financial literacy as measuring how well an individual can understand and use personal finance-related information. Hence, apart from pure financial knowledge, application of that knowledge is essential. Financial literacy supports the understanding of key financial concepts, namely, markets, investments, economics, budgeting, financial planning, banking basics and possibly enhances entrepreneurial intention. Research literature in the field of financial literacy among young adults has proved that the most important channel through which young people acquire financial knowledge are parents (Lusardi, Mitchell & Curto, 2010). A student-sample based research has confirmed that financial literacy enhances entrepreneurship skills (Suparno & Saptono, 2018). Another research by Oseifuah (2010) indicated that an above average level of financial literacy among young entrepreneurs contributed to their overall entrepreneurship skills, thus, overall, financial literacy can be seen as a moderator of increased entrepreneurial activity.

## **Methodology of research**

In 2018, Catholic University of Croatia has carried out a scientific project *Improving Financial Literacy of Young People with the Aim of Optimizing Risk Exposure and Defining the Factors that Impact the Development of Entrepreneurial Activity*. The main research goal of the project was to determine the level of financial literacy and the likelihood of taking risks among the student population in Croatia. However, this research also aimed at explaining some other outcomes related to financial literacy, such as students' attitudes towards entrepreneurship. The large scale research on financial literacy was divided into two parts - a quantitative and qualitative part. The quantitative part of the research was conducted with a survey questionnaire at seven Croatian universities at the sample of more than 1,700 students. The main results of quantitative research show an insufficient level of financial literacy and a low level of awareness of financial topics among students. The term "financial literacy" is not familiar among the students since almost two thirds of students have stated that the term "financial literacy" is not familiar to them at all.

When it comes to awareness about the importance of financial literacy, research results show that over 70% of research participants rarely or almost never listen or read about finance-related topics. Such results can be explained through the fact that most students still live with their parents who take care of finances, but also the Croatian trend of youth living with their parents often until they are 30 years old or older (Eurostat, 2018). Nevertheless, students show great interest in expanding their financial knowledge. 63% of them agreed that they need

greater knowledge in the field of finance. Furthermore, according to other researches, the financial literacy is crucial for improvement and growth of entrepreneurship (Avlijaš et al., 2014), which creates grounds for researching the relationship between financial literacy and entrepreneurship.

### ***Data collection – qualitative research***

Considering that previous research findings indicate that the entrepreneurial initiative in many ways depends on the socio-demographic characteristics of prospective entrepreneurs, a qualitative-based focus group research with students was conducted in order to explore patterns in the family environment in which an individual grows and the level of financial literacy that define interest for entrepreneurial activities.

The data for the qualitative research were collected with the usual procedure for conducting a group interview, at the Laboratory for Psychological Research of the Catholic University of Croatia. The focus groups interviews were recorded by an audiovisual method, along with taking notes of the most important parts in the participant's responses. Each focus group lasted for 54 minutes.

A total of 21 student participated in the study, including 9 female participants and 12 male participants. All participants are students of different study fields and study levels, which was important due to the heterogeneity of students' interests and context. Participating students were contacted by e-mail containing general information about the project and the call for the focus groups. All students gave consent to participate in the qualitative research.

In order to examine how the family background can shape an individual's level of financial literacy and entrepreneurship later in life, it was necessary to divide the participants into two focus groups, according to certain criteria. Therefore, all participants were divided according to the basic criteria of the material income of their own family in which they grew up or still live in. According to such criterion, the focus group has been divided into a group with the participants with above-average income (further in the text "first group") and the group with the participants of average or below average income (further in the text "second group"). This criterion is important because of the comparisons of perceptions and the entrepreneurial propensity of those who come from families with above-average or average and under-average income. Furthermore, in most cases "first group" students come from families that were directly involved in entrepreneurial activities or are in some other ways involved in business.

Focus group interviews had several research goals:

- Examine how often and in what way conversations about finances have been conducted in the family
- Examine what opinion has prevailed over entrepreneurship and entrepreneurs in the family
- Examine what life priorities the family has emphasized
- Define to what extent the family environment has encouraged the ambition and desire to achieve success in business life

### ***Findings***

This paper will discuss the difference between the two groups related to Conversations about entrepreneurship in the family and The meaning of business success.

### **Conversations about entrepreneurship**

This section explored to what extent are students familiarized with entrepreneurship in their immediate family. The idea was to examine whether somebody in participant's family has been involved in entrepreneurial activities, how was that process conducted, what has been the family opinion about entrepreneurship in Croatia and Croatian entrepreneurs, and what is the participant's perception of mentioned thematic today. Furthermore, one of the goals was to understand parents' perception of entrepreneurial activity and whether parents have encouraged students to build a career or to find a safe job. Since families of the participants in the first group dominantly have been working in their own companies, the results can be analyzed through the assumption that learning from positive entrepreneurial examples can enhance the entrepreneurial activity of individuals in the future (Fornahl & Brenner, 2003: 54).

Although the participants of the first group were not familiar in detail with the specific process of starting a job and other entrepreneurial activities their parents have initiated, the participants have a positive opinion on entrepreneurship. At the same time, they agree on a positive family attitude toward entrepreneurship in Croatia, and that their parents encourage them to work on their own entrepreneurial ideas after finishing their studies. Participants also express positive views on entrepreneurs in Croatia and used terms such as "inspiration" while talking about this topic. In general, the participants of the first group are more open in terms of thinking about their own independent entrepreneurial attempts. This can be directly connected to the results in the study about the influence of early exposure to family business experience on developing entrepreneurs. The study shows that „role models in entrepreneurial families are important motivators for becoming self-employed“ (Tarling et al., 2016: 745).

Well, they would say positive things about Croatian entrepreneurship. Yes, they approve a good idea when they see it in the media. (B.)

Well, they had a positive opinion about it. I don't know, for example, when I have been daydreaming about my own ideas, my father would say „Go ahead, go... do it, figure it out, accomplish it. (Z.)

However, participants expressed some concerns in the context of entrepreneurship in Croatia. They mostly point out the inefficient bureaucracy and a high perception of corruption that demotivates young people who want to start their own business. Those problems are identified and emphasized in both groups, regardless of their opinion on Croatian entrepreneurship.

When it comes to the entrepreneurial career on the one hand or finding a stable job on the other, the participants of the two groups are dominantly different in their narratives. First group participants agree that parents have been encouraging them to use all opportunities offered in the education process - from projects to travel abroad. This is why they are planning to continue with such activities and build a dynamic career. Therefore, results show that participants of the first group got used to exploring new situations and using all the opportunities given, which could be the answer to the question why are they so open to the challenging situations – such as developing their entrepreneurial ideas. Once more, it is shown that the family background is often crucial for developing and starting the participant's entrepreneurial ideas.

When I started college, I began to travel a lot, I participate in the college projects, European projects... I have been to America, I have used the opportunity to do Erasmus, I have volunteered on conferences (P.)

In the second group, most participants responded positively to the question of entrepreneurial attempts in their family. However, when it comes to describing the process of entrepreneurial experience, the negative perception of entrepreneurship was highlighted. What is particularly negative in the perception of second group participants about entrepreneurship is too much personal responsibility, the question of financial sustainability and bureaucracy. Along with the negative perceptions of entrepreneurship, results show the discouragement of participants to achieve their own entrepreneurial activities and the tendency to seek secure and stable jobs, which is the main difference in comparison to the first group.

The worst jobs are those that you have to carry home. You don't work from 7 a.m. till 3 p.m., but you have to think about it at home, how you can promote other employees. You are at home with your family, but can't relax, because you have many worries and responsibilities. (I.)  
My father is his own boss, so he always tries to push me away from it. He doesn't want me to be my own boss because he thinks it's the worst... It's really, very, very hard. It's very exhausting and hard, it's not the work from 9 – 5, it's 0 – 24. (K.)

Besides great responsibility, the second group participants mention the question of financial sustainability in entrepreneurship, which they directly connect to uncertainty. Mentioned results could be analyzed through the constant concern about finances and savings that the family of the second group participants have been emphasized. Such family background is oriented toward the stable and secure job rather than the financially unsustainable entrepreneurship, which is also shown in the narratives of the participants.

I don't find any benefits for young people in this job in the context of income, maybe just in terms of some kind of experience, for example, if they help their parents in the company to learn how it works. In my opinion, if a young person enters this world, there is a minority of them who will earn money and benefit from it. (M.)

Finally, besides the great responsibility and financial (un)sustainability, the only aspect on which participants of both groups strongly agree is the bureaucracy that often makes impossible for young people to accomplish their own entrepreneurial ideas.

I read a few articles where people wrote about restrictive and repressive laws for entrepreneurs in Croatia. If a person manages to achieve some income in Croatia, the country will take a great amount of that money, which is problematic because the entrepreneur can't continue to develop his company. (N.)

Therefore, the second group participants agree on discouraging atmosphere in Croatian society in the context of entrepreneurial activities of young people, which is why there is a tendency in the second group to find a secure job which, as mentioned above, is achieved by education.

Everybody is completely discouraged. I would like to earn money, but I am discouraged from being an entrepreneur. I just don't have any interest or will to do it. I would like to earn money, but I don't want to be an entrepreneur, especially in Croatia. (M.)  
For me, it's important to find a secure job so that after a few years I can get a promotion. (I.)

### **The meaning of a business success**

The participants of both groups explained what business success means for them. All participants agree on the importance of satisfaction with their own life and the balance between free time and work. Nevertheless, the participants of the first group emphasized the importance of independent decision-making at work through the concept of being „their own boss“. It is interesting that earlier in the discussion, the participants of the second group stated completely opposite perception on this concept since they stated it is too responsible and stressful. Moreover, the participants of the second group emphasized financial security again, as an indicator of business success.

Well, I think that it's the most important to have secure and stable finances. (K.)

For me, business success is firstly personal satisfaction. And then, of course, a lot of money and giving opportunities for other young people. (J.)

For me, the business success is to be the boss and I will achieve it when people start to recognize me on the street. (L.)

## Conclusion

Earlier researches have indicated that entrepreneurial intention can be related to several factors, among which access to both financial resources and knowledge about financial issues can act as a determinant of entrepreneurial success. Additionally, it has been found by many authors that family background can also influence one's decision to start an entrepreneurial activity. This paper contributes to the broader understanding of the relationship among financial literacy, family background and entrepreneurship.

This qualitative research was a continuation of an earlier quantitative research which showed that when it comes to their risk attitude, Croatian students can be described as fairly conservative and such conservative view might inhibit entrepreneurial activity in the future. The qualitative research was conducted to understand if attitudes towards entrepreneurship could be motivated by the lack of financial knowledge or stem from students' past experiences. In order to explore patterns in the family environment in which an individual grows and the level of financial literacy that define interest for entrepreneurial activities, a qualitative-based focus group research with students was conducted. Two focus groups have been formed according to the criteria of the material income of families' students grew up or still live in. Moreover, this mostly corresponded to involvement in entrepreneurial activities (participants with above-average income, "first group", were mostly directly involved in entrepreneurial activities). The family background proved to be crucial in the narration differences of the participants. The dominant differences are detected in every response between two groups, except in the common conclusion about discouraging atmosphere in the Croatian society in the context of youth entrepreneurship. Participants of the first group are more open in terms of thinking about their own independent entrepreneurial attempts. Such finding implies that stable financial and supportive family background can create positive and incentive grounds for future entrepreneurial attempts.

Furthermore, besides participants who have been growing up in the financially secure family background, which are open to entrepreneurship in general, there are participants that have been growing up in the less secure economic conditions. The latter group of participants has a goal to find a secure and stable job rather than developing their own entrepreneurial activities, which they consider „unsustainable" and „unprofitable". It is very worrying because the financial family structure in the Croatian society shows that there is 13.3% of population who live in the families with the low work intensity and 28.5% persons who live in the risk of poverty (CBS, 2016). Both groups of participants agreed on the most severe problems in

Croatia in the context of laws for the young entrepreneurs: the perception of corruption and inefficient bureaucracy. It discourages young people to start their own business and consequently is highly important to continue the research on this topic, due to the scientific contribution, but also with the aim of developing new strategies for encouraging young people in the field of entrepreneurship. Thus, the analyzed results point out the necessity for further quantitative research in the field of the youth entrepreneurial initiatives in Croatia, in order to gather data that can be generalized on the wider population. The importance of financial literacy in the context of youth entrepreneurship and everyday living should also be emphasized in the scientific community, but also in education process in general. Finally, regardless of the background for the entrepreneurial intention among students, improving entrepreneurial skills has to be included in one of the obligatory programs in the educational system. With the aim of reducing potential business failures, entrepreneurial competencies need to be implemented before young people experience negative consequences of undertaking a venture.

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## MARKETING

# CONSUMER SATISFACTION ON ONLINE SERVICES IN KOSOVO

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## Abstract

*While many studies on online consumer satisfaction have been conducted, not many of them are aimed towards the rapidly expanding markets of the developing countries.*

*This paper aims to analyse and examine consumer behaviour based on different variables (age, gender, level of education, income, customer care, delivery time), and the impact of those variables on consumer satisfaction on domestic and foreign online services in Kosovo.*

*The paper includes literature reviews on consumer satisfaction and its relation to the Marketing Mix (4P's); as well as self-administered questionnaires, which have been used to draw recommendations and conclusions.*

*Due to the rapidly changing nature of technology, the data represented in the paper have been collected on two separate points in time, including the year of 2017 and 2019; where changes have been observed. In order to ensure inclusiveness, the data have been gathered from five major municipalities in Kosovo (including urban and rural areas). Furthermore, the respondents have been chosen randomly in order to ensure the reduction of sampling bias. The gathered data are presented through different tables, amounting to an analysis of the reliability of variables; the correlation between those variables; and testing hypotheses through multivariable regression and contingency test.*

*As a result of data collected in 2017, significant relationship between consumer satisfaction on one hand and the Marketing Mix (Products, Price, Place (Distribution), Promotion), customer care, delivery time, and Online Platform services on the other hand have been observed. In addition, the majority of demographic variables (except gender and income) as independent variables have shown to be significant in explaining consumer satisfaction from online services. On the contrary, the level of customers' income and gender have shown to be statistically insignificant ( $p=0.143$  and  $p=0.264$  respectively; where  $\alpha=5\%$ ) when explaining online consumer satisfaction. In accordance with the results, it is reasonable to infer that product variation found online, has the strongest correlation with total customer satisfaction from online services in Kosovo ( $r=.988$ ).*

*Contrary to 2017, in 2019 changes in significance of some variables have been observed. The data from 2019 show a continuation of the significance of age, location and the level of education. In addition, income has shifted from being insignificant in 2017 to significant in 2019. No change in significance has been observed in terms of gender affecting consumer satisfaction. In accordance with the results, it can be inferred that the strongest correlation has shifted towards the price level of the 4 P's of Marketing with total customer satisfaction from online services ( $r=.996$ ), followed by customer care ( $r=.990$ ).*

*The findings from the analysis are used to create a set of suggestions for the supply side i.e. businesses and non – profit organizations that would have an impact towards consumer satisfaction and thus, potentially leading to loyalty.*

**Keywords:** the consumer, e-Commerce, customer satisfaction, marketing mix, costumer care

**JEL classification:** M11, M14, M3, L81

## **Introduction**

Technology has been a significant driver of production thorough history. Nevertheless, the potential for exploiting the benefits of technology laid its foundation with the beginning of the Industrial Revolution (Rifkin, 2013); followed by an exponential growth in the last decades. These advancements enabled a new dimension in terms of interaction, communication and even the initiation of financial transactions. (Shafiee & Bazargan, 2018) Virtual platforms have been created which initially have served as communication means, followed by the ability to share data and interact with one another across the globe. Furthermore, technological advancement has introduced a completely new way of exchanging products and services (Shafiee & Bazargan, 2018). Nowadays, individuals are able to make use of different online platforms to perform various types of purchases in terms of products as well as services. This type of commerce is nowadays known as e-Commerce (electronic commerce) (Grandon & Pearson, 2004).

Accordingly, businesses must adapt to these changes as a continuous attempt to establish sustainable competitive advantage. As Barney states “firms obtain sustainable competitive advantage by implementing strategies that exploit their internal strength, through responding to environmental opportunities, while neutralizing external threats and avoiding internal weaknesses” (Barney, 1991), so it is in the interest of firms to have a better understanding of the environment in which they operate i.e. Porter’s five forces that impact an industry (Porter, 1980). One key component of doing business is having a better understanding of one’s customer base and their needs. Therefore, consumer satisfaction has continuously been a significant topic of competitive – advantage seeking firms in the sense that loyalty (switching cost) can be a product of consumer satisfaction (Wilson, Zeithaml, Bitner, & Gremler, 2016). In order to analyze satisfaction, it is significant to understand what it is. According to Kotler, consumer satisfaction is the positive feeling that a consumer has when his/her needs are met in correlation to his/her expectations (Kotler, & Keller, 2012).

Therefore, consumer satisfaction has a direct implication on products, their prices, promotion, and distribution (place) (Kotler, & Keller, 2012). This study values society, culture and behaviour as influential factors thus, a questionnaire has been conducted in the effort to explain consumer satisfaction on online services in Kosovo.

To the best of our knowledge, this is the first attempt to investigate satisfaction on online services in Kosovo, and therefore we believe that it will fill in a considerable gap in the existing literature regarding both consumer satisfaction and online services.

## **Questionnaire design**

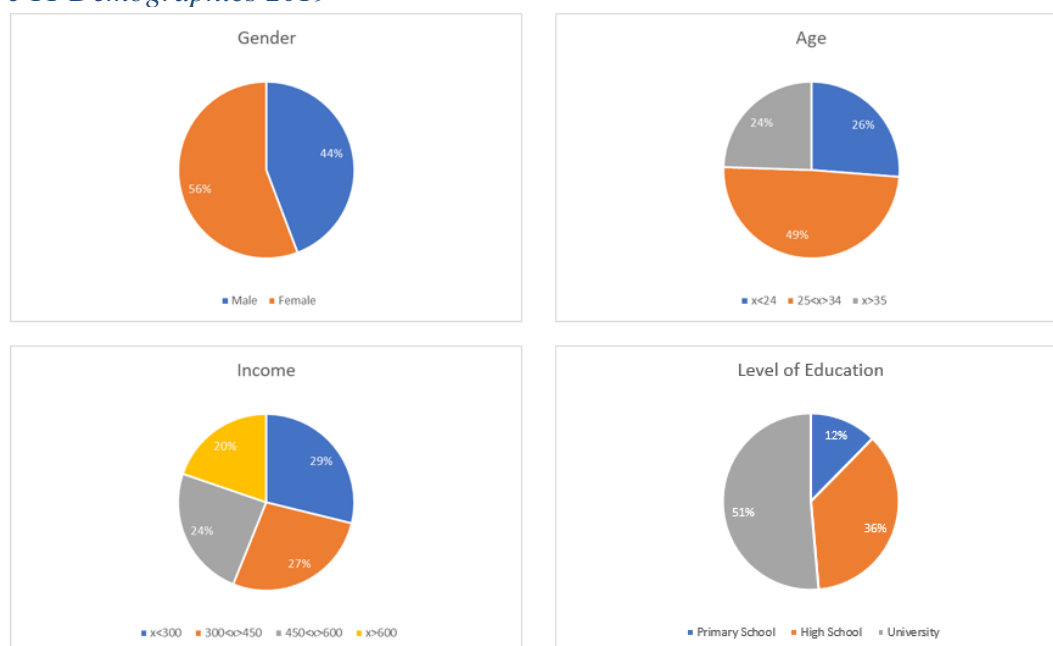
The questionnaire has been designed to analyse satisfaction based on age, gender, location, education, product variation, price, distribution, delivery time as well as customer care

services. The questionnaires have been conducted twice (2017 and 2019) where changes have been observed. The questionnaire has been distributed to 1,100 individuals in 2019 and 1,224 in 2017 across five major cities in Kosovo (Prishtina, Peja, Gjakova, Prizeren, and Mitrovica). Of those, 850 individuals responded to the questionnaire, amounting to a 77% response rate in 2019 and 69% response rate in 2017.

First five questions aim to capture main demographic characteristics of respondents such as (age, gender, education, residence, and income), the rest of the questions are constructed according to Likert scale approach which helps to best evaluate the degree of satisfaction from online services in Kosovo. The questionnaire deals with issues regarding 4p's of marketing (product variation, price, promotion, distribution) as well as further investigation of delivery time and customer care.

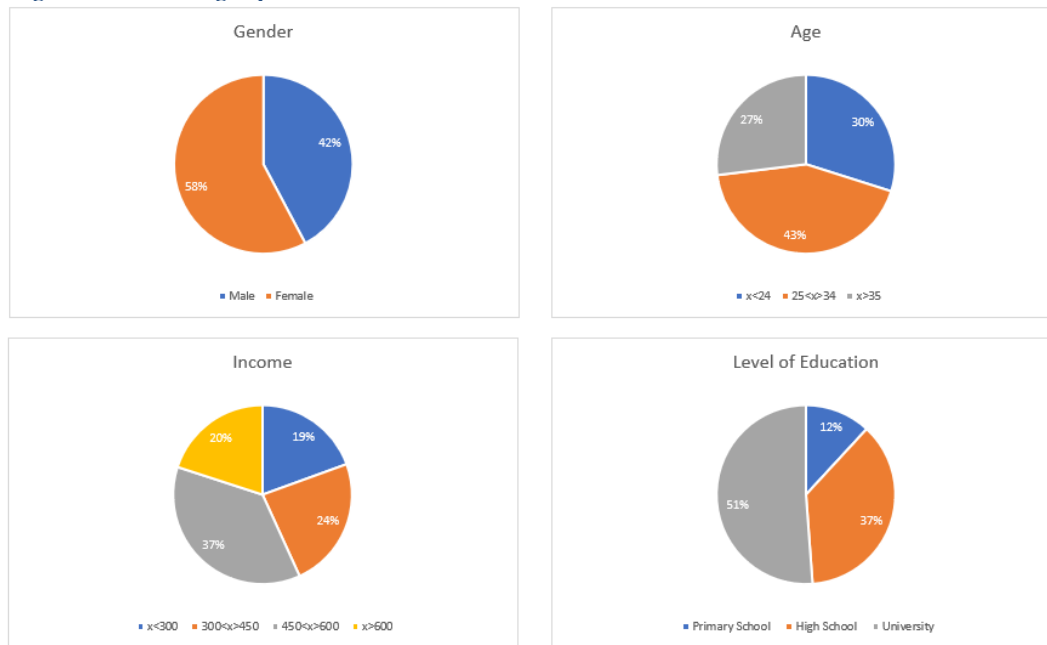
As per demographics (shown in the graph below), 56% of the respondents in 2019 were female and 44% male. On the other hand, almost half of the respondents (49%) fall between the age of 25 and 34 years, which is consistent with our assumptions that millennials represent most online platform users. Income level of our respondents seems to be evenly distributed among different rates. The same can not be said in terms of education level, where the majority of the respondents (51%) had a university degree.

*Figure 11 Demographics 2019*



A slightly different response rate was observed in 2017 as can be seen in the graph below

*Figure 12 Demographics 2017*



Finally, the collected data have been analysed with the effort to better understand what drives consumer satisfaction on online services in Kosovo, and how does the significance of variables change over time.

## Methodology

In order to analyse the collected data, a number of statistical methods have been used: descriptive method, which has served to describe the results obtained through questionnaire, Cronbach's Alfa, which is used to test the reliability of variables, bivariate correlation method, which is an analysis that measures the strength of relationship between two variables, multivariable regression method for testing hypotheses and crosstabs and test contingency or HI-squared test, which helped us to test others hypotheses, as well as ANOVA which indicates analysis of variance. All the test and methods where conducted for the data gathered in 2017 as well as 2019.

The data have been processed by using Microsoft Office Excel and SPSS (Statistical Package for the Social Sciences).

## Contingency test of $X^2$

Contingency test is used to assess whether differences between the average values of two samples are statistically significant (Pearson, 1904). In our case, it is used to test the following hypothesis:

H1 - There is a significant relationship between age of customers and the level of satisfaction with online services.

H2 - There is a significant relationship between gender of customers and the level of satisfaction with online services.

H3 - There is a significant relationship between the residence of customers and the level of satisfaction for online services.

H4 - There is a significant relationship between the level of education of customers and the level of satisfaction with online services.

H5 - There is a significant relationship between the income of customers and the level of satisfaction with online services.

*Table 1: Chi-Square Tests Contingency test 2017*

2017: Age and customer satisfaction	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13.627 <sup>a</sup>	6	.034
Likelihood Ratio	15.964	6	.014
N of Valid Cases	850		
2017: Gender and customer satisfaction	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.976 <sup>a</sup>	3	.264
Likelihood Ratio	4.049	3	.256
N of Valid Cases	850		
2017: Residence and customer satisfaction	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	74.795 <sup>a</sup>	12	.000
Likelihood Ratio	79.502	12	.000
N of Valid Cases	850		
2017: Level of education and customer satisfaction	Value	Df	Asymptotic Significance (2-

			sided)
Pearson Chi-Square	24.088 <sup>a</sup>	6	.001
Likelihood Ratio	24.214	6	.000
N of Valid Cases	850		
2017: Income and customer satisfaction	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13.458 <sup>a</sup>	9	.143
Likelihood Ratio	12.673	9	.178
N of Valid Cases	850		

As we can infer from the first table on data from 2017, variables like: age, residence, education are significant whereas gender and income tend to show no significance.

H1 – As can be inferred, we are 95% confident that there is a significant relationship between age of customers and the level of satisfaction on online services.

Out of total respondents, 254 belong to the group of people up to 24 years. 3% of those seem not be satisfied with online services, followed by 30% who are less satisfied, 47% are averagely satisfied and the rest 20% are very satisfied. Respondents between the age of 25-34 amount for total of 367, where the majority (50%) of them are averagely satisfied. On the other hand, 229 respondents are above the age of 35 years. 44% of them show average satisfaction, whereas none of them is not satisfied.

H2 - There is a no significant relationship between gender of customers and the level of satisfaction with online services ( $r=0.264$ , where  $\alpha=0.05$ ). Therefore, gender does not affect consumer satisfaction.

H3 – With 95% confidence, we can say that location does matter in the sense of explaining consumer satisfaction. Prishtina leads with the highest number of very satisfied customers followed by Gjakova, Prizeren, Peja and Mitrovica.

H4 – Additionally, the level of education seems to be significant as well. It is worth noting that 51% of the respondents have a university degree or above. Out of those, the majority (55%) express average satisfaction.

H5 – With an  $\alpha$  of 0.143, we are 95% confident that different levels of income in 2017 has no effect on consumer satisfaction when it comes to online services in Kosovo.

Contrary in 2019, income has drifted from being insignificant in 2017 to being significant in 2019. The rest of the variables have remained in the same significance category.

*Table 2: Chi-Square Tests, Contingency test*

2019: Age and customer satisfaction	Value	Df	Asymptotic Significance (2-sided)
-------------------------------------	-------	----	-----------------------------------



Pearson Chi-Square	22.467 <sup>a</sup>	6	.001
Likelihood Ratio	24.761	6	.000
N of Valid Cases	850		
2019: Gender and customer satisfaction	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.242 <sup>a</sup>	3	.356
Likelihood Ratio	3.350	3	.341
N of Valid Cases	850		
2019: Residence and customer satisfaction	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	132.068 <sup>a</sup>	12	.000
Likelihood Ratio	149.279	12	.000
N of Valid Cases	850		
2019: Level of education and customer satisfaction	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21.072 <sup>a</sup>	6	.002
Likelihood Ratio	21.155	6	.002
N of Valid Cases	850		
2019: Income and customer satisfaction	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	32.794 <sup>a</sup>	9	.000
Likelihood Ratio	37.004	9	.000
N of Valid Cases	850		

#### **Consumer satisfaction, marketing mix: 4P**

Marketing Mix is defined as a set of tactical and controlled marketing instruments that the enterprise combines in order to meet the needs and satisfaction of its customers (Kotler, & Keller, 2012). Marketing Mix consists of everything the enterprise can do to influence growth for its products and services. Numerous opportunities can be grouped into four variables or instruments known as "4 P's":

- Product
- Price
- Place (Distributions)
- Promotions

Therefore, the following hypotheses are:

H6 – Product variation has a positive effect on customer satisfaction.

H7 – Satisfaction with prices has a positive effect on customer satisfaction.

H8 – Satisfaction with promotion has a positive effect on customer satisfaction.

H9 – Satisfaction with distribution has a positive effect on customer satisfaction.

In addition, two other important variables have been added to the equation, and thus,

H10 – Satisfaction with delivery time has a positive effect on customer satisfaction.

H 11 – Satisfaction with customer care has a positive effect on customer satisfaction.

### Reliability of variables - Cronbach's Alpha

The table below shows Cronbach's Alpha or the scale of reliability of variables. As can be observed, all of the selected variables have been proven to be reliable and therefore a good representation of consumer satisfaction. In 2017, product variation was the most reliable variable with the highest  $\alpha$  ( $\alpha = 0.988$ ). On the other hand, in 2019, with an  $\alpha$  of 0.996, price has shown to be the most reliable variable.

*Table 3: Cronbach's Alpha*

Model	Cronbach's Alpha 2017	Cronbach's Alpha 2019
Product	.988	.915
Price	.975	.996
Promotion	.925	.894
Distribution	.966	.971
Delivery time	.963	.976
Customer care	.969	.990

a. Dependent Variable: Satisfaction with online services

### Bivariate correlation

In the following correlation table, we will see a value for the Pearson r coefficient, Significance level Sig. (2-tailed) and a number (N) of the cases that are used in the correlation. Since we used the Pearson coefficient of correlation, we will have it in each column of the table.

*Table 4: Analysis of correlation between variables 2017*

		Variety of products	Prices	Promotion	Distribution	shipping	Customer care	Online services
Variety of products	Pearson Correlation	1	.964**	.857**	.929**	.920**	.936**	
	Sig. (2-		.000	.000	.000	.000	.000	.977**

	tailed)							
	N	850	850	850	850	850	850	850
Prices	Pearson Correlation	.964**	1	.848**	.917**	.904**	.922**	.951**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	850	850	850	850	850	850	850
Promotion	Pearson Correlation	.857**	.848**	1	.837**	.821**	.846**	.861**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	850	850	850	850	850	850	850
Distribution	Pearson Correlation	.929**	.917**	.837**	1	.893**	.907**	.935**
	Sig. (2-tailed)	.000	.000	.000	.000		1	.000
	N	850	850	850	850	850	850	850
Shipping	Pearson Correlation	.920**	.904**	.821**	.893**	1	.905**	.930**
	Sig. (2-tailed)	.000	.000	.000	.000		1	.000
	N	850	850	850	850	850	850	850
Customer care	Pearson Correlation	.936**	.922**	.846**	.907**	.905**	1	.940**
	Sig. (2-tailed)	.000		.000	.000	.000		.000
	N	850	850	850	850	850	850	850
Online services	Pearson Correlation	.977**	.951**	.861**	.935**	.930**	.940**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	850	850	850	850	850	850	850

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficient shows that there was correlation between all variables and consumer satisfaction on online services in Kosovo in 2017. In that context, the correlation coefficient for product variation is  $r=.977$ ; price is  $r=.951$ ; promotion  $r=.861$ ; distribution  $r=.935$ ; delivery time  $r=.930$ ; and costumer care with an  $r$  of  $.940$ . Therefore, there is a strong link between the variables.

*Table 5: Analysis of correlation between variables 2019*

		Variety of products	Price	Promotion	Distribution	Shipping	Customer care	Online services
Variety of products	Pearson Correlation	1	.838**	.714**	.793**	.799**	.822**	
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.844**
	N	850	850	850	850	850	850	850
Prices	Pearson Correlation	.838**	1	.816**	.937**	.946**	.971**	.922**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000

	N	850	850	850	850	850	850	850
Promotion	Pearson Correlation	.714**	.816**	1	.785**	.778**	.783**	.815**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	850	850	850	850	850	850	850
Distribution	Pearson Correlation	.793**	.937**	.785**	1	.920**	.922**	.944**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	850	850	850	850	850	850	850
Delivery time	Pearson Correlation	.799**	.946**	.778**	.920**	1	.933**	.954**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	850	850	850	850	850	850	850
Customer care	Pearson Correlation	.822**	.971**	.783**	.922**	.933**	1	.980**
	Sig. (2-tailed)	.000		.000	.000	.000		.000
	N	850	850	850	850	850	850	850
Online services	Pearson Correlation	.844**	.992**	.815**	.944**	.954**	.980**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	850	850	850	850	850	850	850

\*\*. Correlation is significant at the 0.01 level (2-tailed).

Accordingly, data from 2019 show that there is still correlation between all variables, where the price of products has the highest correlation coefficient with consumer satisfaction ( $r=.992$ ). Additionally, promotion has a similar coefficient of correlation in 2019 of  $r=.815$ ; distribution  $r=.944$ ; delivery time  $r=.954$  and customer care  $r=.980$ . On the other hand, product variation has dropped as a coefficient of correlation from  $r=.977$  to  $r=.844$ .

### Multivariate regression

Regression analysis method is a method used to find the relation between the dependent variable Y and independent variables X1, X2, X3, ... .

Table 6: Analysis of multivariate regression 2017

#### Model Summary

Model	R	R Square	Adjusted Square	Std. Error of the Estimate
1	.983 <sup>a</sup>	.966	.966	.137

- Predictors: (Constant), Satisfaction with distribution, Satisfaction with the promotion, Satisfaction with prices, Satisfaction with the variety of products, delivery time, customer care.
- Dependent Variable: Consumer Satisfaction

Value R represents the coefficient of correlation between independent variables with the dependent variable. In this case,  $r=.983$  indicates that independent variables and the dependent variable have a strong positive correlation. From this we are able to conclude that the value of R indicates a satisfactory level of prediction of the dependent variable Y - customer satisfaction. The value for R Squared is 0.966 and reflects the coefficient of

determination which is used to identify how independent variables are able to predict the dependent variable. Adjusted R Squared equals 0.966 and is the adjustment of the value of R Squared. As seen, R Squared and adjusted R Squared do not differ (.966), so we are certain that independent variables indicate 95% variation in the dependent variable.

*Table 7: Analysis of multivariate regression 2019*

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.996 <sup>a</sup>	.991	.991	.071

Value R represents the coefficient of correlation between independent variables with the dependent variable. In 2019,  $r = .996$  indicates that independent variables and the dependent variable have a strong positive correlation. From this we are able to conclude that the value of R indicates a satisfactory level of prediction of the dependent variable Y - customer satisfaction. The value for R Squared is 0.991 and reflects the coefficient of determination which is used to identify how independent variables are able to predict the dependent variable. Adjusted R Squared equals 0.991 and is the adjustment of the value of R Squared. As seen, R Squared and adjusted R Squared do not differ (.991), so we are certain that independent variables indicate 95% variation in the dependent variable.

*Table 8: Analysis of variance 2017*

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	446.934	6	74.489	3976.771	.000 <sup>b</sup>
	Residual	15.790	843	.019		
	Total	462.725	849			

a. Dependent Variable: Satisfaction with online services

b. Predictors: (Constant), Satisfaction with distribution, Satisfaction with the promotion, Satisfaction with prices, Satisfaction with the variety of products, Shipping, customer care.

From the analysis of variance (ANOVA) from the data taken in 2017, presented in the table above, we can see that the model is significant at  $\alpha = 0.000$ . ANOVA results indicate that in general the independent variables have a significant correlation with the dependent variable, respectively with overall customer satisfaction which has taken the values  $F = 3976.771$  and  $p = 0.000$ .

*Table 9: Analysis of the variance 2019*

**ANOVA<sup>a</sup>**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	481.930	6	80.322	15972.310	.000 <sup>b</sup>
	Residual	6.239	843	.005		
	Total	486.169	849			

From analysis of variance (ANOVA) from the data in 2019, presented in the table above, we can see that the model is significant at  $\alpha = 0.000$ . ANOVA results indicate that in general the

independent variables have a significant correlation with the dependent variable, respectively with overall customer satisfaction which has taken the values  $F = 15972.310$  and  $p = 0.000$ .

*Table 10: Regression coefficients and significance between the independent variables 2017*  
**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.103	.020		-5.106	.000
Variety of products	.610	.030	.597	20.580	.000
Satisfaction with prices	.015	.026	.015	.581	.591
Satisfaction with the promotion	.034	.013	.034	2.623	.009
Satisfaction with distribution	.119	.019	.115	6.150	.000
Delivery time	.137	.018	.132	7.561	.000
Customer care	.118	.020	.115	5.787	.000

a. Dependent Variable: Satisfaction with online services

According to the table above we can conclude that:

H6 - “Variety of products has a positive effect on customer satisfaction” is approved, because the significance value is smaller than 0.05 where the value of significance in this case is  $p = 0.000$ .

H7 - “Satisfaction with prices has a positive effect on customer satisfaction” is not approved, because the significance value is bigger than 0.05 where the value of significance in this case is  $p = 0.591$ .

H8 - “Satisfaction with promotion has a positive effect on customer satisfaction” is approved, because the significance value is smaller than 0.05 where the value of significance in this case is  $p = 0.009$ .

H9 - “Satisfaction with distribution has a positive effect on customer satisfaction” is approved, because the significance value is smaller than 0.05 where the value of significance in this case is  $p = 0.000$ .

H10 - “Satisfaction with shipping has a positive effect on customer satisfaction” is approved, because the significance value is smaller than 0.05 where the value of significance in this case is  $p = 0.000$ .

H11 - “Satisfaction with customer care has a positive effect on customer satisfaction” is approved, because the significance value is smaller than 0.05 where the value of significance in this case is  $p = 0.000$ .

*Table 11: Regression coefficients and significance between the independent variables 2019*  
**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

(Constant)	-.029	.010		-2.823	.005
Variety of products	.027	.006	.028	4.672	.000
Satisfaction with prices	.555	.017	.563	33.180	.000
Satisfaction with the promotion	.013	.005	.014	2.561	.011
Satisfaction with distribution	.064	.010	.062	6.400	.000
Delivery time	.085	.011	.084	8.027	.000
Customer care	.268	.014	.263	19.131	.000

a. Dependent Variable: Satisfaction with online services

According to the table above we can conclude that:

H6 - “Variety of products has a positive effect on customer satisfaction” is approved, because the significance value is smaller than 0.05 where the value of significance in this case is  $p = 0.000$ .

H7 - “Satisfaction with prices has a positive effect on customer satisfaction” is approved, because the significance value is smaller than 0.05 where the value of significance in this case is  $p = 0.000$ .

H8 - “Satisfaction with promotion has a positive effect on customer satisfaction” is approved, because the significance value is smaller than 0.05 where the value of significance in this case is  $p = 0.011$ .

H9 - “Satisfaction with distribution has a positive effect on customer satisfaction” is approved, because the significance value is smaller than 0.05 where the value of significance in this case is  $p = 0.000$ .

H10 - “Satisfaction with shipping has a positive effect on customer satisfaction” is approved, because the significance value is smaller than 0.05 where the value of significance in this case is  $p = 0.000$ .

H11 - “Satisfaction with customer care has a positive effect on customer satisfaction” is approved, because the significance value is smaller than 0.05 where the value of significance in this case is  $p = 0.000$ .

## Conclusions

The positioning of companies that operate in Kosovo market through online platforms shall continue to develop as the companies are in the initial stage and it is a concern if they wait for the development to take place as a process on its own. Moves ahead shall be made with the strategy of differentiation based on quality in order for them to provide superior products.

The strategy of innovation in the market that the online companies have used is a suitable strategy that provides variety and is financially beneficial. They shall use the advantages that it provides.

From marketing research, we have found that most of the respondents have high level of education and their frequency in using online platforms is very important, 435 of the respondents in 2017 had high education which remained almost the same with 437. Another important element is competition. Following the analysis that were made, it was found that

apart from local competition, customers prefer to make online purchases even from other platforms abroad in order to meet their needs and desires.

The experience associated with purchases made from in store still remains irreplaceable to a good number of people. Nevertheless, the dynamics of life and the ever-decreasing free time is orienting customers towards making purchases from the comfort of their homes. Furthermore, it is continuously getting easier and more comfortable initiate purchases from e-commerce, which is yet another reason for companies to turn their heads towards online platforms.

The lack of products offered locally, has oriented customers towards international web sites, in the search for their desired products. Therefore, a number of consumers have been aware of online platforms thus, we assume that adapting to this new way of buying and selling goods and services may be fairly easy. Firms may benefit from this and ensure sustainable competitive advantage if they manage to implement this technology in accordance with rapid changes in technology.

From personal experience and online sales practices, the customers are aware of the performances, capacity, camera, processor, operational system etc. of a smart phone, and one can find this out in the beginning of a conversation with a customer. Therefore, a demanding customer always expects developments to take place in line with global developments.

The general discussions about high prices in Kosovo may be the main factor of dissatisfaction among consumers. From the data of the research not many consumers are satisfied with the prices offered by online platforms in Kosovo.

Firms may want to invest in decreasing the time it takes them to initiate a sale up to the time it takes them to deliver a product or service. As the analysis has shown, consumers value their time therefore expect timely delivery, with additional satisfaction if their expectation is surpassed.

Post purchase phone calls, daily/weekly discounts, gifts for regular buyers, emails with information on new products are only some of the forms that can be used to earn the trust of the customers. A satisfied customer with the item he or she purchases will not forget to purchase same types or similar types of products or services in the future because he or she has experienced satisfaction, belief and trust on the items purchased previously.

Equally important would be to invest in special training of employees in regard to the new era of online platforms in the sense that employees need to understand the message that their company wishes to deliver, for them to be able to deliver to their customers.

Kosovo remains in the early stages of online platform development as well as e-commerce. As such, the current situation does represent a unique opportunity for firms to exploit the benefits of e-commerce, in order to boost sales as well as reduce fixed and variable cost – leading to the creation of competitive advantage. Furthermore, an e-commerce focused firm may find it easier to follow the concept of the triple bottom line where focusing for people and the environment proves to be equally important as focusing in the financial part of the business.



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# CHOOSING BETWEEN OFFLINE AND ONLINE CHANNELS IN CASE OF FMCG CATEGORIES

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## Abstract

*Grocery retail is facing an unprecedented amount of changes driven one side by technology on the other side by shoppers. Shoppers expect value (meaning both price and quality), choice and convenience. Both traditional brick-and-mortar formats and online stores need to meet and even exceed shoppers' expectations. In this paper I will undermine on most important selection criteria of choosing offline or online in case of fast moving consumer goods. In my research I found that most important factor is feel/smell/see of the product when someone is choosing offline. On the other hand as for the online shopping respondents see an obvious advantage of shopping for less money as offline. Omnichannel solution seems to be the key success of future's retail. Shoppers want to have real experiences what a store can offer while online delivers the "available World".*

**Keywords:** Offline stores, Online stores, Omnichannel, Fast Moving Consumer Goods, selection criteria

**JEL classification:** M30

## Introduction

Fast Moving Consumer Goods (FMCG) goods are popularly named as consumer packaged goods. (Corney, 2011) These items are of daily consumption and have a high return. The fast moving consumer goods (FMCG) sector includes in its broadest sense and specialise in the following areas: Food and Beverages, Consumer Durables, Personal Care and Cosmetics, Sports Goods, Apparel, Household Goods, Luxury Brands, Textiles and Furnishings. FMCG sector is one of the most intense "Competition Driven" industries, which is continually in a state of dynamic transition. (Oraman Y. et al 2011.)

Choosing either online or offline channel means a certain risk to a shopper. Some recent studies found that channel transparency, channel convenience, and channel uniformity positively influence customer perceived behavioural control. In addition, it was found that channel transparency and uniformity help to reduce customers' risk what they perceive. Some research found that channel convenience does not have a significant impact. Higher product price increases the influence of channel transparency, convenience, and uniformity on reducing customers' perceived risk. Also customer perceived behavioural control and channel price advantage have a positive impact as some said and perceived risk has a negative impact on customer channel selection intention in the omni-channel retail environment. (Xu and Jackson 2019)

Some results indicate that online retailing can be classified into four e-commerce categories that entail individual e-channel touchpoints, emphasizing the need for a more differentiated

consideration of “the online channel.” Both technology-related quality and context-related situational benefit affect consumers' utilization of e-channels these days. (Wagner et al 2018) There is one paper what developed an IP model to determine item allocation for a hybrid retailer's store network, comprising bricks-and-mortar and online stores. Authors state that products with low carrying costs are distributed between the bricks-and-mortar stores and the online store. Products with high carrying costs can be withdrawn from the bricks-and-mortar stores and made available exclusively at the online store where the inventory carrying costs are comparatively lower. There is a belief that this strategy assists the hybrid retailer to not only improve the profitability of its bricks- and-mortar stores but also to retain the customer of the market segment that is loyal to the items withdrawn from the traditional stores. In that framework, the online channel complements rather than competes with traditional channels.

(Bhatnagar, Syam, 2014)

Most of recent publications opt for the migration of brick-and-mortar with online, not to handle like separate channels. Market players need to focus on brand and experiential consistency. If one retailer has a heavy emphasis on excellence in customer service, they must ensure parity throughout all channels, delivering the same impact if it goes online. UPS one of the largest parcel delivers claims to have 38 per cent of multichannel purchases in 2016. (UPS 2016)

Brand and brand experience seems to be the key point when choosing a channel. Brand image is a compilation of all consumer's interactions with the brand. A seamless brand experience, for both the online and offline retail market, has a positive impact on brand image, and ensures that customers and potential customers recognize and remember that brand no matter what it stands for. (Emarsys 2019)

Brick-and-mortar store still offers a near customer experience, delivering sensual experiment to our 5 senses. While for online most experts agree that online store will evolve to rapidly meet shoppers' expectations. enabled by new technologies. (IGD, 2018)

In Hungary, in the year of 2017 a robust survey with 1.500 respondents conducted by GfK Research Institute revealed the most important factors of choosing offline or online channel. Main findings include for offline „I can see the product and touch it” reaching 59 per cent of respondents. While online top reason „I can save money this way with better prices and discounts” reached 50 per cent agreement by respondents.

*Table 1: Top 7 reasons opting for online and offline*

Top 7 reasons for opting online:	Top 7 reasons for opting offline:
I can save money this way (better prices, discounts)	I can see the product with my own eyes and touch it
Easier shopping	I get the purchased product sooner
Better assortment	Redemption is less problematic
Faster shopping	I usually shop there, I got used to it
Offers better delivery conditions	I can buy more products at once
Offers better conditions of payment	Faster shopping
I can buy more products at once	The shopping is more enjoyable

*Source: (GfK, 2017)*

Online shopping varies dramatically by product to category therefore generalizations using consolidated data may be misleading. (Schulz, Block 2015)

Above survey examined general shopping behaviour independently from categories. My research is focusing on capturing fast moving consumer goods. The visibility of products in case of daily goods, especially in case of fresh categories (pastry, meat, fruit and vegetables) is key.

Multichannel retailing is of Academic interest and with a large number of new articles being published on this topic as retailers have adopted additional new channels and new channel technologies with unique characteristics, which has further increased the complexity of multichannel retailing. (Liu 2018)

### ***Empirical research***

In my qualitative research I conducted individual interviews with 14 shoppers buying both offline and online and 7 retail-related professional about they experiences on most important decisive factors. The research was carried out in January- February 2019 in Hungary. The aim of my research was to explore what factors influence preference and dispreference of the two examined channels.

In case of daily goods when we take a look on general preference whether choosing of online or online channel the result mainly goes for offline. Reasons behind is clearly about the „feel” of the product. For food and drink what we take into our body or a cosmetic product what we lubricate on our face or body or even household cleaning products we use in our house is a sensitive issue. Therefor feeling, touch even smell are an important decision factors before choosing. Brick-and-mortar shopping experience may ease the decision and comply like a confirmation of our choice.

As a fact being on the first position on offline pro „I can see the product with my own eyes and touch it” seems to be evident. But as one of my interviewees said *“Seeing the product makes me sure I am having the right choice”*

In my qualitative research of 14 online and offline grocery shoppers and 7 research professionals agreed that the seeing, feeling and touching of a product is the key element of choosing grocery. Among the 5 senses look is the key point of attracting attention followed by the physical evidence of touch.

What comes next, as second and third and further decision criteria is depending on the involvement of the respondent. Instant access of chosen product may be the second most important factor for those, who are usually in a hurry, meaning they do not like shopping of daily goods at all, but want to get finished as easy and soon as possible. But for some others, who may prefer going the usual way of running errands ends up in a kind of routine purchase. While routine shopping means usually an easier shopping purchase.

In the focus of my study was to capture how routine is covered in everyday grocery shopping. Due to the qualitative research this partly means choosing the same store day-by-day, ending up in four different store formats visiting during a month. This includes small kind of format (kiosk, or independent grocery store), hyper- or large supermarket format, discount store or some specialists (e.g. drogerie, bakery, butcher etc.). On the second hand meaning the same way within the store, where shoppers are aware what to find where. At this latter point we came to the idea how often to re-arrange store layout. Shoppers do recognise changes in store layout as mainly a disturbing effect. There is a continuous debate whether to change store layout time-to-time or not. Store owners tend to disrupt the routine of their shoppers with re-arranging their store inside, while shoppers tend to stick to their usual routine to make an easier shop-around.

Main advantage of on offline store is the get the product sooner as online, exactly calling in the second of choice. Due to the interviews' learnings I found that gaining the selected product immediately is a key point in case of daily goods. Respondents stated that it is acceptable to get products on a long life-cycle, what they can use for many years, like electronics or furniture. But hunger and thirst are of primary needs meaning an urgent need of immediate solution. Of course, some of the grocery shopping can be planned for a longer run, e.g. having a 6-er pack of mineral water or washing powder of 1 kilogram can end up for a week and a month (or even more) long to run out.

Main categories where immediate availability is key: bakery, fruits and vegetables, meat and dairy products. While in case of durable food, like, flour, rice and drinks, or mineral water, beer, wine and non-alcoholic beverages shoppers can store up in their home therefore instant access is not a key decision point.

As for the online shopping respondents see an obvious advantage of shopping for less money as offline. Based on the qualitative research of mine, online shopping clearly means a cheaper solution for grocery shopping as well, even if respondent said that in case of non-food categories (e.g. books, electronics, furniture, clothing and shoes) the better price ratio seems more tremendous than in case of daily goods. As one of my interviewees stated *"Online I can always find a good price promotion or a special offer"*. In case of online shopping the second and third options are to cover an easier and quicker shopping experience. "Easy shopping" mainly means to have a wide access to products even from other countries. Not really in case of daily goods, but in case of durables, foreign markets, like China can deliver a seamless shopping experience.

Under "quick" our respondents understood the fact of a seamless experience of delivery services. Delivery is a key point in case of online shopping experience, to get the product at your door is the final moment of truth. As I experienced *"I used to try different delivery services up to 10, but now I now that only 2 can deliver really on time and I only choose them."*

Wideness of selection about available products may vary on individuals' attitude. While the cited GfK shopper survey stated to have wide selection as the 4th most important factor of the online channel the respondents in my qualitative research also linked wide selection to most of the offline store. Reasons behind lay on individual perception. If someone prefers online vs. offline tends to notice a wider selection available online than in stores. On the contrary if someone prefers offline vs. online sees an available wider selections at store.

Main selection criteria for going offline is the instant availability, while main advantage of choosing online is a mix of wide selection of products and favourable price. One important factor is being the "faster" item. Being "faster" means a very different experience to the examined persons. "Faster" means the time of delivery in case of online shopping, therefor getting the parcel/bucket as soon as possible. Once we are considering offline purchase in the meaning of "faster", I found that we can finish the purchase itself in short time we wish. At this point the reference point is the shoppers "feeling" how fast it was, independently from its real time and independently from the time others may experience.

Payment seems a key differentiating factor between online an offline channel, in favour of the online. The respondents in my research claimed that the seamless payment experience is much more linked in their mind to online purchase than to the offline ones. Even if they are aware of and using state-of-the art pay pass-like payments when shopping at a brick-and-mortar store, online web shops offer on effortless payment much more visible. Here I think communication and visibility of the available payment methods are clearly advantageous of the online channel.

As for the assortment, online channels are perceived as an option of having a wider selection than offline at all. Rationales behind are to get a kind of world-wide set of products in our home when buying online, while in case of offline, shoppers need to rely on the selection what the retailer brings in. As a final learning I concluded to add “wider assortment” as an indicator only linked to online channel and hardly to linked to offline. As one of my respondents said *“I really can find everything on online channel, it does not matter what I need, I can find it on internet stores.”*

Preferences and dis preferences are awoken when I got to the point of Customer Experience. Kind of enjoyment when shopping as an important aspect of the whole process was included in my investigation too. Brick-and-mortar retail emphasise the customer/shopper experience as the main aspect of choosing offline option. Retail experience includes feeling and decoding of the 5 sensory stimuli or at least as more as possible of them. Feeling, touching even smell, taste and hear are parts of the shopper experience when we go to a store. Taste of course is much more linked to food and beverage, but also covering the topic I investigate. Overall the feel of being a real customer not only a shopper is much more linked to offline than to online.

Neutral attributes are revealed in case of value-added items like “I can pay with my mobile device too” in case of online and “I can support the local economy this way” in case of offline purchase.

### ***Limitations***

My study serves as a kind of pilot researching offline and online references. At this early stage I conducted a qualitative survey among offline and online shoppers and retail experts with the aim to explore preferences and choosing criteria. Qualitative research has a certain limitation of the lower sample while profile of the sample also does deliver an impactful insight but not a total coverage of the potentially available universe. I investigated online and offline channels although the practical and academical interest turns towards omnichannel and multichannel solution. Understanding deeper online vs. offline and Multichannel my further research will focus on following topics: (1) What factors influence channel choices of consumers? (2) How do shoppers use different channels during their purchase journey? And (3) How do multichannel strategies and channel selection behavior affect consumers outcomes?

### ***Managerial implications***

Omnichannel solution seems to be the key success of future’s retail. Shoppers want to have real experiences what a store can offer while online delivers the “available World”. Managers need to follow what consumers want but at the same time they also need to invest in innovation and discover solutions what the consumers do not now they really want to have. The key question is whether they really want to pay for that. Therefor return-on-investment before launching innovation seems to be a hard point of board decisions.

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# PDCA-BASED IMPROVEMENT OF A SERVICE QUALITY FRAMEWORK ON COURSE LEVEL

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## Abstract

*As the idea of providing the best possible level of service quality in higher education institutions spread, the identification and role of customers have come to the forefront in the related literature. Most studies agree on that students are the primary customers of higher education, highlighting their complex role in the service provision process being 'products', clients and partners at the same time. On the other hand, there are many other stakeholders in higher education including e.g. the government, funding bodies, parents, employers whose expectations and perceptions of service quality should be taken into account as well. This results in the lack of agreement regarding the interpretation of customer in higher education and therefore, being customer focused raises several issues in this sector. One possible approach is investigating service quality on different well-defined levels, namely on institutional, faculty / program and course levels. Regarding the latter one, most studies agree on that students are the primary customers and their perception of quality is of utmost importance, however, the lecturers' point of view is indispensable as well at this level.*

*In this paper the development of a service quality measuring and evaluating framework in case of a special type of course is presented, emphasizing not only the students' but also the supervisors' aspects by conducting several focus group and personal interviews. The proposed questionnaire including 26 statements applied for project work courses is primarily SERVQUAL based similarly to many models proposed in various service industries. In the pilot year, statements were evaluated on a 7-point Likert scale by two aspects, namely, importance and performance. In this year the average response rate was about 70% with more than 500 filled out questionnaires. The results of the focus group and personal interviews are compared to that of the statistical analyses applied for the comparisons of responses given by different segments of students grouped according to various attributes including the level of study, the type of the business program, the level of the project work course. By analysing the interviews, students' and supervisors' feedbacks are confronted by pinpointing both similarities and differences caught in the brainstorming, affinity diagram constructing and Q method sessions by presenting and discussing two stakeholder groups' affinity diagrams and statement rankings. These results may serve as a basis for departmental managerial decisions according to the PDCA philosophy. Taking all the available results into consideration, the questionnaire applied in the pilot year has been revised by exploiting the voice of students and supervisors as well.*



**Keywords:** higher education, service quality, PDCA, focus group, student satisfaction

**JEL classification:** C83 (survey methods, sampling methods), I23 (higher education, research institutions)

## Introduction

Higher education (HE) is one of the fast-expanding sectors worldwide to which increasing attention has been paid recently due to its significantly strengthening economic impacts and growing business-like features. As a result of this trend, the number of enrolled students, the diversity of programs and courses also increase, enhancing institutions to implement customer-centric approaches (Kara & DeShields, 2004). The maturing of the HE market goes hand in hand with an increasing and widening interest in quality issues focusing on meeting the needs and expectations of stakeholders by addressing and balancing them on different institutional levels (Bernhard, 2012). The growing competition on national and international levels results in handling students as primary customers (Pereira & Silva, 2003) and enhancing their satisfaction has become one of the most significant goals on institutional level (Sadeh & Garkaz, 2015; Douglas, McClelland & Davies, 2008) in order to successfully recruit and retain them (Helgesen & Nasset, 2007). Therefore, institutions use a variety of methods to listen closely to and interpret the ‘voice of students’ (Elsharnouby, 2015) reflecting a complex set of expectations and perceptions which need to be identified and understood both on course level, program / faculty level and on institutional level as well utilizing either a ‘bottom-up’ or ‘top-down’ approach.

Putting quality issues on the agenda has resulted in widely diversified approaches owing to the fact that not only higher education services bear special characteristics compared to traditional services (e.g. Eagle & Brennan, 2007), but also the interpretation and evaluation of higher education quality is complex (Harvey & Green, 1993; Clewes, 2003) and diversified owing to the large number of stakeholders and to the complex role of students in the service provision process. According to the state of the art in the literature, students could be considered as

- customers from different aspects such as input customers, internal customers for campus facilities, external customers receiving the outputs of the system, transformation customers from a faculty view and output customers from society view (Sirvanci, 1996; Kanji & Tambi, 1999; Pereira & Silva, 2003; Mahapatra & Khan, 2007),
- workers in the education processes (Sirvanci, 1996; Kanji & Tambi, 1999),
- partners in the learning process (Kanji & Tambi, 1999; Yorke, 1999),
- clients (Guolla, 1999),
- producers (Guolla, 1999),
- products of the education process (Sirvanci, 1996; Guolla, 1999),
- labourers of the learning process (Sirvanci, 1996),
- co-creators and co-producers of the education process (Usantha & Kamara, 2016),
- users (Guilbault, 2016),
- beneficiaries (Guilbault, 2016).

Owlia & Aspinwall (1996), Abdullah (2006), Khodayari & Khodayari (2011), Ostrom, Bitner, & Burkhard (2011) and Mark (2013) state that students are the core and primary customers

since they are directly served by the institutions. According to Marzo-Navarro, Pedraja-Iglesias, & Rivera-Torres (2005), Sander, Stevenson, King & Coates (2000), O'Neill & Palmer (2004), Galloway (1998) and Hill (1995), the courses, trainings and knowledge offered by the universities are meant for the students and so they are in the role of priority customers. Guilbault (2016) concludes that students are the beneficiaries of HE as they are the users of the education services and that motivates higher education institutions to pay more attention on providing the best possible academic experience to students to achieve their satisfaction by reflecting a customer-oriented approach (Bennett & Ali-Choudhury, 2009; Abdullah, 2006; Helgesen & Nasset, 2007).

Managing service quality has become a hot topic in HE context based on the first impressive empirical results of the SERVQUAL (Parasuraman, Zeithaml & Berry, 1988) and the SERVPERF (Cronin & Taylor, 1992) methodologies in various service industries. Paying conscious attention to service quality has become a means of differentiating and gaining competitive advantage (Giannakis & Bullivant, 2016), various models and HE adaptations have been proposed (see e.g. Mahapatra & Khan, 2007; Teerovengadum, Kamalanabhan & Seebaluck., 2016; Abdullah, 2006). The growing debate on the definition of quality in HE and on the role of students have led to the suggestion that service quality should primarily be defined based on student perceptions (Mai, 2005; Alves & Raposo, 2009) by highly considering student satisfaction results (Arokiasamy, 2012; Paswan & Ganesh, 2009). These efforts also appear on course level concentrating on effective course delivery mechanisms and the quality of teaching and courses (see e.g. Noaman et al., 2017, Ali et al., 2016, Yousapronpaiboon, 2014, Sadeh & Garkaz, 2015, Edström, 2008).

On what most of the researchers agree is that students' experiences and perceptions are of high importance (Mattah, Kwarteng & Justice, 2018). However, Sahney, Banwet, & Karunes (2008) claim that besides students, staff and faculty members should be considered as primary stakeholders. Lecturers are the pillars of excellence for the institution, their role has a high impact on the quality of learning and teaching and on the student perception of service quality (Ihsan, Taib, Talib, Abdullah, Husain, Wahab, Idrus & Abdul, 2012). Desai, Damewood & Jones (2001, p. 136) suggest that 'the more faculty members know about students, the better they can provide educational services to them'. Gaining insights this way can be utilized to better understand student expectations and be more responsive when fulfilling them during student-lecturer encounters (Gruber, Reppel & Voss, 2010). Hill, Lomas & McGregor (2003) report that the quality of lecturers belongs to the most important factors in the provision of high-quality education. Similarly, Marzo-Navarro et al. (2005) stress that lecturers are the main factors in a university, having the largest influence on student satisfaction. The role of lecturers has also changed due to the new position of students: today's students are more likely to be satisfied if they are actively involved in study programs that fulfil the expectations for subsequent and very specific employment. These trends put several issues on the agenda of lecturing as students need to take actively part in the service provision process and their participation needs guidance and motivation (Kotze & Plessis, 2003).

Taking the direct role of students and lecturers into consideration when measuring and evaluating service quality on operational level, this paper focuses on the establishment of a service quality framework on course level based on the consideration of course evaluation traditions at the largest university of technology in Hungary. The project work courses under investigation play a significant role in the curriculum so the perception of students related to these courses could provide important aspects connected to the total student experience as well. Therefore, a pilot questionnaire has been developed to measure and evaluate service

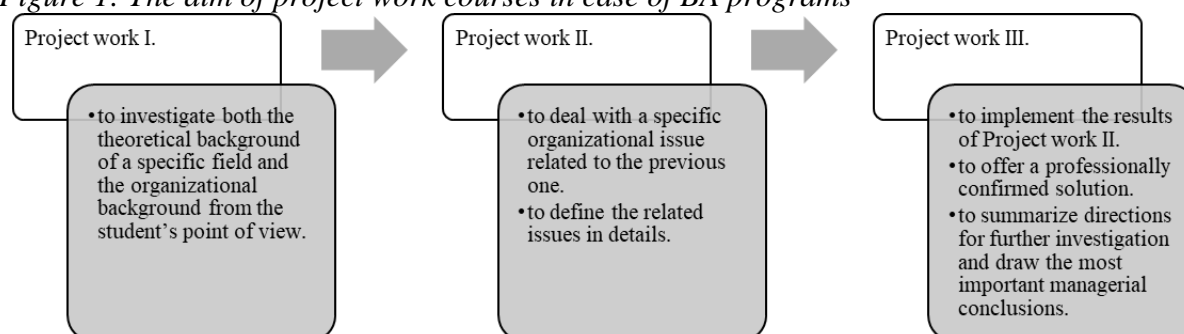
quality issues associated with the supervision of these courses based primarily on the SERVQUAL methodology. Secondly, focus group and personal interviews have been conducted with student and lecturer involvement to analyse the aspects of the two directly interacting stakeholder groups. The primary aim of this paper is to present the combined results of quantitative and qualitative analyses of two academic years in order to close the Plan – Do – Check – Act (PDCA) loop, that is, to apply the continuous improvement philosophy both when considering the improvement of the applied methodology and when feeding back students' perceptions to the related processes.

## The subject of the research - Project work courses

There is a long history of course evaluation at the investigated university, the framework of Student Evaluation of Education has been applied since 1999 measuring different elements and dimensions of the semester-long education quality. The studied project work courses having specific features are not part of this evaluation system. However, they have quite high ECTL points and obligatory courses for students both on bachelor and master level at the business programs offered by the Faculty of Economic and Social Sciences. The project work courses are to prepare students to write a thesis and foster their successful entry to the labour market.

During these project work courses a supervisor is assigned to each and every student assisting the student through the flow of consecutive project works and providing the necessary professional support. Depending on the type of the business program, the obligatory number of these courses changes (Figure 1.). BA students usually complete three, BSc students fulfil two consecutive project work courses. On MA level, students are required to execute a single project work course due to the lengths of master programs. The output of each project work is a written paper. After the students have completed and uploaded their written report to the official website, they prepare an oral presentation where both the content of their paper and their presentation skills are evaluated. Students are given a final grade only after successful oral presentation.

*Figure 1: The aim of project work courses in case of BA programs*



## Survey development

Taking the aforementioned features of these courses into consideration, a SERVQUAL-based course evaluation questionnaire was developed. The questionnaire including 26 statements (Figure 2.) is based on a 7-point Likert scale, where score 1 stands for the lowest, and score 7

for the highest value evaluating service quality issues both by judging importance and performance. A question about the overall service quality perception is also included, and specific demographic questions and a place for narrative comments are also provided. The statements were developed utilizing the models proposed by Parasuraman et al. (1988), Oldfield & Baron (2000), Yousapronpaiboon (2013) and Kincsesné, Farkas & Málovics (2015). The importance aspect reflects the expectations and requirements of students, while performance scores denote how satisfied students are with the various components of the supervising process. The survey was filled out by both bachelor and master students, the response rates in the applied various segmentations were around 70% on average.

## Results

Since students have evaluated both importance and performance, an importance-performance (I-P) map has been developed. The I-P map in Figure 3. represents the average values calculated for each statement, the red lines present the grand average importance and the grand average performance scores. Quadrant I. includes the statements in case of which both importance and performance scores are higher than the grand averages, while quadrant III. shows those statements where both aspects are lower. The importance of S3, S9 and S26 is high, but their performance scores are a little bit lower than the average, which reflects a moderate performance gap. Quadrant IV. denotes those cases (see S4, S5, S6, S20, S24) where the importance levels are lower, but performance scores are higher calling attention to the reconsideration of resource allocation.

Figure 4. represents the difference between the average performance and importance scores highlighting the statements where the performance should be higher since the average importance score exceed the average performance score: S1, S2, S3, S8, S9, S12, S14, S16, S17, S26.

Figure 2: Project work courses – The 26 statements

**Project work courses - questionnaire**

Please evaluate the given statements' importance and show your satisfaction with the performance in the given aspects as well!

*Importance: 1 - really low importance, 7 - really high importance, Performance: 1 - really low satisfaction, 7 - really high satisfaction*

Statements	Importance	Performance
S1 - The guidelines related to the content requirements of the project work are clear and useful.		
S2 - The guidelines related to the formatting requirements are clear and useful.		
S3 - Supervisor feedbacks at the different phases of the project work are interpretable.		
S4 - Appropriate, suitable consultation opportunities are provided.		
S5 - The supervisor applies up-to-date tools and methods during the consultation process.		
S6 - Consultations take place in an undisturbed environment and under the right circumstances.		
S7 - The supervisor keeps the jointly agreed deadlines supporting the continuous progress of the project work.		
S8 - The supervisor is ready to help with the difficulties arising during their cooperation.		
S9 - During consultations the supervisor expresses his/her willingness to share his knowledge in an understandable way.		
S10 - The supervisor pays attention to the student's specific interest when determining the exact topic of the project work.		
S11 - The supervisor is available at the scheduled time.		
S12 - The supervisor is willing to answer the emerging questions and requests.		
S13 - The number and the frequency of consultations during the semester are sufficient.		
S14 - The supervisor's response time to requests is satisfactory.		
S15 - The supervisor's recommendations and expectations are consistent with the guidelines related to the content of the project work.		
S16 - The student is given enough help when doing research on the relevant literature.		
S17 - The student is given enough help related to the appropriateness of the form and content of references.		
S18 - The student is given enough help related to the style and terminology.		
S19 - The supervisor supports the student when preparing the oral presentation of student results.		
S20 - The supervisor is polite, responsive, attentive.		
S21 - The supervisor is familiar with the supporting processes of project work courses.		
S22 - The student relies on the supervisor's professional knowledge.		
S23 - The content requirements of the project work are fulfilled as a result of continuous cooperation between the student and the supervisor.		
S24 - There is a clear communication between the supervisor and the student.		
S25 - There is a partnership between the student and the supervisor.		
S26 - During the semester the student is given personal attention.		

Figure 3: Importance-Performance Map

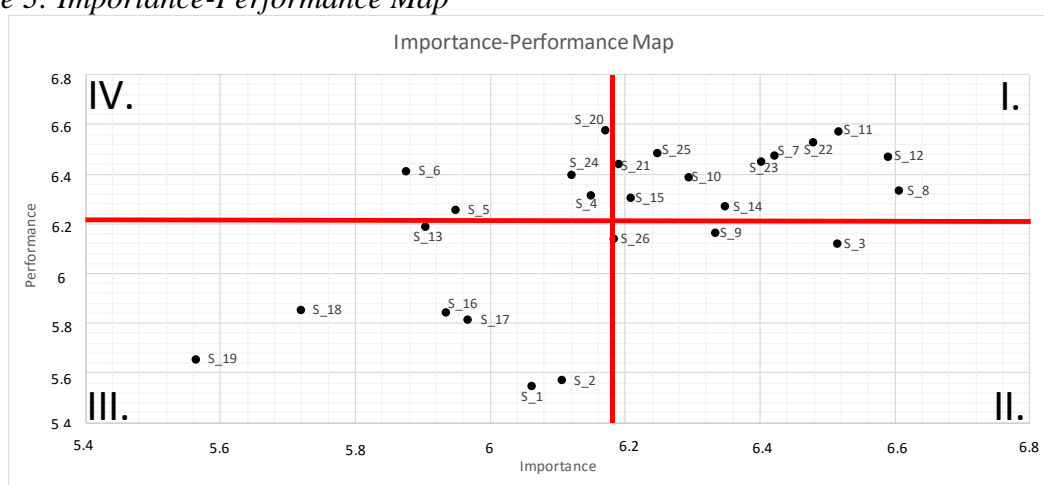
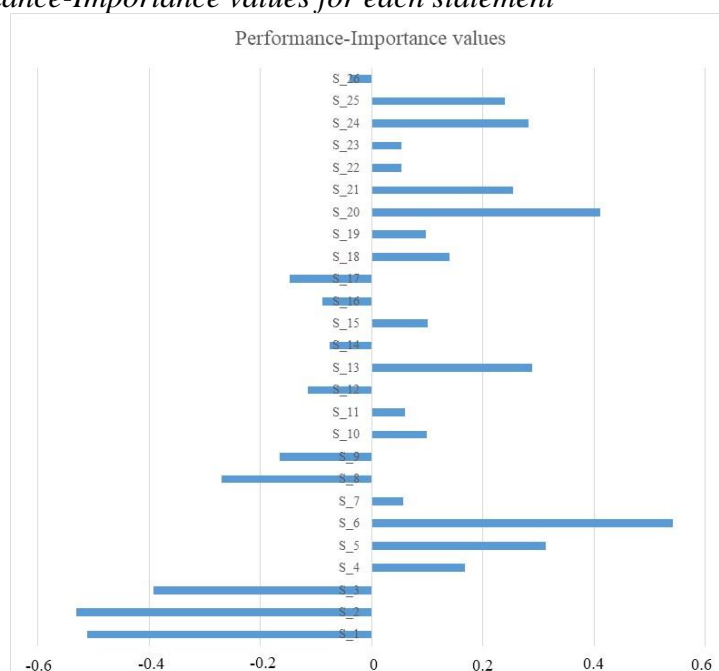


Figure 4: Performance-Importance values for each statement



As the normality of the importance and performance scores could not have been proved, statistical tests based on different segmentations of the performance evaluations have been conducted that do not require the normality of data as a precondition (shown in Figure 5.).

Figure 5: Statistical tests' results

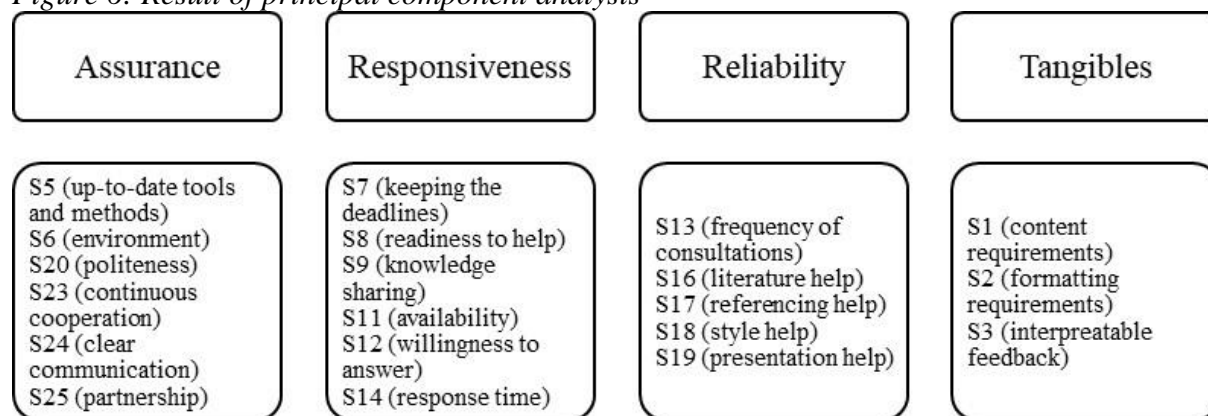
Wilcoxon signed rank test ( $\alpha=5\%$ )						Mann-Whitney U test ( $\alpha=5\%$ )		Kruskal Wallis test ( $\alpha=5\%$ )					
None	study program - Engineering management	study program - International Business Economics	study program - Management and Business Administration	BA/BSc level	MA/MSc level	importance BA/BSc - MA/MSc	performance BA/BSc - MA/MSc	performance - sub-departments	importance - sub-departments	performance - levels of project work	importance - levels of project work	performance - study programs	importance - study programs
$H_0=H_1$	$H_0=H_1$	$H_0=H_1$	$H_0=H_1$	$H_0=H_1$	$H_0=H_1$	$H_0(BA/BSc)=H_0(MA/MSc)$	$H_0(BA/BSc)=H_0(MA/MSc)$	$H_0(LEARN)=H_0(ADMIN)=H_0(PROJ)=H_0(QUAL)$	$H_0(MARK)=H_0(QUAL)=H_0(PROJ)=H_0(QUAL)$	$H_0(PW_1,BA/BSc)=H_0(PW_1,BA/BSc)=H_0(PW_1,MA/MSc)$	$H_0(PW_2,BA/BSc)=H_0(PW_2,BA/BSc)=H_0(PW_2,MA/MSc)$	$H_0(STUD)=H_0(IMP)=H_0(IMP)=H_0(IMP)$	$H_0(STUD)=H_0(IMP)=H_0(IMP)=H_0(IMP)$
S1, S2, S3, S4, S5, S6, S8, S9, S10, S12, S13, S15, S18, S19, S20, S21, S23, S24, S25	S1, S2, S3, S4, S5, S6, S8, S13, S18, S20, S21, S24, S25	S1, S2, S3, S5, S6, S8, S10, S13, S19, S20, S21, S24, S25	S1, S2, S3, S5, S6, S8, S13, S15, S20, S21, S24, S25	S1, S2, S3, S4, S5, S6, S8, S9, S10, S12, S13, S15, S18, S19, S20, S21, S23, S24, S25	S1, S2, S3, S4, S6, S8, S15, S20	S12, S15, S16, S19	S17	S3, S5, S8, S9, S10, S12, S13, S14, S15, S16, S17, S18, S19, S21, S24, S25, S26	S3, S5, S9, S10, S14, S15, S16, S21, S24, S25, S26	S1, S2, S4, S13, S15, S18	-	S1, S4, S20	S3, S4, S5, S12, S14, S15, S16

Taking the results of all the aforementioned statistical analyses into consideration, in case of S7, S11 and S22 all null hypotheses are accepted. Taking all segmentations into account, about half of the statements require deeper analysis, as in these cases significant differences have been caught either between importance scores, either between perceived performance, either between the coherent importance and performance evaluations. Therefore, focus group interviews have been organized to come to a clearer conclusion related to the critical to quality statements and to see the opportunities for shortening the questionnaire.

A Principal Component Analysis (PCA) with varimax rotation was carried out for the importance scores considering them as students' expectations. Six statements were left out (S4, S10, S15, S21, S22, S26) in order to come to a clearer component structure. The total variance explained by the components was 58.809 % (see Figure 6.). However, the questionnaire applied to grab the special features of supervising processes differed from the original SERVQUAL questionnaire, our analyses has revealed a partly different factor structure compared to the original SERVQUAL dimensions. Our first component titled as 'assurance' highlight the main features of continuous partnership. The second and third

components are largely reflective on the ‘responsiveness’ and ‘reliability’ dimensions of the original SERVQUAL. The fourth component (‘tangibles’) incorporate the formal written documents and feedbacks accompanying the supervising processes.

*Figure 6: Result of principal component analysis*



### ***Qualitative research***

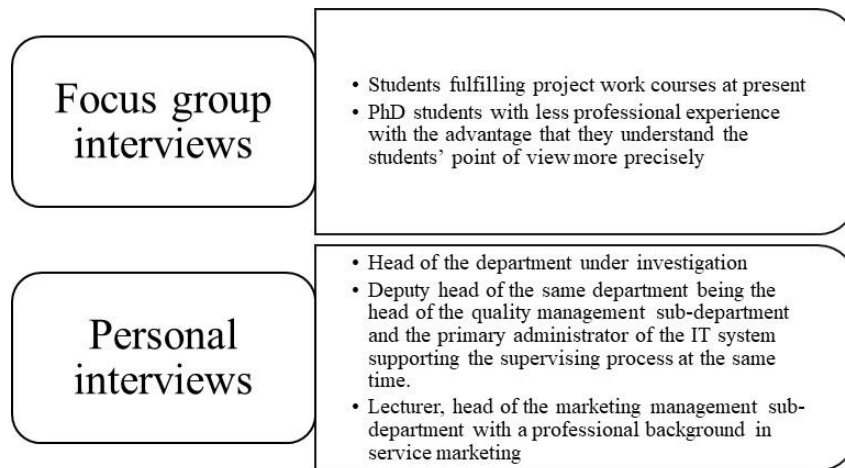
After analysing the statistical results of the pilot year, focus group interviews were performed with the involvement of different ‘mini-groups’ (Krueger, 2002; Williamson, 2008; Krueger & Casey, 2009). These focus group interviews were split into two phases. First, students and supervisors were invited to take part and were given the opportunity to provide narrative comments related to the supervising process. Next, interviews were performed with supervisors with different professional background.

The primary purpose of the qualitative research was to shorten the questionnaire by welcoming some fresh ideas directly from the students and supervisors and to come to a general conclusion related to critical to quality supervising attributes. The focus group interviews with two student groups both including 3 students and a PhD-supervisor ‘mini-group’ were performed in the fall semester of 2018 and in the beginning of 2019. The invited students’ common and distinctive features are summarized in Table 1. Figure 7. provides more details about the interview participants.

*Table 1: Common and distinctive features of the participated students in focus group interviews*

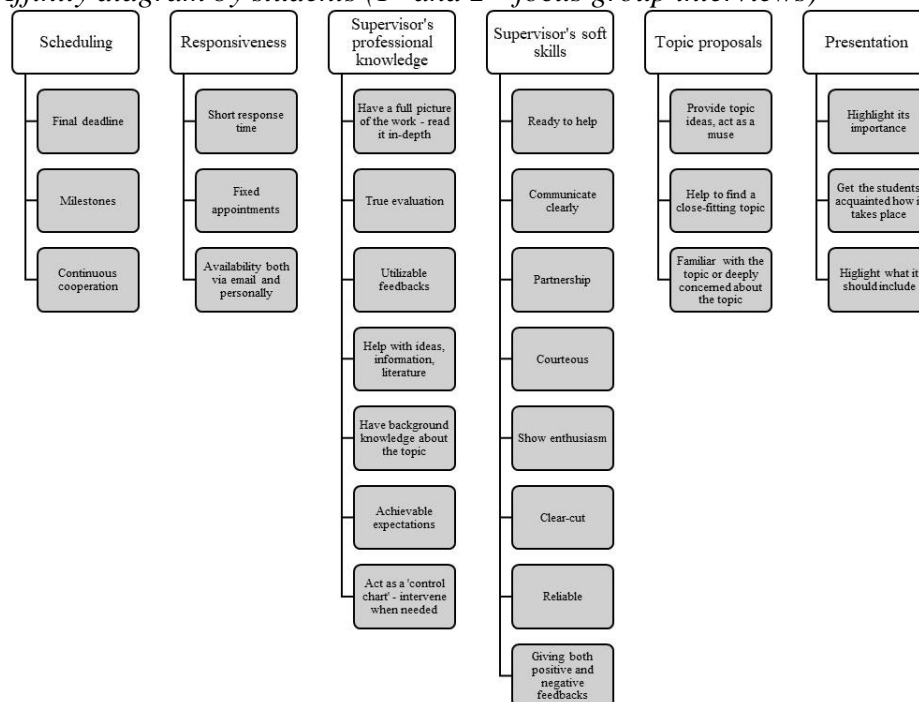
Common features	Distinctive features
They already fulfilled at least one project work course during their studies. They have been studying at the same faculty on one of its business programs.	They have fulfilled project work course(s) at different departments. 3 of them study on BA/BSc level and 3 of them on MA level.

*Figure 7: Features of the participated supervisors (focus group interview and personal interviews)*



The focus group sessions were divided into three consecutive parts. At first, participants freely listed and discussed those factors and attributes that they had found important in the experienced supervising processes, choosing the five most important factors individually. Based on these ideas, participants created an affinity diagram in group work in each focus group separately (see Figure 8. and 9.). The two student 'mini-group' interviews resulted in six main groups titled as scheduling, responsiveness, supervisor's professional knowledge and soft skills, topic proposals and presentation. The ideas appearing in the affinity diagram associated with 19 of the 26 statements in the original questionnaire.

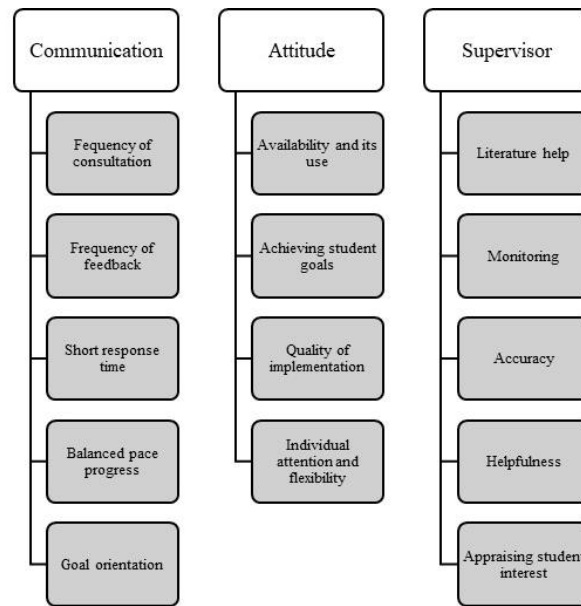
*Figure 8: Affinity diagram by students (1<sup>st</sup> and 2<sup>nd</sup> focus group interviews)*



The PhD students' group work has resulted in an affinity diagram with 3 main groups labeled as communication, attitude and supervisor. The ideas presented here did not reflect to 6 of the original statements. 4 out of this 6 had not been mentioned previously by students either.

*Figure 9: Affinity diagram by supervisors (3<sup>rd</sup> focus group interview)*





If we were to compare the structured ideas given by students and PhD students, the followings could be concluded. ‘Communication’ ideas may be linked to the ideas of ‘Scheduling’ and ‘Responsiveness’ listed in the students’ affinity diagram, while ‘Attitude’ and ‘Supervisor’ labels associate with a mix of ideas listed in the ‘Supervisor’s professional knowledge’, ‘Supervisor’s soft skills’ and ‘Topic proposals’. It must be noted that the issues of oral presentation were not highlighted in the 3<sup>rd</sup> focus group. What is even surprising, that students have not dealt with their own role in the supervising processes since they have focused merely on supervisor-related attributes. PhD students in the role of supervisors but not very far away in time from being a student similar to the supervised ones have called attention to the contribution of students for successful accomplishment of the requirements.

Next, students were asked to critically review the importance of the original survey statements with Q organizing technique considering the subjectivity of this method since it is performed on small samples and is a combination of qualitative and quantitative research techniques (Valenta & Wigger, 1997). Discrete values between  $-4$  (least important) and  $+4$  (most important) could be assigned to express the importance of the supervising issues addressed by the statements aiming to identify the groups of the least and the most important statements by quantifying the opinions of the participants. The Q organizing technique forces the participants to sort the statements into the shape of a quasi-normal distribution which means that fewer statements can be placed to the two ends, and more to the middle titled as ‘grey or neutral zone’ (Shinebourne, 2009). During the focus group interviews (shown in Figure 10 and 11), all participants found S20 (politeness) and S21 (familiarity with supporting processes) the least important and S3 (interpretable feedbacks) and S8 (readiness to help) the most important. Nevertheless, while students found the supervisor’s response time (S14), his / her willingness to answer (S12) and the frequency of consultations (S13) really important, the supervisors put them into the grey area and focused more on the knowledge sharing (S9) and on student interest (S10). Students felt that content requirements, while for the supervisors the style help are less important than the other examined characteristics.

In the next phase, 3 interviews were made with 6 main questions:

1. What kind of feedbacks including positive and negative have you received in connection with project work courses from students and supervisors?
2. What kind of role these project work courses play in the education of students?

3. Do project work courses add value to the degree of graduated students? Do companies know about these courses?
4. Did you fulfil project work courses when you were a student? Could you compare that system to the one in place today?
5. Reading through the 26 statements which do you consider as the most or least important ones?
6. As a summary, could you name some dimensions which are really important in the supervising process from the students' and supervisors' points of view?

According to the interviews, the supervising process was really different at the beginning of the Bologna process, since there were less students, one lecturer supervised 3-4 students per semester. More time could be dedicated to one student, consultations could happen more frequently and as a result, the supervisor-student relationship could be more direct. Nowadays, one lecturer is responsible for several students, many colleagues supervise more than 30 students' project works in each semester.

The most negative feedbacks regarding supervising were raised in connection with the IT system supporting project work courses. Problems arise mostly on master level, many administrative mistakes occur, the departments responsible for project work supervision do not treat either the students or their outputs in exactly the same way. On the other hand, student attitude also shows great differences.

The interviewees highlighted that most of the time students do not see the value and opportunity embedded in the successful completion of these courses until they come to the thesis or entry the labour market.

*'2-3 companies have contacted me recently whether there is an opportunity to cooperate in project works connected to their specific topic since there is an increasing shortage of experts in given fields in the labour market.'* (Supervisor and service marketing researcher)  
*'For many students, these courses are viewed as a high credit load, their added value is experienced later.'* (Head of the department)

These project work courses help to keep balance with mass education since students are paid individual attention, they are to demonstrate the utilization of their professional knowledge in practical problems and how valuable their knowledge is in a real life situation.

*'Fulfilling these courses gives value in the process of job search.'* (Head of the department)

Figure 10. The least and most important statements according to the focus group interviews

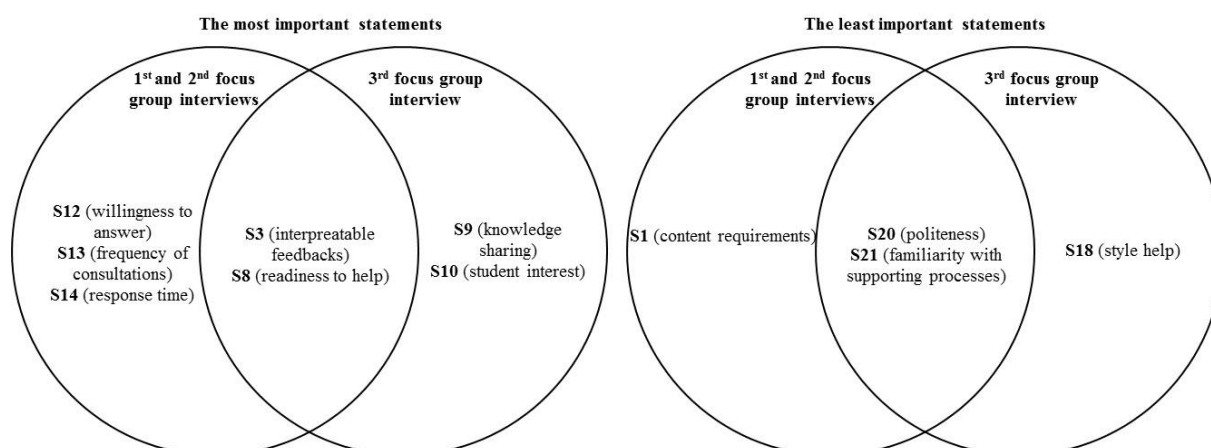


Figure 11. The least and most important statements according to the personal interviews

	Head of the department	Deputy head of the department	Supervisor and service marketing researcher
Most important	S3 (interpretable feedbacks)		
	S8 (readiness to help)		
	S9 (knowledge sharing)		
	<b>S10 (student interest)</b>		<b>S10 (student interest)</b>
	S12 (willingness to answer)	S19 (presentation help)	
	<b>S22 (professional knowledge)</b>	<b>S22 (professional knowledge)</b>	<b>S22 (professional knowledge)</b>
Least important		S23 (continuous cooperation)	
	<b>S25 (partnership)</b>		<b>S25 (partnership)</b>
	S26 (personal attention)		
		S5 (up-to-date tools and methods)	S1 (content requirements)
		S10 (student interest)	S2 (formatting requirements)
		S16 (literature help)	
		S17 (referencing help)	
		<b>S18 (style help)</b>	<b>S18 (style help)</b>
		S24 (clear communication)	

Students claimed partnership, the acknowledgment of the value added performed by the student, the professional knowledge, support, guidance and availability of the supervisor, trust, individual attention and the help with literature research as the most important quality related attributes (Figure 10 and 11). From the supervisors' point of view, for the mutual success of these courses it is really important that students have own ideas, they do put effort into their work, appreciate the help and continuous feedback provided by the supervisor, student trust and keeping the deadlines.

According to the qualitative interviews, students can be categorized into different groups. 'Neglecters' are the students who do not really care about the completion of their project work. Independent students only need confirmation and feedback from the supervisor, they are able to work individually. 'Vampires' can be categorized into two sub-groups, the helpless ('need help in every moment') and the overanxious ('always having one more question') students, who need more regular consultations, care and time from the supervisor. This means

that the supervisors provide individual attention by choosing during the first consultations which way to handle the student.

## Conclusion

This paper presents the first results of a newly developed questionnaire measuring the level of service quality in case of project work courses. Both quantitative and qualitative results of the applied methodologies are highlighted and compared to each other evaluating different features of these courses. Table 2. provides a thorough review of these results related to each statement. The contribution of this paper to the existing body of knowledge could be identified from two aspects. Firstly, a more sophisticated questionnaire was proposed to course evaluation by addressing the investigation of particular features of supervising processes. Secondly, students evaluated the importance of these attributes which may be considered as the reflection of their expectations and requirements.

The quantitative results highlighted 12 statements which need deeper analyses. These results as a next step in the PDCA cycle were complemented with qualitative data collected during 3 focus group interviews and 3 personal interviews. As a result of the qualitative and quantitative research, the relevance of S1, S2, S3, S5, S6, S15, S17, S18, S20, S21, S24 had to be examined. S1, S2, S15 and S21 are left out when improving the questionnaire because they were considered as least important statements. The applied statistical tests in the case of these statements resulted in the fact that most of the null hypotheses were rejected. However, in case of S1 and S2, the I-P diagram shows that the importance scores are much higher than the performance scores.

The results show that S3 and S8 were the most important ones for the interview participants and therefore, these statements need more attention because the average importance scores exceed the average performance scores. In case of S3 this gap seems to be more significant. There were no statements which were part of both the least or the most important groups according to the qualitative analysis. However, it is interesting that S10 appeared in the grey group according to the student focus groups, in the most important group according to the PhD focus group and two interviewees considered it as really important as well. On the contrary, the deputy head of the department marked it as least important. All the other statements were more or less modified, some of them were merged and by adding one new (S15) statement, the improved questionnaire contains altogether 15 statements (see Figure 12.). With this step, the PDCA cycle for the development of the questionnaire considering both the voice of students and supervisors applied for the project work courses has been closed. However, according to the continuous improvement philosophy, it is time to start a new PDCA cycle by utilizing these feedbacks in the relevant supervising and supporting administrative processes in order to enhance the supervising performance.

*Figure 12: The new questionnaire applied for course evaluation in case of project work courses*

## Project work courses - questionnaire

Please evaluate the given statements' importance and show your satisfaction with the performance in the given aspects as well!

*Importance: 1 - really low importance, 7 - really high importance, Performance: 1 - really low satisfaction, 7 - really high satisfaction*

Statements	Importance	Performance
S1 - The student is given feedbacks by the supervisor in an appropriate and meaningful manner so as to assist the student's progress.		
S2 - The supervisor is available both via email and personally with appropriate frequency under proper conditions (providing milestones during the semester).		
S3 - The supervisor is up-to-date in terms of the tools and methods of the field and gets the students acquainted with their application.		
S4 - The supervisor meets the mutually agreed deadlines and dates.		
S5 - The supervisor expresses his/her willingness to help with any kinds of project work related issues the student addresses.		
S6 - The supervisor considers the student's field of interest when designating the project work topic with which the supervisor is highly familiar with.		
S7 - The supervisor's response time is appropriate.		
S8 - The student is given enough help when doing research on the literature.		
S9 - The supervisor professionally supports the student's preparation for the oral presentation highlighting its importance and relevance.		
S10 - The supervisor is courteous, helpful and attentive.		
S11 - The student relies on the skills and professional knowledge of the supervisor.		
S12 - The project work's topic description is the result of the cooperation between the student and the consultant.		
S13 - The communication is direct and clear with the supervisor.		
S14 - The supervisor treats the student as a partner.		
S15 - The supervisor reads through the project work from the beginning to the end and provides comprehensive feedback pinpointing both the strengths and the weaknesses.		

Table 2: The results of quantitative and qualitative research of each statement

Statements	I-P map	P-I diagram	Statistics	Affinity diagram		Q technique			New statement
				FG1 and FG2	FG3	FG1 and FG2	FG3	Personal interviews	
<b>S1 (content requirements)</b>	-	<b>I&gt;&gt;P</b>	<b>deeper analysis needed</b>	<b>no</b>	<b>no</b>	<b>least</b>	<b>grey</b>	<b>least - 1 interviewee</b>	-
<b>S2 (formatting requirements)</b>	-	<b>I&gt;&gt;P</b>	<b>deeper analysis needed</b>	<b>no</b>	<b>no</b>	<b>grey</b>	<b>grey</b>	<b>least - 1 interviewee</b>	-
S3 (interpretable feedbacks)	better performance is needed	I>>P	deeper analysis needed	yes	yes	most	most	most - 1 interviewee	1
S4 (the appropriateness and suitability of consultation opportunities)	less performance is enough	-	deeper analysis needed	yes	yes	grey	grey	grey	2
S5 (up-to-date tools and methods)	less performance is enough	-	deeper analysis needed	yes	no	grey	grey	least - 1 interviewee	3
S6 (environment)	less performance is enough	I<<P	-	no	no	grey	grey	grey	2
S7 (keeping the deadlines)	-	-	-	yes	yes	grey	grey	grey	4
S8 (readiness to help)	-	-	deeper analysis needed	yes	yes	most	most	most - 1 interviewee	5
S9 (knowledge sharing)	better performance is needed	-	-	yes	yes	grey	most	most - 1 interviewee	1
S10 (student interest)	-	-	-	yes	yes	grey	most	least - 1 interviewee, most - 2 interviewee	6
S11 (availability)	-	-	-	yes	yes	grey	grey	grey	2,4
S12 (willingness to answer)	-	-	-	yes	yes	most	grey	most - 1 interviewee	5
S13 (frequency of consultations)	-	-	deeper analysis needed	yes	yes	most	grey	grey	2
S14 (response time)	-	-	-	yes	yes	most	grey	grey	7
<b>S15 (consistency with guidelines)</b>	-	-	<b>deeper analysis needed</b>	<b>no</b>	<b>yes</b>	<b>grey</b>	<b>grey</b>	<b>grey</b>	-
S16 (literature help)	-	-	-	yes	yes	grey	grey	least - 1 interviewee	8
S17 (referencing help)	-	-	-	no	yes	grey	grey	least - 1 interviewee	8
S18 (style help)	-	-	-	no	yes	grey	least	least - 2 interviewee	10
S19 (presentation help)	-	-	-	yes	yes	grey	grey	most - 1 interviewee	9
S20 (politeness)	less performance is enough	I<<P	deeper analysis needed	yes	yes	least	least	grey	12
<b>S21 (familiarity with supporting processes)</b>	-	-	<b>deeper analysis needed</b>	<b>no</b>	<b>no</b>	<b>least</b>	<b>least</b>	<b>grey</b>	-
S22 (professional knowledge)	-	-	-	yes	yes	grey	grey	most - 3 interviewee	11
S23 (continuous cooperation)	-	-	-	yes	yes	grey	grey	most - 1 interviewee	12
S24 (clear communication)	less performance is enough	-	deeper analysis needed	yes	no	grey	grey	least - 1 interviewee	13
S25 (partnership)	-	-	deeper analysis needed	yes	yes	grey	grey	most - 2 interviewee	14
S26 (personal attention)	better performance is needed	-	-	yes	yes	grey	grey	most - 1 interviewee	6

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# WHAT ABOUT YOUNG GENERATION? THEIR PURCHASE INTENTION TOWARDS REMANUFACTURED WHITE GOODS

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## Abstract:

*Remanufacturing plays an important role in the context of the circular economy because it reduces energy and material consumption. Since the consumers are still reluctant to buy remanufactured products, the presented research attempts to provide deeper insight into consumers' purchase behaviour. Moreover, the majority of researches on this topic is focused on adults and do not consider the young generation, which will grow up soon into productive live and become a new purchase power. Therefore, the author focuses on young customers, who are characterized by new buying habits. As a theoretical framework is used the theory of planned behaviour and theory of perceived risk, the combination of which enables a deeper understanding of consumer' perception and purchase behaviour. Data was collected by using a questionnaire survey, in which the students from the second biggest university in the Czech Republic (n=201) participated. According to the findings, the purchase intention of the young generation is positively influenced by all the determinants of the theory of planned behaviour, i.e., consumers' attitude, subjective norm and perceived behavioural control. Although the effect of all elements is significant, the subjective norm has the biggest influence. This may stem from the fact, that the young generation uses a number of social networks on a daily base and their virtual life has become equal to their real one. Moreover, they share their experiences with others and thus it is not surprising that others' opinions are important for them. Furthermore, the presented study examines, if the young generation also feels uncertain about remanufactured products. The results show that young consumers connect some risks with these products, which negatively influence their attitude and consequently also their purchase intention. Finally, based on the overall findings the study offers theoretical as well as practical implications, which can be beneficial not only for other researches but also for remanufactures when setting up a more effective marketing strategy.*

**Key words:** Remanufactured products, Young generation, Theory of planned behaviour, Theory perceived risk, Purchase intention

**JEL classification:** M31, Q21, Q56, C1

## Introduction

Over the last few years, we have witnessed the change in consumer consumption of goods and services, which has increased tremendously across the world (Joshi and Rahman, 2015). Subsequently, these changes have led to the depletion of natural resources and unprecedented levels of produced waste (Khor and Hazen, 2016), which generated critical environmental problems (Michaud and Llerena, 2011). Various countries become conscious of this threat and thus have started implementing end-of-life strategies, such as manufacturing strategy. Atasu et al. (2010) define the concept of remanufacturing as: *“production strategy, which involves taking used products, bringing them back to as-new condition, and selling them again, often with exactly the same warranty as a new product.”* Since, within the remanufacturing process, the products are recovered via reusing, refurbishing, and/or replacing components, it is said that remanufactured products deliver economic, social and also environmental benefits (Tseng et al., 2015). That is because during the production of remanufactured products it is produced fewer emissions, less raw material and energy are required, which reduce cost and improves total productivity. Thus remanufacturing represents the significant opportunity for firms (Wang et al., 2013). In the same time, thanks to these benefits the remanufactured products have become the keystone of sustainable supply chain practices, leading to increased availability during last few years (Watson, 2008; Zhu et al., 2015). In 2015, the remanufacturing industry produced around €30 billion in turnover and another growth is expected by 2030 (Parker et al., 2015 "in" Vafadarnikjoo et al., 2018).

The success of sustainable supply chains depends on consumers' acceptance and willingness to buy remanufactured products (Wang et al., 2018). Although there is a number of empirical researches dealing with remanufacturing issues (e.g., Ferguson and Toktay 2006), they are only focused on operational issues (Guide 2000) or involvement in managerial remanufacturing practices, while much less attention is paid to end-consumer behaviour (Wang and Hazen, 2016; Wang et al., 2013) especially to the young generation which has a strong ability to reflect their choices when purchasing products. Since, the consumers are generally characterized by quality, performance, safety and maintenance concerns about remanufactured products, for reversing their low perception of these products compared with new products, it is important a deeper understanding and recognition of their purchase intention.

This paper contributes to the existing literature by the examination of consumers' purchase intention towards the remanufactured product, which is considered according to the Theory of Planned Behaviour as the strong predictor of peoples' purchase behaviour (Shim et al., 2001). While the theory has been used by numerous authors in a different field (e.g., Zagata, 2012; Han & Kim, 2010; Bansal & Taylor, 2002) in context of remanufactured products it was used only by few studies (e.g., Jiménez-para et al., 2014; Wang et al., 2013). Furthermore, because of the aforementioned consumers' concerns related to remanufactured products this paper also draws upon the Theory of perceived risk. Thus, by combining both theories, in comparison with the current literature, I provide more comprehensive view of consumers' behaviour, especially young generation (the purchase intention of students was examined only by Sun et al., 2017, who however focused on recycled products).

## Theoretical framework

### *Consumer perception of remanufactured products*

Since, consumers' perception and acceptance of remanufactured products are considered as main barriers to the growth of the remanufacture industry (Liang, 2011 "in" Wang, 2018), the researchers' attention has turned to consumer behavior. Even though research is still at an early stage, there are several studies that have already examined attributes related to consumers' buying decision (i.e., whether to buy remanufactured products or giving still a priority to new products). For example, Guide and Li (2010) investigate the issue of consumers' willingness to pay, Khor and Hazen (2016) focus on purchase intention and behaviour, or Hazen et al. (2012) examine consumers' perception of remanufactured products.

Based on the findings of these studies, the consumers are unwilling to buy remanufactured products, although the purchase of the remanufactured product may bring them many benefits (Khor and Hazen, 2016). This consumers' reluctance is mainly caused by the unfamiliarity because consumers do not have clear information and a deep understanding of how the products were used before and which steps were necessary to remanufacture them (Hatcher et al., 2014; Wang et al., 2018). Thus, the uncertainty about remanufactured products outweighs the substantial value offered by buying remanufactured products for customers. According to the current literature the remanufactured products are sold at a lower price (Seitz, 2007), have longer-term warranties, and are more environmentally sustainable in terms of the materials and energy than needed to produce their new equivalents (Wang and Hazen, 2016).

Therefore, a key factor affecting consumers' intention to purchase remanufactured products is the ability to deal with consumers' risk perception associated with these type of products (Wang et al., 2013).

### *Perceived risk*

As previously mentioned the consumers feel uncertain about remanufactured products, especially as regards the quality. The remanufactured products combine both new and restored components which is the reason why customers consider them as being of lower quality (Ferrer and Swaminathan, 2006). Moreover, purchase of remanufactured products is associated with more uncertainties such as unknown previous uses, unknown methods used to restore the products, lack of previous experience or lack of commercial recognition (Hazen et al., 2012).

Perceived risk is formally defined as "*the nature and quantity of uncertainty seen by a consumer in contemplating a particular purchase*" (Cox & Rich, 1964). Research suggests that perceived risk is an important element of making purchase decisions because it represents the potential losses related to buying the product (Wang et al., 2018). Stemming from prospect theory, if the consumer considers the planned purchase to be risky, then his/her attitude is negative and the other way around. If the purchase is judged to be less risky, the consumers' attitude is more positive (Wang and Hazen, 2016).

In this context, however, researchers state that consumers' perceived risk consists of different type of perceived risk, which differ from product to product (Wang et al., 2013). Following Grewal et al.'s (1994) suggestion the author identifies the following four risks as the most significant risks related to the remanufactured product: financial, performance, social,

physical, privacy and time. And thus, because the certain level of uncertainty negatively influences purchase attitude of the customer, I hypothesize that:

*H1: Perceived risk associated with remanufactured white goods negatively influence the consumers' attitude toward remanufactured products.*

### ***Theory of Planned Behavior***

Theory of Planned Behavior (TPB) proposed by Ajzen (1985) is a very popular and useful model for predicting and better understanding of person's intention to behave (or not) in a particular way. It was already used in diverse contexts (e.g., social and culture) and in a wide range of fields (e.g., environmental issues, Thompson and Hansen, 2012; ethical consumer decision, Ozcaglar-Toulouse et al., 2006; organic food, Zagata, 2012). Since this theory has been applied successfully in green purchase behaviour, it can be suitable also in predicting consumers' purchase behaviour towards the remanufactured products (Jiménez-Parra et al., 2014; Wang et al., 2018).

The TPB is an extension of the Theory of Reasoned Action and stems from the rational and reasoned decisions made by individuals (Wang et al., 2018). Thus, TPB provides a robust theoretical lens and states that behavioural intention, which consequently leads to actual behaviour is formulated by three fundamental determinants that combine personal, social and control influences (Ajzen, 1985). The three basic elements (factors) are: attitude towards the behaviour, subjective norm and perceived behavioural control (Zagata, 2012). **Attitude** is defined as the positive or negative evaluation of certain behaviour (Wang et al., 2018) and refers to “the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in the question” (Ajzen, 1991:188). Therefore, if individuals have a more favourable attitude towards the behaviour, the stronger should be their intention to behave in this way (Jiménez-Parra et al., 2014; Wang et al., 2018). **Subjective norm** reflects the individual's perception of what their closest referents think they should do (Jiménez-Parra et al., 2014) and represents “individuals' perception of social pressure to perform or not to perform the behaviour” (Ajzen, 1991:188). Therefore, the more individual follows the expectation of people, who are important in his/her life (e.g., family, friends, workmates) the more likely he/she will behave in this way (Jiménez-Parra et al., 2014; Wang et al., 2018). **Perceived behavioural control** shows the extent to which individuals think that the behaviour to be under their control (Taylor and Todd, 1995) and thus refer to “perceived ease or difficulty of performing the behaviour and it is assumed to reflect past experience as well as anticipated impediments and obstacles” (Ajzen, 1991:188). Therefore, the more easily individuals can engage in the behaviour (i.e., have the ability, time, money, etc.) he/she is supposed to have a stronger intention to the behaviour (Wang et al., 2018; Khor and Hazen, 2016).

Finally, since all together leads to the formation of a behavioural intention, I hypothesize:

*H2: Attitude positively influences the consumers' intention to purchase remanufactured products.*

*H3: Subjective norm positively influences the consumers' intention to purchase remanufactured products.*

*H4: Perceived behavioral control positively influences the consumers' intention to purchase remanufactured products.*

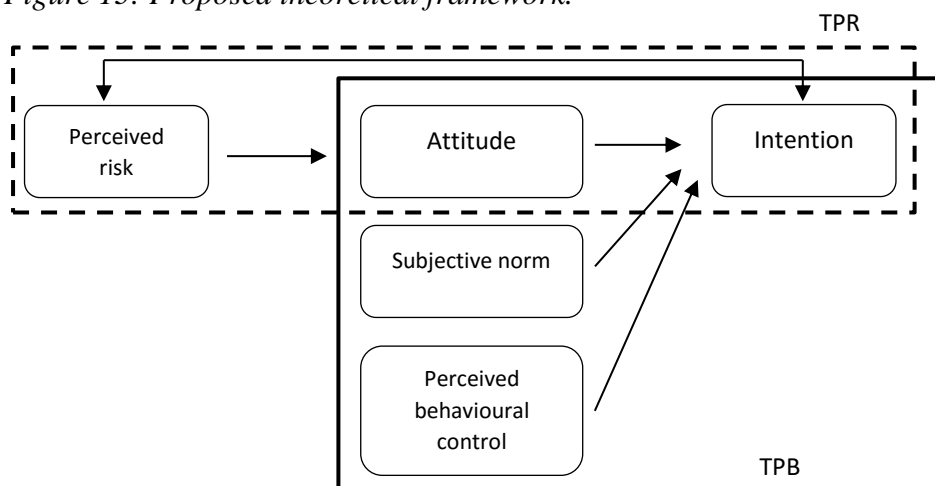
## Methodology

### *The conceptual model*

This study is focused on the purchase behavior of young customers in the Czech Republic, especially on determinants influencing their decision whether to buy or not remanufactured white goods. Since the customers associate the purchase of remanufactured products with uncertainty (confirmed by e.g., Hazen et al., 2012), this paper draws upon the TPB as well as the TPR. Theory of Planned provide more social psychology view, thanks to the incorporation of both social and personal factors. On the other hand, the Theory of perceived risk highlights the level of perceived risk, which stems from consumers' uncertainty about the quality and reliability of remanufactured products. Moreover, risk factors are considered to be the key determinants of behavior, where the effect of risk on purchase intention is mediated via attitude (Taylor and Todd, 1995). Thus, the combination of both theories provides a more comprehensive approach and enable to examine the customers' behavior more deeply.

Based on the above mention, the following research framework of consumer intention to purchase remanufactured products has been developed (Figure 1).

*Figure 13: Proposed theoretical framework.*



*Source: Author*

### *Questionnaire design*

Based on the explanatory character of the research, the data was collected by using a quantitative investigation, specifically a self-administered questionnaire. All of the measurement items of the constructs were taken over from previous research (see Appendix A for more details about the wording of single questions). Prior to the questionnaire was definitively released, the two pilot tests for evaluation validity and reliability was conducted. The first pre-test was run with the experts in the fields of psychology and marketing to evaluate the questionnaire. By this was ensured that all the questions correspond to theories and particular items were correctly and adequately represented. Within the second pre-test, the random selected young people were asked to fill the questionnaire and identify potential ambiguities (i.e., the poor meaning of the questions, expression hardly understand, etc.). Based on their observation five questions in the questionnaire were slightly corrected to be

better understandable for participants. After the pilot study, the final version of the questionnaire could be drafted.

The questionnaire contained 24 questions and consisted of two parts. The first part is made up of 19 questions related to determinants of purchase behavior and perceived risk. All of the questions of both constructs were adopted from previous research (see appendix 1) and measured according to 7-points Likert' scale (where 1 presented a negative attitude - strongly disagree and 7 show positive attitude – strongly agree). The second part focuses on respondents' demographic information.

### ***The Sample and data collection***

The author randomly selected on-campus students of Masaryk University (the second biggest university in the Czech Republic) as the study sample. The young adults were chosen because youth are more concerned about the current environmental issues and relative to their judgment level, they have a higher ability to reflect their attitudes in their purchase (Yadav and Pathak, 2016). The research was conducted during February 2019 and data were collected through a professional survey website the click4survey. The questionnaire was disseminated using the most widely used young generation social network (Erge, 2015) - Facebook. To reach a wide range of respondents, the author posted the questionnaire in the advanced selected students' Facebook group. Moreover, the author also uses snowball methods; thanks to it the representativity of the sample was get. A total of 201 questionnaires were returned representing a return rate, i.e. 45 %. In the end, the final sample consists of 178 usable responses, because some of them contained incomplete responses or did not fall into the category of young generation by age.

Following the Kline' s (2011) recommendation that the number of responses should be at least 10 cases per parameter, a sample size of 178 is considered to be sufficed (i.e., in case of 16 parameters it is necessary to have at least 160 observation).

### **Data analysis and results**

For the statistical test was used IBM SPSS Statistic version 25 and GRET version 2019a. The analysis consists of the two-stages procedure. Firstly, the measurement of inner consistency of the fundamental determinants (sub-construct of TPB and TPR) itself was tested by Cronbach' s alfa and confirmatory factor analysis (CFA). Later on ordinary least squares (OLS) regression was used for the model fit (the validity and reliability of the proposed model) and hypothesis testing. Moreover, following Wang and Hazen' s (2016) approach, the author also considers control variables, which may have also impact on consumers' intention to purchase remanufactured products. The study specifically controls for gender (the impact confirms by Akhter, 2003), age, education background, nationality, income.

Therefore, the final regression model has following equation:

$$\text{Purchase Intention} = \beta_0 + \beta_1 \text{Attitude} + \beta_2 \text{Subjective norm} + \beta_3 \text{Perceived behavioural control} + \beta_4 \text{Age} + \beta_5 \text{Education} + \beta_6 \text{Nationality} + \beta_7 \text{Income}$$

Moreover, to test the effect of perceived risk the author uses the approach of Baron and Kenny' s (1986), who state that the mediational effect can be revealed in four steps by running



regression analyses (for review see Newsom, 2002). Therefore, the following regression equation was set up:

$$\text{Purchase Intention} = \beta_0 + \beta_1 \text{Perceived risk} + \beta_4 \text{Age} + \beta_5 \text{Education} + \beta_6 \text{Nationality} + \beta_7 \text{Income}$$

$$\text{Purchase Attitude} = \beta_0 + \beta_1 \text{Perceived risk} + \beta_4 \text{Age} + \beta_5 \text{Education} + \beta_6 \text{Nationality} + \beta_7 \text{Income}$$

$$\text{Purchase Intention} = \beta_0 + \beta_1 \text{Attitude} + \beta_4 \text{Age} + \beta_5 \text{Education} + \beta_6 \text{Nationality} + \beta_7 \text{Income}$$

$$\text{Purchase Intention} = \beta_0 + \beta_1 \text{Perceived risk} + \beta_2 \text{Attitude} + \beta_4 \text{Age} + \beta_5 \text{Education} + \beta_6 \text{Nationality} + \beta_7 \text{Income}$$

### ***Measurement model: confirmatory factor analysis***

To measure the reliability of the construct Cronbach's Alfa was used as recommended by (Fornell and Larcker, 1981). Although the questions employed for measurement of individual items were borrowed from the previous research, Cronbach's Alfa score of perceived behavioral control did not meet the benchmark of exceeding the recommended value of 0,70 (Hair et al., 2010). Therefore, the author eliminates problematic question from the construct and measure the perceived behavioral control only by two questions, which internal consistency is greater than 0,70. Furthermore, to get the value of overall contrast, the factor loading analysis (CFA) was used. For each item was run Bartlett's Test and control the prerequisite of confirmatory factor analysis. The results of CFA confirm the inner consistency of measured construct (the value of extraction sum of squared loadings exceed 60 %) and thus for each construct the new factor is created.

### ***Ordinary least squares (OLS) regression***

After confirming the adequate fit of the measurement model, the author ran OLS model and tested the research hypotheses. The author uses robust (HAC) standard errors to deal with heteroscedasticity in the presented sample and also tests for multicollinearity. The results of variance inflation factors (VIFs) are well below 10 (range from 1.026 to 2,464), which indicate no problems with multicollinearity. Firstly, the value for standardized path coefficients ( $\beta$ ) between constructs and the coefficient of determination ( $R^2$ ) were calculated.

As seen in Figure 2, all three determinants - i.e., attitude toward remanufactured white good ( $\beta = 0.348$ ,  $p < 0.001$ ), subjective norm ( $\beta = 0.424$ ,  $p < 0.001$ ), perceived behavior control ( $\beta = 0.100$ ,  $p < 0.074$ ) are significantly associated with consumers' intention and therefore supporting H1, H2 and H3. Together, these variables explained 55% of variance in intention to purchase remanufactured white goods ( $R^2 = 0.552$ ).

***Figure 14: Analysis of the hypothesis***

Determinants			Effect	Estimate	P-value	
Attitude	→	Intention	+	0.348	0.000***	Supported H1
Subjective norm	→	Intention	+	0.424	0.000***	Supported H2

Perceived behavior control	→	Intention	+	0.100	0.074*	Supported H3
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Note: P-values in parentheses: \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

Secondly, the influence of perceived risk is measured. Following the approach suggested by Baron and Kenny's (1986) four regression analyses are conducted and the significance of each coefficient is tested at each model. In Figure 3, the author reports the result: Model 1 shows significant effect of perceived risk ( $\beta = -0.544$ ,  $p < 0.000$ ) on purchase intention, Model 2 report significant effect of perceived risk ( $\beta = -0.486$ ,  $p < 0.000$ ) on attitude, Model 3 show significant effect of attitude ( $\beta = -0.486$ ,  $p < 0.000$ ) on intention. This altogether indicates that between variables exists zero-order relationship and mediation effect is possible. To confirm this assumption, Model 4 is run. Since both variables perceived risk and attitude still significantly predict intention, the findings indicate partial mediation, which supports H4.

*Figure 15: Analysis of the mediation hypothesis*

Independent		Dependent	Estimate	P-value	
Perceive risk	→	Intention	-0.544	0.000***	Supported in Model 1
Perceive risk	→	Attitude	-0.486	0.000***	Supported in Model 2
Attitude	→	Intention	0.642	0.000***	Supported in Model 3
Perceive risk	→	Intention	-0.304	0.000***	Supported in Model 4
Attitude			0.495	0.000***	

Note: P-values in parentheses: \*\*\*  $p < 0.01$

## Discussion

The purpose of the paper is to investigate the predictors of consumer purchase behavior of young generation towards remanufactured white goods. Consistent with other researches (e.g., Khor and Hazen, 2017; Wang et al., 2018) purchase intention towards remanufactured white goods is positively influenced by consumers' attitude, i.e., how consumers perceive this type of products. That means if customers perceive remanufactured product positively, they will have a higher tendency to buy them. Furthermore, the effect of subjective norm (family, friends, etc.) also positively influences the purchase intention. The result is contrary to the Wang's et al., (2018) findings, who presented a negative impact. One reasonable explanation may be that the young generation is more influenceable by social pressure than the older ones. The young people use a number of social networks (such as Facebook, Instagram, Youtube, etc.) and are connected during the whole day. Moreover, they watch a number of influencers and share their opinions and experiences publicly. Therefore, it is not surprising that the opinion of others is important for them. This statement is also supported by the presented results when the effect of a subjective norm is the biggest one. Additionally, consistent with TPB, the purchase intention is also positively influenced by perceived behavioral control (also confirmed by e.g., Khor and Hazen, 2017), however, its effect is the smallest one. This may be due to the fact that the young generation lives in a world full of information, with access to the Internet from almost anywhere. So, they can easily find information whenever they need it. Moreover, it may also explain why the respondents did not know where to buy the

refurbished product. This information is unimportant for them right now, and they will start searching for it at the moment when they decide to buy remanufactured products.

Additionally, since the customers are still reluctant to buy remanufactured products, the author also examines the effect of the perceived risk. The results show that consumers' intention is influenced by the perceived risk via the consumer's attitude. Therefore, the more risk is perceived, the more negative attitude and thus lower willingness to buy these products. This mediation effect is also supported by Wang et al., (2013) according to whom the consumers have especially doubts about the quality and performance of remanufactured products. Moreover, some of them even think that remanufactured products are unusable or second-hand (Wang et al., 2018). This points out that customers do not understand refurbished products and their view is superficial and narrow. Since it is closely related to their knowledge, which consequently formulates consumers' understanding, future research can focus on the effect of consumers' knowledge on consumers' purchase intention.

The major contribution of presented research stems from a preliminary understanding of the young generation buying intention towards remanufactured white goods in the Czech Republic. Thus, it brings practical as well as theoretical implications. As regards the former, the findings can help remanufacturers to understand consumers' behaviour better and thus set up a more effective marketing strategy which eliminates risks associated with remanufactured products. They should communicate benefits of remanufactured products as well as the opportunity where to buy them, because the results also show, that the young generation does not know, where to buy remanufactured products. Additionally, the study also contributes to the existing literature. First, it confirms the applicability of TPB in the context of the purchase of a remanufactured product (also used by other authors, but in the country with different culture characteristics - e.g., Wang et al., 2013, 2018 on Chinese customers or Khor and Hazen, 2016 on Malaysia customers). Secondly, it focuses on the young generation, which brings the understanding of young generations' decision-making. Thirdly, by incorporation of TPR into the overall model, it brings a more complex view of why consumers' purchase intention towards remanufactured products is still lower than towards new products.

Besides the aforementioned contributions, the presented study also has its limitations. First, the generalizability of this research is restricted, because the survey targeted only university students, meaning only university educated young population. Since they represent only 34 %, the results cannot be related to the overall population of young people living in the Czech Republic. Therefore, future studies might focus on the young generation, who did not attend the university or test the effect of education. Secondly, due to the choice of the research sample, the results are applicable mainly in the Czech environment. Thus, future research might focus on the behaviour of the young generation from across Europe or the U.S. Thirdly, the theoretical framework consists of a basic model of TPB. However, Ajzen (1991) himself suggests that TPB can be deepened and broadened by adding new variables, future researches may consider other variables, especially those, which might play a significant role by the young generation (e.g., moral norms, environmental concern, etc.).

## **Conclusion**

With this work, the intention has been to investigate the young generation purchase intention towards remanufactured white goods. The author focuses on the young generation especially thanks to the fact they will become a new purchase power very soon. Moreover, they are

characterized by different buying habits, which are influenced by their concern about the world's current problems. The survey was conducted on a sample of 201 university students in Brno (the second biggest city in the Czech Republic). To gain deeper insight into purchase behavior, the author applies TPB as well as TPR. The former has been found very useful in predicting consumer intention, while the latter focuses on the risk associated with the remanufactured product. Based on the findings, the author concludes that young generations' purchase intention is positively influenced by all constructs of TPB – i.e., attitude, subjective norm, perceived behavioral control. Moreover, the effect of perceived risk on purchase intention shows to be as mediated via attitude.

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## Appendix

### A: Questionnaire items and their source of adoption.

Constructs	Items	Source
Perceived risk	<ol style="list-style-type: none"> <li>1. I am afraid that the safety of remanufactured white goods is not as good as that of new products, so it may present safety risks.</li> <li>2. I am afraid that remanufactured white goods do not function as well as new products.</li> <li>3. I am afraid that buying remanufactured white goods is not a good investment.</li> <li>4. I am afraid that I will have to return to the repair shop to repair more frequently</li> </ol>	Wang et al. (2013)

	when I use remanufactured white goods.	
<i>Attitude</i>	<ol style="list-style-type: none"> <li>1. In general, I think that buying remanufactured white goods is a good idea.</li> <li>2. Buying remanufactured white goods is a wise choice.</li> <li>3. I have a favorable attitude toward buying remanufactured white goods.</li> <li>4. I like the idea of buying remanufactured white goods.</li> </ol>	Wang et al. (2013); Wang et al. (2018);
<i>Subjective norms</i>	<ol style="list-style-type: none"> <li>1. Those who are important to me (such as families and friends) would support me to buy remanufactured white goods.</li> <li>2. Those who have important influences on me (such as my boss and teachers) think that I should buy remanufactured white goods.</li> <li>3. People whose opinion I value would agree with my decision to buy remanufactured white goods.</li> </ol>	Wang et al., (2013); Singhal et al. (2019)
<i>Perceived behavioral control</i>	<ol style="list-style-type: none"> <li>1. If I decide to buy remanufactured white goods, I know where I can go to buy them.</li> <li>2. I have the resources (i.e., time and money) to buy remanufactured white goods.</li> <li>3. Whether or not I buy remanufactured white goods is entirely up to me.*</li> </ol>	Wang et al. (2018); Singhal et al. (2019)
<i>Purchase intention</i>	<ol style="list-style-type: none"> <li>1. I am likely to purchase remanufactured products in the near future.</li> <li>2. I will encourage my relatives and friends in their decision to buy remanufactured products.</li> <li>3. When I have to choose between new and remanufactured products, I will choose the remanufactured version.</li> </ol>	Wang et al. (2018); Singhal et al. (2019)

\* This question showed to be problematical and therefore was removed from the construct.

# FEAR APPEAL INTENSITY IN ROAD SAFETY ADVERTISIMENTS AND STRENGTH OF NEGATIVE EMOTIONS

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## Abstract

*Fear appeals are a kind of "external inducers" that are used to increase the desire of the individuals to do something useful and good, not only for themselves but for the environment, for the society and for the family as well. Fear appeals are related to various forms of emotional components that are basically negative, such as fear, sadness, guilt, depression, etc., which serve to motivate the individual, to make a change in the same direction with the guidelines promoted by the message with fear appeal. The aim of this paper is to investigate the relationship of advertisements with different fear appeal intensity with certain types of negative emotions. Actually, we tested if there are significant differences in the impact of advertisements with low and high fear appeal intensity on six different types of negative emotions.*

*This research study relies on the linear model and Extended parallel processing model assuming that advertising message effectiveness measured through the strength of negative emotions is different depending on the message fear appeal intensity. A survey with 100 respondents (who possess driving licence) was carried out, using questionnaires as a method of data collection. To measure the influence of advertising messages with fear appeal on negative emotions a survey questionnaire was developed. Non-probability sampling procedure (convenient sampling) was used to design the research sample. Kruskal-Wallis test was used to reveal the differences in the strength of negative emotions evoked by the advertising messages with different fear appeal intensity. The results indicated that there are significant differences between advertisements with high and advertisements with low fear appeal intensity on five negative emotions. Actually, there are significant differences in the strength of guilt, anger, fear, anxiety and sorrow between advertising messages with high and low fear appeal intensity. Messages with high fear appeal intensity evoke stronger emotions of guilt, anger, fear, anxiety and sadness compared to messages with low fear appeal intensity. Despite several limitations, this study offers valuable findings and poses some directions for further research. Namely, this study offers valuable insights into the relationship between advertising messages with different fear appeal intensity and negative emotions providing marketing managers and particularly marketing communications managers some useful guidelines for effective decision making regarding the communications strategy. The limitations of this research can be overcome in the future by concentrating on the effect of different fear appeal intensity on recall or attitude change. Also examining the effect of fear*



*type and fear intensity might be an interesting research topic as well. Furthermore, personality traits could be more carefully explored and linked with the effectiveness of fear appeal advertisements.*

**Keywords:** Advertising messages, fear appeal intensity, negative emotions.

**JEL classification:** M31, M37

## Introduction

In preventing road safety high-risk behaviours besides law enforcement programs, advertising activities with fear appeals have been proven to be very effective (Elder et al., 2004; Stead et al., 2004). Indeed, fear appeals are used frequently in advertising (Ruiter et al., 2014; Rossiter and Thornton, 2004) and especially in road safety advertising (Tay & Watson, 2002; “Tay, 2005; Lewis et al., 2007). The “fear appeals” or fear-arousing threat appeals present the negative outcomes that individuals may experience as a result of engaging in the depicted unsafe behaviours (Lewis et al., 2007a), thus, evoking negative emotions (Donovan & Henley, 2010) which in turn motivate the audience to align their attitudes and behaviours with those recommended in the message (Schneider et al., 2001).

Previous research studies regarding the use of fear appeals in advertising mostly focused on investigating the effect of fear appeals on improving road safety (Tay & Ozanne, 2002; Lewis et al., 2007a; Hoekstra & Wegman, 2011), on intentions to drink and drive (Tay, 2005), on changing attitudes of the drivers (Lewis et al., 2008), on attention allocation (Megias et al., 2011) etc. Moreover, previous research on fear appeal examined the relationship between fear appeal, and demographic and psychological characteristics of individuals (Tay and Ozanne, 2002) and very few studies have examined the link between fear appeals and negative emotions (Lewis et al., 2007a; Tannenbaum et al., 2015). In fact, in previous research studies, attention has been paid mostly to guilt and fear as emotions (Brennan and Binney, 2010; Guttman & Salmon, 2004), while anger, sadness, depression and almost all positive emotions have been ignored (Passyn and Sujun, 2006).

This study draws upon the drive theory and Extended parallel process model which describes how rational considerations and emotional reactions determine behavioral decisions. Namely, the earliest conceptualisations of the fear-persuasion relationship were related to drive theories according to which fear appeals evoke fear arousal and the level of fear arousal in turn, acts as a drive to motivate action (Witte & Allen, 2000). However, previous research studies provided evidence of existence of both linear and curvilinear relationship between fear arousal and persuasion. Both linear and curvilinear models anticipate that the low level of fear is relatively less motivating and less effective than a moderate level of fear. The linear model anticipates that a higher level of fear is more effective than a moderate level of fear. Contrary to this, the curvilinear model assumes that the high level of fear would be less effective than the moderate level of fear (Wilson & Albarracín, 2015). Given that other factors influence the fear-persuasion relationship, more complex models were developed with greater focus on the role of cognitive factors such as Parallel response model, Protection motivation theory and Extended parallel processing model (EPPM). The last one, EPPM, integrates all three perspectives of fear appeal theories (drive theories, Parallel response models and Subjective expected utility (SEU) models i.e. Protection Motivation Theory) into one theory. The EPPM posits that the extent to which individuals fear the threat, determines whether they are motivated to continue processing the message which in turn may initiate a danger control

process (cognitive process), a fear control process (emotional process), or message ignorance (Cho & Witte, 2005).

While acknowledging the fact that existing studies have made fruitful attempts at exploring the fear appeals in advertising, and the relationship between fear appeals and fear, there are limited studies that investigate the relationship between fear appeal in advertisements and other negative emotions. Consequently, the goal of this paper is to analyze the influence of advertising messages with different fear intensity on several negative emotions, thus, providing the evidence-based insights on those relationships and bridging the identified research gap.

In order to obtain a complete image of how fear appeals affect the negative emotions, an analysis is performed aiming to determine how advertising messages with a high or low fear appeal intensity affect the different negative emotions of individuals exposed to the message, by conducting a research using questionnaires as a method of data collection. In the end, concluding remarks are presented.

### **Literature review**

*Fear appeal.* Fear appeals are carriers of a message that displays the consequences that can arise if the audience does not adhere to what is presented in the advertising message with a fear appeal (Glascoff, 2000). An advertisement with a fear appeal arouses fear by identifying the negative results that will occur if the person does not apply the guidelines presented in the message or by identifying the negative effects that will happen due to the individual's engagement in a negative and undesirable behavior. Fear appeals are used as a tool to increase the individual's interest and the persuasiveness of the message (Laroche et al., 2001).

*Emotions and fear appeals.* Many fear appeals cause emotions such as fear, anger, rage, etc., and these emotions can partially (or in some cases, completely) mediate the effects of fear appeals (Tannenbaum et al., 2015). Message rejection and message acceptance depend on whether the optimal level of fear is exceeded or not (Quester et al., 2007). Additionally, there is an optimal level of emotions that causes a motivational behavior change, associated with the message being received (Witte, 1994). Very intense emotions can be extremely useful on certain occasions, however they often result with an opposite effect (Witte, 1994). Moreover, the results of the meta-analysis conducted by Witte & Allen (2000) showed that strong fear appeals produce high levels of perceived severity and susceptibility, and are more persuasive than low or weak fear appeals. According to Snippes et al. (1999), individuals find it easier to remember and recall a message that reflects fear, rather than a message that evokes positive feelings, or a message without an emotional component.

*Derivation of hypotheses.* The following section includes a brief description of six negative emotions.

*Sadness* is triggered by a mental or a physical loss of a loved person or a separation from a loved person, regardless of whether it is real or imagined, or due to an inability to achieve some goal (Dillard et al., 1996). There is a correlation between sadness, as unintentionally evoked emotion through messages and a change in people's behavior (Dillard et al., 1996). According to Batra & Holbrook (1990) the sadness is one of the main affective response to advertising messages with negative appeals. The feeling of sadness is useful to encourage the awareness of what could happen if no appropriate preventive action is taken (Nabi et al., 1999). Sadness can trigger a desire to take preventive measures, which eventually leads to the

acceptance of the message, rather than its rejection (Ooms et al., 2017). Given this prior research we hypothesize the following:

**Hypothesis 1:** There are statistically significant differences in the strength of sadness evoked by the messages with an appeal of higher fear intensity and messages with an appeal of lower fear intensity.

The conditions that cause guilt are those in which an individual acted in a way that is inconsistent with his/her concepts of appropriate behavior (Bradford et al., 2017). For the message to arouse a sense of guilt, it should suggest a violation of the accepted norms of behavior (Nabi et al., 1999). The feeling of guilt is positively related to the perceived effectiveness of the message (Dillar & Peck, 2000). According to Guttman & Salmon (2004) people may react to messages with feelings of guilt if they haven't adopted the recommended practices previously. Given that different fear appeal intensity produces different effects on individuals according to EPPM, we hypothesized that different fear intensity in advertising messages will result in different levels of guilt.

**Hypothesis 2:** There are statistically significant differences in the strength of guilt evoked by the messages with an appeal of higher fear intensity and messages with an appeal of lower fear intensity.

Anger is associated with a highly focused attention and a desire to attack someone or a desire to revenge the source of anger (Roseman et al., 1994). The effects of anger on the decision-making to change the behavior or to improve the behavior on the basis of some messages, have been almost ignored in the literature. Intentionally evoked danger is positively correlated with the persuasiveness of the message, while inadvertently stimulated anger as a response to alleged guilt or fear appeals is correlated with a negative behavior (Dillard et al., 1996). According to Bradford et al., (2017) excessive or intense level of fear often causes great anger, and such messages are less convincing. As the intensity of the fear appeal increases, the arousal of the feeling of anger will also increase, accompanied by feelings of nervousness, irritation, anxiety, and guilt (Coulter et al., 1995). Nabi (2002) found that different versions of news stories with fear message, elicit anger and fear. As a result of the foregoing, the following hypothesis was proposed:

**Hypothesis 3:** There are statistically significant differences in the strength of anger evoked by the messages with an appeal of higher fear intensity and messages with an appeal of lower fear intensity.

Fear is based on the belief that an individual is facing some kind of danger or a threat that he/she can hardly control. For a message to arouse a sense of fear, it must reflect a serious threat to which the audience is susceptible (Donovan & Henley, 2010). Fear originates from the perception of danger (Smith & Lazarus, 1993). Furthermore, as an emotion, fear is an appropriate tool to encourage a behavior that is clearly directed towards protection against the serious consequences that may arise if one does not undertake the activities pointed out in the message with a fear appeal (Smith & Lazarus, 1993). According to Brennan & Binney (2010, p.11) fear appeals in advertising, encourage people to comply with rules and acceptable behaviour by scaring them about the potential legal, health and social risks associated with illegal, unhealthy or antisocial behavior". Dillard et al. (1996) claimed that fear appeals produce significant levels of fear emotion. According to De Meulenaer et al. (2015) more perceived threat leads to more fear. From what is indicated above, the following hypothesis was proposed:

**Hypothesis 4:** There are statistically significant differences in the strength of fear evoked by the messages with an appeal of higher fear intensity and messages with an appeal of lower fear intensity.

Depression can be considered a set of different emotions, which result in a loss of focus on a particular goal (Salovey et al., 1991). There is a great irony in social marketing because fear appeals should basically prevent the occurrence of undesirable events, however at the same time they can cause an adverse effect, such as depression (Sutton, 1992). Brennan and Binney (2010) claimed that people prefer message appeals that make them proud for doing something, rather than make them feel ashamed for not doing something properly, since the feeling of shame would lead to depression and therefore the message effectiveness decreases. Kohn et al. (1982) found that fear appeals produce significant levels of depression. From all above-mentioned and having in mind the EPPM framework, the following hypothesis was proposed:

**Hypothesis 5:** There are statistically significant differences in the strength of depression evoked by the messages with an appeal of higher fear intensity and messages with an appeal of lower fear intensity.

Messages intended to evoke a high level of *anxiety* among the audience are unlikely to achieve that goal (Elliot, 2003). Previous research studies (although not in advertising context) showed that increasing use of fear appeals has been associated with negative outcomes such as higher anxiety (Putwain & Symes, 2011, Putwain & Best, 2011). According to Hastings et al. (2012) fear appeals trigger negative responses such as anxiety. According to Kohn et al. (1982) fear appeals induce anxiety. It is proved that fear leads to anxiety (Mavridou et al. 2012) and that individuals with high uncertainty avoidance tend to experience more anxiety and will likely experience more fear in response to a fear appeal than low uncertainty avoidance individuals (Hofstede 2001). Based on the EPPM and on the above-mentioned research studies, the following hypothesis was proposed:

**Hypothesis 6:** There are statistically significant differences in the strength of anxiety evoked by the messages with an appeal of higher fear intensity and messages with an appeal of lower fear intensity.

## **Methodology and results**

### ***Methodology***

For the purposes of this paper, a survey was conducted by using a survey questionnaire which was distributed in hard copy to a convenience sample of 100 respondents. The questionnaire contains four items concerning the characteristics of the respondents, such as gender, age, degree of activity as a driver and a number of traffic accidents in which the respondents participated, while the remaining 6 items refer to negative emotions incited in the respondents by advertisements with a fear appeal adapted from Lewis et al. (2007b). These 6 items were measured on a five-point Likert scale, ranging from 1 –the lowest degree of consent to 5 –the highest degree of consent. Both advertisements are real advertisements previously used in the road safety promotional campaigns of the National Council for Road Traffic Safety in Macedonia

### ***Sample structure***

A total of 100 respondents who possess driving licence were surveyed, of which 82 are active drivers. There is approximately equal representation of the respondents by gender and approximately equal representation of respondents under and above the age of 40. About half of the respondents (51%) participated in one traffic accident, 9% of the respondents did not participate in any traffic accident, whereas the rest of the respondents participated in more than one traffic accident. The structure of the sample is presented in Table 1.

*Table 1 Sample characteristics*

Characteristics	Number of respondents	%
<b>Gender</b>		
Male	47	47%
Female	53	53%
<b>Age</b>		
18-30	25	25%
31-40	23	23%
41-50	18	18%
51 +	34	34%
<b>Frequency of driving</b>		
Active	82	82%
Inactive	18	18%
<b>Number of traffic accidents in the last 5 years</b>		
0	9	9%
1	51	51%
2	20	20%
3	18	18%
4 and more	2	2%

*Source: Authors' calculations*

### ***Results from the research***

An example of an advertisement with a low fear intensity without a disturbing content (showing a young boy and a girl, whereby the girl is talking on a mobile phone while driving the car, and the boy worriedly tries to grab the steering wheel with the intention of preventing a possible traffic accident) and an example of an advertising message with a high fear intensity (a picture from a car accident of two mobile phones, represented in a role of cars, whereby the destructive consequences of the accident are visible) were shown to the respondents. The fear intensity in both advertisements differs. The first advertisement portrays pictures that do not show severe consequences of a car accident (the accident was about to happen), while the second advertisement contains pictures showing serious and severe consequences of the traffic accident after it happened.

The data on the strength of emotions evoked by messages of varying intensity of fear appeal is presented in Table 2.

*Table 2. Descriptive statistics*

Emotion	Low fear intensity		High fear intensity	
	Mean	S.D.	Mean	S.D.
Sadness	2.25	0.61	4.77	0.53

Guilt	2.23	0.91	3.26	0.85
Anger	1.50	0.77	4.10	1.28
Fear	2.03	0.72	4.54	0.81
Depression	2.08	0.34	2.95	0.26
Anxiety	4.85	0.5	4.91	0.32

*Source: Authors' calculations*

The data presented in Table 2 indicated that all six negative emotions are stringer, when induced by messages with higher fear intensity comparing to messages with lower fear intensity. The messages with lower fear intensity produce significant levels of anxiety, while other negative emotions are relatively weak. The messages with higher fear intensity produce significant levels of anxiety, sadness, fear and anger, while guilt and depression are rather weak although stronger than in the case of lower fear intensity.

In order to reveal the degree of negative emotions differences resulted from advertisements with higher and lower fear intensity, a Kruskal-Wallis test was used since the assumptions for applying the ANOVA test were not met. The results of Kruskal-Wallis test are presented in Table 3.

*Table 3. Strength of negative emotions differences*

No.	Emotions	Mean rank	Kruskal Wallis test	Hypotheses
1	<b>Sadness</b>			
	advertisement with an appeal of lower fear intensity	51.99	0.000	Hypothesis 1 is accepted
	advertisement with an appeal of higher fear intensity	149.02		
2	<b>Guilt</b>			
	advertisement with an appeal of lower fear intensity	68.47	0.000	Hypothesis 2 is accepted
	advertisement with an appeal of higher fear intensity	132.54		
3	<b>Anger</b>			
	advertisement with an appeal of lower fear intensity	56.71	0.000	Hypothesis 3 is accepted
	advertisement with an appeal of higher fear intensity	144.3		
4	<b>Fear</b>			
	advertisement with an appeal of lower fear intensity	54	0.000	Hypothesis 4 is accepted
	advertisement with an appeal of higher fear intensity	147		
5	<b>Depression</b>			
	advertisement with an appeal of lower fear intensity	57.42	0.000	Hypothesis 5 is accepted
	advertisement with an appeal of higher fear intensity	143.58		
6	<b>Anxiety</b>			
	advertisement with an appeal of lower fear intensity	99.39	0.583	Hypothesis 6 is rejected
	advertisement with an appeal of higher fear intensity	101.62		

*Source: Authors' calculations*

According to the Kruskal-Wallis test results presented in Table 3, it can be concluded that five out of six hypotheses are accepted, i.e. there are statistically significant differences in the strength of the negative emotions (sadness, guilt, anger, fear and depression) evoked by the messages with different fear intensity. In other words, appeals with a high fear intensity evoke

stronger sadness, guilt, anger, fear and depression compared to appeals with a lower fear intensity. The sixth hypothesis, which refers to anxiety, is rejected, i.e. there are no statistically significant differences in the anxiety evoked by messages with low and messages with high fear intensity.

## Conclusion

According to data analysis about negative emotions evoked by the messages with fear appeal, the fear intensity in the message can affect the emotional response of those who are exposed to the message with the fear appeal.

The empirical analysis on the impact of road safety advertisements with fear appeal showed that advertisements with a higher fear intensity evoked stronger guilt, anger, fear, anxiety and sadness comparing to the advertisements with a lower fear intensity.

The results from the Kruskal-Wallis test confirmed five of the six hypotheses. Only the hypothesis which refers to anxiety, is rejected. Hence, we can conclude that the intensity of fear in the advertisements with a fear appeal affects the level of sadness, guilt, anger, fear and depression triggered by messages with a fear appeal, whereby messages with high fear intensity on average evoke stronger negative emotions than messages with low fear intensity. These results are consistent with the findings of Coulter et al. (1995), Dillard et al. (1996), Bradford et al., (2017), Putwain & Symes (2011).

Despite the revealing outcomes of the research, this study is a subject of several limitations primarily related to the number of the respondents, that is, the size of the sample, and regarding the type of the sample. A larger sample and a probabilistic sampling method instead of convenience sampling can provide more valid and credible results. However, this paper provides useful findings for marketing managers and especially for marketing-communication managers when deciding on the message appeal and on the fear intensity, certainly taking into account the company's marketing communications objective. Future research could be extended to analyze the impact of the varying intensity of fear appeal in advertising messages on the long-term message recall, persuasion and attitude change. In addition, future studies should consider analyzing the effect of fear type and fear intensity, and the influence of some personal characteristics of individuals on the effectiveness of the advertising messages with a fear appeal.

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# TOURISM

# **SOCIODEMOGRAPHIC CHARACTERISTICS OF MODERN TOURISTS AS A DETERMINING FACTOR IN THE NEED RECOGNITION FOR TRAVEL**

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## **Abstract**

*Need recognition for travelling or choosing a tourist destination is the first stage of the tourist destination choice process. This is the moment in which a tourist finds a significant difference between the actual and desired state. When this difference is greater than acceptable, there is a need for traveling. At this stage, tourists are influenced by internal sociodemographic factors, but also by external factors such as technology and social media. The focus of this paper are four sociodemographic features of the tourist - gender, age, degree of education and personal monthly income. We also analyse four social media platforms important for tourism and travel - Facebook, YouTube, TripAdvisor and Booking.com. The aim of this paper is to provide an insight into the attitudes of tourists regarding their socio-demographic characteristics and the importance attached to social media in the stage of need recognition for travel. Tourist attitudes have been collected through online survey on a sample of 1,057 Croatian tourists, who are also social media users.*

*Research findings show that behaviour of tourists related to social media differs in terms of gender, age, education and income. In the stage of need recognition women attach greater importance to social media than men. Regarding the remaining three observed sociodemographic characteristics, research shows that older people, more educated and those with higher income, take social media as less important in need recognition for travel. On the other hand, younger tourists, less educated and with lower incomes, attach greater importance to social media in need recognition stage.*

*This paper offers the first insight into the role of social media in the need recognition stage for travel and thus significantly contributes to the existing literature on consumer behaviour in tourism.*

**Keywords:** sociodemographic characteristics of tourists, social media, need recognition, tourists choice

**JEL classification:** D91, J10, J16, L82, L83

## Introduction

A large number of decision makers believe that consumer choice is a process that takes place in several stages (eg Chon, 1990; Clawson and Knetch, 1966; Mayo and Jarvis, 1981). In addition, this applies to non-routine purchases such as tourism (Chon, 1990; Gunn, 1989; Clawson and Knetch, 1966; Sirakaya and Woodside, 2005: 823); and selection of tourist destinations (Bettman and Park 1980; Wright and Barbour, 1977). As one of the cornerstones of tourism research, a great number of studies can be found investigating and theorizing tourism decision making (eg. Lee, Bruwer and Song, 2017; Li, McCabe and Song, 2017; Rojas-de-Garcia and Alarcon-Urbistondo (2018).

The information processing theory is a central place in all consumer behavior models (Bettman, Luce and Payne, 1998). This theory argues that the process of consumer decision-making involves five major stages: needs recognition, information search, evaluation of alternatives, buying and post-buying behaviour (Hawkins, Best and Coney, 1995). They are an integral part of the classical decision-making process (Kotler, 1998), or the most widespread model used by consumers when deciding on choosing a tourist product or a tourist destination.

The starting stage of the tourist destination choice process is the consumer's needs recognition. The recognition of need must come before the decision is made. In case the need is not perceived, the decision will not follow (Hawkins, Best and Coney, 1989: 536). Also, when there is no gap between the desired state (from the consumers perspective) and the actual state (the one the consumer perceives at the moment), the consumer is satisfied and does not take any action. On the other hand, when there is a difference, bigger than acceptable, between the consumer's desired state (O'Guinn, Allen and Semenik, 2009: 154) and perception of the actual state, there comes the need recognition (Hawkins, Best and Coney, 1989: 536, Kesić, 2006: 304; Kotler, 1998; O'Guinn, Allen and Semenik, 2009: 154).

If the above-mentioned translates in the context of tourism, the decision-making process begins when a potential tourist becomes aware of certain need (buying, changing environment, various forms of entertainment, etc.) (Djeri, Plavša and Čerović, 2007: 71). There are three determinants of the need recognition (Kesić, 2006: 14; Previšić, 2011: 545); information stored in memory, diversity of the individuals and environmental impacts. Information stored in memory, i.e. tourist's knowledge of destination can be based on experience or reality as well as destination image (Tasci and Gartner, 2007). Despite the importance of information stored in memory, the focus of this paper will be on the remaining two determinants of need recognition. Furthermore, individual diversity of the tourist will be researched with special emphasis on their socio-demographic characteristics (as internal factors of tourist behavior) and the influences of the environment with an emphasis on social media (as an external factors affecting of tourist behavior).

In the literature on consumer behavior in tourism, numerous factors have been suggested to explain the behavior of tourists (e.g. Crompton and Ankomah, 1993; Nadeau et al., 2008;

Nicolau and Mas, 2005: 1026). Most authors categorises them as internal (individual, psychological or psychographical) and external (exogenous, non-psychological, social or environmental factors) (e.g. Dmitrovic and Kolar, 2007, Hill, 2000, Mayo and Jarvis, 1981). Internal factors are derived from a socio-psychological set of potential tourists (Assael, 1984) and provide a global description of their cognitive and affective structure (Gonzales and Diaz, 1996). From a broader perspective, researches show that internal factors have great explanation value when interpreting tourist behaviour (Gonzalez and Bello, 2002; Hsieh et al., 1993; Muller, 1991) and have shown much more significance than environmental factors when choosing tourist destination (Mutinda and Mayaka, 2012: 1597). On the other hand, external factors refer to outside forces acting independently of individual (Hill, 2000) and affect its cognitive and affective system (Živković, 2009: 82).

Different authors cite various factors, thus, Assael (1984) cites sociodemographic characteristics of tourists, lifestyle, personality, situational factors, motives, values and attitudes as internal factors. Dmitrovic and Kolar (2007) include the life cycle of the family and the consumer's age, the financial status of the individual / social class, motivation and perception within the person, personality, education and culture. External factors are economic development / financial trends, demographic and social changes, travel safety, technological development and the development of public transport. Cohen, Prayag and Moital (2014: 4) highlighted three key factors influencing consumer behavior in tourism: technology, Y generation and ethical consumption. On the other hand, Hsu, Tsai and Wu (2009: 290) do not distinguish between internal and external factors, but merely state that these are age, gender, personality, education, income, cost, distance, nationality, risk, motivation, destination image, food, security and technology.

Of all the above-mentioned internal factors, the focus of this paper will be on four socio-demographic characteristics of tourists: gender, age, degree of education and monthly income. In addition, the technology, or social media (Facebook, YouTube, TripAdvisor and Booking.com) will be considered as an external factor, which as a phenomenon have had a great impact on tourism in a very short time. Despite numerous researches in the field of social media, there is still uncertainty about the scope of the role that various forms of social media have on consumers (Forbes and Vespoli, 2013: 110). Also, the role of social media in the stages of the decision choice, not only tourist destinations but products and services in general, is still mostly unidentified.

Few paper have dealt with the role of social media in all stages of the tourist destination choice process. An example may be an experimental study of Sema (2013), works by Hudson and Thal (2013), Wang and Yu (2015), and Zhang and Benyoucef (2016). Much of the other researches involved the role of social media in one or two sub-stages of the tourist destination choice process. Nevertheless, the role of social media in the stage of information search in tourism has attracted the wide interest of scientists, yet there is a stunning lack of papers dealing with the role of social media in the needs recognition stage, especially from consumers' perspective (Sun, Fong, Law and He, 2017: 363), which further apostrophes the importance of this research.

Therefore, the aim of this paper is to provide insight into the attitudes of tourists with regard to their socio-demographic characteristics and the importance attached to social media in their need recognition for a tourist vacation or in the process of tourist destination choice. This paper contributes to the literature on consumer behavior in tourism in several ways. First, internal and external factors are a significant factor in tourist destination choice. Better

understanding of this topic for marketing managers in tourism may lead to better managing of their tourist destination. Second, this primary research is the first attempt to gain insight into the role of social media in the needs recognition of tourists.

## **Literature review**

### ***Sociodemographic characteristics of modern tourists, social media users***

The use of social media in tourism has fundamentally changed the functioning of the tourism market, as well as the way tourists behave and plan their trips. Just a few years ago, marketing managers of tourist destinations and touroperatours were the only sources of tourist information. Nowadays, every tourist, a social media user who, for example, posts vacation photos on his Facebook profile, posts video of a tourist destination on YouTube or publishes destination or hotel review on TripAdvisor or Booking.com becomes a source of tourist information. The researches show that personal characteristics of tourists are one of the factors influencing the chance of following the advice provided in an online tourist community and it should be taken into account when attempting to understand their involvement with social media content (Yoo and Gretzel, 2011: 612) and researching forms of social media behavior.

Existing researches had shown that human behavior related to social media often differs depending on their age, gender, income, education level, race (Jones and Fox, 2009, Karahasanović et al., Madden, Macgill and Smith, 2007; Verna, 2009; Ye, Hashim, Baghirov and Murphy, 2018) and personality traits (Leung, 2013: 1003). Furthermore, empirical research related to user-generated content in tourism has also shown a correlation between personal characteristics of tourists and the creation of social media content (Gretzel, Kang and Lee, 2008; Gretzel et al., 2009; Lee, Yoo and Gretzel, 2009; Yoo and Gretzel, 2008a, 2008b, 2009b;), pointing to different views in terms of user-generated content perception, usage patterns, and scope of its creation (Yoo and Gretzel, 2011: 609). Therefore, motivation of posts review is affected by its gender (Del Chiappa, 2011; Yoo i Gretzel, 2009b), income (Yoo i Gretzel, 2008c), nationality (Gretzel, Kang i Lee, 2008), culture, generational group membership (Yoo i Gretzel, 2009b) and its involvement in travel planning (Yoo i Gretzel, 2011: 612).

For example, men in the US outnumber women in UGC (user-generated content) activities according to demographic indicators for the adult population, while women prevail when the pattern is limited to puberty age, young and students (Verna, 2009). For Yoo and Gretzel (2008c), men are more likely to produce UGC, while for Del Chiappa (2011) those are women, making 67.3% of UGC in tourism.

Concerning the advice of the online community, previous research has shown that gender and generational affiliation affect the motivation of tourists to follow the advice. Women have more trust to UGC than men have and they are more likely to change their booking arrangements after reading the published reviews and comments (Del Chiappa, 2011). Furthermore, women appear to be more involved in the process of seeking information through social media (Kim, Kim and Wise, 2013: 8). This is also confirmed by Persaud and Azhar's (2012: 431) who state that women access social media via mobile phones more for social connectivity and research, while men focus on betting, entertainment, and shopping.

Karahasanović et al. (2009) find significant differences between age groups regarding UGC usage, sharing and posting. Older people rarely publish and share photos or watch videos and photos of others, but more often participate in blog and forum discussions than young people do. Furthermore, it seems that there is an emerging market of consumers from Generation Y, also known as "digital natives", who increasingly base their travel decisions on the platforms with UGC (Cairncross and Buulens, 2010, Pendergast, 2010). The close relationship between the youth and the creation of UGC and consumption is found in numerous researches (Jones and Fox, 2009, Verna, 2009), who believe that UGC is more used and generated by younger users (Yoo and Gretzel, 2009). Young users are generally more active users for most types of UGC (Lenhart et al., 2007).

Tourists aged 25-34 are the ones with highest usage of social media for collect information, ideas and inspiration when planning travel (Text100, 2014). Young people are also the leading participants in sharing experiences and pictures of traveling on social media. Considering the general popularity of sharing images on social media, travel images have become a way of self-expression and building the personal image in the younger population (Lo et al., 2011). UGC creators are highly educated people (Del Chiappa, 2011) with greater personal income and better internet usage skills (Del Chiappa, 2011; Yoo and Gretzel, 2008b). It is also more likely that frequent travelers are highly involved in the travel planning process (Yoo and Gretzel, 2008b). As stated by Gretzel and Yoo (2008: 43) TripAdvisor users are highly educated, have high income, travel often, use internet extensively, and plan ahead.

The leading participants in sharing experiences and social travel images are people with high level of education, regular income and great travel experience (Lo et al., 2011). It is interesting to note that tourists with higher education are less reliant on information on Facebook than their lower educated companions (Jacobsen and Munar, 2012: 45). In addition, 93% of tourists with higher income check hotel reviews prior to reservation (Brand Karma, 2013: 16).

### ***The role of social media during need recognition for travel***

Need recognition occurs when the consumer realizes that he or she has an unsatisfied need (Hoyer and MacInnis, 2010: 12). At this stage, the consumer recognizes a significant difference between the actual and the desired state. When this difference is greater than the acceptable, the need is created (Kesić, 2006: 304). Need may be triggered by internal (discomfort, fatigue, aspiration for new experiences and events, etc.), but also external incentive (e.g. social media). At the beginning of this stage, the consumer does not think about himself as a buyer, but scans the market (aware or not) and as a channel uses friends, bloggers, reviews, videos (on YouTube and social networks) (Wolny and Charoensuksai, 2014: 322) and ads (Coulter and Roggeveen, 2012: 880).

The tourist can recognize the need while *surfing* the social media platforms such as Facebook (Gros, 2012: 20). Research by the Marketing Agency Text100 (2012) has shown that social media is extremely important at this stage of tourist destination choice. According to this research, even 88% of respondents under the age of 34 were inspired by Facebook (Text100, 2012). Google Travel Study (2014: 7) found that for 42% of tourists YouTube is the source of inspiration for travel, but Crowel, Gribben and Loo (2014: 9) put it as a primary source of inspiration. Even tourists aged 18 to 24 subscribe to content that focuses on inspiration for future travels (video blogs). Therefore, it can be said that online video has impact on 65% of

tourists when thinking about travel, 48% when thinking about what type of travel to choose and 61% when choosing their destination (Google Travel Study, 2014: 8).

The situations in which a consumer can recognize the needs through social media are numerous. Consumers can recognize the need when viewing the photos of products their friends bought and published on social media or discussing with them on various topics. In addition, when consumers *give like* to brands, products or services on Facebook, all of their friends see that one on their page. The *Follow* function has the same purpose on Twitter and can also be a trigger for need recognition (Gros, 2012: 35). As other triggers, it is possible to list tempting vacation photos published by Facebook friends on their *wall* or in their albums, travel events posted on an unknown traveler's blog, very positive reviews on the hotel at Booking.com, beautiful photos and a description of the tourist destinations on TripAdvisor, etc.

In addition to other consumers and UGCs, the trigger can also be the tourist destination itself and their FGC. A tourist can recognize the need when he is looking at an official promotional video that tourist destination has published on YouTube, or a photo of a tourist destination published on the official destination profile. By publishing photos of a tourist destination, it tries to influence the behavior of tourists in the decision-making process (Akehurst, 2009; Hsu, Kang and Lam, 2006). Also, a recognition may arise when marketing managers of tourist destinations use the benefits of social media and promote a tourist destinations by trying to attract the attention of consumers (Sema, 2013) and increase internet traffic on their sites (Tussyadiah and Fesenmaier, 2009). The moment in which a consumer becomes aware of a certain product, service or destination through social media is called *Zero Moment of Truth* (ZMOT). ZMOT is a stage in the purchase process that is not specifically mentioned in the existing choice process models. In practice, this is the moment in which a consumer is exposed for the first time to products and services through social media that affect his opinion and is often seen as an inspiration for further involvement into new trends and products (Wolny and Charoensuksai, 2014: 324). This term is defined as the moment in which marketing is taking place; in which the consumer becomes aware of the information and in which consumer decisions are made, which affects the success or failure of virtually every brand in the world (Lecinski, 2011). There are many research papers that explore the importance of exogenous factors in making a travel decision, but not those who explore the impact of such factors (such as social media) at the first stage, need recognition for travel (Marmo and Baggio, 2017).

## **Methodology**

### ***Measurement and data collection***

The research question of this paper is: Do socio-demographic characteristics affect tourists' opinion on the importance attached to social media in the stage of need recognition?

In order to get acquainted with the research area, secondary research was conducted on relevant scientific literature on social media, their role in tourism and the behavior of today's tourists. Since this is a relatively recent and unexplored phenomenon, a focus group study on the role of social media in tourism and the selection process of a tourist destination has been conducted. A preliminary pilot research was carried out, which included the synthesis of the findings obtained through secondary research. More precisely, the research of past experiences through two focus groups, the one on a sample of experts and the other on a sample of tourists. Focus group of experts consisted of 11 experts engaged in Internet



promotion or were marketing managers responsible for the social media platforms. The focus group of tourists consisted of 9 average Croatian holiday makers who use social media on a weekly basis. The interview in the focus group of tourists was structured in five points: a) introduction to social media, b) the presence of social media in the stages of tourist destination selection, c) traditional and social media, d) UGC and FGC, e) devices. In the interview for the focus group of experts, the sixth point was added – f) the future role of social media in tourism. Open-type questions are designed to identify the affective and cognitive responses of respondents on the role of social media in tourism (Zolkepli and Kamarulzaman, 2015: 197).

Based on the findings of the previous literature, and focus groups, the first version of the highly structured questionnaire was created in the Croatian language. The questionnaire was tested on five respondents. Its shortcomings were identified and a new version of the questionnaire was created. The same process has been repeated twice. The questionnaire has 21 question in total, and the questions were related with the all five stages in the process of tourist destination choice. But for this paper only the answers related to the respondent's desire to travel created through observed social media platforms have been used (need recognition state): *I wanted to go on a trip when I saw / read the content about tourist destination on the Facebook /YouTube/ TripAdvisor/Booking.com*. The final version of the questionnaire was created using the Google Forms app. All items were measured using 5-point Likertscale (1 = strongly disagree, 5 = strongly agree).

The sample included only tourists from Croatia, who were also users of at least one of the four observed social media platforms (Facebook, YouTube, TripAdvisor and Booking.com), using deliberate sample and snowball sample. The data was collected in July 2016 by sending to more than 7,000 respondents an e-mail message with a link to the survey questionnaire. Each contacted tourist is asked to fill out the questionnaire and send an e-mail with the questionnaire link to his contacts. In order to increase the attention and interest of the participants for participation in the research (Mangold and Faulds, 2009: 362), a prize game "Wellness weekend for two in Jezerčica thermal baths" was organized. Link to questionnaire access remained active until mid-October when it received the last response, totaling 1,099. Of the total number, 42 questionnaires were not usable for analysis. Data processing continued based on 1,057 valid questionnaires. Data was analyzed using descriptive and inferential statistics, with the support of SPSS 17 with the Mann–Whitney U test (nonparametric and non-normally distributed data set).

## **Results**

### ***Demographic characteristics***

This study included 1,057 respondents, most of them being women (73.1%), while 26.9% of respondents were male. This uneven representation of the sexes in the sample is attributed to the prize game "Wellness weekend for two in the Jezerčica thermal spa", organized in the framework of the research. It is assumed that women are more motivated to use this type of service than men do. Therefore, it is considered that the prize game has stimulated a much larger share of women to complete the questionnaire.

With regard to the age of respondents, tourists between 25 and 34 years of age (Table 1) predominate, i.e. the average age of respondents is approximately 37.4 years. Among those surveyed are those with high school qualifications (46.9%) followed with the ones with

master's degrees and university specialists (14.9%). The average monthly income of respondents is approximately 7.237 kn.

*Table 1: Profile of respondents*

Characteristics	Frequency	Percentage (%)	Characteristics	Frequency	Percentage (%)
Gender			Level of education		
Male	284	26,9	High school degree	153	14,5
Female	<b>773</b>	<b>73,1</b>	College degree	135	12,8
Total	1.057	100,0	University degree	<b>496</b>	<b>46,9</b>
Age (Years)			Master's degree/ university specialist	158	14,9
18 – 24	123	11,6	PhD	115	10,9
25 – 34	<b>414</b>	<b>39,1</b>	Total	1.057	100,0
35 – 44	284	26,9	Personal monthly income		
45 – 54	155	14,7	Up to 4.000 kn	157	14,8
55 – 64	73	6,9	4.001 – 8.000	<b>452</b>	<b>42,9</b>
65 and more	5	0,5	8.001 – 12.000	231	21,8
Unknown	3	0,3	12.001–16.000	56	5,3
Total	1.057	100,0	16.001 and more kn	12	1,1
			Unknown	149	14,1
			Total	1.057	100,0

*Source: Autors survey*

### ***The difference among tourists based on socio-demographic characteristics and affection to social media***

#### **Gender**

Inferential statistical analysis was firstly used to compare the differences in the attitudes of respondents about the importance attached to the social media in the stage of need recognition during destination choice between genders. The analysis was compiled collectively for all observed social media platforms (Facebook, YouTube, TripAdvisor and Booking.com) with a view to determining whether the two groups of respondents are random or statistically significant. For this purpose, the non-parametric Mann-Whitney U test gave the results listed in Table 2.

*Table 2. Respondents comparison by gender*

Need recognition stage and responding statement (from questionnaire)	Groups by gender	No. grades	Middle ranks	Mann-Whitney U	Z	p
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I wanted to go on a trip when I saw / read the content about tourist destination on the platform.	Men Women	759 2.111	1354,53 1464,61	739670,5	- 3,233	0,001
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Source: Authors survey

Based on the test results in Table 2, a few conclusions can be drawn. At the stage of need recognition there is a statistically significant difference between men and women. Women at this stage attach greater importance to social media than men ( $1464.61 > 1354.53$ ), i.e. the difference between men and women is statistically significant ( $U = 739670.5$   $z = -3.233$   $p = 0.001$ ).

#### Age

The second analysis relates to differences in attitudes of respondents of different ages and importance attached to social media at the need recognition stage when choosing a tourist destination. Four age groups were used here:

- very young (aged 18-24) - 123 respondents with 324 grades,
- younger (aged 25-34) - 414 respondents with 1.203 grades,
- middle (aged 35-54) - 439 respondents with 1.167 grades. and
- older (aged 55 and more) - 78 respondents with 169 grades.

In this analysis, estimates of the importance of social media (FB, YT, TA and BC together) were provided by 1,054 respondents (for three subjects the age was not known). A total of these respondents gave 2,863 assessments that were introduced to the Kruskal-Wallis H testing test at the stage of the need recognition during destination choice and the results are presented in Table 3.

Table 3. Comparison by age groups

Need recognition stage and responding statement (from questionnaire)	Age groups	No. grades	Middle ranks	$\chi^2$	df	p
I wanted to go on a trip when I saw / read the content about tourist destination on the platform.	very young younger middle older	324 1.203 1.167 169	1779,46 1453,63 1341,34 1237,97	86,381	3	<0,001

Source: Authors survey

Based on the test results found in Table 3, several conclusions can be drawn. In the need recognition stage there is a statistically significant difference between respondents of different ages and importance that they give to social media. In the observed stage with the growing age of respondents, the importance of social media decreases ( $1779.46 > 1453.63 > 1341.34 > 1237.97$ ), i.e. older respondents had lower importance of social media in their need recognition for travel. The difference between these four groups is not random ( $\chi^2 = 86,381$   $df = 3$   $p < 0.001$ ).

#### Level of education

The third analysis relates to the differences in attitudes of respondents with regard to the degree of education and importance attached to the social media at the need recognition stage when choosing a tourist destination. Four groups of education were used here:

high school and lower	153 respondents with 377 grades,
collegedegree	135 respondents with 329 grades,
university degree	496 respondents with 1.363 grades, and
MA and PhD	173 respondents with 801 grades.

In this analysis, estimates of the importance of social media (FB, YT, TA and BC together) were taken by 1,057 respondents. They gave in total 2,870 grades that were tested by the Kruskal-Wallis H test in the need recognition stage during tourist destination choice, and the test results are shown in Table 4.

*Table 4. Comparison by education level*

Need recognition stage and responding statement (from questionnaire)	Level of education	No. grades	Middle ranks	$\chi^2$	Df	p
I wanted to go on a trip when I saw / read the content about tourist destination on the platform.	high school	377	1588,20			
	and lower	329	1589,34			
	college	1.363	1392,39			
	degree	801	1373,80			
	e					
	university degree					
	MA and PhD			34,238	3	<0,001

*Source: Authors survey*

Based on the test results found in Table 4, several conclusions can be drawn. In the need recognition stage there is a statistically significant difference between the respondents of different level of education and the importance of social media. As the level of education of respondents increases, the importance of social media decreases. The difference between the four groups is not random ( $\chi^2 = 34,238$  df = 3 p <0.001).

#### Personal monthly income

The fourth analysis refers to the differences in attitudes of respondents regarding their personal monthly income (in kn) and the significance attached to the social media at the need recognition stage when choosing a tourist destination. The four groups of benefits used here are:

Low income (< 4.001 kn)	157 respondents with 399 grades,
Middle income (4.001-8.000 kn)	452 respondents with 1.225 grades,
Higher income (8.001-12.000 kn)	231 respondents with 648 grades, and
High income (12.001 or more kn)	68 respondents with 193 grades.

In this analysis, estimates of the importance of social media (FB, YT, TA and BC together) were taken by 908 respondents (149 respondents did not want to answer about their income). In total, 2,465 assessments were obtained that were tested by the non-parametric Kruskal-Wallis H test in the need recognition stage during tourist destination choice, and the results are shown in Table 5.

*Table 5. Comparison by income*

Need recognition stage and responding statement (from questionnaire)	Income	No. grades	Middle ranks	$\chi^2$	Df	p
I wanted to go on a tourist trip when I saw / read the content on a tourist destination on the platform.	low	399	1452,29	59,019	3	<0,001
	middle	1.225	1219,99			
	higher	648	1178,67			
	high	193	1044,64			

*Source: Authors survey*

Based on the test results found in Table 5, several conclusions can be drawn. In the need recognition stage there is a statistically significant difference between respondents with different income. With the increase in personal monthly income of respondents, the importance of social media decreases. Furthermore, the difference between the four groups of incomes is not accidental ( $\chi^2 = 59,019$  df = 3 p <0.001).

If the last three analyzes are summed up, it can be concluded that, as tourists are older, more educated and have higher incomes, for them social media is less important during the need recognition stage. While the results are significantly different for younger tourists, relatively lower educated and with lower-income.

## **Discussion and conclusion**

Many papers explore the tourist destination choice process and the factors that influence it, but it is crucial to find out which characteristics of tourists as consumers determine their need for travel, a priori. Demographic characteristics of tourists can be considered those who determine the desire for spending, shopping, traveling and so on. Where is the connection between social media and need recognition for travel? Tourists often have limited experience and knowledge of tourist destinations, so each and every information is key to creating a desire to travel. Social Networking Engineering is a powerful tool in creating wishes and needs. However, not all sociodemographic groups are equally subject to the influence of user-generated content. This study confirmed that the tourist behavior connected with social media differ in terms of gender, age, education and income. It also confirmed the basis for setting up a research question as well as conducting the research itself. Given the specificity of research and focus on only one stage in the tourist destination choice process, the need recognition stage, this paper contributes to the existing literature on consumer behavior in tourism. The previous studies by Del Chiappa (2011), and Escobar-Rodríguez, Grávalos-Gastaminza and Pérez-Calañas (2017) show that women have higher trust to social media than men do. This was confirmed by our research, as it turned out to be women who rely more on social media than men and also more often than men want to go on a vacation when they see or read interesting tourist content on the social media platform. Younger users are generally more active on social media (Cairncross and Buulens, 2010; Jones and Fox, 2009; Karahasanović et al., 2009; Lenhart et al., 2007; Pendergast, 2010; Text100, 2014; Verna, 2009; Gretzel, 2009), which is confirmed by the demographic statistics of social media users. Our research has shown that younger users rely more on social media than the older tourists, which is consistent with the previous research conducted by Escobar-Rodríguez, Grávalos-Gastaminza and Pérez-Calañas (2017). Furthermore, older users are inspired with their own experiences, with increasing age the docility of tourism lowers, and they strive to meet their inner wishes and needs. Even though tourist content on social media is most consumed and published by highly educated tourists (Del Chiappa, 2011; Gretzel and Yoo, 2008), research has shown that

higher education is also connected with lower level of motivation to travel generated from social media content. In other words, it is assumed that the level of education increases the knowledge, so tourists are more inspired by other sources of information than it is the case with social media. Research findings are consistent with Jacobsen and Munar (2012) who report that tourists with higher education are less reliant on Facebook information than their lower educated fellows are. When looking at the monthly income of respondents, it is impossible to observe them isolated from their age. As the age increases, the respondents grow and receive their income. In the survey, respondents with high incomes are also older respondents. As already mentioned, older respondents, and high-income ones do not use much social media as younger respondents, low- or medium-income ones do, so they will rarely trigger the need for traveling.

This study fills the gap by concentrating on the first, out of five stages in the tourist destination choice process, ie. need recognition stage. And provides an insight into the attitudes of tourists regarding their socio-demographic characteristics and the importance attached to social media in this stage. How far it is known to the authors, this is the first research which addresses observed categories in the context of tourism.

### **Limitations and suggestions for future research**

Limitation of paper lies in the exclusive focus of the study on four platforms of social media. Also, the four observed platforms represent three different types of social media. Facebook is a social network, YouTube is a content sharing site, while Booking.com and TripAdvisor are review sites which further complicates their comparison and inference. In addition, Facebook and YouTube are sites where tourism and travel-related topics are just one small piece of content amongst the amount of other content, while the TripAdvisor and Booking.com have exclusive focus on tourism and travel. It should also be emphasized that the survey was made on the sample of Croatian tourists. Such a limitation may correlate with the country's specific representation of the social media in the habits of spending on goods and services.

In addition to differences in tourist attitudes, future research should focus on all four stages of the tourism destination choice process (information search, evaluation of alternatives, purchase and post-purchase behavior), or compare the different social media platforms and their influence i observed stages.

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# ACHIEVING SUSTAINABILITY OF A DESTINATION THROUGH CREATIVE TOURISM? A CASE STUDY FROM CROATIA

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## Abstract

*Scientific research in the field of tourism has recognized the importance of the concept of sustainable tourism development in modern age and many research papers have been published accordingly. This field has been researched extensively and has provided different perspectives of analysing impacts of tourism development on different environments and communities. It is in the focus of this research to examine the impacts of creative tourism on the sustainability of any tourism destination and to determine if creative tourism is in the position to enhance the strength of local economy and increase job opportunities for the local inhabitants, while simultaneously preserving those very skills and talents. Certain challenges arise in the process of defining the concept of creative industries as it partially overlaps with the concept of cultural industries, but at the same time incorporates many more aspects of community's identity, adding tourists' experience and skills into the process of product development. Therefore, the theoretical research in this paper is primarily oriented towards analysing development of the concept of creative tourism and examining its current importance for destinations' identities. Creative tourism has rather upfront development presumption - long-term benefits for the destination. In order to achieve such state, it is necessary for all stakeholders within a destination to embrace and implement the premise of sustainable tourism development. As creative tourism assumes participation of tourists in the process of making creative experiences, the resources engaged in the process should be preserved, local identities should be strengthened and local economies should be empowered. Such environment enables sustainable tourism development of a destination and ensures its long-term existence on the market.*

*In order to examine and evaluate potentials of creative tourism in a specific destination, a case study of Grožnjan is analysed. Known as a "town of artists", it already represents a significant potential for introducing a thorough concept of creative tourism and all of its potentials for tourists and the local community. Even though the town itself is not inscribed onto any official lists of creative cities, it does not stand as an obstacle to its future development. Moreover, it is building its competitive advantage on the market through emphasizing its artistic potential. The town accommodates 64 art galleries, which is a unique and highly valuable potential emphasized in their tourism promotion. Their tourism product is based on inducing and fostering small-scale, community-based development that is oriented towards sustainable practices and long-term preservation of heritage.*

*The research conducted in this paper was based on secondary data sources, dominantly scientific papers and publications of creative cities networks and tourist boards. The conclusions were drawn based on theoretical findings and results of the case study research.*

*The contribution of this article is reflected in analysis of destination market potentials in the field of creative tourism, while combining those results with literature findings in order to examine the reached level of creative tourism in Grožnjan and its appropriateness. The limitations of the research arise from the fact that the research is conducted based solely on secondary sources, which prevents more specific conclusions to be drawn in terms of satisfaction of both demand and supply side of the market. In that sense, it is possible to conclude that even though this research clearly indicates that Grožnjan possesses high quality creative tourism products, future research has to be focused on examining the perceptions of tourists visiting this destination, satisfaction of local community and the impact of creative tourism development on the local economy.*

**Keywords:** creative tourism, creative cities, sustainable tourism development, Grožnjan

**JEL classification:** Z32, L83

## Introduction

Creative tourism can be perceived as a meaningful tool for preserving unique, distinctive identity of a chosen destination. It has been researched extensively (Lindroth, Ritalahti, & Soisalon-Soininen, 2007; Richards & Wilson, 2007; Durmaz, Platt, & Yigitcanlar, 2010; Fernandes, 2011; Richards, 2011; Tan, Kung, & Luh, 2013; Hung, Lee, & Huang, 2016; Marques & Borba, 2017; Dean, Suhartanto, & Kusdibyo, 2019; Suhartanto et al., 2019) and is commonly perceived as a sustainable measure in the process of preserving cultural identities and enriching tourists' experience. The shift from cultural tourism to creative tourism became possible once the level of awareness about the importance of individual and community identities was raised on a higher level. The relationship between creative industries and sustainability has also been in the focus of different researches, emphasizing its different perspectives (Nasser, 2003; Adamo, Ferrari, & Gilli, 2019).

According to Cambridge Dictionary, creative industry is “an industry that is based on work in which original ideas are important, such as work in the arts or the media, in designing computer software etc.” (Cambridge Dictionary, n.d.). What is more, it is recognized that the creative industries possess significant economic potential. In contemporary society, it becomes increasingly important to be aware of one's own skills and potentials. For instance, the UK creative industries in 2017 have generated £101.5 bn (gross value added), with 7.1% increase since 2016 (The Creative Industries, n.d.). Creative industry comprises of IT, software and games; film and TV; advertising; publishing; music, arts and culture; design and fashion; architecture; and crafts. It provides numerous opportunities for engaging human skills, creativity and intelligence into the process of developing more distinctive, contemporary product or service that will enrich both individual's and society's quality of life.

“The creative tourism is considered a new generation of tourism by involving the tourists themselves and the locals in the creation of the tourist products (co-creation)” (Creative Tourism Network, n.d.). This new approach enables tourists to become an integrated part of holistic experience in a destination by combining uniqueness of local heritage with specific motivations of creative tourists. As a result, tourists take an active role in culinary classes, folk dances, painting schools, pottery classes, etc. Modern tourist seeks for unique experience and creative tourism enables self-fulfilment, raising awareness about distinctive

characteristics of local communities worldwide and in the end, not irrelevant, enables strengthening of the local economy.

## **Purpose and Methodology**

The main purpose of this paper is to provide overview of theoretical findings in the field of creative industries and creative tourism. Creative tourism is rather new concept, but it relies on harnessing each individual into the process of making distinctive, recognizable tourism product. Therefore, the literature overview enables analysis of the chosen case study from Croatia, the town of Grožnjan, Istria. Even though this town is not included in UNESCO Creative Cities Network nor the Croatian list of creative cities, it has numerous potentials to provide creative experiences for tourists and to thereby include their skills into product development process. This town was selected due to its distinguishing tourism potentials, rich cultural heritage, beauty of the natural landscapes and arts. The aim of the paper is to analyse creative aspect of Grožnjan and to discuss the quality of creative experiences offered to tourists, thus enabling sustainable development of this destination.

For the purpose of the analysis, a secondary research was conducted. After the initial overview of the existing theoretical findings within this field, secondary sources of data were consulted in order to analyse destination chosen for conducting a case study. In that sense publications by different organizations involved in developing creative cities networks were analysed. Based on the conducted secondary research, concluding remarks were drawn. The limitation of this research lies in the fact that there was no direct communication with stakeholders involved in the process of developing creative tourism in Grožnjan. In that respect future research should be based on primary research that would involve three groups of stakeholders – local community, local government and tourists. That would enable the process of making precise conclusions about the impacts of creative tourism in the local economy.

## **Theoretical Background**

In order to gain full understanding about the importance and potentials of creative tourism and creative experiences, it is crucial to precisely define the role of creativity in the process of product development. “Creativity could be applied to tourism through the development of new products or experiences; of new forms of consumption or new tourism spaces” (Richards & Wilson, 2007: 15). In other words, it is important to recognize the potentials of developing added value to already developed product or to develop new products that would include distinguishing, new experiences for both tourists and the local community. However, according to OECD (2014: 32-33), the shift from cultural industries to the broader creative industries signifies a number of important changes in the way culture and creativity are seen, such as: a broader understanding of culture and artistic activity; the increased importance of creativity, innovation and skills in economic development; changes in consumption and demand patterns; the repositioning of culture from being elitist and exclusive to being more creative, democratic and inclusive; viewing the production of culture as a sector rather than a separate industrial activity; and a shift from subsidised arts towards commercial activity. It seems crucial to note that culture and cultural experiences have to be presented to tourists as a tool for deepening the relationship between hosts and guests in a destination, for example through dance classes, painting lessons, culinary schools, literary fairs, etc. Culture is not

perceived as being exclusive product for the chosen segment of tourists, it is offered to anybody who is interested in consummation of cultural product and to experience a different aspect of tourism activities in a tourism destination.

Nevertheless, certain barriers to creative development exist, such as shortage of creative skills, lack of creative investment, lack of creative audiences and the cumulative disadvantage of creative locations (Richards & Wilson, 2007: 29). Even though culture is nowadays perceived less as an elitist product and many destinations might try to become a part of that market, certain quality and uniqueness of heritage resources must exist and that heritage has to be preserved and identified with and by the local community. “By applying creativity as a process to the development of tourism destinations whilst utilising the unique cultural capital of each one, a new paradigm shift has been established” (Wattanacharoensil & Schuckert, 2016: 1050). Creative tourism destinations provide new platform for creating unique experiences that can be perceived as sustainable practices as they fully respect local heritage with the emphasis on its intangible aspect and they depend on exchange of authentic skills and knowledge.

Creative tourism assumes that tourists themselves participate in the creative activities being undertaken, skill development and/or creative challenge from the basis of active tourist experiences (i.e. consumption of creative experiences) (Richards & Wilson, 2006: 1217). Alongside contemporary society development, it is possible to argue that people have experienced alleviation to a certain extent, which has in turn initiated the need in tourists to become a part of product creation process, which gives them the opportunity to interact with other individuals interested in the same or similar activities and to expand the knowledge foundation and the quality of their skills. In terms of personal identity, creative tourism enables individuals to gain certain empowerment and to strengthen one’s identity. What is more, from the supply side perspective, “arts and cultures has the potential to distinguish and revitalize a neighbourhood” (Aquino, Phillips, & Sung, 2012: 7). This implies that the process of exchange in creative tourism can at the same time provide high quality experiences for tourists, but can also provide a tool for local community to earn additional revenues in a sustainable environment.

“The focus of tourist attention is also shifted away from external cultural objects and inflected inwards towards the self, which is (partly) created through travel practices, at least for those individuals with access to travel experiences” (Richards & Wilson, 2006: 1214). Unlike mass tourism, creative tourism allows individual tourists to become an integral part of tourism product production, and to enable each individual’s contribution to the process to be recognized. As claimed by Aquino, Phillips, & Sung (2012: 5), creative tourism is a way for individuals and communities to express and engage themselves with family, friends, their neighbourhoods and their communities. “The fact that the customer is involved in the production of services and service innovation can be seen as one of the basic characteristics of innovation within the service sector” (Lindroth, Ritalahti, & Soisalon-Soininen, 2007: 54).

“Tourism experiences are generated by the people met, places visited, activities participated in and memories created from travel, particularly through watching, tasting, smelling, touching, listening to and being part of a culture or lifestyle that is distinctly different from everyday life” (Fernandes, 2011: 630). Creative tourism is a unique platform that enables destinations to meet a specific, small-scale tourism demand that is interested in particular product offered by destination, to create differentiated experience that would ensure loyalty customers and long-term inflow of additional earnings into local economy. Creativity is not

reflected only in one sphere, but it rather assumes a general “creative turn” in society (Richards, 2011: 1277). Creative industries in general add to the quality of life of each individual interested in self-fulfilment and deviation from mass tourism product that in majority cases disables creative experiences.

“Even though creativity is seen as the base of creative tourism, the creative factors of creative tourism systems remain unexplored” (Tan, Kung, & Luh, 2013: 154). Because creative industries are still under development and can provide numerous opportunities for any emerging destination, it is seen as a unique tool to use the creative sector as competitive advantage on the market. According to Rogerson (2006: 162), in terms of further development, what is required is to expand the linkages between the emerging creative industries sector and tourism developments taking place in the city more deeply. Creative industries might provide a turn in developing rejuvenated tourism product in destinations. Regeneration of numerous declining cities has depended upon creating new narratives of regeneration (Richards & Wilson, 2006: 1209).

Unlike traditional understanding of travel industry and tourist behaviour, it is important to emphasize that contemporary tourists are in search of more interactive and fulfilling experiences (Tan, Luh, & Kung, 2014: 248). In terms of product development, small communities do not have to face high expenses of developing such experiences as they are intended to remain authentic, small-scale and genuine. What is left for development is supporting infrastructure, but if community-based development is advised, long-term advisability and sustainability would be met. “As well as increased creative content being integrated into tourism products, tourism has itself become a creative arena for the development of skills and performance” (Richards, 2011: 1277).

“Perhaps because tourism has become so ubiquitous and fragmented, no longer confined to the western generator countries, its distinctions have become ever more blurred with other human movement and motivations” (Evans, 2007: 58). As society reaches more complex state, the approaches to individual self-actualisation has to be adjusted, especially under the influence of greater number of cultures participating in tourism exchange process. “Creativity is often seen as a panacea, although there are also critical views on it” (Marques & Borba, 2017: 86). The same might be claimed for sustainable tourism development. Even though many destinations decide to embrace sustainability as a concept of interest, not always do they adjust their development policies accordingly. Despite the obvious advantages of implementing both of these concept into development policies of a given destination, it still requires numerous efforts to be devoted in order to reach desired state of its sustainability and creativity. Flagship project should not be expected to generate new areas of cultural industry, but rather to boost development of already existing ones (Aitchison & Evans, 2003: 138).

“Processes of globalisation and symbolic competition seem to be leading to increasing serial reproduction of cultural attractions and 'commodification' of the cultural tourism product” (Richards & Wilson, 2006: 1221). Heritage of any kind, especially intangible heritage of a destination, when included into tourism exchange, might be in danger of becoming commodified. Such influence of tourism exchange cannot be considered sustainable and could lead to serious discontentment of a local community. Creative tourism in its basic idea should prevent any misuse of creative experiences and should eliminate the possibility of the process of commodification of destination's resources. If the final outcome is to avoid standardization, it is crucial to put emphasis on tourist experiences, rather than on different goods and services within destinations (Binkhorst, 2007: 126). Creativity enables individuals

to express their own skills and behaviours, to add value to the existing activities and to emphasise the importance of uniqueness of products and services offered to tourists. In such manner the standardization can be avoided and its negative effects would be prevented.

According to Cooke & De Propris (2011: 365), academic research in geography or the humanities has enabled better understanding of creative industries, both their social and economic role, in the UK and Europe in general. As already mentioned, creative tourism arose from the wider concept of creative industries, which was initiated by the need to add another perspective to the process of self-actualisation and self-assessment. As Evans (2009: 1012) claims, some mid-West US cities characterise their creative economy in cultural heritage rather than creative class terms. Creative industries and, more precisely, creative tourism can add a new value to city's identity and attractiveness. "Due to the growing interest in culture and the increased popularity of artistic environments in post-industrial societies, creative milieus, as urban agglomerations of creative and cultural activities, are widely recognized to play an important role to a city's attractiveness for tourism and inward investment" (Kostopoulou, 2013: 4584).

In order to gain a better understanding of the importance of creative tourism in a destination, it seems crucial to get familiarized with specific features of the demand side of that market. In that respect, chosen characteristics of creative tourists are (Creative Tourism Network, n.d.):

- they share the same values based on ethical principles, authenticity, intangibles, know-how, permanent training, experiences and DIY trends;
- they want to experience the local culture by participating actively in artistic and creative activities;
- they want to live experiences whereby they can feel themselves "like a local";
- they spend a substantial part of the budget for the fulfilment of these experiences;
- they combine different types of tourism, during the same trip;
- they are exclusive regarding the way they travel: once experienced the creative tourism, they no longer want to travel in a conventional way.

All these characteristics go along with aforementioned distinguishing features of creative tourism development and the uniqueness of experiences offered to tourists. Although it might seem that creative tourists form an elitist segment of the market, deeper analysis indicates the opposite, that they are very much integrated into the society, the only aspect that distinguishes them lies in the specific motivation and willingness to become an integral part of tourism experience. From that perspective, it is possible to argue that creative tourism has the ability to overcome difficulties that arise from the process of continuously attracting new consumers and to create a certain image of a destination on international tourism market.

*Table 1: From cultural branding to creative spaces*

<i>Hard branding the culture city &gt;&gt;</i>	<i>&gt;&gt; Creative spaces</i>
<ul style="list-style-type: none"> <li>• Museums and heritage tourism</li> <li>• Cultural districts</li> <li>• Ethnic quarters</li> <li>• Entertainment cities – Times Square, Potsdamer Platz</li> <li>• Competitive advantage</li> <li>• Pilgrimage and literary trails</li> <li>• <i>City of culture</i></li> </ul>	<ul style="list-style-type: none"> <li>• Cosmopolitan culture</li> <li>• Creative production and consumption</li> <li>• Creative clusters</li> <li>• Creative class – new Bohemia</li> <li>• Cultural trade and art markets</li> <li>• Comparative advantage</li> <li>• Showcasing the designer city</li> <li>• <i>Creative city</i></li> </ul>

*Source: Evans, 2007: 61*



Table 1 indicates necessary characteristics of transformation from the cities of culture towards creative cities. Creative spaces go along with the idea that production and consumption of tourism have to be creative, have to incorporate cosmopolitan culture and have to develop creative clusters. Unlike cities of culture, creative cities have to possess integrated network that would include all creative industries, combining it into a unique product. Tourism can play an important role in the process, can add to the process of product development, and in that sense should take an active role in the process of achieving sustainability of a tourism destination.

It would be ideal if the final objective of tourism experience would be creativity, not only during the journey, but whenever a person is away from home; that, in fact, is a presumption of creative tourism supply (Prentice & Andersen, 2007: 90). Certain distance from traditional mass tourism market can be noticed as the term enlightened tourist is starting to become more important nowadays. It is argued that now it is time to take back the meaning of being a tourist, i.e. someone who journeys abroad to enhance their life through new experiences, continuing education, and meeting others (The Enlightened Tourist, n.d.). The idea of going back to the initial idea of creating something that would today be known as tourism goes along with the idea of developing creative tourism, as both assume that travel should be initiated due to enlightening, exciting motives and a desire to experience new aspects of life and to enhance the personal amount of skills and knowledge. Culture-based creativity is an essential feature of the post-industrial economy where the ability of creating the “unexpected” and the “emotional” is of paramount importance (Korez-Vide, 2013: 80).

Table 2: The relationship between cultural and creative forms of tourism

	Primary time focus	Primary cultural focus	Primary consumption focus	Primary learning focus
Cultural tourism	Past and present	High culture, popular culture	Product, process	Passive
Creative spectacles	Present	Arts, performance	Performance	Passive
Creative spaces	Present and future	Arts, architecture, design	Atmosphere	Interactive
Creative tourism	Past, present, future	Creative process	Experience, co-makership	Active skill development

*Source: Richards & Wilson, 2006: 1217*

Based on the information in Table 2, it is possible to provide concluding remarks about the importance and evolution of creative tourism concept. In the focus of creative tourism there are little limits to what can be expected and experienced. Moreover, it is easily concluded that only tourists themselves impose limits, as their role is above all in the focus of product creation. That can be taken as one of the reasons why cities decide to take an active role on this market, as their size and uniqueness usually implies enormous potential within this sector. On the other side, rural areas usually possess distinctive heritage and unique crafts and skills that local community can both preserve and present to tourists. Socio-cultural component of sustainable development can be endangered if either commodification or standardization occur because of misusing culture within community. By implementing creative tourism policies, it can be expected that sustainability would be achieved and that community would be preserved in the long run, with all its distinctive features.

According to European Commission (2017: 21), the ideal Cultural and Creative City in Europe would be a mixture of Cork, Paris, Eindhoven, Umeå, Leuven, Glasgow, Utrecht and Copenhagen. What this statement implies is that there is no unique, globally accepted recipe how creativity and culture can be combined into a perfect product. Each city is a unique platform for developing creative tourism. One of the examples is the town of Grožnjan in Istria, Croatia.

## The Case of Grožnjan

Grožnjan is known as the “town of artists”, with many artists of different profiles living and working in Grožnjan or within the municipality area. It is a historic town located in north-west Istria, around 15 kilometres from the sea, and is proud of its rich tradition, cultural heritage, beauty of natural landscape and above all its artistic surrounding (Tourist Board of Grožnjan Municipality, a, n.d.). The creativity of the town is expressed and outlined by its numerous resources, but more importantly, art and music are represented in the best possible form: on-site creation. The size and artistic atmosphere in town are its main comparative advantages in the process of developing creative tourism. “On average, small and medium-sized cities score relatively well compared to larger ones, particularly in 'Cultural Vibrancy' and 'Enabling Environment'” (European Commission, 2017: 23). The size of destination is not a limiting factor in the process of product development in creative tourism, on the contrary, ambience tourism resources can add to the overall experience and can enhance the uniqueness and importance of cultural heritage. The impacts of creative cities on sustainable development have been researched extensively (Kagan & Hahn, 2011; Fusco Girard, 2013; Kirchberg & Kagan, 2013; Ratiu, 2013; Perry, Ager, & Sitas, 2019) and their role is undoubtful, but the success relies heavily on uniqueness of creative tourism products and on the quality of creative tourism strategies.

Tourism is one of the major carriers of economic growth in the field of culture and creativity (Richards, 2011: 1277). Therefore the importance of inducing creative tourism in any destination can add to the overall growth of local economy. Based on the data presented in Table 3 it is possible to argue that the importance of tourism within this destination is increasing, but what is more, the duration of stay is rather long, as in 2018 tourists have spent 4.78 days within destination per arrival, which goes along with the results on the national level (4.8 days) (CBS, 2019). While the number of arrivals and overnight stays increases annually, duration of stay is rather constant, which proves that the destination provides sufficient amount of activities for tourists to stay in Grožnjan and be engaged in different on-site creations.

Table 3: Tourist arrivals, overnight stays and duration of stay in Grožnjan (2009-2018)

	Arrivals	Overnight stays	Duration of stay
2018	4,327	20,703	4.78
2017	3,481	17,678	5.08
2016	3,548	18,088	5.10
2015	3,400	13,484	3.97
2014	3,008	14,165	4.71
2013	NA	NA	NA
2012	NA	NA	NA
2011	1,523	8,469	5.56
2010	1,388	7,473	5.38

2009	1,026	4,973	4.85
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*Source: CBS, 2010-2019*

It was long ago established that relation between creativity and cities exists (Durmaz, Platt, & Yigitcanlar, 2010: 199). This can certainly be confirmed for the town of Grožnjan, as it was declared a town of artists in 1965. “Artists transformed old, abandoned houses into an art colony which has since become a place of residence and work for many of them” (Tourist Board of Grožnjan Municipality, b, n.d.). Such focused strategy oriented towards introducing opportunities for artists to develop and present their skills has resulted in creation of world-renowned creative tourism product. This can be emphasized by the fact that Grožnjan was awarded by Croatian National Tourist Board, its jazz festival was declared as the best boutique jazz festival in Europe, it was awarded as the “Perfect harmony between art and culture, city with a great inclination in tourism” in Lugano in 2011, etc. (Tourist Board of Grožnjan Municipality, c, n.d.). To be recognized as artistic, creative destination might be a crucial turning point for any destination included in this niche.

The crucial role of cities in promoting sustainable development focused on people and the respect of human rights is notably recognised in the 2030 Agenda for Sustainable Development which includes among its 17 goals a specific objective to ‘make cities and human settlements inclusive, safe, resilient and sustainable’ and identifies culture and creativity as one of the essential levers for action in this context (UNESCO, n.d.). Creative tourism in its core definition assumes preserving the uniqueness and authenticity of different resources within a destination. The same idea is inscribed into the theory of sustainable tourism development and therefore these two concepts are oriented towards the same objectives. In the case of Grožnjan it can be argued that development strategies have resulted with sustainable product, as much as the limitations of the conducted research allow. Even though the town itself has had only 736 inhabitants in 2011, with average age of inhabitants being 44.6 years (CBS, 2015), the rather large number of tourist arrivals is related to the whole municipality, and due to specific nature of tourism product in a destination, activities are offered to tourists almost on daily basis, which could diminish the influence of seasonality in this destination. Focus on sustainable practices ensures long-term economic stability, environmental protection and strengthening of cultural identity within a destination.

“Some influence as follow (1) developing the tourism and creative industries together can stimulate innovation and encourage the development of new products in all sectors (2) creating and increasing the employment in an area with limited tourism assets” (Ardhala, Santoso, & Sulistyarso, 2016: 672). As previously mentioned, Grožnjan was declared a town of artists 54 years ago. Orientation on different forms of art (painting, music, different crafts, etc.) has resulted with 64 art galleries in town, some of them being privately owned. On the other side, potential of creating new jobs is of crucial importance. Rural areas are usually faced with limited opportunities for creating new jobs and therefore any additional economic activity, especially a sustainable one, is welcomed in the local economy. What is more, creating a sustainable product assumes employing local products and limiting the effect of leakages out of the economy.

Research done by Hung, Lee, & Huang indicates that memorability may be an appropriate predictor to future behavioural intentions such as revisiting or word-of-mouth recommendation (2016: 768). Developing a creative product within a unique ambience seems to provide numerous opportunities for ensuring loyal tourists. Hence, according to already mentioned characteristics of creative tourists, once they have experienced creative tourism,

they no longer travel in a conventional way. This puts additional opportunities for the stakeholders to increase the number of loyal tourists in a destination. Creative tourism, being rather small and specific niche on tourism market, depends on the word-of-mouth marketing. In such delicate surrounding as Grožnjan is, in order to remain sustainable, it is crucial to continuously enhance the importance of small-scale businesses. Most of the accommodation facilities in Grožnjan are developed in historic objects and add to the creative experience in this destination. By implementing sustainable policies, such development can yield long-term benefits for all stakeholders. The key aspect is to employ creativity and skills of all locals and to target creative tourists with specific motives and needs in order to attract them to Grožnjan.

## **Discussion and concluding remarks**

Based on the secondary research conducted in this paper, it is possible to conclude that the chosen destination represents almost an ideal potential for developing creative tourism that would add unique experience for both local community and their guests. By using data from Table 1, it is possible to conclude that Grožnjan is still in terms of certain elements in the process of transformation from the city of culture to creative city, but specific characteristics of creative city can already be seen. For instance, creative production and consumption is already present in this town, as it is emphasized in their promotional materials. Also, creative spaces are used as comparative, rather than competitive advantage. The overall idea of transforming the town of artists into the creative spaces seems more than reasonable, as the town's ambience is of crucial importance and can only add to the whole experience.

Sustainable aspect of developing creative tourism in Grožnjan might be endangered if the increase in the number of tourist arrivals and overnight stays becomes an imperative and the only objective. So far, based on the information about the average duration of stay, there is rather constant length of stay of tourists visiting this town. The longer the stay per tourist, the lesser the impact on the overall surrounding. Additionally, sustainability can be achieved if all stakeholders are in a position to maximize their utility through the process of tourism development. As much enlightened tourists might be, this process of exchange in tourism still remains strongly under the influence of achieving economic benefits on the supply side and maximizing personal gains on the demand side of the market. There are several advantages of Grožnjan as a potential creative tourism destination that might ensure its sustainability – unique cultural heritage, creative atmosphere within the local community, emphasis on the creative ambience, specific location in Istria County (close to the seaside), relatively small number of inhabitants that have to cooperate, clear image of development strategy and vision, undoubtful potential of artistic heritage. If managed properly, all these advantages could ensure long-term sustainable development of creative tourism in the town.

In order to gain clearer image of exact potentials of this community, it is necessary to conduct primary research that would involve representatives of all stakeholders on the supply side of the market, but also the opinion of creative tourists would have to be included. In that way, specific characteristic of demand could be examined and potentials of supply side could be outlined.

Finally, it is possible to argue that creative tourism offers numerous potentials to destinations willing to implement creative strategies. However, uniqueness of a destination must be clearly emphasized and based on that knowledge creative tourism can be further developed. Even though the presence on different international lists of creative cities can certainly be considered as comparative advantage of any destination, it cannot be considered as the only

presumption of success of a creative destination on the market. Small-scale businesses and strategies can add to the experience of tourists and would ensure preservation of small rural areas, as Grožnjan is. Creative tourism and sustainable tourism development assume similar strategies and therefore can be considered as reasonable strategic decision of any destination willing to preserve its resources. However, there are certain considerations that have to be taken into account, such as preventing standardization and commercialization of cultural and other resources in a destination and, more importantly, staged authenticity must be avoided. It is for that reason why all stakeholders have to be properly introduced with all potentials and requirements of this concept. If any of these events occur in a destination, not only would future development be questionable, but the loyalty of creative tourists would not be reached. For that reason, creative tourism has to be given a special attention in development strategies of the destination, all skills and knowledge have to be fully comprehended by the local community and they have to be willing to share their identity with tourists in order to ensure creative experiences for all stakeholders included in the process.

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# INFLUENCE OF SPORT TOURISM ON SUSTAINABLE TOURISM DEVELOPMENT IN EASTERN CROATIA

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## Abstract

*Sport tourism destinations attract tourists by engaging dominantly natural resources in the process of creating tourism experience. Contemporary trends on sport tourism market suggest that there is a growing need to include tourists in adventurous activities and to enrich the demand side of sport tourism market. Such competitive environment provides numerous opportunities for creating high quality sport tourism products and govern destination strategies towards sustainable development. It is, however, crucial for sport tourism destination to define its most competitive resources that will meet the needs of specific group of sport tourists (professional athletes, leisure athletes, amateur athletes ...). Engaging destinations' resources and local community into creation of sport tourism products constitutes a sound basis for implementing sustainable tourism policies. Based on the conducted research it is possible to argue that resources in Eastern Croatia can be used and employed in the process of creating competitive sport tourism products. However, it is crucial to create and implement development strategies that would be used by stakeholders in order to achieve the set objectives and meet the postulates of sustainability.*

*Eastern Croatia has numerous natural potentials and preconditions for development of sustainable sport tourism destinations. Additionally, there is a potential in built resources that provide added value to sport tourism product and enable larger opportunities for engaging available infrastructure in development of sport tourism destinations. Objectives of the paper are therefore focused on defining the stage of sport tourism development in Eastern Croatia and analyzing the existing natural and built tourism resources that might be engaged more intensively in creation of sport tourism destinations within that area. The contribution of this paper is seen in the overview of the scientific literature in the field of sustainable sport tourism development, as well as in the analysis of tourism resources engaged in the process of creating sport tourism products in the area of Eastern Croatia.*

*This research is conducted by using available secondary data sources and results are interpreted by chosen methods of descriptive statistics. Limitations of the research can be defined through the lack of primary research, as it would be possible to make more conclusions about the influence of sport tourism on sustainable tourism development in Eastern Croatia if stakeholders were involved, primarily those on the supply side of the market. Future research should provide more specific analysis of the reached stage of sport tourism development in the area of Eastern Croatia, as well as the analysis of sustainability of development process. Results of the research yield suggestions for sustainable development*

*policy-making process based on sport tourism product. In the long run this would enable sustainability of local community and destinations' resources, while ensuring higher quality of sport tourism experience.*

**Keywords:** sport tourism, sustainable tourism development, sport tourism destinations, sport activities, Eastern Croatia

**JEL classification:** Z32, L83

## Introduction

Numerous destinations worldwide direct their development strategies towards sustainable policies. Regardless of their choice of primary tourism product, the final objective is to create sustainable environment that would enable preservation of local resources, strengthening local economy and enhancing local community's identity. That outcome can be reached if all stakeholders have fair impact on decision-making process and if all their interests are balanced and properly fulfilled. The same applies in the process of sport tourism development. Hence, sport tourism destinations rely dominantly upon natural resources and therefore their quality is of upmost importance, but numerous elements influence the quality of sport tourism product. "Sport tourism has been delineated along the lines of activity categories having direct relationships to tourism (sports events, attractions, resorts, tours, cruises) and are influenced by inherent elements such as history, destination, policy, sociocultural characteristics, marketing and economic impact" (Kurtzman & Zauhar, 2001: 553). Certain resources within a destination (like seas, rivers, forests, mountains, natural parks, etc.) can be a subject to competition between different stakeholders, as their usage cannot be assigned to only one of them. Thus, the main presumption of sport tourism development is based upon sustainable policies and their implementation is of crucial importance accordingly.

Even though Eastern Croatia is dominantly a rural area, certain cities can be outlined as potential sport tourism destinations that either are in the early phase of development or need certain incentive to develop infrastructure needed for this special interest tourism. "Investment in sport infrastructure in cities was not primarily aimed at getting the local community involved in sport, but was instead aimed at attracting tourists, encouraging inward investment and changing the image of the city" (Gratton, Shibli, & Coleman, 2005: 985). This implies that not necessarily is the awareness about the importance of sport activities presumption of sport tourism development. Indeed, it can be its consequence, but the exchange of the ideas about the importance of sport activities remains in the core of the idea and should be emphasized more intensively. The main objective of this paper is therefore to analyse current sport tourism supply within the area of Eastern Croatia; to evaluate the current stage of sustainability of those products; and to propose potential guidelines for future sustainable development of sport tourism. The method used in the paper is desk research, dominantly for theoretical research and afterwards for the purpose of sport tourism market analysis.

## Theoretical background

There is little doubt that sport and tourism are interrelated and that they provide each other a platform for improvement and enrichment of tourism offer within a destination. “In addition to being an attraction or activity that tourists seek to experience, sport may contribute to the uniqueness of destination” (Higham, 2005: 5). Due to intensive growth of international tourism arrivals that has been registered during the last several years, with 7% increase in total international tourist arrivals and 5% increase in total international tourism receipts in 2017 (UNWTO, 2018: 2), it is not surprising that many of those travels are related to sport activities. After all, for 55% of all international travellers the main purpose of visit was related to leisure, recreation and holidays (UNWTO, 2018: 3), which enables destinations to position themselves internationally and to ensure long-term existence on sport tourism market.

It is more than necessary for contemporary tourism destinations to develop their strategies according to sustainable development policies. Namely, sustainability is a prerequisite of any development these days, especially for such sensitive activity as is tourism. Sustainable tourism is oriented towards ensuring long-term thinking, is oriented towards the care for equity and fairness and active participation in decision-making processes (Bramwell, 1997: 13-14). At destination level it is crucial to engage local stakeholders into decision-making process as their interests and activities have direct impact on the quality of tourism product offered to tourists. Therefore, the emphasis should be put on two main concepts – resources preservation and stakeholders’ inclusion. If those elements are properly incorporated into development strategies, sustainable policies can be expected to yield desired results.

One of the biggest concerns related to tourism development in any destination is the level of environmental impacts that this special interest tourism has. “Incorporating the notion of place with the notion of physical activity into a definition of sport tourism would help address the problems associated with distance of travel and the problems associated with using narrow definitions of sport” (Gibson, 1998: 49). Sport tourism should be defined by incorporating impacts from its broader environment. Trends that have impact on tourism, recreation and leisure are related to tourist distribution, consumption centres, travel patterns, consolidation, energy, communications, societal change, public involvement and fees for using public lands (Gartner & Lime, 2000: 5-9). A lot of effort is required by local stakeholders to achieve a desired level of sport tourism development, but if the final objective is to ensure prosperity for local community, it is the effort worth investing.

It seems as the amount of opportunities offered for sport tourism development is almost unlimited – it can take place in urban and rural areas, indoors or outdoors, in all types of climatic conditions and seasons (Delpy Neirotti, 2003: 18). Indeed, there are numerous opportunities that destinations worldwide can seize in order to increase the quality of sport tourism product offered to tourists. Adapting to various changes and variables on the market, either endogenous or exogenous, is a constant process that can be used as either advantage or limitation in terms of destination development. Increasing the quality rather than quantity of tourism product is a strategy that can be considered to be in line with sustainable development policies and therefore destinations should decide to embrace that approach in order to ensure long-term existence on the market.

Based on the general theory of sustainable tourism development, in sport tourism there is significant influence of uncertainty when it comes to defining what sustainable sport development should assume (Lindsey, 2008; Malchrowicz-Mósko, Płoszaj, & Firek, 2018). This issue arises from the unnecessary desire to assign somewhat specialized definition of sustainability to the field of sport tourism, while the effort should rather be put on determining

how to implement globally accepted policies into development strategies in specific destinations. More specifically, “with priorities for sport development increasingly focused on long-term outcomes, understanding whether and how sports development programmes can contribute to sustainable change is vital to improvement of policy and practice” (Lindsey, 2008: 292).

There is little doubt that local community has significant influence on the quality of sport tourism products. It seems crucial to involve people in the host community in developing both sport and tourism, regardless of their level of involvement (directly or indirectly), in order to ensure sustainability of both activities (Ntloko & Swart, 2008: 80). This can be argued for any type of tourism product in the process of sport tourism development within a destination, i.e. for sport events, hard or soft activities, summer or winter activities, etc. The basic presumption of a successful tourism product lies in cooperation between public and private sector, but the involvement and influence of local community seems to be of crucial importance. In that sense, the issue of social responsibility in terms of mega sport events has been researched extensively (e.g. Babiak & Wolfe, 2006; Walker, Heere, Parent, & Drane, 2010; Walker et al., 2013; Smith, 2014; Stančin & Krajinović, 2016; Kiani, Nazari, & Shahbazzpour, 2019), as there are many aspects of event management that need to be carefully implemented in order to yield optimal benefits for the local community in terms of infrastructure development, creating job opportunities, improving entrepreneurial climate, empowering women and minorities, strengthening cultural identity, etc.

“There is an odd paradox with regards to rural sport: while many people living in rural areas herald what they consider as the profound contributions of sport to the social fabric of rural communities, these perceived effects remain seriously under-valued in the thriving sport-for-development debate” (Spaaij, 2009: 1132). In other words, it is not rare to happen that sport tourism potentials are not accomplished due to many reasons, and rural destinations consequently are left with insufficiently developed products and unsatisfactory market position. Therefore, it is often revised that emphasis should be put on increasing benefits for the local community through development of any special interest tourism, sport tourism more specifically in this case. As it assumes meeting push and pull factors in specific destination during specific time period, it is highly sensitive process, especially in rural areas. Due to diverging features of those areas, it is occasionally perceived that tourism development will unconditionally bring in numerous economic benefits to destinations. Regardless of the stage of tourism development within any area, development that is not properly managed will not yield desired results. Sensitive and generally preserved rural areas represent substantial potential for developing sustainable sport tourism products and activities that could bring in numerous benefits to local community in the long run.

Rural areas are especially sensitive when it comes to the question of social responsibility. According to Henshall Momsen (2001: 514), there are certain characteristics of rural areas that tourists find attractive – they are marginal for agriculture, often located in thinly populated, isolated and less-favoured upland regions, while tourism serves as additional source of income, especially for women, and is important in reducing the rate of rural depopulation. Even though all these characteristics are ideally supposed to bring in positive effects to tourism destinations, certain disruptions might occur if any unanticipated event affects the balance of sustainable tourism criteria. Moreover, “the concept of social sustainability is often, quite rightly, identified as an important but under-studied concept that is dependent upon the understanding of human – human relationship, including conflicts” (Fyall & Jago, 2009: 77).

Even though the process of creating sustainable tourism product relies dominantly on destination's resources and stakeholders' cooperation, the final outcome is twofold – local community's prosperity and tourist satisfaction. Even though sustainable tourism development is most often researched from the supply-side perspective, tourists are also an integral part of the process as they consume products and experiences produced and created in the local environment (Gibson, Kaplanidou, & Kang, 2012: 161). Even so, the focus has to be put on community and its long-term interests and thereby their involvement in decision-making process is of crucial importance. In order for tourism to incorporate the idea of community participation, it is necessary to initiate the development within the community, i.e. to incorporate the idea of "building from below" (Schulenkorf, 2012: 3). Antagonism of local community towards tourism development is mostly associated with mass tourism and its consequences on the quality of local resources, cultural identity and local economy. Therefore, sport tourism development can be considered as a tool for overcoming challenges that arise from mass tourism development and can direct the focus onto achieving benefits for the local community, however those benefits might be defined.

There is a growing need to define policies that would enable different stakeholders the opportunity to create more competitive and sustainable tourism products. "Regarding social sustainability, the main concern seems to be related to issues such as: (i) employees' satisfaction and perception of equity concerning salaries; (ii) training of the employees; (iii) the customers' protection by ensuring product safety; (iv) community development; and (v) non-discrimination and social exclusion" (Carneiro, Breda, & Cordeiro, 2016: 309). Sport tourism activities usually assume certain level of participation by service providers, especially within the sphere of the so-called hard activities. Therefore, the aspect of social responsibility is of utmost importance, as it assumes mutual understanding, respect and high level of awareness about potential difficulties.

Sustainable tourism development as a research area is extremely dynamic and evolving in terms of raising awareness among different destinations and stakeholders within those destinations. Sustainable sport tourism development, however, is an area that requires much more research and, as already mentioned, specific strategies that would enable implementation of policies. Hinch, Higham, & Moyle (2016, 170) have identified specific needs for further research – "differing scales both in terms of activity and destination, single versus multi-sport destinations, sport destination resources and civic investment, the interplay of sport and destination lifecycles, sport tourism's contribution to and impacts of climate change and more explicit theorizing". It seems superfluous to argue that climate change will have enormous impacts on tourism flows in the future, as the future is already happening. The main challenge is how will destinations adapt those changes and adjust their products accordingly. Numerous researches (e.g. Moen & Fredman, 2007; Steiger, 2012; Cocolas, Walters, & Ruhanen, 2016) have been dealing with that issue and the main conclusion seems to be that adaptation is a premise of the success. As much as some areas, such as Eastern Croatia, are not yet seriously affected with consequences of climate change, the adaptation process should always remain in the focus of development strategies.

Further to this matter, sustainability of sport events is in the focus on many researchers these days. Those events have almost critical role in the process of development in different destinations, as has been expected in the case of Brazil and its hosting to FIFA World Cup and the Olympics. However, since the success of planning process lies in the capability to embrace past experiences and use them in future development, certain destinations, such as

Japan, are already in the final stage of preparation for some future events, more precisely the 2020 Tokyo Olympics and the 2021 Kansai World Masters Games (Hinch & Ito, 2017). It is the core idea of sustainable development to use best practices and guidelines for future strategies and to implement the best ideas of policies worldwide.

However, if the sustainable development of rural areas is in the main focus, then it seems rational to develop events that would be of smaller size and have less intensive impact on local infrastructure and resources. The term small scale also needs to be conceptualized in relative terms, as “the distinction between small scale and hallmark events is not simply related to the size of the event, but is also related to the fact that regular season games do not tax the resources of the host city in the same manner as hosting a mega event” (Gibson, Willming, & Holdnak, 2003: 182). Numerous opportunities arise from hosting a sport event within a destination, with the emphasis on respecting and preserving local resources and identity of the community. The same can be applied on the area of Eastern Croatia, where small scale events provide numerous opportunities for developing sustainable sport products and can help overcoming numerous imbalances in the number of tourist arrivals, overnight stays and receipts at national level.

## **Methodology**

Results and findings of the paper are based on secondary research. Descriptive statistics methods are used in secondary data analysis. In order to analyse potentials of sport tourism destination and its resources, authors have used official statistical reports, scientific articles as well as relevant websites. Based on the available secondary data, following elements are analysed: physical characteristics and qualities of the area, accessibility and infrastructural arrangements, economic resources, and cultural and perceptual aspects. To display and analyse the available resources and sport activities in the area, authors have used the data provided on the web pages of tourist boards in the researched area, which includes: Tourist Board of the Vukovar-Srijem County, Tourist Board of the Osijek-Baranja County, Tourist Board of the Požega-Slavonia County, Tourist Board of the Virovitica-Podravina County and Tourist Board of the Brod-Posavina County. Collected data were analysed for each county separately.

On the basis of available data and conducted critical analysis, authors have provided several recommendations which can be applied to the development of sustainable sport tourism destinations in the analysed area. Concerning the methodology, paper has two main limitations which have to be taken into consideration. Firstly, there is no available data on the number of tourists involved in sport tourism activities and events in the analysed area, which prevented authors from providing direct physical economic impacts for the analysed activities. Another limitation is the absence of primary research that would include in-depth interview with the stakeholders in the area. These limitations can be used as a guideline for one of the future research of sustainable sport tourism development in a certain area, Eastern Croatia in particular.

## **Analysis of market development potentials**

In order to provide economic overview of the analysed area, it is necessary to firstly examine GDP per capita as one of the main macroeconomic indicators.

*Table 1: GDP per capita in Eastern Croatia during the period 2007-2016 (in kuna)*

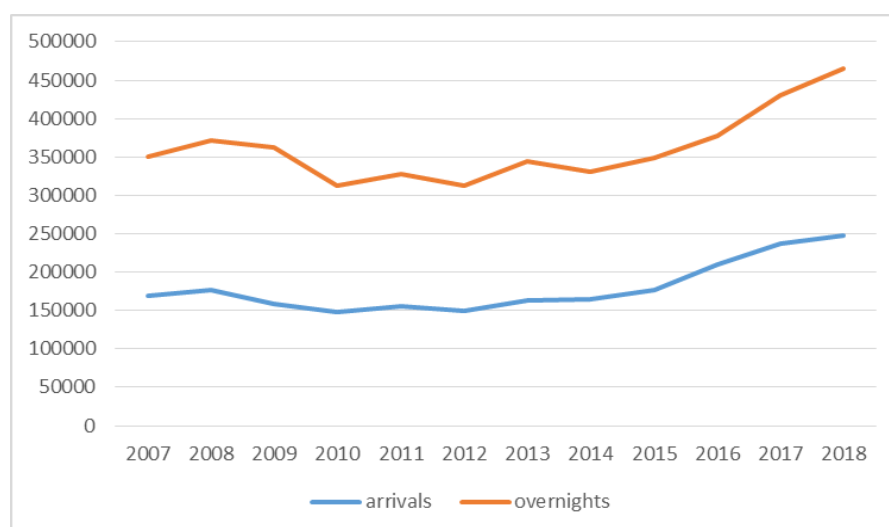
Area	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Index
Republic of Croatia	74,770	80,668	76,949	76,610	77,857	77,494	77,985	78,273	80,707	84,207	113
Continental Croatia	75,042	81,627	78,274	77,998	79,585	79,037	79,402	79,560	82,197	85,851	114
Virovitica-Podravina	49,419	51,194	46,648	44,219	46,215	45,534	45,396	42,709	43,833	46,610	94
Požega-Slavonia	45,902	49,560	46,643	46,330	46,240	45,303	46,303	44,483	45,838	47,778	104
Slavonski Brod-Posavina	41,785	46,494	43,634	42,404	43,613	43,521	44,479	43,141	45,100	47,375	113
Osijek-Baranja	61,640	66,547	63,133	59,648	61,365	60,185	61,515	61,121	63,259	66,518	108
Vukovar-Srijem	44,528	49,922	47,152	44,086	45,519	44,313	45,300	44,432	46,713	49,417	111

*Source: CBS, 2008-2017*

As shown in Table 1, GDP per capita in five counties included in the analysis is much lower than the average GDP per capita in Croatia. When analysing the base index for 2016 (with the 2007 as the base year) it can be concluded that GDP per capita is increasing slower than average Croatian GDP per capita in four analysed counties, while Virovitica-Podravina County has declined in 2016 in relation to the base year. Furthermore, according to CBS, the analysed area accounts for 13.1% of all employees in Croatia, while, at the same time, it has a share of 17.9% in the entire population of the country.

Despite inarguable tourism potentials of the Eastern Croatia, it still lags significantly behind coastal Croatia when it comes to registered tourism results. In 2018 the share of the aforementioned 5 counties in total number of tourist arrivals was 1.33%, while their share in overnight stays was 0.52% (CBS, 2019). These results indicate poor performance of Eastern Croatia in internal tourism, but simultaneously they emphasize that the length of stay within this area is less than 2 days (1.83), which again is below national average (4.95 days) (CBS, 2018). Such results are not favourable for this area, as they have negative effect on utilisation of facilities, employment in tourism, potentials for development and entrepreneurial activities. By developing sport tourism this area might embrace possibilities for rejuvenation of tourism offer and enhance performance of local economies.

*Graph 1: Tourist arrivals and overnight stays in Eastern Croatia during the period 2007-2018*



*Source: CBS, 2008-2019*

Even though there is a clear increase in the number of registered tourist arrivals and overnight stays during the analysed period, the length of stay of tourists is decreasing. In 2007 the average length of stay was 2.07 days, in 2009 tourists stayed for 2.28 days while in 2019 they stayed in average for 1.87 days. Bearing in mind that the most visited county is Osijek-Baranja, with the nature park Kopački rit, it is easily concluded that this region highly depends on same-day visitors that are attracted by the flagship attraction of this area. It seems rational that tourism product should be developed by bearing in mind that rural areas provide high potential for developing competitive tourism products, outdoor activities in particular (almost one third of all nature parks in the Republic of Croatia are located within this area). At the same time it is necessary to enable cooperation between public and private sector in order to enhance the quality of products provided to tourists. This area, however, has favourable transportation connections with the rest of the country, as it is connected with highway networks (AC3 and AC5). There is also a huge importance of Rhine-Danube Corridor that provides the main east-west link across Continental Europe. This component of tourism supply is one of the main presumptions of tourism development and therefore its connectivity with major generating markets is of crucial importance.

When analysing sport tourism activities, the important aspect that has to be taken into consideration is the basis for their development. In that sense, two different sets of activities can be emphasized. Firstly, there are sport tourism activities which are predominantly based on natural resources, and they usually do not require special additional infrastructure. On the other side, the activities that do not need natural resources are based mainly on man-made (social) resources. Since Eastern Croatia has numerous natural resources that can be considered as ideal for developing sport tourism activities, it can be assumed that the majority of sport tourism activities within the analysed area rely upon those resources.

One of the activities with the highest development potential is **cycling**. In general, cycling is one of the most popular sport tourism activities, and it is adjusted to tourists of different age and different purchasing power. Furthermore, it is an activity that involves active sportsmen, but can also include people who usually do not cycle, but decide to do so while they are on vacation. Besides the natural resources, this activity requires infrastructure such as cycling routes and the accommodation. In Eastern Croatia all analysed counties have not only the potential for cycling tourism development, but they already have well set up offer with all the infrastructure needed. Numerous routes are offered to tourists, together with the services of renting, buying or repairing bicycles. Furthermore, Bicycle route Sirmia, which connects southern area of Vukovar-Srijem County with its northeast part, is a part of the route Eurovelo 6 ([Visit Vukovar](#), n.d.). Eurovelo 6 is 4,400 km long and is one of the most popular European bike routes. It includes ten countries and numerous coasts, rivers, castles, as well as a high level of needed infrastructure ([Eurovelo](#), n.d.). Other routes on the area also have great potential for further development. Such diversity is specific, since it includes different places in the area, such as forests, fields, cultural resources or vineyards, which creates an opportunity to link sport tourism offer with other special interest tourism activities, such as cultural tourism, ecotourism or wine and gastronomic tourism. This consequently provides a great potential for local community to become a part of tourism offer in the area. Additionally, in terms of sustainability, it can be argued that cycling does not have unbearable impact on natural environment and therefore it can be considered as sustainable sport tourism activity (Cupples & Ridley, 2008; Pröbstl-Haider, Lund-Durlacher, Antonschmidt, & Hödl, 2018).



The analysed area is set up of many natural and social resources needed for **hunting and fishing** activities. Within this territory, nine hunting grounds are owned by the state (Hrvatske šume, n.d.) and several are privately owned. Also, there are many rivers and lakes which can be considered as suitable for fishing. These activities attract tourists with higher financial solvency, mostly men, they are well informed and interested in ecological sustainability. Eastern Croatia has all the presumptions needed for hunting and fishing tourism development, which includes: (1) wild species richness, (2) vicinity of the generating markets (Hungary, Austria, Germany...), (3) transport accessibility, (4) hunting infrastructure, (5) hunting service providers, and (6) good law regulations concerning hunting tourism. Nevertheless, hunting and fishing activities provide an opportunity to all year tourism, which can provide constant revenue for the local community. Even though there are ethical issues associated with this special interest tourism, tourists that visit destinations only for hunting and fishing in controlled environment do not put additional pressure on natural resources and, thus, can be considered as sustainable (Robinson & Bennett, 2000).

Hydrographic resources of the area, besides their fishing potential, make a basis for developing activities such as **kayaking, canoeing, driving on boats or swimming**. Despite the potential of water resources and activities, their offer is still scarce, and it is not used and promoted in tourism sufficiently or appropriately. One of the possible reasons lies in the fact that those activities are very dependent on weather conditions, and therefore are perceived by service providers as being very risky and unmanageable (Brymer, Downey, & Gray, 2009). However, in the future, they might be developed as additional offer of sport and other tourism activities in the area.

**Hiking** trails within the area are another aspect of tourism offer. For instance, in Brod-Posavina County there are two hiking associations which take care of the hiking trails and activities in the County. It is possible to go on short excursions, but also to take a long walk and spend the night in the hiking centre (Tourist Board of Brod-Posavina County, a). Other counties do not give special attention to these activities, despite the fact that this plain area is bordered with the mountain chain of Krndija, Papuk, Psunj, Dilj gora and Požeška gora. They provide a potential for recreation, as those forests are mild and gentle, which is suitable not only for people used to hiking, but also for people who would like to enjoy the nature but are not as active. These activities do not require many investments, and should get bigger attention in the future tourism development. When analysing their sustainability, it is argued that after the initial pressure put on the natural resources, all further activities do not make much additional damage on, for instance, hiking trails (Gartner, 1996: 141). In that sense hiking represents another form of sustainable tourism offer (Chesters & Smith, 2001).

Beside the mentioned activities, sport tourism offer of the area includes also: **riding, tennis, golf, paintball, archery, airsoft**, etc. Those activities are incorporated in other activities which are not necessary connected with sport tourism, but provide great tourist experience. Some of them, such as golf, cannot be considered sustainable as they have significant impact on natural resources (water, land) (Pleumarom, 1992; Salgot & Tapias, 2006; Woodside, 2009). Therefore their planning and development have to be managed carefully in order to respect natural heritage and potentials of the area and not to cause irreparable damage in the environment.

The category with great development potential, involving sport tourism activities, relates to **sport tourism events**. The relationship between sport events and social sustainability has been researched extensively and, if managed properly, it can provide positive impacts on

community's identity and local economy (Smith, 2009; Kim, Jun, Walker, & Drane, 2015; Hinch & Holt, 2017). In the analysed area events can be divided into two groups, depending on their relation to the cultural heritage of the area. Some of them have cultural origin, and therefore are used as great tool for promoting local culture. For instance, majority of the analysed counties have an event that includes horse parades (White Horses Babina Greda, Carnival riding in many villages...) and those events inform visitors about the heritage of those villages. Additionally, numerous fishing events are organized in the area. Besides the events related to culture, there are three internationally recognized events in Brod-Posavina County: Mega bikers meetings, Auto Rally and International Oldtimer meetings, that attract many visitors during different times of the year (Tourist Board of Brod-Posavina County, b). Furthermore, two major sport events were held in Osijek – Davis Cup 2018 and World Handball Championship 2009 (among other cities in Croatia). This proves that this area has disposable infrastructure and that it is already recognised as potential sport tourism destination. However, when it comes to events, it can be concluded that Eastern Croatia does not use its full resource potential, there is a lack of small-scale sport events and their promotion should be directed towards enhancing their uniqueness and specific features. Since events bring in numerous advantages to a destination (expansion of the market, creating new demand, increase of revenue and tourist arrivals, new infrastructure, publicity...) and this area has potential for organizing events, it would be of great importance to coordinate the efforts of public and private sector in order to develop additional tourism product within the area.

The analysis of sport tourism resources in the Eastern Croatia has indicated that the majority of the activities is predominantly based on natural resources, rather than on social ones. Despite the fact that the offer of some activities is well developed, there is still a lot of unused potential which provides a great opportunity for sustainable sport tourism development in the area (numerous special reserves, regional parks, nature monuments, significant landscapes, park forests, park architecture monuments, etc.).

## **Critical analysis of sustainable development potentials**

Even though sustainable tourism development is a concept of indubitable importance these days, its implementation into development strategies can be rather challenging. Namely, depending on the stage of tourism destination lifecycle, quality of the product, involvement of the local community, level of awareness about the importance of tourism for the local economy, environmental protection and other factors, the concept of sustainable tourism development has to be adopted to numerous different variables, while at the same time the core idea has to remain unchanged. Therefore, the application of the concept on different special interest tourism can be considered as a crucial challenge, but the outcome has to be the same in any case, and it is to provide equal opportunities for all stakeholders to maximize their interests, while preserving environment, enhancing local economy and strengthening cultural identity. The same can be applied to the development of sustainable sport tourism destinations.

In the case of Eastern Croatia it is possible to outline several key issues of tourism development, among which are: involving local community into the decision-making process, better use of marketing tools, developing other special interest tourism within the area, improving the cross-national cooperation and, consequently, prolonging the length of stay of tourists. Potentially crucial aspect of that process lies in the involvement of the local community. Since sport tourism activities partially rely on the involvement of service

providers, it seems more than rational to include as many locals in this process as possible. Additionally, due to significant problem of decreasing the number of inhabitants within this area, for many reasons, and the problem of aging population, such product development would enable job opportunities and would increase the strength of local economies. According to data outlined in Table 1, the economic performance of this area is below the country average and requires additional activities that would enable GDP per capita growth and increase of job opportunities. This kind of cooperation would, without a doubt, enable further development stages and would strengthen the identity of local communities within this area.

Furthermore, in order to create a product that would attract more tourists in the area, it is necessary to relate sport tourism activities to other special interest tourism offer, such as cultural tourism, wine and gastronomic tourism or ecotourism. Special interest tourism offer in the area has great potential, but it is still not sufficiently recognized and developed, which is one of the main incentives for stronger cooperation between different special interest tourism. For instance, almost every cycle route passes nearby some of the cultural tourism resources, which can be incorporated in the overall tourism offer. Furthermore, local restaurants or bars can also provide their services to visitors on the route. All these activities, when planned in advance, could provide better results. This kind of cooperation has numerous advantages. First of all, it can provide a possibility to participate in different activities during their stay in the destination, aside from sport activities, which would create better experience. For example, tourist who came for cultural or wine tourism offer, can also be involved in sport activities. Such cooperation would not only attract more tourists in the area, but would have effect on prolonging their stay, due to numerous activities tourists could participate in.

The promotional issues are among the main challenges this area is faced with. Promotional costs are quite high for an individual service provider. One of the solutions is joint promotion, which also arises from the cooperation of all service providers. This is not only a way to reduce costs, but also an opportunity to enhance diversity of activities in the area. From the marketing perspective, the visibility can be increased through cross-national cooperation. This kind of cooperation can be seen in the case of Eurovelo, but there is also a possibility for other activities to become an integral part of international network, and to get recognized not only on domestic, but also on the international market.

Based on the conclusions derived from secondary research in this paper, the authors argue that implementation of these recommendations does not require high investments, but nevertheless assumes good cooperation of all service providers, creation of common goals and defining activities for their achievement. These activities, if managed properly, can create a basis for implementing sustainable tourism policies into development strategies. As Eastern Croatia is dominantly rural area, it should be preserved as much as possible in order to yield long-term benefits for the local inhabitants. Hence, it seems rational to relate sport tourism offer within this area to the idea of sustainable tourism development. Namely, due to the tourism results that are registered within this area, it would be possible to develop small-scale sport tourism products. In that way resources would be given a chance to become more intensively incorporated into tourism offer, but at the same time they would have to be protected in order not to exceed the limits to their usage. Additionally, one of the specifics of rural area, as mentioned in theoretical analysis, is that occasionally local inhabitants have much higher expectations from tourism development than is reasonable and consequently, the desired results are not reached. Small scale development would enable to meet the realistic potentials of the area with creating high quality, competitive products.

As this research was conducted by using only secondary data sources, it would be recommendable if in the future it would also include primary research that would enable analysis of data collected directly from service providers, local inhabitants and tourists themselves. In that way it would become possible to examine the level of involvement of those three groups of stakeholders in the decision-making process, to emphasise main challenges of developing sustainable policies and to determine main advantages of developing sustainable sport tourism in Eastern Croatia.

## **Conclusion**

Based on the research results it is possible to confirm the existence of numerous potentials for developing sport tourism products that would have positive impact on the sustainability of tourism development in Eastern Croatia. Even though it is common to emphasize the economic prosperity, job creation and minimising leakages out of the economy as the main benefits of cooperation between public and private sector, it is necessary also to indicate that it can affect environmental protection and strengthen cultural identities of local communities. The level of development of each sport activity analysed in the paper was determined on two levels – based on theoretical research and on secondary research. Combining these two concepts enabled authors to provide qualitative evaluation of each chosen activity within the area.

As emphasized, two main concepts in sustainable tourism development are resource preservation and stakeholders' inclusion. In the area of Eastern Croatia natural resources, that are the basis for sport tourism activities, are mainly preserved and further restrictions should be imposed in order to maintain such state. On the other hand, stakeholders' inclusion is an aspect that should be much more emphasized and developed. Namely, both vertical and horizontal cooperation should be encouraged in order to create more competitive and sustainable sport tourism offer. In this sense, potential future research should be undertaken through primary research that would involve all stakeholders included in the process of product development, namely, public and private sector, with special emphasis on the local community. The contribution of this paper is reflected in the initial analysis of sport tourism resources and determining their future potential in enabling sustainable tourism development of the area. Additionally, it can be used by business practitioners in order to detect key challenges of managing sport tourism development of Eastern Croatia.

In the long run, it seems rather optimistic to claim that there will be significant increase in the number of tourist arrivals into this area. However, such situation reflects enormous potential to develop small-scale sport tourism products that would not attract large number of tourists, but could be considered as unique experiences that respect local heritage and are developed based on the ideas of sustainable tourism development. In that way sport tourism could become a basis for developing other tourism products within the area by creating a network of different stakeholders with similar interests. Sustainable sport tourism can be more intensively developed within the area of Eastern Croatia, but numerous specifics of the area suggest that development process has to be carefully planned and controlled in order to yield optimal results.

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# CAN EVALUATION TRIGGER CHANGE? THE CASE OF THE INTERIM EVALUATION OF THE CROATIAN TOURISM DEVELOPMENT STRATEGY

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## Abstract

*The paper will focus on the results of the first conducted sectoral interim evaluation in Croatia, that of the Croatian Tourism Development Strategy till 2020. The authors will reflect upon the methodology used, the applied approach, the objectives and scope of the recently implemented interim evaluation of the mentioned Strategy. They will also comment on the purpose and functions of this sectoral evaluation and will observe objectively its role from the point of view of achieving effectiveness, long term, and concrete and sustainable development impacts in the sector.*

*The main findings of the conducted evaluation will be presented, based on a number of held interviews and a survey with the main policy makers, civil servants as well as all key stakeholders in the tourism industry. Particular focus will be given to evaluation questions and judgement criteria based on the evaluation criteria of effectiveness, impact and sustainability. The authors will indicate some of the positive achievements, but all the more so, some of the current problems and challenges in the segment of tourism in Croatia in the period until 2020 and beyond. Along with observations related to the issues of accountability in the sector, the paper will also provide reflections on the learning effects as the end result of such an evaluation, contributing to further policy development and policy learning in the sector of tourism.*

*The authors will indicate that their experience with this first interim evaluation could serve as a good practice example for conducting similar sectoral evaluations in Croatia as well as a tool for further long term development of tourism in the country, since the sector is of pivotal importance for Croatia's local, regional and urban development as well as its overall economic competitiveness.*

*Particular attention will be given to some of the noted deficiencies and needs for further improvements in this sector, vital for Croatia's further development, providing recommendations for improvements of the overall Croatian tourism development policy, with specific focus on the effectiveness of the so far achieved results as well as sustainable implementation of the Strategy and overall policy, aiming at reaching major and more concrete development impacts in the field of tourism.*

**Keywords:** interim evaluation of a strategic program, tourism policy

**JEL classification:** Z32 (tourism and development), Z38 (policy)

## Introduction

Tourism is still considered as one of the most relevant economic sectors, widely recognized as a relevant factor not only for achieving competitiveness on the national level, but also as an important factor in regional development (EC, 2010). By nature the tourism industry has an irreplaceable role in regional policy in most EU Member States, contributes to local and regional development due to its positive multiplier effect which triggers new business opportunities in a wide range of activities, thus significantly influencing growth, stability of local and regional economies, new employment opportunities, overall attractiveness and living conditions on the local and regional level. (Lusticky, Bina and Musil, 2015; Sharma, 2004; Downes and Rooney, 1999, Cooper et al., 2008). The benefits which are in the initial period reflected in the local communities translate in a longer term period into new investments and growth, with its positive effects on regional as well as national competitiveness.

The tourism industry is particularly relevant for Croatian local and regional development, with its noticeable impact on raising the living standard and quality of life in local communities dependent on revenues from tourism. Its major contribution to the overall national competitiveness is also not surprising, due to its linkage as well as notable impact on other development policies, among them, agriculture, culture, environment, transport, leisure and other. Having this in mind, the main strategic document related to the tourism industry is a relevant starting point for continuous promotion of developmental change in a sector of key importance for Croatian overall development.

This paper presents research findings as the result of the implemented interim evaluation of the *Croatian Tourism Development Strategy till 2020* (hereinafter: Strategy), released by the Ministry of Tourism in 2013. The Strategy was evaluated in the course of its implementation (Covering the period 2014-2017), serving as a tool for the overall improvement of the tourism policy.

The Strategy is based on the analysis of key indicators of achieved development in the tourism industry. It focuses on the development constraints but also the emerging potential, stemming from the globally relevant development trends, and points out the key success factors which the Croatian tourism policy should employ until 2020. It must be noted though that Croatian tourism is still facing a number of serious constraints, among them, the insufficient distinction of products and services, lack of innovative and quality tourism facilities, growth based on the expansion of private households accommodation, lack of quality hotel services, unsatisfactory air and maritime traffic networks, static system of national marketing, lack of globally branded destinations, inadequate tourism infrastructure of a destination, and inherited inclination of the local population towards seasonal business. These pertaining weaknesses stress the importance of sound strategic programs, as well as the importance of evaluation of their implementation. The quality of strategic planning can be considered as one of the most relevant factors of competitiveness of tourism destinations

(Lusticky, Bina, Musil, 2015), influencing by large continuous improvement and change of this policy, which is particularly relevant for Croatia.

The paper provides an overview of the purpose and goals of the conducted evaluation of the tourism policy. The overview is followed by the methodological framework used for the implementation of the evaluation, along with the key findings according to the main criteria of interim evaluation. Finally, conclusions and recommendations for further development of the Croatian tourism policy in the forthcoming period are provided.

## **Purpose and Goals of Evaluating the Tourism Development Strategy**

Evaluation implies the obtaining, analysis and use of data aimed at improvement in the process of developing or implementing a strategic program, and the achieved results. Primarily, efficient and timely management, decision making, education of stakeholders and responsibility for resource use and achievement of results are encouraged. (Maleković, Puljiz 2007 and 2009; Maleković, Tišma, 2011).

We can define evaluation as a selective exercise that attempts to systematically and objectively assess progress towards the achievement of an outcome. It involves assessments of different scope and depth carried out at different stages in time in response to evolving needs for evaluative knowledge and learning during the effort to achieve an outcome. The focus of such an exercise is on expected and achieved accomplishments, and its prior focus is on determining the relevance, impact, effectiveness, efficiency and sustainability of the interventions (Smith, 2007). In this regard, its main purposes are to understand why and to what extent intended, but also the unintended results are achieved. Likewise, from point of view of the topic of our paper, it is a relevant source of evidence on the achievement of results and overall performance, improving thus the implementation of a programme and enabling the process of learning from past successes as well as failures (Maleković and Tišma, 2011; OECD, 2012). It needs to be noted however that evaluation practice cannot be perceived as purely scientific research, as is often the case. Rather, the main challenge is to produce directly useful knowledge that is of value to society. From this point of view, it can be looked upon as a form of participation in the European "knowledge based society" (Basle, 2006).

If we agree that the moving force behind evaluation activities is very often the desire to have a positive influence on policy, then we can also agree that one of the main goals of evaluation is to upgrade the current as well as future development policy by way of the assessment of the results of particular interventions, to enable transparency and mentioned accountability when reporting on the results of development activities, as well as to improve the management of socio-economic programmes (Maleković, Puljiz 2007). In this regard, evaluation can be perceived as a management tool, formalizing thus some of the good practice which is currently emerging on an informal basis in the framework of Cohesion policy evaluation, all of which is very relevant for Croatia's policy development and change (Maleković, Tišma, 2011). Barca is right in observing that policy makers will perceive evaluation as necessary and relevant if evaluation assessments are turned into clear-cut public messages for policy makers, and if the policy-makers are required by partners to respond with information that only evaluation can provide (Barca, 2006).

Since our research herewith is related to the first conducted sectoral interim evaluation in Croatia, it is necessary to point out that the further introduction and capacity building for evaluation in Croatia is relevant due to a number of reasons, such as (OECD, 2010; WB Handbook on Evaluations 2010, Maleković, Puljiz 2007, Maleković, Tišma 2011., Puljiz, Maleković, Keser, 2017; EC 2013; EC 2013a; EC 2014; OECD LEED, 2012):

- ensuring transparency, efficient and effective management of development programs
- ensuring financial and other accountability of the programme managers
- ensuring maximum return of invested resources for development programmes
- ensuring maximum long term, sustainable and relevant socio-economic development impacts for the development of certain Croatian regions
- serving as a tool for triggering public policy development and developmental change (since it explicitly points out the results of socio-economic development of the implemented development programs and policies)
- providing the means for introducing new forms of governance and enhancing an integrated approach to development.

There are additional reasons for evaluating the tourism policy, among which the following merit to be singled out (OECD LEED 2010; OECD 2012):

- to ensure full integration of tourism in the overall development strategy and the incorporation of tourism goals in the other regional development strategies
- to enable greater awareness and participation – among local public and private decision makers as well as amongst the wider public - on the importance of development of sustainable tourism
- to help policy makers better assess the impacts of the tourism policy and programmes against their objectives
- to allow better cross-government understanding of the efficiency of the overall government approach in tourism on all levels

When considering the purpose of evaluation, it is hard to refrain from referring to the present imbalance between financial/procedural and outcome/performance accountability, as well as accountability and effectiveness, with administrative actions being too focused on inputs and processes, on financial and procedural accountability (Polverari, 2011). These issues are extensively discussed also in the framework of EU Cohesion policy and Croatia is among those countries whose management of Cohesion policy is by far too overburdened with procedural accountability with visible unfavorable effects on impacts of implemented programmes (Puljiz, Maleković, Keser, 2017).

This interim evaluation, the first sectoral one implemented in Croatia, as well as the first interim programme evaluations (for example, Operational Programmes, relevant for using EU funds in the 2013-2020 Cohesion Policy Multiannual Financial Framework) which are currently under way, are by all means an opportunity for considering shifts of approach which will inevitably have to take place in the post 2020 programming period. This is of the utmost importance since evaluation is still not perceived by most Croatian stakeholders as a challenge in providing useful knowledge of value to society. Suboptimal recognition of the importance of evaluation is observed and most policy makers do not perceive it as a management tool and means for improving governance.

The objectives of our research stem from the main purpose of evaluation of public development policies. In this regard, and having in mind that such sectoral evaluations have not been conducted in Croatia so far, one of the prior goals of the research was to raise understanding and capacity related to the purpose and relevance of mid-term evaluation as a valuable tool for public policy evaluation in Croatia. Among other research objectives were the following:

- to demonstrate to what extent have the set goals of the Strategy been fulfilled, in line with the mentioned evaluation criteria;
- to identify the main problems and constraints for more effective implementation of the Strategy and the reaching of relevant and sustainable impacts of the policy;

- based on the conducted analysis and research findings, to provide recommendations for overcoming the main constraints and for promoting change and improvement of the implementation of the Strategy as well as the overall tourism policy;
- to point to the new emerging themes which directly or indirectly affect tourism industry, among them, sustainable tourism, safe tourism and migration.

## **Methodological Framework for the Implementation of the Evaluation**

Interim evaluations are carried out in the course of the implementation of a strategic programme and indicate whether it is necessary to redirect and make corrections in the current programming period (Vidueira, Rivera, Mesa and Diaz-Puente, 2014). This was one of the goals for setting the methodological framework for this interim evaluation.

Along with the desk research of all available internal documents (among them, the action plans, national programs, Annual Reports on the Implementation of the Strategy, Report on Audit of Efficiency of the Implemented Measures and similar), which constitutes an integral part of every evaluation, interviews have been conducted with 40 key stakeholders in the tourism industry. A thorough plan of stakeholders and public servants to be interviewed was agreed upon jointly with the core team of the Ministry in charge of following the project's implementation. It was agreed that all main stakeholders in charge of implementing the action plans as set by Strategy would be interviewed with the aim of assessing their achievements. Among them were directors of the Croatian Tourist Association, and other related associations (golf, cycling, cruising, camping, other ), representatives of the Association of Tourist Guides, the Croatian Chamber of Economy, directors of hotels and associations of congress tours, the National Association of Family and Small Hotels, the Association of Rural Tourism, the Institute of Tourism, the Association of Catering and Tourism, the Association of Seascapes, the Association of Divers as well as Association of Adventure Tourism, the Association of Cultural Tourism, tourism related private firms and numerous other. Particular attention was given to the participatory approach, the reason why the interviewed covered the public and the private sector as well as the civil society. From the mentioned it is visible that the representatives of special interest tourism, which are becoming all the more relevant, were also well covered.

With the aim of assessing the relevance and effectiveness of the implementation of the Strategy in the considered period, as well as the possibilities for achieving sustainable impacts, interviews were also held with 15 public servants of the Ministry of Tourism, responsible for the management and coordination of the implementation of the Strategy. Surveys have also been conducted among key Ministry of Tourism public servants and policy makers and particular focus was given to their views and recommendations for the development of the policy in the post 2020 period.

A number of the proposed criteria typical for interim evaluations have been used in order to provide the Ministry of Tourism all the basic information and findings which would help them understand the state of affairs and define the optimal further steps for the implementation of the Strategy.

The basic criteria used were:

- *Relevance*: examines whether the aims and priorities of the Strategy are based on objective needs and development potentials, i.e. to which degree are the aims justified by the needs. The main evaluation questions were the following: to what extent are the goals of the Strategy justified as compared to the needs? Are they in line with local, national and European priorities?

- *Effectiveness*: compares the achieved results with respect to the proposed measures (to which degree have the aims been reached or to which degree they are expected to be reached). The main evaluation questions were: to what extent have the goals of the Strategy been achieved? Have the used interventions and instruments produced the expected results? Would more results have been achieved if different instruments had been used?
- *Sustainability*: assesses if the effects of the intervention will last after it is concluded and to which degree, i.e. examines whether the results, including institutional changes, can be assessed as permanent. The main evaluation questions were: Will the results and impacts, including institutional changes last? Will the impact last even if the public financing ceases? What long-term (development) impacts are envisaged?
- *Impact*: the degree of change that can be objectively justified by the intervention (the Strategy was not evaluated according to the criteria of efficiency since this evaluation aspect was undertaken in the framework of the elaborated Report on Audit of Efficiency of the Implemented Measures Defined by the Strategy for the Development of Tourism of the Republic of Croatia Until 2020). The main evaluation questions were: What is the contribution to the general goals of the Strategy? What are the defined monitoring indicators? What have been the intended/expected, but also the unexpected positive/negative contributions to the Strategy?

Along with the mentioned obligatory criteria, consideration in interviews and the conducted survey was also given to additional evaluation criteria such as usefulness, complementarity of measures and equal opportunities. The complementarity criteria is of particular importance when considering the integrated and sustainable development approach, not only of measures envisaged within the Strategy but also in regard to some relevant measures which are currently implemented in the framework of other related strategic documents in Croatia (the Strategy was not evaluated according to the criteria of efficiency since this evaluation was undertaken in the framework of the elaborated Report on Audit of Efficiency of the Implemented Measures Defined by the Strategy for the Development of Tourism of the Republic of Croatia Until 2020).

The implementation of the Strategy according to the mentioned criteria was assessed also in line with a number of additional specific judgement criteria, aiming at obtaining as wide and in depth an overview as possible as well as inputs for evaluation findings and recommendations. The judgment criteria were particularly helpful in the course of drafting questionnaires for surveys.

Following the explanation regarding the use of the criteria of efficiency, it must be noted that quantitative methods were not used in the implemented analysis and research since the research team used the mentioned *Report on Audit of Efficiency of the Implemented Measures Defined by the Strategy for the Development of Tourism of the Republic of Croatia Until 2020* which provided the basis for the quantitative data. The research herewith was thus based on semi structured interviews held in the period September 18<sup>th</sup> – November 6<sup>th</sup> 2017 as well as on the survey conducted in the course of November 2017.

Along with the applied criteria and evaluation tools, as well as the desk research of all available relevant documents provided by the Ministry, the aim of research was also to analyse similar strategic documents and other literature, including the implemented evaluations in other countries. Along with the referred to literature under the previous heading, among the more relevant ones were the *Tourism Policy and Planning – Yesterday, Today and Tomorrow* (Edgell et al, 2008), which provided a much wider development

perspective on the industry in a number of countries world wide (including the USA, Canada and Asia) as well as a thorough insight on new policy issues and development themes in the industry. The *Tourism Trends and Policies*, (OECD, 2012) provide evidence on good governance practices which can facilitate an integrated approach to tourism which is particularly missing in Croatia, the consequences of which are multifold. The OECD LEED *Policy Review on "Sustainable Tourism and Local Development in Apulia Region (2010)* indicated best practice examples on the evaluation framework for tourism development not only in Apulia but also other EU regions, with focus on challenges and requirements related to seasonal tourism, retaining of seasonal workers and their integration in the local community, government measures related to education and training in a number of countries and other. Furthermore, from point of view of circumstances in Croatia, and some similarities in challenges and tourism development goals, insight into the Assessment of the National Tourism Development Strategy – Poland, was also useful (Sliwa-Martinez, 2012), particularly related to the sustainable development principles, and environmental management as well as the creation of ecological awareness through tourism.

As to the main limitations for the conducted research, they were analyzed and discussed with the project team and the involved staff from the Ministry in the initial period of the project's implementation. Among the most pressing limitations were poor information flow and lack of information and knowledge among some of the stakeholders related to the content and scope of the Strategy. A further limitation was the initial lack of knowledge on the goals and purpose of interim programme evaluation. This was particularly the case with the interviewed from the private sector and civil society as well as with some of the more relevant stakeholders. Both limitations were carefully considered and the project team envisaged shorter presentations on the purpose and relevance of evaluation with the aim of raising the understanding and related knowledge of the key stakeholders as well as civil servants from the Ministry. As to the lack of information on the Strategy, discussions were held prior to the interviews in order to enable the necessary understanding of all interviewed as to the strategic planning process in the Ministry and its relevance for further development of the tourism policy.

The mentioned limitations were highly considered in order to overcome the present lack of knowledge and skills and one of the contributions of the conducted research was the visible raised awareness and understanding of the goals and purpose of strategic planning as well as of evaluation of the tourism policy in the mid-term period. The key related staff of the Ministry was included in the whole evaluation process, participated at all discussions, interviews and presentations with the aim of raising their overall knowledge related to the use of evaluation for the purpose of initiating policy development and change of the current Croatian tourism policy. Furthermore, an integral part of the implemented research was to raise consciousness of the importance of the evaluation and to convey the knowledge on its purpose and aims to the key stakeholders also.

## **Evaluation Findings**

Following the research objectives as indicated in Chapter 2, on the basis of the used methods and evaluation tools, as well as the mentioned evaluation criteria, this Chapter provides evidence from the implemented research.

Taking into account the existing restrictive factors of the future development of tourism in Croatia, as well as the leading global trends in tourism demand, the implemented evaluation of the Strategy was undoubtedly focused on the prospects for reaching the goals set by the Strategy. The main goal of Croatian tourism until 2020 is to increase its attractiveness and competitiveness, which would position Croatia in the top 20 tourist destinations in the world

(based on the competitiveness criterion (World Economic Forum, WEF)). Simultaneously, the Strategy defines the following four strategic goals of the Croatian tourism development until 2020 which were one of the key issues in the course of evaluating the Strategy:

- Accommodation structure and quality enhancement (i.e. a continuous increase of hotel accommodation, increase of the quality and decrease of the quantity in camping and household accommodation)
- New jobs creation (between 20 and 22 thousand new jobs in tourism and around 10 thousand jobs in non-tourism related services, induced by tourism)
- Investments (implementation of the new investment projects amounting to around 7 billion euros)
- An increase of tourism revenue (the overall annual revenue from the tourism industry should amount to approximately 14.3 billion euros)

### ***Relevance of the Strategy***

The first and most important goal of the Strategy – accommodation structure and quality improvement – has not been achieved so far. Even though the overall accommodation capacity has increased, the private accommodation capacity increase is significantly higher in comparison to the increase of the hotel accommodation.

Regarding the new job creation, it is necessary to point out a slight upward trend in the number of employees in the tourism industry. 2017 data record 35.183 seasonal workers. A deficiency of skilled employees is related to the decreasing number of students finishing high schools specialized in tourism careers. A lack of knowledgeable staff in highly qualified managing positions presents an additional problem. Considering the current needs, this goal is also highly important for the remaining period covered by the Strategy.

The goal to increase investments has also not been met. Regardless of the mentioned needs and constraints, there are still no significant investments in tourism infrastructure such as golf courses, amusement parks, theme parks, visitor centers, congress centers, et al., which are mandatory for creating the necessary supply for extending the season. The Ministry of Tourism, in cooperation with the Ministry of State Property and the Agency for Investments and Competitiveness, has issued the Investment Projects Catalogue, which yielded a launch of some investments, basically *brownfield* ones. However, there are no *greenfield* investments which would significantly extend the season, and, consequently, increase the tourism revenue. Finally, the increase of tourism revenue is going in the opposite direction. Even though the increase of visitor expenditure per travel was aimed at, the foreign exchange revenue per foreign visitor is decreasing. The Strategy has foreseen the diversification of products and services (nautical, health, cultural, business, golf, cycling tourism, wine and culinary tourism, adventure and sports tourism, et al.) which could extend the season, widen the geographical base from the coast to the hinterland, and consequently increase the revenue. However, the prepared action plans are not being implemented. Even though some relevant actions have been initiated, aiming at the development of continental tourism, the most pressing obstacle for significant change is still the lack of accommodation facilities.

It is necessary to point out the fact that none of the strategic investment projects have been implemented between 2013 and 2017 for the purpose of achieving the aims set to increase the revenue, attractiveness, competitiveness and investments in tourism. A need for intensifying the implementation of related measures is evident if the set goals are to be reached.

The degree to which the achieved results have been reached has also been assessed, particularly from point of view of whether they have satisfied at least some of the long term pressing needs in the tourism industry.



The results of the implementation have also covered certain needs regarding the increase of the overall quality of tourism services (for example, the period between 2014 and 2017 recorded an increase in the number of 4-stars hotels; investments aimed at raising the quality of private accommodation were made, and the state-owned tourism infrastructure issues were solved). It is observed that the Strategy targets all key issues such as the transformation of the accommodation structure, the extension of the season, the supply quality increase, the inclusion of local population and the opening of small private hotels working year-round and adaptable to changes. Furthermore, key stakeholders positively assess the idea of the year-round tourism, with a particular emphasis on the development of special interest tourism (e.g. congress and health tourism, etc.). Overall, interviews with the key stakeholders and evaluation results related to this criteria confirm that the goals are relevant and have been defined well, but they simultaneously insist on the simplification of the implementation of the Strategy as well as on investments in employee training.

### ***Research Findings Related to the Criteria of Effectiveness***

Taking into account the degree of the goals' implementation and comparing it to the results of the *Travel and Tourism Competitiveness Report* from May, 2015, and May, 2017, a slight progress of the Republic of Croatia according to the criterion of competitiveness (WEF) is visible (in 2015, Croatia was in the 33<sup>rd</sup> place, and in 2017 in 32<sup>nd</sup>) (<http://www.konkurentnost.hr>).

An expansion of provided services has also been planned, primarily regarding hotel accommodation, as well as the stagnation and decrease of the upward trend of household accommodation after 2015. Therefore, even though the planned number of beds has been reached, the household accommodation capacity should have stagnated or exhibited a slower growth, which wasn't the case. Some of the key reasons why the strategic goals haven't been fully reached and why most of the defined measures haven't been implemented are an insufficient number of professional officials in the Ministry, insufficient financial resources and dependence on external funds, insufficiently aware and proactive stakeholders, as well as slow and inefficient inter sectoral (inter-ministerial) cooperation.

Albeit, several positive changes did occur in the tourism industry during the observed period: extension of the season, increased tourist expenditure, the increase in tourism revenue, new job creation and new investments. Numerous innovations have also been introduced, such as the **eVisitor** system (the activation of the eVisitor system has greatly simplified the realization of tourist check-ins and check-outs for the accommodation providers, private renters, and others. The Ministry has obtained the tools and information which could serve as an important database for monitoring the trends and upgrading everything that can be gathered from that database). Additional positive changes include state support for small businesses in tourism and progress in family farm businesses training on rural tourism.

Some of the key restrictive factors regarding the implementation of the Strategy relate to weak inter-ministerial cooperation as well as the lack of vertical coordination of all the services down to the destination level. Insufficient cooperation between the public and the private sector has also been pointed out. Some of the negative effects are the result of inadequate implementation of the measures, the lack of a sufficient number of qualified workers due to the migration of young people to the EU countries, and the failure to meet the defined increase of hotel accommodation in regard to the overall accommodation.

The views of key stakeholders reflect the fact that a major shortcoming of the Strategy implementation is the weak management and coordination of its implementation. The stakeholders consider most of the defined action plans irrelevant in the practical sense, with a

lack of focus on the key measures. Among rather important issues, insufficient use of the EU funds, seasonality and an inert approach to continental tourism development were raised.

Evaluation of 'unexpected' changes which have occurred in the observed period were also considered. Among positive unexpected changes is the increase of the overall quality of supply, i.e. enhanced branding of Croatia as a recognizable and attractive destination of high quality. Consequently, this has yielded a large increase in the increase of private accommodation, which, according to stakeholders' opinion, does not generate the adequate supply of high quality, new job creation and added value. On the other hand, one of the key negative unexpected changes was the increase of VAT from 13% to 25%. Moreover, the legalization of private facilities has caused the unexpected expansion of private accommodation. Since the infrastructure of the local self-government units (water supply, wastewater treatment, roads, parking, et al.) does not allow for an increase in the number of visitors, the aforementioned causes the quality of services to decrease. This issue is simultaneously related to the issue of sustainability.

Based on research findings, the issue of coordination is among the most critical ones for enhancing the effectiveness of the implementation of the Strategy. Therefore, it is of the outmost importance to include all the key stakeholders (self-government units, Croatian Forests Ltd., Croatian Roads Ltd., Croatian Water Management Company, Croatian Railways and other), as well as to thematically (cultural, health, nautical, rural, golf, green, cycling tourism, etc.) carry out the defined actions via operational inter-departmental bodies. By reaching the aforementioned, the strategically important complementarity of the measures would be secured, i.e. the mutually supportive and synergetic effects of the measures set by the Strategy and the strategic programs from related development policies.

### ***Assessment of Impacts***

The evaluation was also focused on the possibilities for achieving the expected impacts. Most of the stakeholders have assessed the meeting of the goals set by the Strategy as an important factor for the overall economy of Croatia. Tourism is currently among the main driving forces for activities within other sectors. If the actions set by the Strategy continue to be directed in a goal-oriented and methodical manner, it is reasonable to expect an economic momentum in processing industry, food as well as other industries.

Stakeholders are aware that the rise of private accommodation contributes to meeting the defined overnight stays and enables the rise of the living standard, which assigns tourism an important role in achieving economic and social objectives. However, most of the interviewed stakeholders perceive the increase of private accommodation as potentially negative in the future, especially if not followed by the increase in the quality and the standardization of accommodation as well as the reinforcement of the necessary infrastructure services (municipal, transport, and other), which depend on the local and regional self-government units' readiness and capability.

Considering the implementation of the Strategy in terms of the realization of predicted impacts, it is obvious that this will not be easily achievable. The mentioned predicted overall tourism revenue in Croatia by 2020 should amount to 14.3 billion euros and cannot be reached since Croatia does not dispose with the necessary resources - natural and anthropogenic, as well as human - to uphold such rapid development.

Even though the set targets for tourist arrivals and overnight stays have been reached, this does not apply to the indicators of the quality of the provided services. The high pressure on the public and tourism infrastructure reflects a lack of the quality of tourism services during the peak season.

One of the key circumstances jeopardizing the expected impacts was the slow-paced growth of the development of continental tourism, which is unjustifiable since resources for the development of various forms of tourism do exist (particularly, for example, for health tourism). A further constraint for achieving synergic impacts in tourism is seen in poor cooperation between the local self-government units in the development of tourism products of mutual interest. No less important in this regard is skillful and highly professional personnel, which both the Ministry and tourist boards lack.

One of the mentioned impacts that can still not be objectively measured is the VAT rate increase, the result of which was the decrease of investments in the tourism industry. This has directly affected the decrease of the planned tourism investment increase defined by the Strategy as one of its strategic goals. Moreover, stakeholders emphasize the uncertainty of impacts of the announced property tax in tourism, which also brings long term plans for the tourism industry investments to a standstill. No less important is the stakeholders' opinion on the insufficiently addressed safety aspect of the future tourism development, which confirms a lack of analysis of the possible impacts of unwanted events on the future development of tourism in Croatia (i.e. disasters in maritime transport – cruise ships, oil tankers, terrorism, climate change, fires and similar.)....

Overall, it is possible to conclude that some of the key restrictive factors which could jeopardize the achievement of the expected development impacts of the Strategy are the following:

- High number of tourists in relation to carrying capacity, which could result in the decrease of the quality of services and impact the overall tourism revenue
- The insufficient capacity necessary for the implementation of the Strategy
- Insufficiently and ambiguously defined roles of key stakeholders
- Insufficient number of staff/workers (coordinators) for the realization of the defined interventions in nautical, health, cultural, congress and cycling tourism, as well as for private accommodation, entrepreneurial clusters, et al.
- A lack of competent workforce in the catering industry (departure of young people).

#### ***4.4. Assessment According to the Sustainability Criteria***

During the evaluation of the Strategy, according to the sustainability criteria, it should be taken into consideration that most of the measures defined by the Strategy are still in preparatory phase and it is not possible at this stage to assess the implementation of the Strategy based on the criteria of sustainability. The results achieved so far are still subject to various circumstances, such as environmental, economic, financial, demographic, security, migration and other global policy issues.

The key stakeholders advocate the idea of sustainable tourism being the only possible option for Croatian tourism in the future, which should be driven by deliberate and joint efforts to achieve the predefined and agreed strategic goals. Stakeholders believe that it is important to achieve a general policy consensus with the purpose of ensuring that the strategic goals remain unchangeable, at least during the medium-term period, as well as to strictly define the implementation plan. However, it is necessary to increase the capacity for the implementation of the Strategy. Hereof, a lack of knowledgeable staff presents one of the key challenges for the sustainability of the Strategy.

Another challenge for sustainability represents the infrastructure (transport, municipal, safety, environmental infrastructure, cultural and historical heritage conservation, et al.), currently insufficient to support the further development of sustainable tourism.

Finally, it has become impossible to perceive the sustainability of the Strategy devoid of current changes in global tourism trends, such as the increased demand for *vitality* tourism (cycling, scuba diving, adventure tourism, open-air concerts and other), which substantially

affect the increase of demand for such services in Croatia as well. A *brand tracking* research has shown a significant drop in *sun and sea* tourism model, and an increased demand for special interest tourism in Croatia. As well as with the aforementioned criteria, progress will be feasible only in circumstances of harmonisation with the recent leading policies of the EU and other countries, as well as by investing in the necessary skilled personnel.

## Conclusions

Even though the aims of the Strategy have been set high, they are in the midterm period nevertheless still justified and completely aligned with the national development priorities aimed at economic and social development. A notable emphasis has been put on the quality of tourism supply, the development of special interest tourism and the necessary prolongation of the season due to the extremely seasonal and cyclical nature of Croatian tourism (Seasonal tourism asks for particularly tailor made measures, primely related to integrating seasonal (often migrant) workers in the local community, raising their skills and providing housing and other benefits, aiming at retaining the necessary workforce. The French experience, for example, merits attention with its meaasures targeting seasonal workers – from the creation of specific employment contracts for seasonal work to the development of employers' groups, provision of better access to training and recognition of acquired skills, access to housing benefits and other (OECD, LEED, 2012). See: Spatial Planning and Sustainable Development Policy in France, (2010)).

The projects that have been implemented so far prove that the available funds are used well and for the purpose of achieving the main goals of the Ministry. Although nominally small, the funds have provided the basis for the rise of awareness of local actors as to the importance of the development of specific tourism products for the purpose of broadening tourism services.

Regarding the results achieved by the implementation of the measures, a number of positive changes occurred, such being the prolongation of the season, increased consumption, increased tourism revenue, new job creation and new investments in tourism. Albeit the accomplished, and regardless of the increased consumption, overall attractiveness and competitiveness, the absence of strategic investment projects comes to the forefront in the period 2013 - 2017.

The evaluation has confirmed that the reasons behind failing to carry out the planned interventions are mostly due to the insufficient number of professional and competent staff, a lack of financial funds and dependence on the external financial sources, a lack of conscious stakeholders engaged in the implementation of specific measures, and weak and inefficient inter sectoral cooperation – a particularly critical segment. It should also be noted that one of the most important circumstances where expected impacts have not been achieved, albeit their importance, relate to negligible change in the development of continental tourism.

Even though key stakeholders are advocating a model of sustainable tourism – in terms of quality and resources – as the future, the main factor restraining the sustainability of the Strategy in the long term period is the high number of tourists with respect to the carrying capacity, which can further lead to a decrease in the quality of services and overall revenue from tourism. The Polish experience with innovations and green infrastructure solutions in natural protected areas as well as green transport connections and environmental management, including the creation of ecological awareness through tourism (Sliva Martinez, 2012) are worth considering in this regard.

Based on the initially set research objectives, the conducted analysis and research findings, following the main evaluation criteria, it is possible to suggest a few key recommendations, i.e. activities, which could trigger an increase of effectiveness regarding the achievement of

goals set by the Strategy until 2020, as well as in the course of a longer term period. Firstly, it is necessary to ensure better coordination, more efficient, effective, simplified and flexible organization as well as an improved information flow among all involved in the course of further implementation of the Strategy. The aforementioned relates to the necessity of systematic consolidation of horizontal cooperation and relations with other Ministries and related institutions with the aim of enhancing the integrated (inter sectoral) approach to development in Croatia (This is especially significant with respect to agricultural, economic, environmental, cultural, and transport policies), with the tourism industry having in this regard a key role as the promotor of economic development and competitiveness. It is important to underline herewith the pressing need for developing stronger cooperation with the Ministry of Culture in supporting the economic use of cultural heritage with the purpose of strengthening the sector of tourism.

Overall, new forms of governance in EU member states as well as in numerous other countries provide plentiful experience related to enhancing the strategically important cooperation and coordination in the tourism industry aimed at alleviating problems pressing further development and competitiveness of the tourism industry. Among the beyond EU experiences, which also merit attention, in this case Canada needs to be singled out with its achievements in developing coordinated approaches with a full and complementary partnership in tandem with both public and/or private sector organizations (Edgell, D. et al, 2008).

Moreover, evaluation findings have proved that it is necessary to systematically strengthen vertical cooperation with counties, cities and municipalities, and to encourage their joint cooperation on projects relevant for local and regional development. It is also particularly important to ensure the synergy of measures, activities and strategic projects by way of ensuring the coherence and complementarity with goals and priorities from other local, regional and urban strategic development programs (this is particularly related to county development strategies, tourism development strategies of the local and regional self-government units, as well as development strategies of urban areas<sup>1</sup>).

Furthermore, by far more attention should be given to the development of activities aimed at strengthening continental tourism (including agritourism, which is particularly relevant for Croatia's continental regions), as well as to new related policy issues and emerging themes (responsible management of sustainable tourism/sustainable ecotourism, climate change and tourism, tourism and safety, health related tourism, experience economy, special interest tourism – green, health, adrenaline, adventure, vitality, and other).

Finally, it is necessary to define Croatia's long term tourism development priorities. The 2021-2028 Strategy (in line with the forthcoming multiannual financial framework of the EU Cohesion policy) has to be defined with an emphasis on a participative approach and in compliance with the new forms of governance which include not only key stakeholders and development actors of the overall tourism industry, but also citizens (their representatives) and associations.

The above mentioned appears to be feasible in circumstances of raised accountability and ownership of the key policy makers and stakeholders in regard to the main goals and expected long term and sustainable impacts of the Strategy. In this regard, the implemented evaluation project, resulting with raised awareness, understanding and knowledge related to the purpose and goals of evaluating the tourism industry, as well as knowledge related to organizational learning and the strengthening of leadership and effective implementation of the Strategy will surely be useful in the process of promoting further positive change of the tourism policy.

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# THE IMPORTANCE OF GASTRONOMY AND CULINARY PRACTICES IN CREATION OF INTANGIBLE CULTURAL HERITAGE-BASED TOURISM PRODUCTS

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## Abstract

*Limited attention has been given to the potential of intangible cultural heritage (ICH) in the role of tourism product, especially as regards gastronomy and culinary practices being one of the six UNWTO's ICH categories. Gastronomy and culinary practices represent an important and irreplaceable part of a national cultural heritage and as such serve as an element of tourism destination differentiation. Building on the theoretical alignment between heritage tourism, food and culinary tourism and differentiation of tourism products this research examined tourist perception of ICH categories and tourist participation in workshops as ICH-based tourism products in order to determine which category is the most suitable for the potential use of ICH in creation of tourism products. Preliminary research (group interview) was carried out with experts in the field of tourism product creation, promotion and public relations from the Zagreb Tourist Board. Tourist perception of ICH was collected via face-to-face survey. On the basis of primary research and data analyses using descriptive statistics, the results indicate that among six different categories of ICH, tourists were the most familiar with the Croatian gastronomy and culinary practices, but showed the lack of knowledge regarding preparation of Croatian traditional food specialties. Furthermore, the majority of tourists would extend the stay in the destination in order to participate in the ICH-based tourism workshops. This research results demonstrate considerable significance of tourist's interests towards ICH-based tourism products. However, the results indicate that ICH is not sufficiently employed in the creation of ICH-based tourism products as they hold large potential on tourism market. Limitation of this study is reflected in the fact that it was carried out in only one tourism destination in Croatia, the city of Zagreb. The possibilities of broader research perspective would include a research to be conducted on leisure tourists during summer months in the Croatian coastal tourism destinations.*

**Key words:** gastronomy and culinary practices, intangible cultural heritage, tourist perception, tourism product

**JEL classification:** L83, M11



## Introduction

Growing segmentation of the global tourism market by means of demographic, socioeconomic and psychographic characteristics of tourists which includes tourists' motivation, hobbies, opinion, etc. (Poon, 1993) is a well-known fact. Accordingly, the challenge to create a unique and original tourism product appears to be rather demanding effort for tourism developers (Kesar, Matečić, Ferjanić Hodak, 2018).

In general, tourism system accentuates the importance of innovative and diverse tourism products that provide memorable experiences for various types of tourists (Xu, 2010). A distinctive tourism product being a complex amalgam of elements and experiences depends on the destinations' physical, environmental and socio-cultural characteristics or attributes (Jafari, 1982). Socio-cultural characteristics include the history, politics, art, economic activities, ways of life, monuments, individual buildings and built environment (Benur, Bramwell, 2015) or taken more narrowly from the perspective of culture, tangible and intangible cultural heritage. Gastronomy and culinary practices as a category of intangible cultural heritage (ICH) are important and irreplaceable part of a national cultural heritage and represent valuable attribute in the creation of tourism products. Generally, primary tourism products based on destination's attributes are not easily developed due to its multiple components. Smith (1994) emphasised five main elements of tourism product such as physical plant (natural environment), service, hospitality, freedom of choice and involvement. Furthermore many authors argue that an important feature of service products is consumers' participation while delivering services (Booms and Bitner 1981; Fitzsimmons and Sullivan 1982; Normann 1984; Silpakit and Fisk 1985, Smith, 1994). Broadly "for tourism, involvement is not simply physical participation, but a sense of engagement, of focusing on the activity- whether for pleasure or business" (Smith, 1994: 590). The involvement of tourists is the most important element in creation of intangible heritage-based tourism products since the core of ICH represents practices, representations, expressions, knowledge and skills. From the more narrow perspective, gastronomy and culinary practices represent knowledge and skills in traditional food preparation. If tourists would like to develop cooking skills and simultaneously learn about specific characteristics of Croatian food specialties as part of ICH they would need to be highly involved in a preparation of the dish thus discovering the skills necessary for such activity.

From the broader tourism development perspective, "the cultural heritage is one of the most important resources upon which travel is based and appeals to many underlying motives for travel" (Timothy, 2011: 2). For that reason, cultural heritage, as uniquely designed tourism products has been identified by many destinations as a key factor of market differentiation and image creation (Kesar, Matečić, Ferjanić Hodak, 2018). Tourism product has been defined both from the marketing and supply side perspectives (Xu, 2010) but the definitions were often criticized as having missed the essence of the tourism product concept (Smith, 1994). From the demand side perspective, tourism product is defined as "a complete experience that fulfils multiple tourism needs, and provides corresponding benefits" (Xu, 2010: 608). According to that definition, the definition of intangible cultural heritage-based (ICHB) tourism product can be formed. It could be stated that the ICHB tourism product is an experience of practices, representations, expressions as well as accumulation of knowledge and skills on the basis of intangible cultural heritage which provides multiple benefits to tourists. The ICH category of gastronomy and culinary arts is commonly associated with food preparation. However, special interest tourism often discussed within tourism literature and related to food is most frequently associated with terms such as *culinary tourism*, *food tourism*

or *gastronomic tourism* (Long, 2013, Horng and Tsai, 2012; Sanchez-Canizares and Lopez-Guzman, 2012; Ellis et al., 2018). In fact, some academics argue that these terms are very similar and often used reciprocally (Horng and Tsai, 2012, Ellis et al., 2018). However, these terms are applied to somewhat different contexts. Food in culinary tourism is understood as a mode of cultural experiences and cultural consumption thus representing a process of cultural learning and knowledge transfer (Horng and Tsai, 2010; Silkes, Cai, and Lehto, 2013; Smith and Xiao, 2008, Ellis et al., 2018). Accordingly it could be argued that ICH-based tourism products in form of workshops represent the essential ingredient of culinary tourism by establishing a platform not only for developing certain skills and accumulating knowledge but also for cultural learning. Nevertheless culinary tourism raises questions of intellectual property and copyrights connected to intangible cultural heritage (Long, 2013).

The paper is divided into five major parts. Section one introduces the topic of tourism products and the importance of product differentiation as well as the gastronomy and culinary practices as a category of intangible cultural heritage (ICH) and a valuable feature in the creation of tourism products. Section two describes the theoretical framework based on the literature review regarding the relationship between cultural heritage and tourism and positions the research on ICH according to recent developments in this field of research. Furthermore it analyses potentials of food tourism. The third main section provides the explanations of methods used in the primary research. The research results are presented in the fourth section. Section five interprets research implications and offers the paper's conclusions.

## **Theoretical background**

Heritage and tourism are intrinsically linked in a way that tourism is essentially responsible for establishing the concept of heritage (Gravari-Barbas, 2018) and some academics even describe it as "a heritage producing machine" (Gravari-Barbas, 2012). In addition, some research results demonstrate that more than 80% of all trips taken include some element of cultural heritage (Timothy, 2011). Moreover, statistics of international tourist arrivals in 2014 demonstrate that international cultural tourism arrivals accounted for 39.1% of all international tourist arrivals (UNWTO, 2018: 21).

The recognition of the significance of cultural resources as recreational and educational assets occurred in the 1930s while heritage as a usable asset has been researched from 1960s onwards. The issues directly linked to tourism such as visitor use, museum management, conservation, interpretation and authenticity were largely studied during the 1960s and 1970s (Timothy, 2018: 177). Nonetheless, heritage tourism as a primary field of study gained noteworthy academic attention in the 1990s. The descriptive approach to tangible cultural heritage research thus depicting its supply and demand is the most prevailing research approach in the 1980s as well as 1990s (Herbert, Prentice and Thomas, 1989). After the 1990s the studies gain more analytical insights into the research subjects (Timothy, 2018: 177).

As opposed to the research of tangible cultural heritage, ICH has been neglected for a longer period of time, especially the approach to protection and preservation (Vecco, 2010) and the academic research on intangible heritage and tourism is rather scarce. Furthermore, regardless of the growing literature on heritage tourism studies and tangible cultural heritage, "the research on ICH in tourism is still in its initial phase." (Kesar, Matečić and Ferjanić Hodak, 2018: 190). The context that supports this statement is the fact that ICH was defined in

Convention for the Safeguarding of Intangible Cultural Heritage (ICH) by the United Nations Educational, Scientific and Cultural Organization (UNESCO) quite recently in 2003. However, already in the 1994 the ICOMOS Nara Declaration on Authenticity acknowledged intangible heritage in heritage management for the first time (UNWTO, 2012: 9). As a repercussion of intangible heritage's endorsement, such expanded concept of cultural heritage has been incorporated in national and regional legislation with the intention to preserve and safeguard cultural heritage and broaden the scope of interventions to encompass intangible elements (del Barrio, Devesa and Herrero, 2012: 235). Since 2003, number of studies with the research topics such as cultural diversity, capacity-building and sustainable tourism, acknowledged the intangible heritage (UNWTO, 2012). It could be concluded that academic research as regards the relationship between ICH and tourism, notably in the field of social sciences, is inadequate.

Since 2003 discussions of issues such as the nature and the meaning of ICH have been increasing in the academic articles. The concerns range from its connotation and utility in European and other western contexts (Kurin 2004; van Zanten 2004; Aikawa-Faure 2009; Smith and Waterton 2009; Lähdesmäki 2016; Smith and Campbell, 2018) to consequences of the attempts to protect intangible heritage, such as petrification and commodification of living cultural expressions and associated cultural values (Sears 2002: 147; Amselle 2004; van Zanten 2004: 41; Brosius and Polit 2011; Akagawa 2014; Pietrobruno 2014; Smith and Campbell, 2018). Moreover, in some cases the intangible heritage is comprehended as political in its nature (Logan, 2007). In addition, the heritage discussions within Anglophone and western contexts have been profoundly criticized, especially in the extensive usage of the terms "intangible value" and "tangible value". These terms are characterized as being tautological and contradictory terms per se (Smith and Campbell, 2018; Kesar, Matečić and Ferjanić Hodak, 2018).

The UNESCO (2003) defines ICH as "the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage". ICH components are strongly established in societies and regions and, "represent critical factors for creating new global and competitive scenarios" (Cominelli and Greffe, 2012: 245). Mentioned components might represent important factors in the choice of tourism destination, its competitiveness and could have the ability to differ cultural tourism products either worldwide or locally sourced.

For the purposes of this research, the ICH and its classifications need to be clearly distinguished. As per UNWTO (2012, 3), the ICH classification is made up of six following groups: 1) handicrafts and visual arts that demonstrate traditional craftsmanship; 2) gastronomy and culinary practices; 3) social practices, rituals and festive events; 4) music and the performing arts; 5) oral traditions and expressions, including language as a vehicle of intangible cultural heritage; and 6) knowledge and practices concerning nature and the universe. Regardless of absence of gastronomy and culinary arts in direct ICHC classification, gastronomy has considerable role in cultural tourism activity in many destinations and consequently has been isolated from the category of "Social practices" and highlighted by the UNWTO (2012: 3) as a distinct category of "Gastronomy and culinary practices". Therefore ICH classification found by the UNWTO has been selected as starting point and basis for the following analysis.

Despite the upheavals and worldwide expansion of tourism activity, negligible figures of empirical studies related to ICH and tourism can be found (Lopez-Guzman and Gonzalez Santa-Cruz, 2016), especially associated to ICH and creation of the city tourism product (Kesar, Matečić, Ferjanić Hodak, 2018). Previous research of ICH and city tourism have been dealing with the interpretative strategies for cities which highlight the value of ICH for marketing purposes based on case studies in Amsterdam, Genoa and Leipzig (Mitsche et al., 2013), festival of the Courtyards in the city of Córdoba, Spain (Lopez-Guzman and Gonzalez Santa-Cruz, 2016), analyses of tango as a tourism resource in the city of Buenos Aires, Argentina (Gómez Schettini et al., 2011), and the role and protection of ICH in the urban context (Ross, 2019). Other ICH tourism topics include the analysis of intangible heritage and visiting attractions (McKercher and du Cros, 2006), roles of ICH in tourism in natural protected areas (Esfehiani and Albrecht, 2019), the Jemaa el Fna Square in Marrakech, Morocco (Schmitt, 2008), the effect of food experience on tourist satisfaction in Indonesia (Babolian Hendijani, 2016), the relationship between tourism and flamenco as ICH in the region of Andalusia, Spain (Aoyama, 2009), and Bedouin of Petra and Wadi Rum in Jordan as ICH (Bille, 2012). The greater number of presented research is qualitative and descriptive in its nature.

Furthermore as regards the ICH category of gastronomy and culinary practices which is closely related to food, the research has showed that food and drink can motivate travellers to visit a specific destination (WFTA, 2016). The data showed that 80% of leisure travellers had been motivated to visit a particular destination because of a culinary activity or attraction (WFTA, 2019). Moreover food and drink can provide memorable and authentic, sustainable, or unique experiences to visitors as well as educate them (WFTA, 2019). On the other hand this special interest tourism provides important outcomes for residents too. The research has demonstrated that local residents and their businesses can benefit from food tourism generating income and thus positive economic impact on a tourism destination (WFTA, 2019).

## **Methodology**

### ***Measurement***

For the purposes of a larger study, the authors developed highly structured questionnaire containing totally 31 questions regarding tourists' perception of Zagreb's intangible cultural heritage and the quality of heritage-based tourism products, as well as questions related to their socio-demographic characteristics. Among six different categories of ICH one of the observed categories for the purposes of this small-scale research, was gastronomy and culinary practices. Moreover, the authors used only nine out of 31 questions for the data analysis. The questionnaire was adopted on the basis of a thorough literature review regarding inter-linkages between tourism and intangible cultural heritage. As a preliminary research, the method of group interview was applied. The experts in the field of tourism product creation, promotion and public relations from the Zagreb Tourist Board were interviewed. Based on the findings, the first version of the questionnaire was created in the Croatian language. The questionnaire was tested. Questionnaires' imperfections were identified and the new version was created. The questionnaire was translated in English and Italian language. All variables were measured using 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

### ***The sample size***

Since the research was conducted in the city of Zagreb during March, 2017 the size of the sample was calculated on the bases of the total number of tourist arrivals in the city of Zagreb during March 2016 which was in total 66 202 tourists (Croatian Bureau of Statistics, 2016). The sample size was determined on the 95% confidence level and 5% margin of error which amounted for 382 tourists.

### ***Data collection***

The authors collected data from an on-site survey. International and domestic tourists during their visit to the most popular tourist attractions in the city centre of Zagreb were interviewed by trained graduate students, as they voluntarily participated in the survey during March 2017. A total of 638 questionnaires were returned. Screening questions were used to determine whether the respondent could represent the study sample. These steps excluded 7 responses for a final effective sample of 631 cases. Data were analysed using descriptive statistics with the support of SPSS 17.

## **Research Results**

The profile of respondents is the following: 53.6% were females, and 46.4% males. The largest age group were tourists between 21 and 30 years old (51.2%), followed by 14.4% of 31 to 40 years old respondents and 14.3% were younger than 20 years of age. The majority of respondents had bachelor degree (38.5%) and master (19.3%). The 23.5% of respondents had personal monthly income lower than 500 EUR, while 24.7% of respondents did not wish to answer this question. The sample consisted of 25.4% domestic tourists and the majority of them were international tourists (74.6%) from 54 different countries (Table 1).

*Table 1. Profile of respondents*

Characteristics	Frequency	Percentage (%)
Gender		
Male	293	46.4
Female	338	53.6
Total	631	100.0
Age (Years)		
0 – 20	90	14.3
21 – 30	323	51.2
31 – 40	91	14.4
41 – 50	52	8.2
51 – 60	41	6.5
61 and more	34	5.4
Total	1.057	100,0
Origin		
Domestic	160	25.4
International	471	74.6
Total	631	100.0

Characteristics	Frequency	Percentage (%)
Level of education		
High school degree or less	126	20.0
College degree	115	18.2
Bachelor degree	243	38.5
Master degree/ university specialist	122	19.3
PhD	25	4.0
Total	631	100.0
Personal monthly income		
Less than 500 EUR	148	23.5
500 - 1000 EUR	123	19.5
1000 - 2000 EUR	97	15.4
2000 - 3000 EUR	50	7.9
3000 EUR or more	57	9.0
Unknown	156	24.7
Total	631	100,0

The respondents' perception regarding familiarities with six different categories of ICH was conducted on 407 responses, and presented in Table 2. In general, majority of respondents (55.8%) are not familiar with any category of ICH in Zagreb. Among those who are familiar (44.2%) with the Zagreb's ICH, they are familiar the most with the gastronomy and culinary practices, followed by handicrafts and visual arts (10.8%).

*Table 2. Familiarity with categories of ICH*

Question	Category of ICH	N	%
What categories of ICH in Zagreb are you familiar with?	Handicrafts and visual arts that demonstrate traditional craftsmanship	44	10.8
	Gastronomy and culinary practices	<b>56</b>	<b>13.8</b>
	Social practices, rituals and festive events	17	4.2
	Music and the performing arts	36	8.8
	Oral traditions and expressions	10	2.5
	Knowledge and practices concerning Nature and the universe	17	4.2
	Not familiar with any	227	55.8
	Total	407	100.0

For the question regarding respondents' perception of six different categories of ICH, the highest value of the arithmetic mean was recorded for the gastronomy and culinary practices (1.57), while the standard deviation was 1.44 (Table 3).

*Table 3. Perception of gastronomy and culinary practices*

Question	Statement	N	%	$\bar{x}$	Sd
How well do you perceive gastronomy and culinary practices in Zagreb?	Not perceived at all	252	39.9		
	Not perceived	48	7.6		
	Neither not perceived nor perceived	102	16.2		
	Perceived	180	28.5		
	Very well perceived	49	7.8		
	Total	631	100.0	1.57	1.44

Even though respondents are familiar the most with the ICH category of gastronomy and culinary practices there is a lack of knowledge regarding the preparation of Croatian food specialities. Out of 621 respondents, 293 of them or 47.2% who answered this question are not familiar with the preparation of Croatian food specialities, while 22.7% are neither familiar nor unfamiliar. Only 30.1% of respondents are familiar with the observed category. The arithmetic mean of the responses is 2.65, with the standard deviation of 1.44 (Table 4).

*Table 4. Familiarity with preparation of Croatian food specialities*

Question	Statement	N	%	$\bar{x}$	Sd
How familiar are you with making Croatian food	Not familiar at all	205	33.0		
	Not familiar	88	14.2		

specialities?	Neither unfamiliar nor familiar	141	22.7		
	Familiar	95	15.3		
	Very familiar	92	14.8		
	Total	621	100.0	2.65	1.44

The last finding of this research is related to the extension of respondents stay in Zagreb, in order to consume ICH-based tourism products and participate in ICH-based tourism workshops. Nearly half of them (48, 8%) would extend their stay in the destination in order to consume this kind of product or participate in the workshop. The arithmetic mean of the responses is 3.38, with the standard deviation of 1.30 (Table 5).

*Table 5. Extension of stay in the destination*

Question	Statement	N	%	$\bar{x}$	Sd
Would you extend your stay in Zagreb in order to participate in ICH-based tourism products and workshops?	Not at all	75	12.3		
	No	69	11.3		
	Maybe	167	27.5		
	Yes	146	24.0		
	Yes, definitely	151	24.8		
	Total	608	100.0	3.38	1.30

## Research implications and conclusion

The study tried to address the research gap between intangible cultural heritage and the potentials of tourism product creation considering the fact that the exploration of such topic, especially in the field of social sciences is limited. Furthermore the research focused on the perception of ICH categories among tourists in Zagreb in order to detect the most recognized or familiar category. The most recognized category represents the most favourable ICH which could be used for certain ICHB tourism product development.

The unfortunate reality is that the majority of tourists that have chosen to visit Zagreb, Croatia as a cultural tourism destination of the growing popularity are quite unfamiliar with Zagreb's ICH. This indicates either that ICH is insufficiently employed in the creation of tourism products or implies a lack of marketing and promotional activities regarding the ICH in the overall promotion of Zagreb's cultural heritage. Moreover, the research demonstrates that among six different categories of ICH, the category of gastronomy and culinary practices is the most recognized one and as such offers considerable opportunities for cultural tourism product differentiation at the local level. Additionally assuming that tourists are motivated to visit a particular tourism destination because of a culinary activity or attraction, ICHB tourism products based on gastronomy and culinary practices can be considerable pull factor. Aforementioned products could be organized in the form of culinary workshops where tourists become highly engaged in preparation of traditional food and therefore involved in the experience itself. This experience would provide the accumulation of knowledge and development of skills which in turn could enrich tourist personalities. The preparation of traditional Croatian food specialities should therefore become a cornerstone for culinary tourism workshops in which not only foreign but especially domestic tourists could participate. Considering the fact that tourism destinations planning and development ambitions have demonstrated a tendency towards the increase of tourist's stay in a destination one of the results of this research demonstrates that almost majority of tourists would extend

their stay in the destination in order to be able to participate in ICHB tourism products and workshops. Among other possibilities, the means to achieve aforesaid goal is the creation of ICHB tourism product. Those workshops can provide, as WFTA (2019) states, memorable, authentic, sustainable, and unique experience, and at same time educate tourists. The wider discussion of research results is twofold. It extends towards ICHB tourism products as the means to achieve sustainable tourism development goals especially in the area of the socio-cultural sustainability but more practically towards travel agencies or destination management companies who are largely responsible for tourism products creation, its promotion and distribution. Firstly, this type of tourism product represents a favourable tool to manage and obtain socio-cultural sustainability which invokes the preservation of cultural traditions and enforces knowledge transfer onto future generations. In addition it provides memorable experiences not only to international tourists but especially domestic ones. Secondly, ICHB tourism products created by travel agencies are usually offered to tourists who visit the destination in organized manner as additional activity during conferences or other business events in Zagreb. Since numbers of individual tourist arrivals exceed those of organized travel in Croatia (Croatian Ministry of Tourism, 2018: 19) it would be advisable to promote those kinds of products to a wider public on main Croatian tourism generating markets. This practice would, in turn, enlarge ICH visibility on foreign tourism markets. Furthermore, Zagreb Tourist Board together with Croatian National Tourist Board should increase the efforts to promote ICHB tourism products on domestic tourism market particularly in the city of Zagreb. Joint promotional activities of travel agencies and tourist boards should contribute to the improvement of ICH visibility on tourism market.

Limitation of this study is reflected in the fact that it was carried out in only one tourism destination in Croatia, the city of Zagreb. The possibilities of broader research perspective would include a research to be conducted on leisure tourists during summer months in the Croatian coastal tourism destinations. Based on the above, the future research should focus on different types of tourism destinations, and tourists, as well as investigate possibilities other five categories of ICH can offer within tourism product creation.

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# INFLUENCE OF HOTEL ACCOMMODATION CAPACITY ON AVERAGE SPEND PER TOURIST

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## Abstract

*Tourism is the key sector of the Croatian economy. Incomes from tourism in 2017 amounted to almost HRK 80 billion (HTZ), which further points to the importance and impact tourism has for the Croatian economy. The share of tourism in total GDP in 2017 was 19.6 percent (HTZ). That is why it is really important in which way will tourism develop in Croatia. Secondary research of accommodation capacities in tourism and spend per tourist have been carried out in this paper. The subject of the paper is comparing the share of hotel accommodation in Croatia's total accommodation capacity with selected countries. The main goal of the research is to improve the total spend per tourist in relation to the type of accommodation.*

*Hypothesis of this research paper is; If the capacity of hotel accommodation and the share of hotel accommodation in the total accommodation capacity of a country are increased, the share of total tourist spending per capita in total tourist spending will increase.*

**Keywords:** hotel, tourism development, spend per tourist

**JEL classification:** Z32 Tourism and Development

## Introduction

Tourism is a social and economic phenomenon that heavily influences contemporary society (Crick, 1996). According to the definition of Aiest (International Association of Scientific Experts in Tourism) and the World Tourism Organization, tourism is a set of relationships related to the activities of persons traveling and staying in places outside their permanent residence, for a continuous and up to one year of work leisure time, business and other reasons (Čavlek, Vukonić, 2001). The secret for a successful destination is to approach the right target market and to provide an appropriate combination of local tourism products and services (Buhalis, 2000). Tourism is a sector that is rising and will continue to grow in the future. Nowadays, tourism industry can be considered as business behavior since it might influence the development of a local economic. Destinations are a large entity with sets of material and non-material elements (Florek, 2005). Every destination is unique because its resources construct a unique identification. Tourism destination marketing is one vital factor that affects the development and management of destination images.

If we look at today's features of Croatian tourism, it is necessary to emphasize the process of transition after the establishment of the Croatia independence that has marked the last twenty years of the society. During this period, marked by the War (Domovinski rat), non-transparent privatization and other unfavorable factors, tourism in Croatia has grown and strengthened and proved to be one of the strongest economic sectors. After the global crisis and the entry into the European Union, new challenges and opportunities that can be maximized today are a challenge for Croatian tourism. At this time, Croatia is more attractive to tourists due to the quality of its natural space and its rich cultural and historical heritage, than the quality of tourist attractions. Lack of awareness of the need for strategic management of tourist destination in Croatia should be sought mostly in the insufficient knowledge of tourism development issues, in particular problems of negative externalities by virtually all destination development stakeholders, inadequate organizational and / or management skills of the public authorities, socially irresponsible and short lack of entrepreneurial spirit of the local population, insufficient co-operation and / or insufficient understanding of the individual roles of the development process stakeholders, and in particular the public authorities, tourist enterprises and private entrepreneurs (Čorak, 2011).

Therefore, as one of the main reasons why Croatia is now more attractive to tourists due to its natural and cultural wealth than because of its quality tourist offer it is an inadequate development concept. Characteristics of Croatian tourism today are some of the main comparative advantages that are worth mentioning: tourist facilities located in attractive locations, already mentioned cultural and historical heritage, preservation and beauty of nature, mild climate and long tourist tradition. While the main negatives, apart from the lack of qualitative tourist attractions, are still seasonal in business, too much private accommodation, gray economy, insufficient focus on diversification of tourist products and so on.

### ***Competitiveness of Croatia as a destination***

Since 2007, the World Economic Forum (WEF) has published the Tourism Competitiveness Index which measures the success of various factors and policies that enable the sustainable development of the tourism sector and thus affect the competitiveness and development of the observed country. Measurement of the index is organized into four main categories: business environment, relation to tourism, infrastructure and natural and cultural assets. Furthermore, data sub-categories are collected such as security, health, prices, openness, transport infrastructure, information literacy, etc. The 2015 survey encompassed 141 countries of the world. The most competitive country in the world in 2015 was Spain, which was the first for the first time. It is characterized as the third most visited country in the world. The second place was taken by France. Former Switzerland's longest-running winner, took sixth place. Croatia's position compared to the previous year did not change considerably and it occupied 33rd place. As the best quality in Croatia, it is mentioned the tourist infrastructure where quality offers and diversification of hotel accommodation are recognized. The best thing is the offer and presence of rent-a-car companies and the possibility of paying credit card service. Also, Croatia has achieved a good position in the category of wealth, cultural and national goods, destination security. Croatia is characterized as a destination with good health care and IT literacy. The worst position Croatia has taken in is business environment, price competitiveness, labor market and poor political strategy towards tourism. Of the neighboring countries, Italy took the 8th position, while Slovenia 39th.

Europe has maintained its leading position as a tourist region. It is characterized by rich cultural heritage, first class tourist infrastructure, exceptionally strong health and hygiene standards and thanks to the Schengen Agreement, high degree of integration and openness. The Table 1 below in the text presents the incomes in the largest tourist countries of the EU from international tourism.

*Table 1: Incomes in the largest tourist countries of the EU from international tourism*

		<b>Incomes from international tourism in mld. euros</b>		<b>Share of EU income from international tourism in%</b>	
		2010.	2016.	2010.	2016.
1.	Spain	41,2	54,7	17,7	18,2
2.	France	36,5	38,4	15,7	12,8
3.	Italy	29,3	36,4	12,6	12,1
4.	Germany	26,2	33,8	11,3	11,3
5.	Austria	14,0	17,4	6,0	5,8
6.	Greece	9,6	13,2	4,1	4,4
7.	Netherlands	8,9	12,7	3,8	4,2
8.	Portugal	7,6	12,7	3,3	4,2
9.	Sweden	6,3	11,4	2,7	3,8
10.	Belgium	8,6	10,5	3,7	3,5
11.	Croatia	6,1	8,7	2,6	2,9

*Source: World Tourism Organization (2018.): European Union Tourism Trends, UNWTO, Madrid, <https://www.e-unwto.org/doi/pdf/10.18111/9789284419470>*

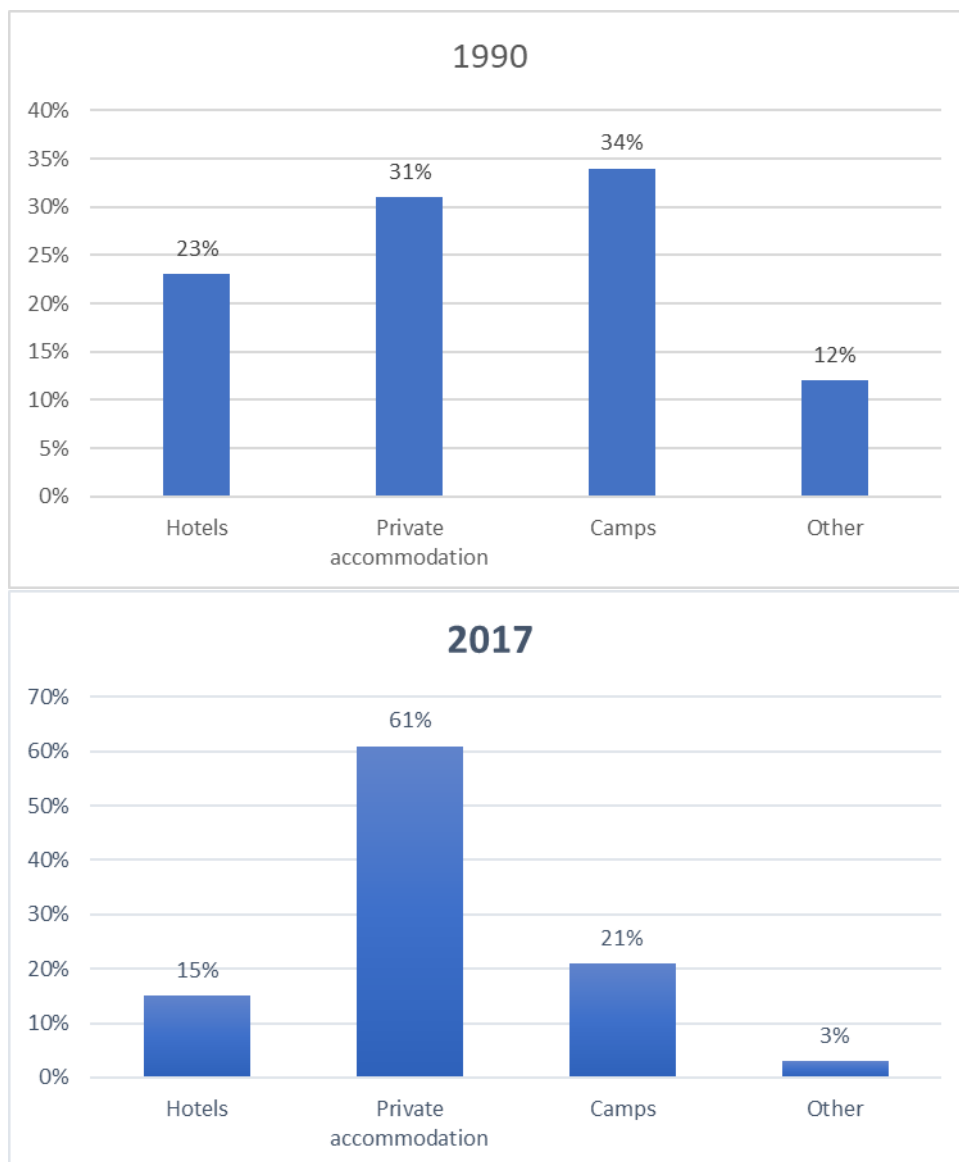
Spain is on top with biggest incomes from tourism, followed by France and Italy. Croatia, looking closer to the nearest and neighbouring countries, is far below Italy and worse than Austria.

### **Secondary Research**

Secondary research of accommodation capacities in tourism and spend per tourist have been carried out in this chapter.

The development of tourism in Croatia was largely left to itself, leading to a high share of private accommodation and unplanned apartment boom which, among the other things, influenced the creation of seasonal limit offers with no added value and attractiveness. In order to establish the current level of development, it is necessary to look back and find the causal links that connect the past and the present and affect the future of Croatian tourism.

*Figure 1. Structure of accommodation capacities in 1990 and 2017*

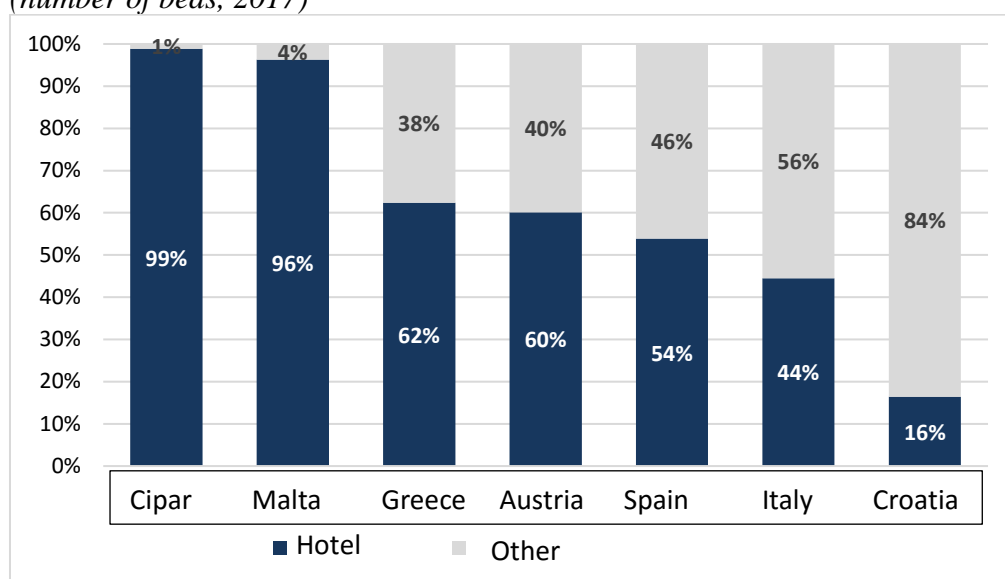


Source: Državni zavod za statistiku, 2018.

The Figure 1 shows that private accommodation is the most common form of accommodation in Croatia. Hotel accommodation mentioned in this paper as one of the key for development, occupies only 15% of the total accommodation structure. The existing structure of a tourist accommodation in which hotels occupy only 15%, is negatively reflected in the duration of the season. The overwhelming share of private accommodation prevents quality management of the destination and there is no management strategy for them. Also, the disadvantage is the lack of competitive attractions in the form of congress centers, wellness facilities, golf courses, theme parks etc. The market structure is dominated by large business entities which defines the offer, and in this environment new entrepreneurial projects and potential investors find themselves in trouble.

The subject of the paper is comparing the share of hotel accommodation in Croatia's total accommodation capacity with selected countries.

Figure 2. Share of hotel accommodation in total accommodation in selected countries (number of beds, 2017)



Source: Eurostat

Comparing to selected countries, Croatia has the lowest share of hotel accommodation, which is over two and half times lower than Austria, Greece, Spain or Italy.

TOMAS research is a continuous study of the characteristics of tourist accommodation and travel in Croatia, which has been run by the Institute of Tourism since 1987. The most recent published survey of tourist attitudes and spend is TOMAS Summer 2017 - Attitudes and spend of tourists in Croatia. The full text of the tenth study of TOMAS Summer was published in the book, which was conducted on a sample of 5,950 examinees / tourists in 67 places in the area of seven coastal counties from July to October 2017. Apart from the level of all seven counties, the results of the survey were also presented to countries of origin of tourists (for 18 broadcasting markets), type of accommodation (for hotels, camps and private accommodation), County of residence (for each of the seven coastal counties) and seasons (for VII and VIII and for IX and X months). Among the main goals of the research are the identification of the market profile of the guest, the identification of the advantages and disadvantages of the tourist offer, the identification of spend characteristics, domestic and foreign demand trends. The study covered seven coastal counties: Istra, Primorje-Gorski Kotar, Lika-Senj, Zadar, Šibenik-Knin, Split-Dalmatia and Dubrovnik-Neretva in the period from July to October 2017. The method used in research was a personal interview of 5950 respondents in 67 places. Accommodation facilities included are: hotels, camps and private accommodation for the domestic guests and guests within the 20 most important broadcasting markets. The stratification of the random sample was performed according to the county, the type of accommodation and the country of origin of the tourist. Of the accommodation categories, the total daily spend per tourist is; most guests from hotel accommodation spend 123.8 euros, private accommodation 75.7 euros, while guests from camps spend 58 euros a day.

Table 2. Average daily spending of incoming tourists who stayed in accommodation facilities in Croatia in 2017

Total		Hotels		Private accommodation		Camps	
euro	%	euro	%	euro	%	euro	%



<b>Total average daily spending</b>	<b>79,7</b>	<b>100,0</b>	<b>123,8</b>	<b>100,0</b>	<b>75,7</b>	<b>100,0</b>	<b>58,0</b>	<b>100,0</b>
Accommodation with food included	39,0	48,9	72,9	58,9	31,6	41,8	29,1	50,2
Restaurants and bars	13,2	16,5	17,0	13,7	14,5	19,1	8,7	15,0
Stores	12,2	15,3	14,0	11,3	13,1	17,3	9,5	16,4
Culture and fun	2,8	3,5	3,3	2,7	3,0	4,0	2,1	3,6
Sport and recreation	3,1	3,9	4,0	3,3	3,1	4,1	2,6	4,5
Excursions	2,7	3,4	3,5	2,8	3,1	4,1	1,6	2,7
Local transport	4,8	6,0	5,9	4,8	5,4	7,1	3,2	5,5
Other	1,9	2,4	3,1	2,5	1,9	2,5	1,2	2,1

*Source: Institute of Tourism (2018). TOMAS Summer 2017 - Attitudes and spend of tourists in Croatia, Zagreb*

The analysis of spend per tourist includes daily spending during the stay in the destination per person. All costs are expressed in euros. Daily spending during the stay in the destination per person are shown for all tourists and by type of accommodation (hotels, camps and private accommodation). Total costs and their structure by type of service (catering, trade and other services) are shown.

The average daily spending per tourist in 2017 was 79 euros per person. In the structure of average daily spending, 49% refers to accommodation, 17% to food and drink services outside accommodation, 34% to all other services (stores, culture, entertainment, sport and recreation, excursions, local transport and other services).

Hotel guests (124 euros per day) spend the most in the destination, followed by guests in private accommodation (76 euros) and campsites (58 euros). The share of spending in restaurants and bars in the structure of daily expenditure is 73% in hotels, 65% in camps and 61% in private accommodation.

The biggest difference in spending between different tourist segments relates to accommodation services. Spending on hotel accommodation is 87% above the average, while spending on private accommodation is lower by 19% and in camps by 25% than average.

Below is a comparison of Croatia with selected countries - Italy and Austria.

*Table 3. Spend per tourist in selected countries*

	Italy (2010.)		Austria (2015.)		Croatia (2011.)	
	mln. eura	%	mln. eura	%	mln. eura	%
<b>Total</b>	<b>114.016</b>	<b>100</b>	<b>38.877</b>	<b>100</b>	<b>8.582</b>	<b>100</b>
Accommodation	50.245	44	11.277	29	2.341	27
Food and drink	17.031	15	11.243	29	1.857	22
Transport	14.913	13	5.781	15	436	5
Culture, sport and recreation	5.680	5	3.776	10	372	4
Other	26.147	23	6.800	17	3.576	42

*Source: The First Italian Tourism Satellite Account, Year 2010, (<https://www.istat.it>), Tourism Satellite Account for Austria, Statistics Austria (<https://www.statistik.at>), Državni zavod za statistiku, (<https://www.dzs.hr/>)*

Earlier in the paper the structure of accommodation in the mentioned countries is shown and it was found that in Croatia hotel accommodation is even two and half times smaller than in Austria and Italy. In the table above, it is evident that the spend per tourist is higher when the share of the hotel accommodation in the total accommodation capacity is higher, confirming

the hypothesis; If the capacity of hotel accommodation and the share of hotel accommodation in the total accommodation capacity of a country are increased, the share of total tourist spending per capita in total tourist spending will increase.

### **Conclusion**

At this time, Croatia is more attractive to tourists due to the quality of its natural space and its rich cultural and historical heritage, but the quality of tourist attractions. Apart from the lack of quality tourist attractions, as well as the seasonality of business, the large share of private accommodation, the gray economy, insufficient focus on diversification of tourist products, etc. Private accommodation is the most common form of accommodation in Croatia with as much as 61% of the total accommodation capacity. Hotel accommodation, which is mentioned in this paper as one of the key for development, occupies only 15% of the total accommodation structure. Croatia has the lowest share of hotel accommodation, which is over two and half times smaller than that of Austria, Greece, Spain or Italy. The average daily expenditure per tourist in Croatia in 2017 was 79 euros per person. The biggest difference in spending between different tourist segments relates to accommodation services. Spending on hotel accommodation is 87% above the average, while spending on private accommodation is lower by 19% and in camps by 25% than average. Compared to Croatia, the selected countries - Italy and Austria - show that total tourism spending is higher when the share of hotel accommodation in the total accommodation capacity is higher. With the above mentioned research we can confirm the following: If the capacity of hotel accommodation and the share of hotel accommodation in the total accommodation capacity of a country are increased, the share of total tourist spending per capita in total tourist spending will increase.

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# THE ROLE OF GLAMPING IN DEVELOPMENT OF CAMPING TOURISM OFFER – POSSIBILITIES AND FUTURE PROSPECTS IN THE REPUBLIC OF CROATIA

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## Abstract

*Global tourism has experienced continuous growth and significant improvement in the quality of tourist offer. The contemporary tourists are experienced, well informed travelers that are looking for genuine and authentic experiences. Thus, their needs and wants are becoming more complex. These trends in contemporary tourism have resulted in a growing demand for new, diverse types of accommodation. Furthermore, the growing trend of returning to nature and the rising ecological awareness of tourists have resulted in increasing demand for camps and similar type of accommodation. Camping is frequently stereotyped as 'poorman's tourism' but it is primarily a lifestyle characterized by pure enjoyment in nature, simplicity and a refined sensitivity toward the environment. Traditional camping has always satisfied the need of tourists to spend their time in nature, but this type of accommodation was unacceptable for a great number of people. Due to that glamping started to develop. It is a specific form of camping which neutralizes its drawbacks by providing a high level of comfort. Glamping contributes to sustainable tourism development, promotion of tourist destinations, raising the level of accommodation quality in the destination, as well as diversity and higher level of quality of the overall tourist offer. Due to favorable traffic position, mild climate and rich natural, cultural and historical heritage in still numerous preserved areas, Croatia has tremendous potential for development of glamping. The aim of the research is to analyze the knowledge about glamping and the possibilities of developing this type of accommodation in Croatia. Also, analyzed business cases from practice, wants to encourage experts to think about the new concept of sustainable tourism development, enriching the accommodation offer with glamping. In order to explore role of glamping in development of a tourism offer and its popularity on tourism market, a comparative analysis of glamping offer worldwide was conducted on relevant online platforms specialized in mediating this type of accommodation in tourism. Also, it was conducted an interview with an expert, leader of numerous glamping projects in Europe. The research proves that future, sustainable tourism development in Croatia can be based on this segment. Furthermore, establishment of clear legal framework in a long term would enable increase of competitiveness of whole tourism product.*

**Keywords:** glamping, trends, tourist offer, Croatia

**JEL classification:** Z32

## Introduction

Contemporary trends in tourism contribute to an increase in demand for accommodation facilities in unique environments of preserved nature. Health and environmental consciousness contribute to the popularization of glamping on the tourism market. Glamping accommodations such as luxurious tents and similar facilities, equipped as top hotel suites are also called five-star camping (Latzka, 2011). Although the stay in luxurious tents was well known much earlier, the term *glamping* is linked to the urban generation of modern tourists seeking higher quality for their money. Furthermore, the generation of millennials, born in 1980-2000, was searching for a way to spend their annual holidays different from their parents. Attractive locations of glamping accommodations are an inexhaustible source of inspiration for inevitable social networking (Glamping Association, 2018). Excellent prerequisites, and the unique micro-location in the vicinity of the main tourist flows and a developing entrepreneurial initiative, open significant opportunities and prospects for the development of glamping in Croatia.

## **Fundamental Determinants of Glamping in the Tourist Offer**

### *Terminological determination*

Many people associate camping with unpleasant experiences such as unwanted storms and other weather inconveniences, permeable tents, questionable quality of the food, various insects etc. For many, such an impression is gained by the camping experience, so they often think of camping with distrust and misunderstanding, unaware of the new possibilities of camping and accommodation in extremely attractive and spacious luxury tents, bungalows and similar accommodations. In recent years, guests who want to stay in nature can enjoy in the growing number of glamping destinations around the world. These are atypical campsites with luxurious accommodation in nature that offer many thematic arrangements and often are opened all year round (CCU, 2011). Glamping turns wild and untouched nature into an attractive tourist destination for people who are not fond of traditional camping. Entrepreneurs in tourism see glamping as a possibility of extreme transformation of existing camps and as a strategy that will enable them to compete and further develop (Carter, 2011). The term "glamping" is a combination of words "glamorous" and "camping" and is defined as a form of camping involving accommodation and facilities more luxurious than those associated with traditional camping (Oxford Dictionaries). The expressions like boutique camping, luxury camping, and comfortable camping are sometimes used as synonyms (MacLeod, 2017: 533). In the Croatian language, the term is taken from the English language, so in the Croatian laws related to tourism, the term glamping houses is used. The Croatian legislation defines the glamping house as "mobile camping equipment made of solid material that is not firmly tied to the ground, in an unusual shape or laid out in an unusual manner in space (e.g. under the ground, on pillars, on the tree, in the water, in the rock etc.) with or without a bathroom. Though it may sound contradictory, glamping is the place of encounter of preserved nature and modern luxury. The Glamping Hub speaks of glamping as an experience of a unique construction and nature with a level of comfort which is usually provided by the hotels, with the unrepeatable experience of staying in a beautiful environment without sacrificing any comfort. The guest can enjoy beautiful views, unique structures and buildings and hidden landscapes, while resting in a comfortable bed, luxurious bath or spa center. Glamping accommodation is based on the harmony of nature, with an emphasis on a five-star experience. Glamping Hub defines accommodation as a destination and not just one part of the journey as a place for sleep over, but an integral part of the luxurious experience that allows guests to gather unforgettable moments. Glamping is also called elite version of well-

known and popular camping and can be considered as special form of rural tourism since it focuses on a unique landscape and natural environment. On the other hand, its main goal is not to introduce the guest to the life of the local population in the agricultural economy, as is the case with typical rural tourism facilities. In its various manifestations, glamping represents an innovative way of valorizing unique natural landscapes. In the context of this definition, it is worth mentioning the need for diversity, environmental care and re-disclosure of nature, followed by transformation and new rural perception that together positively contribute to the diversification of tourist offer. All of these are united in glamping (Boscoboinik and Bourquard, 2012). Also, glamping can be defined as a tourist or residential resting place designed and constructed according to the principles of nature protection and specific cultural environment. In addition, it offers stylish and luxurious comfort and a philosophy of living for a permanent or shorter stay in a truly pure natural environment (Dimnik, 2016). Glamping is not just a few luxuriously designed tents or other accommodation units in nature, but a story, an integrated project, and a comprehensive, sustainable, complex, integral package with a wide range of services.

### ***The origin and the development of glamping***

Although glamping often represents a relatively new trend that has only recently emerged and experienced a rise in the 21st century, its origin in a very similar form goes far in history. In the course of history, travelers of high social status were forced to spend some time in places outside a permanent residence where there was no firm accommodation facility. In the Ottoman Empire, rulers traveled together with the army to wars and conquest far from their homes. Given that such trips were often long lasting, the Sultans did not want to sacrifice the luxury they enjoyed in their homes. Therefore, spacious luxury tents that resembled portable palaces were made for them, decorated with silk and other expensive fabrics. This can be considered the beginning of glamping (Sakáčová, 2013). A similar form of glamping is mentioned in the 16th century in Europe, more precisely in Scotland, where King James V travelled with his mother and papal representative to today's Highland Perthshire. On this occasion, Duke of Atholl produced a luxurious hut where they stayed during the visit and enjoyed all the comfort they had in their palace (Lindsay, 2003). The next stage in the development of glamping comes from the journeys of British and American aristocrats to African safari in the beginning of the 20th century, where they refused to sacrifice the luxury and comfort they enjoyed every day (MacLeod, 2017). Their demands were perfectly fulfilled with luxurious canvas tents with all the amenities they desired, which is one of the characteristics of glamping. For every tourist it took up to 60 local workers to carry their personal belongings, tents, equipment, and food supplies (Bull, 1992). So, the old glamping form had all the most important characteristics of glamping. The tourists have enjoyed the preserved nature, the luxury of the accommodation and the accompanying facilities at the same time. Today's glamping on African safari is very similar, considering that today the development of modern technology enables even more content and higher quality of service. As an example, can be mentioned &Beyond Serengeti Under Canvas, a luxury mobile glamp with canvas tents in the national park Serengeti in Tanzania. Despite being in an isolated location, guests are guaranteed the modern technology and comfort they enjoy in the urban environment. So, the idea of glamping is not entirely new, but the term glamping, which is only ten years old, continues to grow in popularity. The trend of modern glamping has begun in Great Britain and Ireland, driven by the trend of expansion of the music festivals and with a greater number of older participants. In the beginning, music festivals were visited by very young people with limited budgets, but the increasing number of participants who were over thirty years old and had higher disposable income as well as greater desire for comfort,

affected that the tents at festivals' camps became more spacious, more comfortable and more luxurious (MacLeod, 2017). Glamping has developed as a more luxurious pandan to campsites in places where many outdoor events, open air festivals, big concerts etc. are taking place, but today formed another unusual part of the tourist offer. After Great Britain and Ireland, it soon spreads to the United States where the West Coast is the most popular glamping area (MacLeod, 2017). The development of glamping was further boosted by tourism entrepreneurs who were not necessarily at the most attractive tourist locations and therefore wanted to find a market niche that would involve new, wealthy clients looking for luxury accommodation, rich content and gourmet food, and willing to pay higher price for such service. Such example are entrepreneurs in tourism located in the interior of the countries, not at the coast itself, which have the interest to make the accommodation facility a tourist attraction.

### ***Types of glamping accommodation***

At the beginnings of modern glamping, many faced the shortage of quality tents, but nowadays there is an increasing number of companies producing large tents of different styles and shapes, both in Europe and in the world. Some of the well-known varieties and types are: the so-called Mongolian tents, round tents with flat vault and roof openings; large tents in the shape of a dome; bell tents etc. There is also a wide range of unique mobile homes, log cabins and other buildings that can fit into a natural environment and a specific location. Given importance of the connection to nature, in a preserved and autochthonous setting, many types of glamping have found inspiration in primitive or traditional homes such as Mongolian tents, Indians' tents, igloos taken from Eskimos, etc. As the largest intermediary in selling glamping accommodation, Glamping Hub offers more than 12.000 accommodation facilities in more than 80 countries. To help find a preferred accommodation, Glamping Hub classifies accommodation facilities in 28 groups (Glamping Hub, 2019). By analyzing and doing research, a simplified classification of glamping accommodation can be done: 1. glamping domes, 2. tents (bell tents, yurts, safari tents, tipis, hybrid tents), 3. cottages and huts (wooden cottages, huts, mobile homes) and 4. other unusual glamping accommodations. Yurts are the most common form, followed by other unusual glamping accommodations (wagons, water or underwater facilities, igloos etc.). Safari tents are also very common, which is understandable since these are the oldest form of glamping accommodation that has been used for this purpose since the very beginning of glamping. Also, wooden cottages are a very popular form of accommodation in recent years, as they are reminiscent of a typical childhood dream but with a higher level of comfort. Their popularity is also contributed by the fact that they give the guest a sense of security since they are on the high ground, so they can enjoy untouched nature without fear of wild animals.

### **The Main Characteristics of Glamping Market**

Glamping is characterized by the specifics that distinguish it from other accommodation facilities, which provide differentiation and access to the guests with high purchasing power. As already pointed out, it appears as a result of continued demand for comfort and luxury in the accommodation industry. Thanks to that, glamping attracts new market segments that camping would not attract by itself and thus opens new opportunities for tourism offer in the tourist destination. The most important features of the accommodation are the excellent equipment, quality service and natural environment (Vrtodušić Hrgović, Cvelić Bonifačić & Licul, 2018).

### *Characteristics of glamping offer*

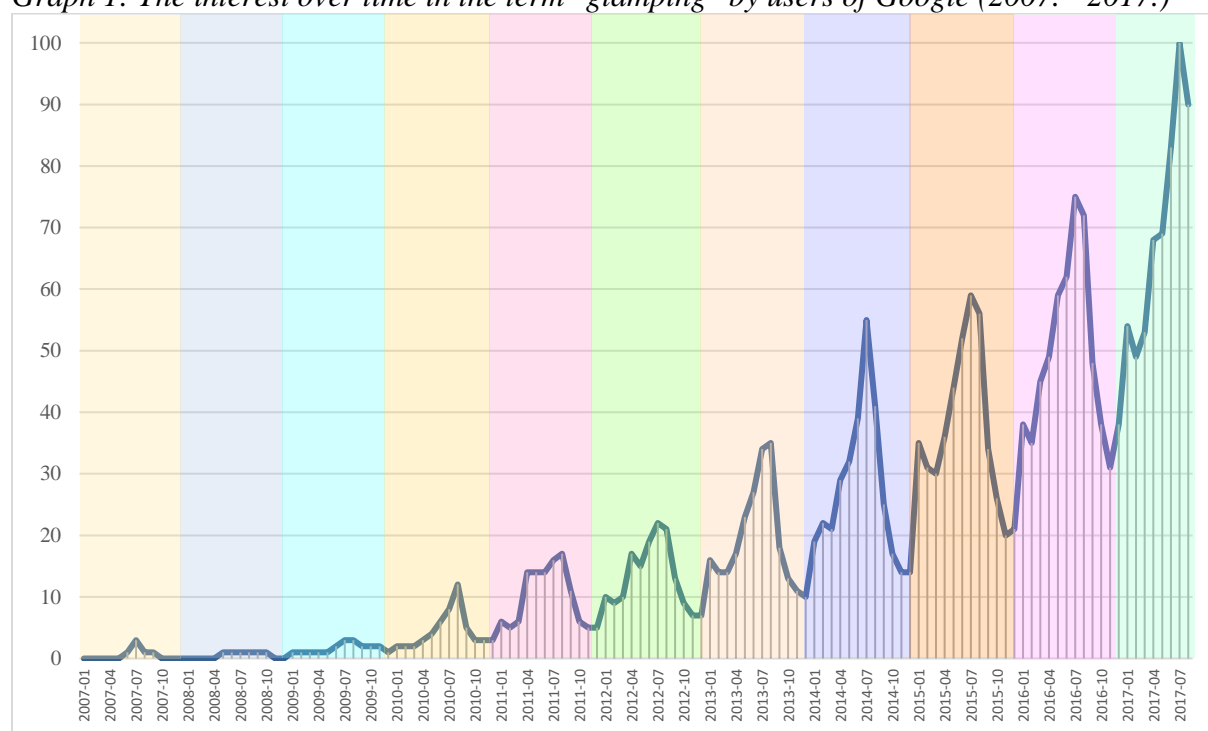
For holders of tourism offer, glamping is a market niche that attracts a segment of high purchasing power, seeking unique experience in luxury accommodation (Andrey, 2014). Apart from exceptional locations in a natural environment, the glamping accommodation offer is based on original activities and authentic amenities well-integrated into the surrounding environment (Boscoboinik and Bourquard, 2012). Growing competition in the global tourism market leads to constant innovations and differentiations on the side of the tourism offer. Environmental care, sustainable development, transformation of tourist demand and a new perception of the importance of natural, authentic and rural, positively and strongly affect the continuous growth and development of the glamping offer. Innovation, luxury and rich content incorporated into the natural environment make it possible for holders of glamping offer to make it a tourist destination. The goal of glamping is to offer guests an alternative to mass tourism destinations where they can enjoy holiday, recreation and other tourist activities undisturbed. Many glamps offer excursions and original adventurous activities outside of the glamp itself, such as safari, hiking, rafting etc. but the focus is on the comfort of the guest - they are provided with comfortable transport from the accommodation to the location where the activities are held. The staff is responsible for providing them with all the necessary meals and top-quality accommodation units upon returning to glamp site (Boscoboinik and Bourquard, 2012). Nevertheless, holders of glamping offer are faced with a paradox of their own existence: the presence of people and the accompanying system that provides them with the necessary comfort distorts the perfect authenticity of the untouched nature on which the whole philosophy of glamping is based. Therefore, the business of glamping facilities must always have an eco-label, and growth and development should be based on the principles of sustainability. Key features of the glamping offer can therefore be summed up and highlighted: high levels of quality and comfort, innovation, heterogeneity of supply, compliance with the natural environment and emphasis on natural, authentic, local and doing business based on the principles of sustainability. These features combined work synergistic, in the direction of further growth and development of glamping, to meet the needs of a modern tourist.

### *Characteristics of glamping demand*

Glamping is much more than luxury camping and to be fully understood it is necessary to know the market segment that caused the flourishing of this type of accommodation. It is about guests who want to enjoy nature, but do not want to give up the comfort they get in the hotel accommodation. The demand for glamping is closely related to glampers' motivation, so glamping demand can be observed from three key aspects: *innovation and diversification of products, staying in nature, luxury and comfort*. Although somewhat paradoxical, nowadays it has become very common that the tourist wants to visit places where there are no tourists (Boscoboinik and Bourquard, 2012: 152). The term *tourist* is largely linked to mass tourism, which has a negative connotation in the minds of modern tourists, thus they seek new concepts and alternatives to mass tourism destinations. Demand for mass tourism is characterized by homogeneity, while in groups with high purchasing power and conscious groups, demand is diverse and thus requires new, intact locations that are not contaminated with mass tourism. These locations are by some criterion special - by design, service, heavy availability or high price. Consequently, innovative solutions are being sought as they are becoming the key to long-term growth and can be achieved at the service, attraction or destination level (Boscoboinik and Bourquard, 2012: 153). Glampers want complete relaxation and a peaceful place where they can escape everyday life, while having a strong

need for privacy. Wishing for change and a different environment, they connect with nature and enjoy outdoor activities. The most significant motivation for glamping is the desire of tourists to see beautiful places and feel an unforgettable experience in nature. They like to be outdoor, enjoy the sounds of water, wind, birds with a beautiful view of untouched nature and being part of it, so they prefer glamping in national parks, near the sea or simply in an exceptional landscape (Sakáčová, 2013: 55). Demand for luxury and comfort is an inseparable aspect of the demand for glamping and, without the demand for luxury and comfort, the glamping would not exist. Glampers are looking for a high level of quality and are willing to pay a high price for it. They want to enjoy adventurous activities, a rich offer of food and drinks and other amenities. For them, the offer of the tourist destination is not crucial because they expect to have everything they need and want at the glamp site. Gourmet foods are prepared by top-quality chefs, and the design of rooms or tents and their functionality maximize the luxury and comfort. Luxury does not only include the physical features of the accommodation but also professional staff and quality service at all levels, personalized approach and attention that will make the guest feel special (Sakáčová, 2013). There is also a part of the glamping demand that wants to enjoy a luxurious uncommon treatment motivated by a particular event, such as birthday, marriage anniversary, honeymoon etc., so the glamping offer must pay attention to this group. Since glampers are guests with high purchasing power or guests who are willing to allocate more financial resources for a vacation on a special occasion, it can be concluded that glampers are not significantly sensitive to price changes or that the price elasticity of glamping demand is low.

*Graph 1: The interest over time in the term "glamping" by users of Google (2007. - 2017.)*



Source: Google Trends, Retrieved from: <https://trends.google.com/trends/explore?date=all&q=glamping>, 08/2017

The popularity and the demand for glamping in the chart above is shown by the interest over time in the term "glamping" by users of Google, the largest internet search engine. Numbers represent search interest relative to the highest point on the chart for the given time. A value of 100 is the peak popularity for the term. A value of 50 means that the term is half as



popular. A score of 0 means there was not enough data for this term or the expression was less than 1% popular compared to the peak. The graph also shows the months of each year in order to observe a repeating pattern that indicates the seasonality of tourism and glamping demand. It can undoubtedly be stated that the demand for glamping is characterized by a pronounced seasonality. During the analyzed period, the peak of search for the term "glamping" was always in the summer months. Also, there is a clear trend in the growing demand for glamping in the observed period. The key features of glamping demand are: anti mass, luxury-motivated demand, connection with nature, low price elasticity and seasonal character.

## Analysis of glamping offer in the world and opportunities for growth in Croatia

Secondary qualitative data related to glamping offer are still poor as the big organizations and statistic offices in charged for market research do not see glamping as separate and specific part of accommodation offer. The research that was conducted for the purpose of this paper was based on glamping offer of specialized intermediaries for this type of accommodation. Glamping occurs and develops alongside megatrends in tourism (UNWTO, 2016) that have strong effect on glamping expansion in the last couple of years.

*Table 1. Glamping offer worldwide*

	Africa	Australia & New Zealand	Asia	Europe	South America	North America	Middle America & Caribbean
glamping.com	110	45	88	184	44	243	63
glampinghub.com	242	825	151	1381	176	9713	245
glampinggetaway.com	46	25	32	87	15	122	28

Source: Edit by author according to the data from glamping.com, glampinghub.com and glampinggetaway.com (01/2018)

Analysis of existing glamping offer worldwide was based on research of most important online intermediaries specialized for glamping that consolidate on one place whole global offer. These data should be observed as an estimation of real situation because of two reasons. Original glamping classifications slightly differ as well as geographical distribution but for the purpose of this paper data were adjusted in order to be able to compare them. As this is still a new trend that has not been sufficiently researched in professional literature and there are still no unified rules on what exactly glamping is considered, previous data include accommodation facilities that cannot be part of glamping accommodation if previous definitions are taken in consideration. Table presents three most important online intermediaries specialized for glamping: Glamping, Glamping Hub and Glamping Getaway. Conducted analysis showed that all three intermediaries in their offer have the most facilities in North America. Except it is a strong economic and touristic area, North America is fertile ground for development of glamping because of long tradition of organized camping where habits are adopted from the childhood through *summer camps* (The Economist, 2012). After North America, Europe is the one that has the biggest offer of glamping facilities. Big offer in Europe is expected since expansion of glamping started in Great Britain in 2005. Also, not surprised because Europe is a leading touristic region for many years. Also interest for spending holidays in nature and full experience during journey is growing among European.

Glamping offer in Croatia is still poor in comparison with other touristic countries in Europe. Existing offer is concentrated along the coast and it is mostly about camps that expanded their offer with glamping facilities. Also, there are examples focused exclusively on glamping offer such as small facilities that consist of one accommodation unit (glamping dome on the small island Misjak, yurt close by Karlovac or tree houses in close to Dubrovnik. For the research of glamping offer in Croatia and possibilities of its development case of glamping resort on the island Obonjan was analyzed in detail. Obonjan Island Resort is situated in Šibenik aquarium and it was opened in 2016. It is a representative glamping resort with luxury equipped tents in preserved natural environment. Also, guests have on disposition numerous amenities and activities. Due to concession agreement between Obonjan Rivijera (owner of Obonjan Island Resort) and City of Šibenik, in an initial phase resort built 60 apartments/tents (4\*) with capacity from 2 to 4 people. In future phases are planned following capacities:

- 60 apartments/tents (4\*)
- Hotel/Aparthotel with at least 50 rooms (4\*) – double and quadruple rooms
- Hotel with at least 130 rooms (4\*) – double rooms
- 60 villas (5\*)
- 50 berths

Resort puts accent on amenities related to alternative vacation with unique experience based on art and culture, music and fun as well as on gastronomy for the guest with high purchasing power. Since accommodation facilities are mostly mobile, only partially are solid constructions that minimize obstacles between guests and nature, they are not suitable during the bad weather conditions. That has strong impact on business seasonality as it is open only during the summer season. While facilities in glamping resorts worldwide are tightly tied to nature environment where resort is situated, in this case more facilities are characteristic for the urban areas.

Accent is on music festivals and concerts of famous musicians and music program is happening on few locations on the island. However, facilities are not limited only on music programs, there are different activities related to other arts. Price includes lessons of boxing, swimming, dancing, running, snorkeling, outdoor gym and pool with sea water, different workshops, meditation, cinema, standup comedy etc. Rowing, kayaking, massages and different treatments and therapies are extra charged (Obonjan Island Resort, 2017). Obonjan Island Resort is typical example of glamp with characteristic accommodation facilities in preserved nature environment and stay in resort is complemented with wide range of amenities. Resort management always point out importance of implementing eco policy in their business. Beside sustainable development is a trend that all stakeholders in tourism, especially in glamping segment, are implementing in case of Obonjan it is necessity considering the limitation of resources because it is isolated location. Project is developed in way that resort minimally impact environment and for building tents were used recycled materials as well as typical local materials (Dunford, 2016). Combination of innovative accommodation facilities and wide range of amenities differentiate Obonjan from the rest of accommodation facilities but also from the organizers of music and entertainment festivals. Since glamping offer is still rare on the Croatian tourism market, and Obonjan Island Resort is doing business for only two years, it is hard to evaluate success of their business. In the next years, with a new investment and increase of capacities, it will be possible to evaluate the success and popularity of this type of accommodation in Croatia as well as return on investment. Investments in glamping does not present competition to the private accommodation or hotels because market segments are totally different, so we can expect more intensive investments in this type of accommodation. Croatia is known a destination

with amazing natural beauties, large number of protected natural areas and rich cultural heritage so it has great preconditions for development of glamping.

With synergy of glamping accommodation and other local stakeholders, glamping projects can play an important role in revitalizing existing and developing new tourist destinations in a way of more sustainable projects than in the case of hotel construction (Vres and Vres T., 2015). Additionally, building a glamping accommodation is a simpler and financially less extensive project than building a hotel of the same level of service. The Croatian market is not saturated with the offer of glamping, just the opposite, the offer of glamping is extremely scarce, and on global level there are trends and demand that can significantly contribute to the development of glamping in Croatia in the future.

## **Conclusion**

From more and more complex requests of contemporary tourists, the demand for differentiated and specific forms of tourism arises, as well as for new, innovative types of accommodation. Under the influence of contemporary trends, the campsite has passed a qualitative transformation, developing into an accommodation that offers a complex service with rich amenities, organized programs and represents the lifestyle of an individual. Indeed, development of campsites is an answer to the growing demand for comfortable and luxury stays in the peaceful natural environment. Improvement of quality of camps generates demand for new market segments that were not previously interested in this type of accommodation. In the development of camping tourism, innovation plays a key role in increasing competitiveness and struggling with global competition, and the main characteristics include increased service quality, environmental orientation, enrichment of amenities for health and recreation, and the emphasis on creating a unique experience.

Glamping provides tourists authentic experience and return to nature, as well as the same level of comfort that can be provided by a hotel or private vacation home, and the accommodation itself becomes a tourist destination. Also compared with other types of accommodation, glamping as a new and innovative product contributes to the competitiveness of a tourist destination as well as to competitiveness of a national tourism. So, holders of glamping constantly strive to find new, innovative solutions so that glamping would not just be a passing trend, but to keep it in the future. Areas with the large glamping offer in the world are North America, Europe and Africa, and in Europe, the United Kingdom, France, Spain, Portugal and Italy. In Croatia, glamping trend started somewhat later, therefore the offer is still scarce and concentrated along the coast. The analysis of a case of Obonjan Island Resort as an example of a glamping in a business practice of Croatia indicates a great potential for development throughout Croatia. This type of accommodation undoubtedly could be one of drivers of tourism development, especially in the rural areas of the continental part of the country and contribute to the development of less developed tourist areas. In addition to previous statement, because of its mobility and environmental approach, glamping accommodation is recommended especially for locations that were previously out of bounds such as some preserved parts of nature. The most important is that glamping accommodation, for tourism of Croatia, presents an opportunity for overcoming seasonality and attracting a new growing market segment.

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# POLICY OF ATTRACTION VS. POLICY OF REJECTION OF FOREIGN DIRECT INVESTMENTS IN TOURISM: COMPARATIVE ANALYSIS OF CROATIA AND SLOVENIA

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## Abstract

*Before gaining their independence in 1991, Croatia and Slovenia shared for centuries a common destiny as constituent parts of several kingdoms and states, the latest was former socialist Yugoslavia (1943-1991). The tourism industry of both ex-Yugoslavian republics has been relatively well developed, especially in Croatia with its natural resources, focused primarily on the Adriatic coast. In Slovenia, tourist activity was more dispersed, mostly among thermal, farm, ski and coastal tourism.*

*After the fall of communism in central and eastern Europe and independence gained, the common history of both newly established countries went in different directions. With its 10-day war for independence, Slovenia did not suffer many negative consequences and was quickly able to focus its economy toward Western countries. On the contrary, Croatia suffered from the bloody and destructive war until 1995. The ruined economy, war casualties and refugee crisis were the consequences which provoked a dramatic lack of overall development of the country in the next decade.*

*Today, Croatia and Slovenia are both members of the European Union. Regarding the general economic situation, Slovenia is today one of the relatively well-developed countries and thus also an OECD member. Croatia has still not been able to join this, in all respects, the most developed, group of countries. Again, the role of tourism is more important in Croatia than Slovenia. Croatia is an established tourist country, which, considering the current economic power of tourism on the global level as well as future forecasts of a continuous growth trend is certainly an enviable situation. Even when we have in mind the economic dependence of the Croatian economy on tourism.*

*According to WTTC (2018), in Slovenia, the total contribution of tourism to GDP was 11.9% of GDP in 2017 and is forecast to rise to 14.5% of GDP in 2028. On the other hand, in Croatia, the total contribution of tourism to GDP was 25.0% of GDP in 2017 and is forecast to rise to 31.7% of GDP in 2028.*

*The goal of this paper is to discover what part of this phenomenon can be attributed to the different national policies concerning the acceptance of foreign direct investments in general and especially in the tourism-related industries.*

**Keywords:** Croatia, Slovenia, tourism, privatization, FDI

**JEL:** F21, G34, G38, L83, P23

## Introduction

In the early 90s of the last century, there has been a collapse of the Communist alliance countries, and thus the ex-Yugoslavia. With the break-up of the mentioned community, Croatia and Slovenia gained their independence and became small open countries that were supposed to be soon ready to catch up with the globalization rules that govern the open market. Unquestionably, this primarily implies openness to foreign capital.

Slovenia has developed rapidly and became an active member of the international community. Croatia had been objectively prevented during the first years with the war, and the later reasons behind the slowness can be attributed primarily to bad political leadership, which has resulted in the fact that not even today, virtually 30 years after independence, it has not become a member of the OECD.

Regarding foreign direct investments (FDI), the comparison of these two countries indicates a paradoxical situation. Slovenia, considering the macroeconomic conditions that are key to attracting foreign investors, is a relatively desirable destination, but also a country that never really wanted to attract foreign investors since they were and still are often considered as a threat to national sovereignty. Croatia, on the other hand, is in a comparably worse macroeconomic position regarding attractiveness for investors, but politically strongly oriented toward attracting foreign investors.

The main aim of this research is to verify to what extent the differences in share of FDI inflows in tourism can be attributed to the different national policies concerning the acceptance of FDI in general and especially in the tourism-related industries.

The following section provides the research background of the subject matter. Section 3 deals with the conceptualization of the link between privatization and FDI and highlights some pertinent facts about FDI in tourism. Section 4 explores the privatisation processes in Croatia and Slovenia and their connection with the amount of FDI inflows into tourism. Moreover, PEST analysis was carried out for both countries. As a final point, a conclusion and policy implications are drawn.

## **Research background**

The tourism industry of both ex-Yugoslavian republics, Croatia and Slovenia, has been relatively well developed already before independence, especially in Croatia with its natural resources, focused primarily on the Adriatic coast. In Slovenia, tourist activity was more dispersed, mostly among thermal, farm, ski and coastal tourism. Even though a general economic development of both countries cannot be directly compared and evaluated because of the much stronger impact that the war for independence had in Croatia (1991-1995), again, the role of tourism in absolute and relative (compared to GDP) terms is nowadays much more important in Croatia than Slovenia (see Table 1).

According to WTTC (2018), in Slovenia, the total contribution of tourism to GDP was 11.9% of GDP in 2017 and is forecast to rise to 14.5% of GDP in 2028. On the other hand, in Croatia, the total contribution of tourism to GDP was 25.0% of GDP in 2017 and is forecast to rise to 31.7% of GDP in 2028. Croatia is an established tourist country, which, considering the current economic power of tourism on the global level, as well as future forecasts showing a continuous growth trend, is certainly an enviable situation.

The importance of tourism for the economy of Croatia in comparison to Slovenia is 2-3 times more important, depending on which indicator we consider (see Table 1). For Slovenia, even the predicted growth of tourism (as a part of GDP) for the next decade is lower (21.8%) than for Croatia (26.8%). Certainly, Slovenia as a tourist destination cannot be directly compared to Croatia, neither in relative and even less in absolute terms. However, the importance of tourism in the economy of Slovenia is at least comparable to the role that the tourism industry plays in European countries and exceeds the worldwide average.

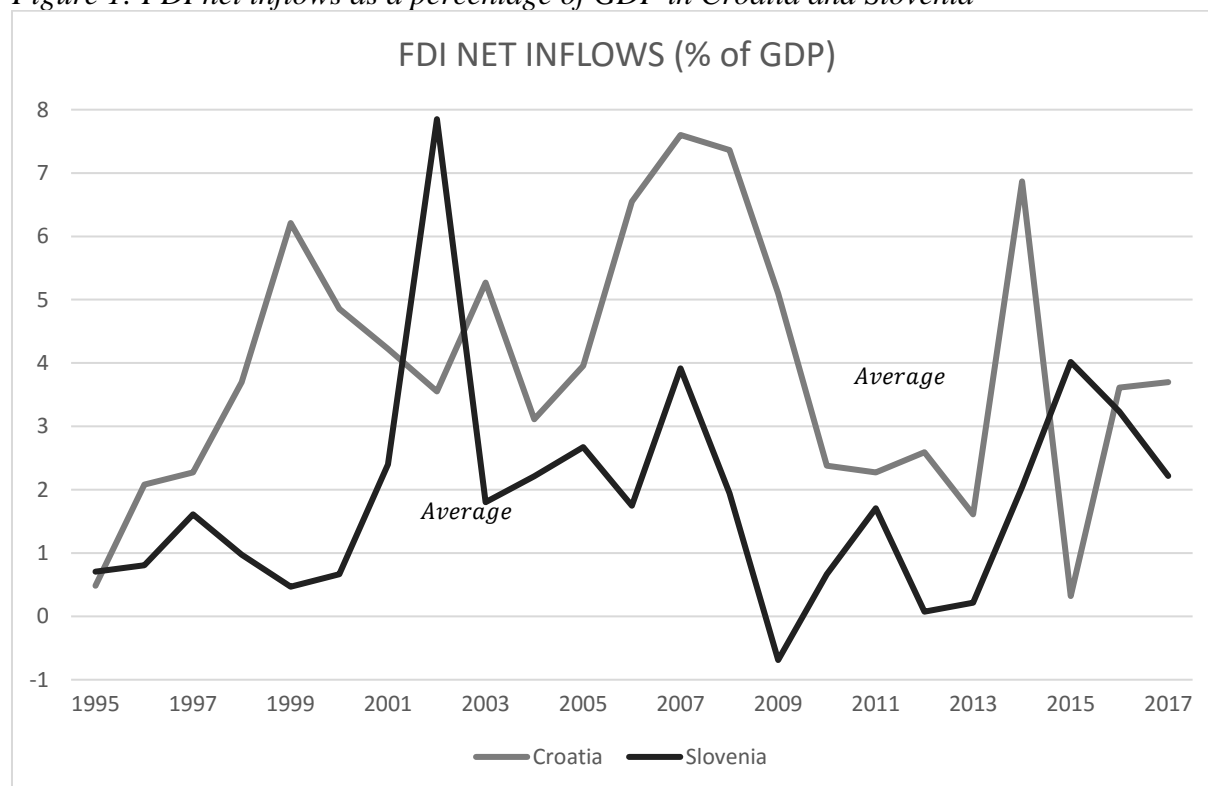
*Table 1: Role of tourism in Croatia and Slovenia*

YEAR 2017	Croatia	Slovenia	Europe	World
Direct contribution to GDP (% of total)	10.9%	3.3%	3.9%	3.2%
Total contribution to GDP (% of total)	25.0%	11.9%	10.3%	10.4%
Direct contribution to employment	10.1%	3.7%	5.1%	3.8%
Total contribution to employment	23.5%	12.3%	11.7%	9.9%
Total contribution to total capital investment	10.9%	8.8%	5.1%	4.5%
Visitor exports contribution to exports	10.9%	8.8%	5.1%	4.5%

*Source: World Travel & Tourism Council (www.wttc.org), adapted by the authors*

The role of inward FDI has been traditionally stronger in Croatia than Slovenia. As presented in Figure 1, the net inflows of FDI, compared to GDP in the period 1995-2017 have been more important in Croatia for 20 out of 23 years. In average, the share has been higher in Croatia by two percentage points compared to Slovenia through all the mentioned period.

*Figure 1: FDI net inflows as a percentage of GDP in Croatia and Slovenia*

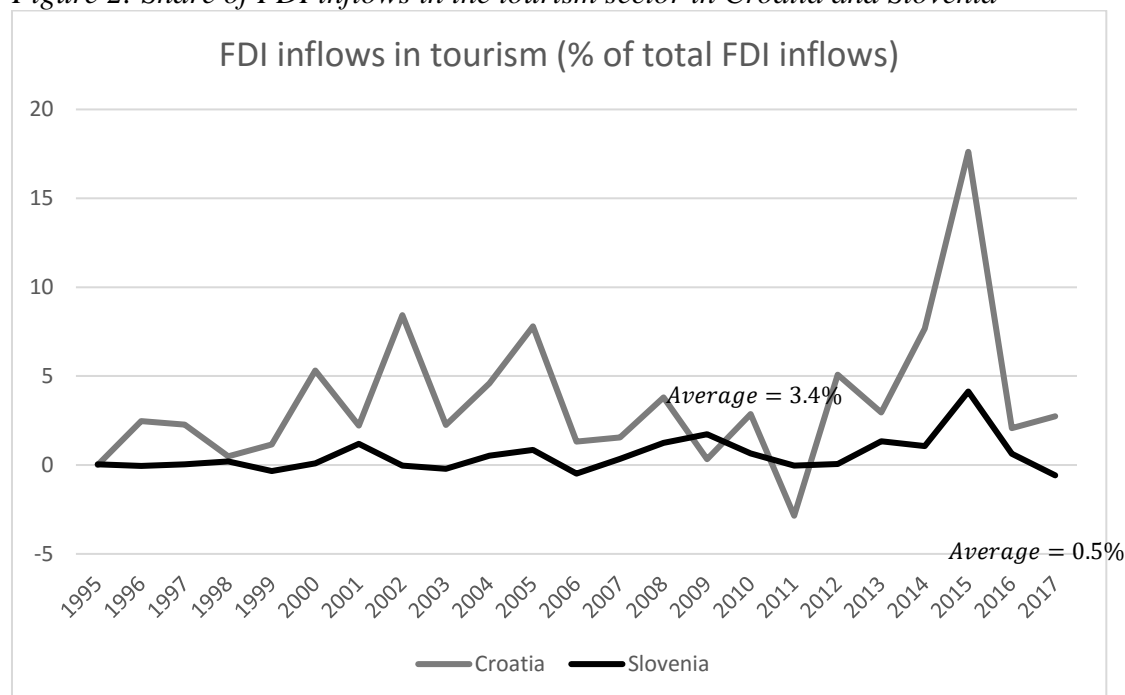


*Source: Worldbank (www.worldbank.org), adapted by the authors*



Similar conclusions can be made about the share of inward FDI in the tourism sector in total FDI inflows when looking at Figure 2. In the same period (1995-2017) the percentage share was in average almost seven times higher in Croatia (average=3.4%) than Slovenia (average=0.5%). As presented, this difference has been smaller during the crisis period (2008-2011) and since 2012 it is growing again.

*Figure 2: Share of FDI inflows in the tourism sector in Croatia and Slovenia*



*Source: National Bank of Croatia, National Bank of Slovenia, adapted by the authors.*

The difference in the amount of FDI attracted to tourism has also resulted in significant differences in the presence of global hotel chains in the observed countries, as can be seen from the following figure.

Figure 3: International hotel brands and their presence in the Eastern Adriatic region



Source: Horwath HTL (2015). *Hotel Market Structure and International Hotel Chains in the Eastern Adriatic Region*. Available online: [http://horwathhtl.hr/files/2013/02/Hotel-Chains-in-Eastern-Adriatic\\_Horwath-Croatia\\_03-2015.pdf](http://horwathhtl.hr/files/2013/02/Hotel-Chains-in-Eastern-Adriatic_Horwath-Croatia_03-2015.pdf) (accessed on 20 March 2019).

According to Horwath HTL (2015) Croatia represents the most developed hotel market in the Eastern Adriatic region with 16% branded hotel rooms out of total hotel supply. On the other hand, Slovenia has a moderately developed hotel market, with 8% of internationally branded total hotel room supply.

## Theoretical framework

### *Link between privatization and FDI*

Although the concepts of transformation and privatization are often equated, the transformation is related to the change of the legal status of social enterprises in companies (Gregurek, 2001) while privatization is defined as the transfer of total ownership, or a greater part of ownership, of the public (or social) sector to private persons (Njavro, 1993). Existing empirical research proves that many developing and transition countries have experienced a significant inflow of FDI by privatizing state-owned enterprises (Mukherjee, Suetrong, 2009).

Since both countries, Croatia and Slovenia, entered the process of privatization after gaining their independence, it is useful to look at the existing research concerning the relationship between privatization and FDI inflows.

Calderón et al. (2004) collect data from 72 countries for the period 1987–2001. They find that companies who were primarily targeting their investments toward the purchase of existing state-owned companies also invested in new companies in the following years (*spillover effect*). For industrialized countries, the authors estimate that at the macroeconomic level investment in the purchase of existing state-owned enterprises in the scope of 1% of GDP results in subsequent new investments of the same volume. In developing countries (among

which we also include Croatia and Slovenia), the result is even higher: 1.5% of GDP in new investments is the result of 1% of GDP of original investments in privatization. The authors conclude that countries can also expect future growth of IFDI in new companies, also because of privatization.

The study, which most suits the geographical region of Central Europe, is Merlevede and Schoors' (2005) analysis of the link between the privatization method (direct sale to the best bidder and indirect sales methods: internal purchases by managers and/or employees and voucher privatization) and the volume of IFDI. With multivariate analysis they prove that the impact of direct sales to the best bidder on the increase of the volume of IFDI is significant. Such an influence is not proven with any of the indirect sales methods. The conclusion is that the choice of indirect selling methods is a negative sign for potential foreign investors, and this can lead to potential foreign investors delaying or even abandoning the decision to invest. The use of indirect privatization methods can also cause the new domestic private owners to stop the restructuring of the privatized state enterprises. By consequence, the foreign investors may decide to postpone or cancel investment projects since they may interpret the behaviour of the domestic owners as rejecting the expected positive effects that potential foreign owners could cause in the privatized companies.

The third most relevant study is Mukherjee and Suetrong's (2009) survey which proves the two-way link between privatization and the volume of FDI in new investments. As they put it, privatization promotes FDI in new companies and these Greenfield investments promote incentives for privatization. Their explanation of this phenomenon is interesting; they explain that the purchase of a domestic state-owned company by a foreign investor is later understood as a way of reducing competition in the domestic market, by which the domestic market becomes more attractive for new investments after privatization.

In conclusion, Tüzüntürk et al. (2018) analyse the relationship between FDI and privatization on a panel data sample of fourteen European Union Founder Nations in the period 1998-2012. They found that privatization has a statistically significant and positive effect on FDI i.e. as privatization increases, FDI also increases. The increase that occurred in globalization resulted in an increase in privatization in the 1990s. According to the authors, privatized companies had potential for high profits, and they became attractive for FDI. These privatized state-founded companies included critical infrastructure investments.

### ***FDI in Tourism***

Tourism is the driving force of the global economy today, and it is predicted that it will also remain the driving force in the coming decades. The following statement is supported by forecasts according to which it is expected that by 2030 the number of international tourist arrivals will reach 1.8 billion (UNWTO, 2018). It is well known that tourism, among other factors, strongly contributes to foreign exchange earnings and job creation. The fact is that more and more countries rely on tourism as an opportunity to develop their economy, irrespectively of the fact that tourism is highly volatile, and that no country should be put into a situation where there is no diversified structure of the economy and solely depends on tourism to a significant scale. Nevertheless, tourism can also serve as a strong support for the growth of an individual economy, regardless of its degree of development. Thanks to its effects on other sectors of the economy, tourism by its nature can also help diversify the economy if it is used in the correct way (Fingar, 2017).

Tourism development is strongly capital-intensive. FDI is therefore a significant factor that can contribute to further tourist development (Endo, 2006; UNCTAD, 2007). According to Dunning and Kundu (1982), pioneering research on the effects of FDI in tourism, foreign-owned hotels earn higher per-room revenue, have a significantly higher average value added than local hotels, and the transfer of skills is an important factor in the development of the domestic hotel sector. Foreign-owned hotels have a strong marketing and promotional network, resulting in connecting the host country with foreign markets, increasing the number of foreign guests and creating more revenue (Endo, 2006).

As for the statistical data related to FDI-T globally, in the period from 2003 to 2016, \$352 billion in capital expenditure was spent on tourism, and from 39 sectors, tourism ranked 10th in terms of capital investment (Shehadi, 2017). Regarding M&A in tourism, the average number of deals in the period from 2012 to 2017 was 327, while the average value was \$78.15 billion (Haddad, 2018). It is also important to point out that, as recently as a few years ago, tourism was rarely seen as an important key sector by investment promotion agencies, while it plays a dominant role today.

A significant part of the current research has shown the existence of a causal link between international tourist arrivals and FDI-T (Katircioglu, 2009; Selvanathan et al., 2012; Othman et al., 2012; Samini et al., 2013; Perić & Nikšić Radić, 2016). Also, there is proven evidence of a causal link between gross value added in tourism and FDI-T (Bezić & Nikšić Radić, 2017) as well as positive influence of FDI-T on productivity of tourism itself (Perić & Nikšić Radić, 2015; Xu, 2017). Finally, the positive impact of FDI-T on overall economic growth has also been demonstrated (Fauzel et al., 2017).

## **Methodology, results, analysis**

### ***Privatization in Croatia***

Privatization started in Croatia by the introduction of the Transformation Act in 1991. Nowadays, the public opinion is that this was the period of the greatest plundering of Croatia. These processes from the end of the last century are also burdening reform efforts in the current decade (Ivanović, 2015). War problems as well as the openly communicated nationalistic style of governing of the first Croatian president were the reason for the very slow privatization of all economic enterprises, as well as tourism in the 1990s of the last century (Ballinger, 2003). Although Croatia is, since gaining its independence, oriented to attract FDI, poor implementation of transformation and privatization, i.e. numerous irregularities associated with these processes reduced the potential that attracted investments should achieve.

According to Ballinger (2003) it is possible to distinguish two major phases of privatization in Croatia, the one initiated by the first Croatian authority after independence, led by the president Franjo Tudjman and the privatization process after democratic elections in January 2000. The first phase is characterized by the fact that the state remained the major shareholder in certain key companies, sought control of foreign investment in fear that foreigners would take over property, and continue the virtual state monopoly, thus making the privatization process incomplete and non-transparent. The second phase is characterized by an increase in FDI, structural adjustment of the economy to EU standards and increased legal transparency.

According to Družić & Gel (2006) during the period (1991-1993) 80% of the companies were formally privatized, small shareholders (mostly employees and former employees) purchased approx. 40% of the capital subject to privatization. Shares not bought by employees and former (retired) employees, and shares not put aside for former owners, entered CPF

(Croatian Privatization Fund) and Pension funds portfolio. In the period (1994-1997) the subject was privatization of the CPF portfolio which represented ca. 30% of the initial capital subject to privatization. In 1998 the volume of privatization was approximately 40% of the CPF portfolio that was put aside during the previous privatization step. Voucher privatization was aimed at those categories of the population that suffered the worst consequences of the war (1991-1995). In 1999 the private sector's share in GDP reached 60 percent. The Croatian government retained 1-30% shares in privatized firms (33.4% of firms), and above 30% in 7.6% firms.

As far as tourism is concerned, it is important to point out that a significant share of the initial Croatian capital was based in the hotel industry (Čižmar, Poljanec-Borić, 1997). Because of the war situation, tourism in Croatia in 1994 was 68% lower than in 1989 (Ballinger, 2003). Such a significant decline in physical activity was not experienced by any other area of the Croatian economy (Ivandić, Radnić, 1996). In the first stage of privatization, the financial condition of many large tourist companies remained questionable, because they were often sold to co-workers of the first president who took them into even deeper insolvency (Ballinger, 2003). The second stage of privatization has led to a slow return of tourist arrivals to pre-war levels, renovation of many hotels and tourist facilities, and the purchase of second-homes on the coast by foreigners. Despite many positive moves, there have been some negative consequences, primarily in the development of mass tourism. The last two, three years best testifies to the unplanned development of tourism and the problem of mass tourism.

### ***Privatization in Slovenia***

The privatization process of the state-owned companies in Slovenia has been defined by the Ownership Transformation of Companies Act and started in 1992. Although the methodology of privatization has been the result of compromises between different political views, clearly the orientation toward indirect sales methods (internal purchases by managers and/or employees and voucher privatization) has been chosen. These two methods have been used by more than 90% of all companies because they enabled discounts of share prices of 50% and prevented the entrance of external (especially foreign) investors into the ownership structure. In the literature we find evidence that the Slovenian state used a variety of protectionist measures to limit foreign takeovers especially in strategic sectors (Bandelj, 2004). The outcome after six years of privatization process was only 68% of social capital privatized and the rest stayed under (in)direct state control. As a result, Simoneti, Rojec and Gregorič (2004) list several corporate governance problems, among them also a deterrence towards foreign ownership.

Until 2008, when the process of privatization was declared officially over, the concentration of ownership in the hands of local managers and local investment funds was an ongoing process. The communicated politics of “national interest” (widely understood as the exclusive property of Slovenians), and demonization of foreign ownership created the public opinion that small owners should not sell their shares to anybody other than local managers of the companies they were working for.

Financed generously by the domestic state-owned banks, which held major market share, this process ended in 2008 with the appearance of the international financial crisis. A clear case of irrational financing of management buyouts has provoked significant problems in several important Slovenian groups, some of them were the most important players in the local tourism sector such as financial holdings Istrabenz and Sava. They have either gone bankrupt or their shares have been confiscated, mostly by the banks that had problems with non-performing assets themselves. In 2013, a “bad bank”, the BAMC-Bank Asset Management

Company (DUTB), was created that acquired non-performing assets from state-owned banks and purchased some claims from other banks in order to consolidate exposures and ensure more effective management of assets.

Although we may conclude that the gradual transition of the early 1990s generated economic growth, preserved social peace and maintained social equality in the extremely egalitarian Slovenian mentality (also as the result of privatization methods chosen), in the long run it resulted in the dilution of much-needed reforms (Guardiancich, 2016) which still haven't been tackled by any of the post-independence governments.

### ***FDI in tourism-Croatia***

The share of FDI in Croatian tourism compared to the total FDI varied significantly from year to year as a result of the inconsistent policy of attracting foreign direct investment to the tourism sector. It is possible to conclude that these investments were very sporadic in the period 1993-2017, and especially they took on negative absolute features after the 2008 economic crisis, until 2014. Since then, the largest share of FDI in tourism compared to total FDI was achieved in 2015 (17.6%) and 2018 (11.1%). Most of the FDI in hotels and restaurants so far has been linked to the acquisition and / or creation of proprietary portfolios of existing companies (the first half of the 1990s), with the speculative acquisition of large land areas in the coastal zone (period from the end of the war until the year 2000). Foreign investments were mainly focused on the reconstruction of existing capacities, as they are mostly located on the most attractive and urbanistically acceptable locations and their renewal is aimed at maximizing location advantage (Družić, 2010).

According to the Main Plan and Strategy of Tourism Development of the Republic of Croatia, one of the primary priorities is the accentuation of FDI in tourism. This scenario places greater emphasis on the construction of new accommodation and other tourist supply capacities, especially in larger coastal cities, but also in larger complexes outside the existing urban units, in the foreseen development zones (Institut za turizam, 2012). Consequently, over the last 10 years the growth of international hotel brands intensified, during which period there was almost a 50% increase of globally branded hotel room stock (Horwath, 2015).

Although the first edition of the Global Tourism Locations of the Future 2017/2018, fDi Magazine (Mullan, 2017), ranked Croatia as the seventh-largest destination with the greatest investment opportunities in tourism, according to Fingar (2018) and Europe-related data, Croatia is not listed among the top 10 of the most desirable destinations for realizing Greenfield FDI in tourism.

### ***FDI in tourism-Slovenia***

During the privatization process that took place in early 1990, Slovenian hotels ended up in the hands of the state and investment funds (Knežević, Cvelbar and Mihalič, 2008). At the beginning and middle of 2000, the secondary privatization process took place and state funds withdrew from the hotel sector. They were replaced with domestic companies. Foreign hotels did not show a special interest in the Slovenian hotel market.

The share of FDI in Slovenian tourism compared to the total FDI has constantly been modest during the whole period 1995-2017. The largest share has been recorded in 2015 with 4.1% and the average for the whole period was just a little bit above 0.5%. These figures are both much less important than the shares in Croatia. They also indicate another problem of the tourism sector in Slovenia: an overall lack of investments. According to the document named

Strategy of sustainable growth of Slovenian tourism 2017-2021 ([http://www.mgrt.gov.si/fileadmin/mgrt.gov.si/pageuploads/Strategija\\_turizem\\_koncno\\_5.10.2017.pdf](http://www.mgrt.gov.si/fileadmin/mgrt.gov.si/pageuploads/Strategija_turizem_koncno_5.10.2017.pdf)), the tourist infrastructure in Slovenia is outdated and needs investment, especially into beaches, ski resorts, cableway infrastructure, cycling routes, walking trails and infrastructure for various adrenaline and outdoor activities in the open air. Already for decades and since independence in 1991, local battles for the ownership of the tourism companies practically disabled any type of serious investment activities. The local owners did not have enough capital to invest but, at the same time, they used all possible means (especially politics and mass media) to deter the possible arrival of foreign investors by creating a hostile environment for foreign investors.

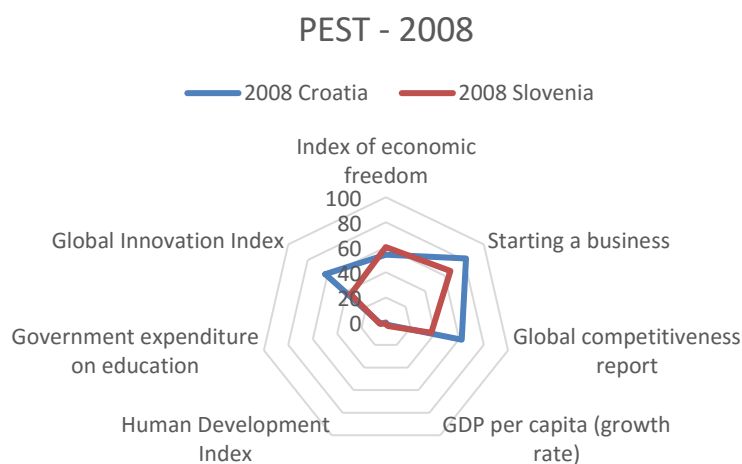
One of the well-known examples is the case of American gambling company Harrah's which in 2007 proposed to invest approximately one billion USD into the development of the existing Slovenian gambling company HIT from Nova Gorica. The general aversion, expressed openly through negative public opinion, supported by the Slovene mass media and created mostly by local politicians and other local groups of interests linked to HIT about foreign investors' plans resulted in cancellation of this investment opportunity in 2008.

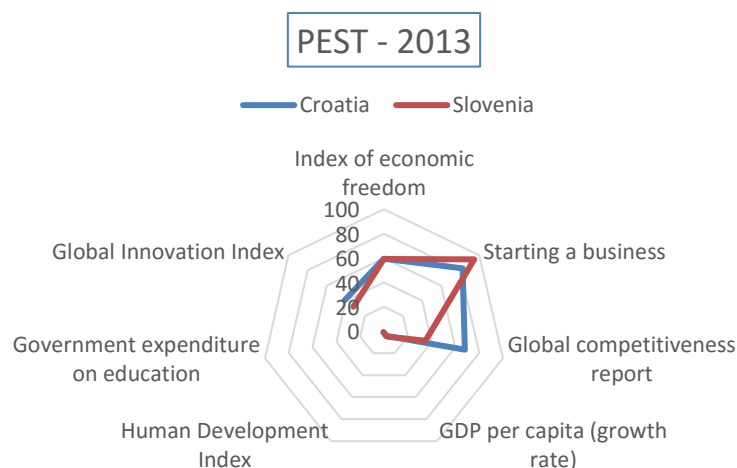
### ***PEST Analysis***

The overall economic system affects FDI inflows through a variety of economic solutions within the country. When a foreign investor decides on a particular location for his capital, he considers the macroeconomic and microeconomic factors, the socio-economic factors, the political and regulatory factors and the legal factors in force in the country concerned. For this reason, apart from analysing the differences in the policy of privatization in work, PEST (P stands for Political, E for Economic, S for Socio-cultural and finally T for Technological environment) analysis is further presented in order to assess the impact factors of the macro-environment.

The political environment is assessed by using the Index of economic freedom and Starting a business Index, the economic environment using Global competitiveness report and GDP per capita, socio-cultural environment by using the Human Development Index and government spending on education and technological environment by using the Global Innovation Index.

*Figures 4, 5 and 6: PEST analysis comparison of Croatia and Slovenia (2008, 2013, 2017)*





Source: <https://www.heritage.org/index/>; <http://www.doingbusiness.org/>; <http://reports.weforum.org/global-competitiveness-report-2018/>; <https://data.worldbank.org/indicator/NY.GDP.PCAP.KD.ZG>; <http://hdr.undp.org/en/content/human-development-index-hdi>; <https://data.worldbank.org/indicator/se.xpd.totl.gb.zs>; <https://www.globalinnovationindex.org/Home>, adapted by the authors.

Observing the PEST analysis, it can be concluded that in all three selected years the macroeconomic environment of Slovenia was more attractive than in Croatia. Croatia macroeconomically managed to get closer to Slovenia only immediately after the global financial crisis, but today Slovenia is again a country that is macroeconomically in a better position. What is interesting to conclude is that the differences in the macroeconomic environment of Croatia and Slovenia as neighbouring countries were not decisive factors with regard to the inflow of FDI into the observed economies. PEST analysis confirms the conclusion that privatization policy played a major role in the differences in FDI attracted by Slovenia and Croatia.

## Conclusions

We started with the presentation of several research papers which clearly prove the causal link between privatization and FDI inflows, not only in privatized companies but also in the subsequent, new investment projects. The evaluation and comparison of the results or public sentiments of citizens of Croatia and Slovenia about the respectful processes of privatization



were not our goal. In both countries serious negative consequences of privatization appeared and the two models have been perceived by the general public of Croatia and Slovenia as socially unacceptable and economically inefficient.

However, the fact is that the Croatian model of privatization was more open toward foreign investors especially after 2000 since foreign legal entities had the possibility to participate as unprivileged buyers and buy shares of the privatized companies at full market prices.

An overall positive (or, at least less negative) relationship toward foreign investors in Croatia, compared to Slovenia, resulted in a higher share of FDI inflows compared to GDP. We argue that at least partially this is the result of the different approaches to the process of privatization in the respective countries. This process defined the general politics toward foreign investors for the whole period after independence and certainly influenced the decisions of potential foreign investors.

The importance of tourism to the economy of Croatia is obvious also by the share of FDI inflows into the tourism sector as part of total FDI inflows. It seems that the Croatian authorities acknowledge the potentially positive role of foreign investors in their tourism sector. This is not the case in Slovenia in 2019 where the main strategic changes of proprietorship in the tourism industry are still an ongoing process amongst almost exclusively local investors.

The future implications of this different attitude toward foreign investors, not exclusively but also in the tourism sector of both countries, however, remain unclear at this time.

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## ABOUT EFMD

### The leading international network for management development

**EFMD** is a global, membership-driven organisation, based in Brussels. As the largest International network association in the field of management development, the EFMD network includes over 900 members and reaches over 30,000 management development professionals from academia, business, public service and consultancy across 91 countries worldwide.

**EFMD** plays a central role in shaping an international approach to management education and is a unique forum for information, research, networking and debate on innovation and best practice in management development. EFMD provides an international platform to bring together leaders in the management education professions and brings many opportunities for partnerships, student and faculty exchanges and the sharing of knowledge and ideas.

Business school members include INSEAD, LBS, IMD, IE, Wharton School, Stanford Graduate School of Business, Cranfield, HEC – Montréal, CEIBS, Antai, Pontificia Universidad Católica de Chile, INCAE, Korea University, University of Sydney, University of Cape Town, IIM Ahmadabad and many other leading schools from around the world. Company membership has a more European feel and includes Alcatel-Lucent, Allianz, BBC, Capgemini University, Deutsche Bank, IBM, Intel and Haniel.

The different services EFMD offer include conferences & events around the world that address key issues for our industry, surveys and the dissemination of knowledge, quality improvement and accreditation via EQUIS, EPAS, EOCCS and CLIP as well as the EFMD GN Deans Across Frontiers mentoring programme (EDAF) and Business School Impact System (BSIS).

We have networks and activities targeted towards Deans, MBA, Executive Education, Undergraduate, Masters, Doctoral, International Relations / External Relations, Research, Entrepreneurship, Responsible Leadership (CSR / Sustainability), Management education in Africa, the Middle East & North Africa, Americas & Asia plus a host of advisory seminars covering key issues for schools and then publications, research, international projects, case writing, excellence in practice & doctoral research awards plus more.

### **EFMD & Professional Development**

As a member EFMD can also open the door to many different awards, partners and services which include:

**Business School Impact System (BSIS)** - a new scheme designed to determine the extent of a school's impact upon its local environment – the city or region in which it is located.

Launched by EFMD in 2014, it is a service for any business school anywhere in the world that is interested in collecting key statistical data on its impact. Once collected, this information can then be used both internally and externally with key stakeholders to widen the debate about "the role of business schools in society" and showcase the enormous added value and impact they bring to a community.

**Strategic Leadership Programme for Deans** enables a group of up to 20 international deans to visit business schools in three countries. Deans gain a unique overview of strategy, operations, structures and future markets in business and management education.

**Executive Academy** is an intense educational experience for Senior teaching & Learning Professionals, enabling you to further develop your leadership competencies and effectiveness. Under the overarching theme "Leading with Impact," the programme is designed to make you more effective in your executive role by empowering you to take on a broader and more strategic responsibility for degree programmes or portfolios. The Executive Academy combines personal coaching, conceptual analysis and integrated application to achieve, for you as a participant as well as the sponsoring school, lasting professional impact.



**Research Leadership Programme** - a partnership between EFMD and EURAM (European Academy of Management), the RLP is aimed at recently appointed directors of research. Over a three-modular based programme, it allows participants to gain a unique overview of research strategy and includes research identity, differing contexts and environmental influences.

**The HUMANE Winter & Summer School** develops the leadership potential of talented administrators by making them fully aware of the concepts and practices of strategic management in a European context, and the importance of integrating academic matters, finances, human resources, governance, leadership and communication strategy in the elaboration of university strategy.

**EFMD Case Writing Competition** promotes excellence in case writing and attracts around 250 submissions per year across 17 categories. Last years' winners came from INSEAD, IMD, University of Geneva, Copenhagen Business School, E.M. Lyon, Rotterdam School of Management, CEIBS, Northeastern University, IESE Business School, Richard Ivey School of Business.

**EFMD / Emerald Outstanding Doctoral Research Awards** have been an outstanding success in helping to foster, celebrate, encourage and recognise excellence in scholarly research all over the world.

**EFMD Excellence in Practice Awards** celebrates outstanding L&D partnerships in L&D with a focus on organisational development, talent management, executive or professional development.

#### **EFMD's hand-picked strategic partners**

**GMAC:** GMAC is the owner of the GMAT exam and provider of market intelligence, research, and professional development opportunities that help schools connect with potential students and employer.





**CVTrust: Smart Diploma™** provides academic institutions with a set of tools to securely grant academic credentials to all their graduates while ensuring full privacy of their personal data.

**Carrington Crisp:** CarringtonCrisp are education marketing specialists, providing market research, consultancy and creative services to business schools globally and work close with EFMD on various studies including SeeFuture, Tomorrow's MBA, GenerationWeb, Executive Education Futures.

**Emerald Group Publishing** is a global publisher linking research and practice to the benefit of society. The company manages a portfolio of more than 300 journals and over 2,350 books and book series volumes, as well as providing an extensive range of online products and additional customer resources and services.

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