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ASSESSING THE PERFORMANCE OF STATE-OWNED ENTERPRISES IN MONTENEGRO

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ABSTRACT
The average stock of state-owned enterprises (SOEs) assets in Montenegro accounts for almost 100 percent of the GDP. SOEs in Montenegro are concentrated in natural monopoly sectors such as energy, transportation, water supply, waste management, and tourism. A SOEs employment footprint in Montenegro accounts for almost 10 percent of total employment which is rather high and similar to some other South-East Europe developing economies.
The objective of this research is to analyze fiscal risks stemming from the 20 largest out of 45 central-government-owned SOEs and to show whether SOEs' corporate governance weaknesses are at the root of the arising fiscal risks.
The methodology used in the research, first includes the OECD corporate governance criteria implementation to measure the stance of corporate governance of 20 analyzed SOEs. The second step of the research methodology is about carrying out a financial ratio analysis to identify fiscal risks stemming from SOEs and confirm whether the fiscal risks are increasing if SOEs' corporate governance is weak. Assessing fiscal risks for the selected group of SOEs is based on the IMF methodology that defines a threshold to assess whether the financial performance of SOEs leads to fiscal risks.
Although having a prominent role in the Montenegrin economy, weaknesses in SOEs' corporate governance reflected in inefficiencies in their management impose substantial financial and fiscal costs. Looking a few years backward, the economic performance of SOEs varies across sectors from profitable SOEs in the energy sector to loss-making enterprises in transportation.

KEYWORDS*: corporate governance, a state-owned enterprise, oversight, fiscal risks*

JEL classification: JEL code E62; JEL code H6; JEL code H8

1. INTRODUCTION

State-owned enterprises (SOEs) play an important role in the economic development of Montenegro and account for a large part of the economy. Goals set for state-owned companies in Montenegro are different from those for commercial companies, which is like in many other countries. Whereas commercial companies are mainly focused on generating profit for their shareholders, state-owned entities fulfill, apart from economic goals, other specific social objectives, such as providing jobs, serving the public interest, or providing necessary goods (Razak et al., 2008). According to official data, there are around 150 SOEs in Montenegro out of which are 45 fully or majority-owned by the central government and the rest are municipal

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SOEs. The average government and municipal-owned SOE assets for the period 2018-2021 accounted for around 90-100 percent of GDP, with a significant employment footprint[1]. This is similar to some other countries in the region like Croatia, Bosnia and Herzegovina, and Serbia.

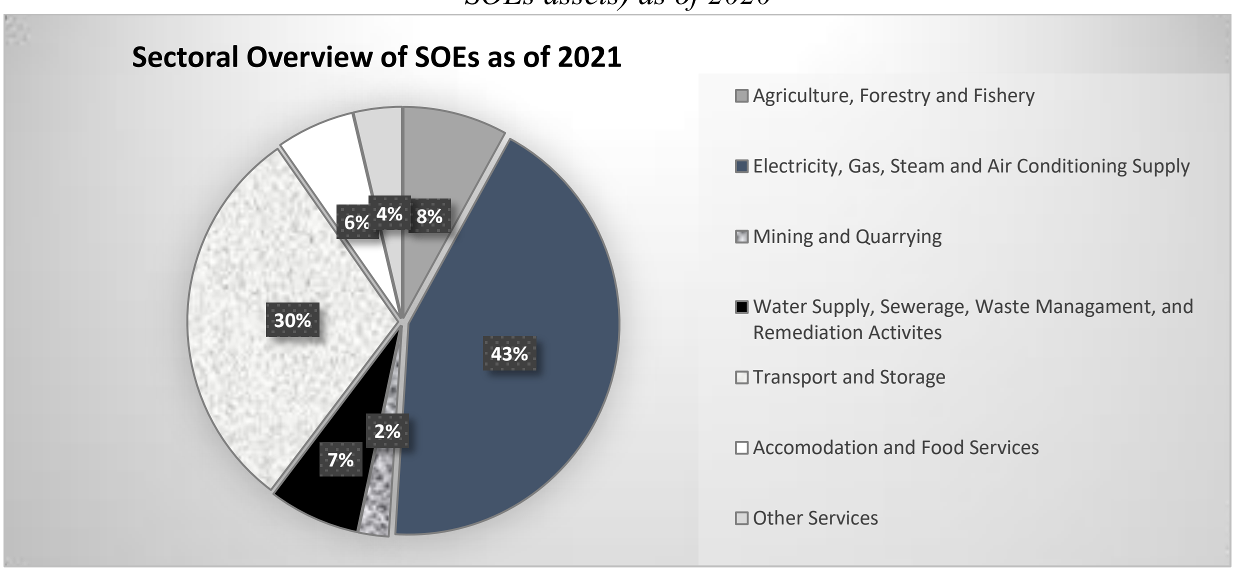
This paper is focused on the largest 20 out of 45 central-government-owned SOEs, whose assets accounted for 78 to 93 percent of GDP over the period 2018-2021. The paper does not include data on municipal SOEs, bearing in mind some research limitations.

The objective of this research is to analyze fiscal risks stemming from the 20 largest SOEs and to show whether SOEs' corporate governance weaknesses are at the root of the arising fiscal risks.

The methodology used in the research first includes the overview of the OECD SOE corporate governance criteria implementation in Montenegro to measure the stance of corporate governance of 20 selected SOEs. The second step of the research methodology is about carrying out a financial ratio analysis to identify fiscal risks stemming from SOEs on the level of each individual SOE as well as on the portfolio level of 20 SOEs. This is based on the IMF methodology that defines a threshold to assess whether the financial performance of SOEs leads to fiscal risks. The third step is to analyze whether the increase in fiscal risks arising from 20 SOEs is associated with SOE corporate governance weaknesses.

SOEs in Montenegro are concentrated in natural monopoly sectors such as Electricity, gas, steam, and air conditioning supply (43 percent of total central- government-owned SOEs assets), Transportation and storage (30 percent of total central-government-owned SOEs assets), Water supply; sewerage, waste management and remediation activities (7 percent of total central-government-owned SOEs); Agriculture, forestry, and fishery (8 percent); Accommodation and food services (around 6 percent of total central-government-owned SOEs).

Figure 1: Central Government SOEs Structure by SITC (% of total central-government-owned SOEs assets) as of 2020



Source: Tax Authority of Montenegro; author's calculations.

[1] About 10% of total employment in Montenegro. This share is higher than in some EU member countries which are ex-socialist economies (like Latvia, Czech Republic, Lithuania, Croatia, Romania), but lower compared to Russia, Ukraine, and particularly Belarus where the SOE employment accounts for almost 1/3 of total employment.

The main findings of this research are that fiscal risks stemming from SOEs are increasing and that SOE corporate governance weaknesses are one of the causes of that.

2. LITERATURE OVERVIEW

According to the IMF, fiscal risks are often compounded by institutional, governance, and financial weaknesses. The IMF finds that institutional and governance weaknesses causing fiscal risks are: (i) “SOEs used as a mechanism for circumventing traditional fiscal controls; (ii) Unclear or uncompensated public policy mandates can weaken performance; (iii) Poor internal governance can reduce returns and exacerbate risks; (iv) Financial reporting systems often fall short of best practice and undermine accountability.”

Furthermore, IMF points out that “SOE-level risks are more likely to have a fiscal impact in SOEs that are:(i) *thinly capitalized*: equity serves as a cushion that enables companies to absorb shocks; (ii) *loss-making:* recurring losses erode the company’s equity. Loss-making companies are not cash generative making them reliant on being able to raise debt; (iii) *low levels of liquidity*: companies may be unable to meet their obligations as they fall due”(IMF, 2021).

Some findings about SOE economic performance and oversight in Montenegro have been published in February 2022 by the IMF in Article 4 Staff Report. The IMF points out that public information on Montenegro’s SOEs is limited and that their economic performance varies widely. Also points out that there is limited central oversight and review of the investment plans of SOEs and the financial performance of SOEs. The IMF finds the need to **manage fiscal risks from the sector, strengthen oversight, and improve governance arrangements for overseeing SOEs** in Montenegro.

Therefore, the purpose of this paper is to analyze whether SOE corporate governance arrangements, if weak, lead to an increasing trajectory of fiscal risks. Fiscal risks stemming from SOEs are defined as deviations of fiscal outcomes from those expected in the budget. According to the IMF methodology known as the “SOE Health Check Tool”, fiscal risks stemming from SOEs are assessed based on financial indicators of liquidity, profitability, solvency, and relations with the government.

3. METHODOLOGY OF RESEARCH

The purpose of the research is to assess possible fiscal risks arising from the largest central government-owned SOEs and to show whether increasing fiscal risks arising from SOEs' are associated with the SOEs weak corporate governance arrangements.

The first step of the research methodology was to check whether the corporate governance mechanisms in the analyzed 20 SOEs are good and aligned with the OECD Guidelines on Corporate Governance of State-Owned Enterprises (OECD, 2015). Therefore, the OECD Guidelines were used as a benchmark to explain gaps in corporate governance of the 20 largest SOEs in Montenegro according to seven principles of effective corporate governance: (i) rationale for state ownership; (ii) the state’s role as an owner; (iii) state-owned enterprises in the marketplace; (iv) equitable treatment of shareholders and investors; (v) stakeholders’ relations and responsible business; (vi) disclosure and transparency (vii) the responsibilities of the board of state-owned enterprises. Each SOE out of 20 selected was analyzed according to seven OECD criteria to assess the stance of corporate governance.

The second step in this research was the assessment of fiscal risks stemming from the 20 largest SOEs based on computing financial indicators on profitability, liquidity, solvency, and government transfers for each SOE in order to assign fiscal risks of SOE. Fiscal risks stemming from SOEs are basically all deviations of fiscal outcomes from what was expected or forecasted by using selected buckets of SOEs' financial ratios.

The theoretical background, to assess the financial risks of SOEs and assign fiscal risks stemming from SOEs is based on the financial ratios following Hida (IMF, 2021), from the IMF's "SOE Health Check Tool" as given in the table below. The table shows the threshold for the classification of financial risk ratios in five categories: from very low to very high risk, based on computed financial ratios.

Table 1. Threshold for classification of risk ratios

	Very Low Risk	**Low Risk**	**Moderate Risk**	**High Risk**	**Very High Risk**
Profitability					
Return on Assets	greater than	0.04	0.01	0	-0.05
Return on Equity	greater than	0.05	0.02	0	-0.1
Cost Recovery	greater than	1.5	1.25	1	0.75
Liquidity					
Current Ratio	greater than	2	1.5	1.25	1
Quick Ratio	greater than	1.2	1	0.8	0.7
Debtor Turnover Days	less than	30	40	50	75
Creditor Turnover Days	less than	30	60	90	120
Solvency					
Debt to Assets	less than	0.25	0.5	0.75	1
Debt to Equity	less than	0.5	1	1.5	2
Debt to EBITDA	less than	1.5	2	3	5
Interest Coverage	greater than	2	1.5	1.2	1
Cash Interest Coverage	greater than	3	2	1.5	1
Debt Coverage	greater than	0.8	0.6	0.4	0.25
Government Relations					
Government Transfers to Total Revenue	less than	0.3	0.4	0.5	0.6
Taxes payable to current liabilities	less than	0.2	0.3	0.4	0.5
Z score		Z > 2.6	2.6 > Z > 1.1	Z < 1.1	

Source: IMF, FAD

The following financial ratios from table 1 were used in the assessment of the financial position of individual SOEs as well as of the whole SOE portfolio in Montenegro:

• **Profitability** – *Return on Equity*. Measures the ability of the company to generate profit that covers the opportunity cost of capital.

• **Leverage** – *Debt to Assets Ratio and Debt to Equity Ratio*. The debt-to-assets ratio measures the proportion of a company's financing that comes from liabilities. *Debt to Equity Ratio* measures a company's financial leverage or the proportion of a company's financing that comes from liabilities relative to equity.

• **Liquidity** – *Current Ratio, which* measures a firm's ability to meet its current or short-term liabilities from short-term assets.

Selected financial indicators are used to assign fiscal risks arising from SOEs based on the threshold given in the table 2.

Table 2: Threshold for benchmarking financial performance to fiscal risks

	Low	Moderate	High	Very High
Selected Profitability Indicators				
Return on Equity	more than 10%	0% to 10%	0% to -10%	less than -10%
Selected Liquidity Indicators				
Current Ratio	more than 2	1.5 to 2	1 to 1.5	less than 1
Selected Solvency Indicators				
Debt to Assets	less than 1	1-1.25	1.25-2	more than 2

Source: IMF, FAD Fiscal Risk Program and SOE Health Check Tool

Each financial indicator was computed on the single SOE level, as well as on the level of the aggregated portfolio of 20 SOEs for each year over the period 2018-2021, and based on them, the the fiscal risk was assigned, based on the threshold, in four categories - from a very low to very high.
The next step was to analyze whether the fiscal risks arising from 20 SOEs are associated with SOE corporate governance.

4. RESULTS AND DISCUSSIONS

4.1 Corporate governance in the 20 largest SOEs in Montenegro

Results of this research were obtained by benchmarking the corporate governance practice in the 20 largest central government-owned SOEs, with OECD SOEs corporate governance guidelines. The 20 largest central government-owned SOEs in Montenegro are presented in the table below:

Table 3: 20 largest SOEs in terms of their assets as of 2021

20 SOEs with the largest assets	Assets as of 2021 (EUR)
Elektroprivreda Crne Gore A.D. Nikšić	1,224,448,755
Željeznička infrastruktura Crne Gore A.D.	598,434,792
"13. Jul - Plantaže" A.D. Podgorica	465,404,373
Crnogorski elektrodistributivni sistem d.o.o.	414,154,476
Crnogorski elektroprenosni sistem A.D.	301,208,110
Aerodromi Crne Gore A.D.	159,498,566
Institut za fizikalnu medicinu, rehabilitaciju i reumatologiju "Dr Simo Milošević" A.D.	122,615,360
Hotelska grupa "Budvanska Rivijera" A.D. Budva	139,968,378
Rudnik uglja Pljevlja A.D.	105,242,561
Hotelsko turističko preduzeće "Ulcinjska Rivijera" A.D. Ulcinj	114,647,213
Regionalni Vodovod "Crnogorsko Primorje" d.o.o.	96,444,023
Luka Bar A.D.	68,324,143
Sveti Stefan Hoteli A.D.	61,864,573
Monte Put d.o.o.	51,055,668
Pošta Crne Gore A.D.	43,583,151
JP Radio-televizija Crne Gore	42,952,465
Crnogorska plovidba A.D. Kotor	38,528,836
Montenegro Bonus d.o.o.	38,367,924
Barska plovidba A.D. Bar	37,484,977
Željeznički prevoz A.D. Podgorica	33,394,172

Source: Financial Statements of SOEs'

According to the first two OECD criteria: "(i) *Rationale for State Ownership*" and (ii) "*State's role as an owner*" this research shows that there is no clear identification of the ownership function in Montenegro, centralized in a single entity, which is independent or under the authority of one minister. The ownership function for SOEs is very fragmented across more ministries, with no centralized single entity which makes the coordination and oversight function more challenging and costly. Therefore, the first two OECD criteria of corporate governance are not met in Montenegro.

Analysis of the implementation of the third criterion "*State-owned enterprises in the marketplace*" shows that there is no clear separation between the state's own function and other state functions that may influence the market conditions for 20 analyzed SOEs. While all 20 analyzed enterprises have mostly non-discriminatory and safeguarded public procurement procedures in accordance with the Public Procurement Law, the economic activities of at least 15 out of 20 analyzed SOEs have access to debt and equity finance under conditions that are not based on purely commercial grounds. At least 12 out of 20 analyzed SOEs benefit from the indirect financial support that confers an advantage over private competitors, such as preferential financing, tax arrears, etc. from the Government. Some SOEs like Elektroprivreda Crne Gore AD, Željeznička infrastruktura AD, Željeznički prevoz AD, Barska Plovidba AD, Crnogorska Plovidba AD, JP Radio-televizija Crne Gore, etc., benefit from state aid and other transfers from the government which creates an uneven business environment for all market players. Therefore, the third corporate governance criterion is not met. With regards to the fourth corporate governance criterion "*Equitable treatment of shareholders and investors*", 15 out of 20 analyzed SOEs are joint- stock companies. Most of them are listed companies and all shareholders must be treated equitably pursuant to the Company Law that is fully harmonized with the EU acquis. However, the degree of transparency is not high, including a challenge of equal and simultaneous disclosure of information to all shareholders. About 19 out of 20 analyzed companies have a website, but they do not regularly publish their financial statements and annual reports. Therefore, this criterion is partially met.

As far as the fifth criterion "*Stakeholder relations and responsible business*" is concerned, it is partially met in the observed 20 SOEs. Almost all analyzed SOEs do not fully recognize responsibilities towards stakeholders and do not always report on their relations with stakeholders. There is limited implementation, monitoring, and communication of internal controls, ethics, and compliance programmes or measures, including those which contribute to preventing fraud and corruption. All 20 SOEs are under the strong pressure of political parties as their board and management are members of political parties appointed on that criterion. Political economy in this regard is particularly reflected in the increasing number of employees in the light of elections.

The OECD's sixth criterion "*Disclosure and Transparency"* is partially met. With regard to disclosure and transparency, as one of OECD principles, SOEs should report material financial and non-financial information on the enterprise in line with high-quality internationally recognized standards of corporate disclosure. In Montenegro, SOEs submit their annual financial statements with external audit reports, pursuant to the Law on Accounting and Audit to the Tax Authority. In addition, the joint-stock companies are obliged to submit both financial statements and audit reports to the Securities Commission of Montenegro (SEC). Specific state control procedures by the State Audit Institution are also performed. On the other hand, all 20 analyzed SOEs fall short in the following internationally recognized standards of corporate disclosure: (a) Board member qualifications, selection process, including board diversity policies, roles on other company boards, and whether they are considered as independent by the SOE board; (b) any material foreseeable risk factors and measures taken to manage such risks. Most of the analyzed SOEs receiving any financial assistance, like subsidies and guarantees from the state usually do not disclose that. As far as the seventh criterion "*The responsibilities of the boards of state-*

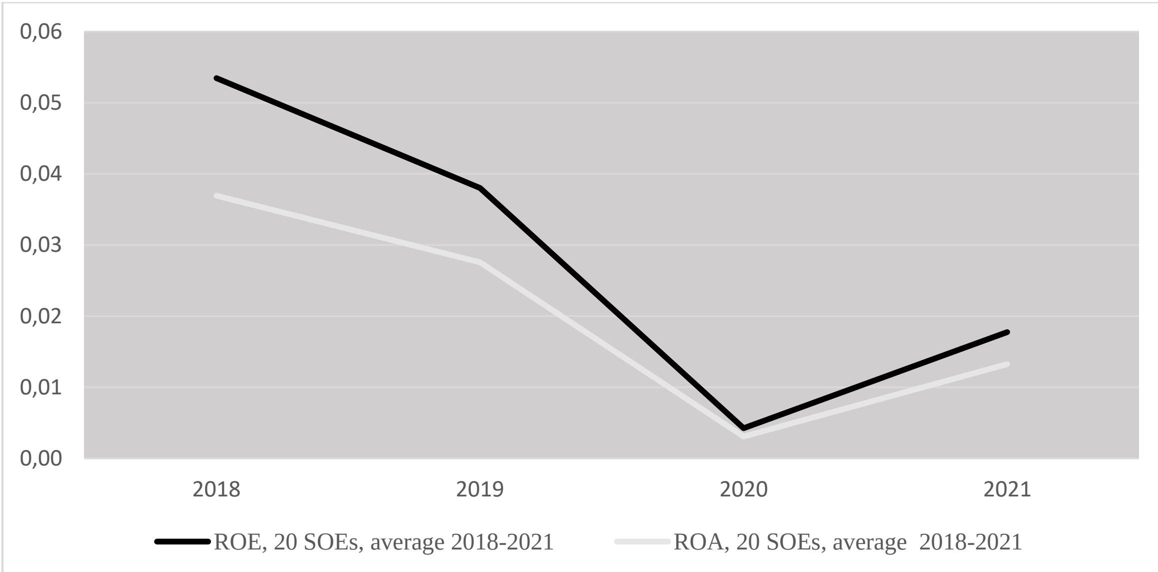
owned enterprises" is concerned, it is not met in at least 18 out of 20 analyzed SOEs. Although the role of SOE boards is clearly defined in the Company Law, they are not always fully accountable to the owners due to the strong impact of the political economy, and lack of integrity and competencies. In at least 10, out of 20 analyzed SOEs, boards do not effectively carry out their functions of setting strategy and supervising management, although they should have the power to appoint and remove the CEO. In all 20 analyzed SOEs, all board members are not nominated based on qualifications. Political interference in the board's operations is very high and undermines the board's independence as a board member is proposed by political parties in all 20 companies to be appointed by the government without any criteria on their competencies. There are no fully implemented mechanisms to avoid conflicts of interest preventing board members from objectively carrying out their board duties and limiting political interference in board processes.
According to all seven above-mentioned OECD criteria on *corporate rules*, SOEs corporate governance criteria in Montenegro are partially met showing severe weaknesses in some aspects of corporate mechanisms. SOEs with the largest challenges in terms of implementation of the OECD corporate governance criteria Barska plovidba A.D. Bar, Crnogorska Plovidba AD, Željeznička infrastruktura AD, Rudnik Uglja AD, Institut "Dr Simo Milošević" A.D. Crnogorski elektrodistributivni sistem d.o.o.

4.2 SOE financial performance on the level of 20 largest central government-owned SOEs

Weakness in corporate governance of 20 analyzed SOEs (shown in table 3) can impose substantial economic and fiscal costs revealed in loss-making, low levels of liquidity, and consequently growing indebtedness. Therefore, financial indicators of the SOEs have been calculated for the period 2018-2021 to assess the financial performance of those central government-owned SOEs in Montenegro and to assess the fiscal risks arising from their portfolio.

The profitability risks of the 20 analyzed SOEs, measured by ROE and ROA have an increasing trajectory, looking at the level of the 20 largest SOEs. Even though it improved in 2021 compared to 2020, profitability is still below its pre-Covid 19 level (see figure 1). This is the consequence of loss-making in large companies, like "13. Jul - Plantaže" A.D. Podgorica, Barska plovidba AD, Crnogorska Plovidba AD, Institut "Dr Simo Milosevic" A.D., Crnogorski elektrodistributivni sistem d.o.o.

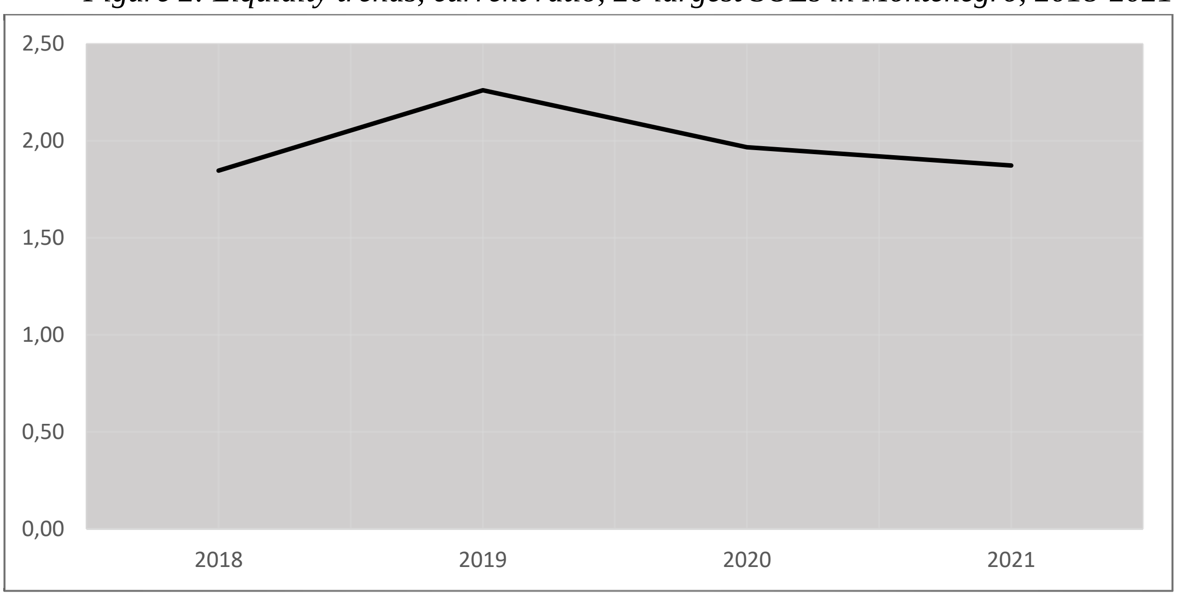
Figure 1: Profitability trends, 20 largest SOEs in Montenegro, 2018-2021



Source: Tax Authority of Montenegro; Author's calculations of ROE and ROA on the level of 20 SOEs portfolio

Liquidity risks are growing as liquidity has been decreasing (see figure 2). The current ratio has been decreasing since 2019 or in the post-pandemic period. The SOE sector continues to face liquidity challenges despite the significant number of transfers in the observed period, with increased risks of outstanding obligations that adversely affect the state budget.

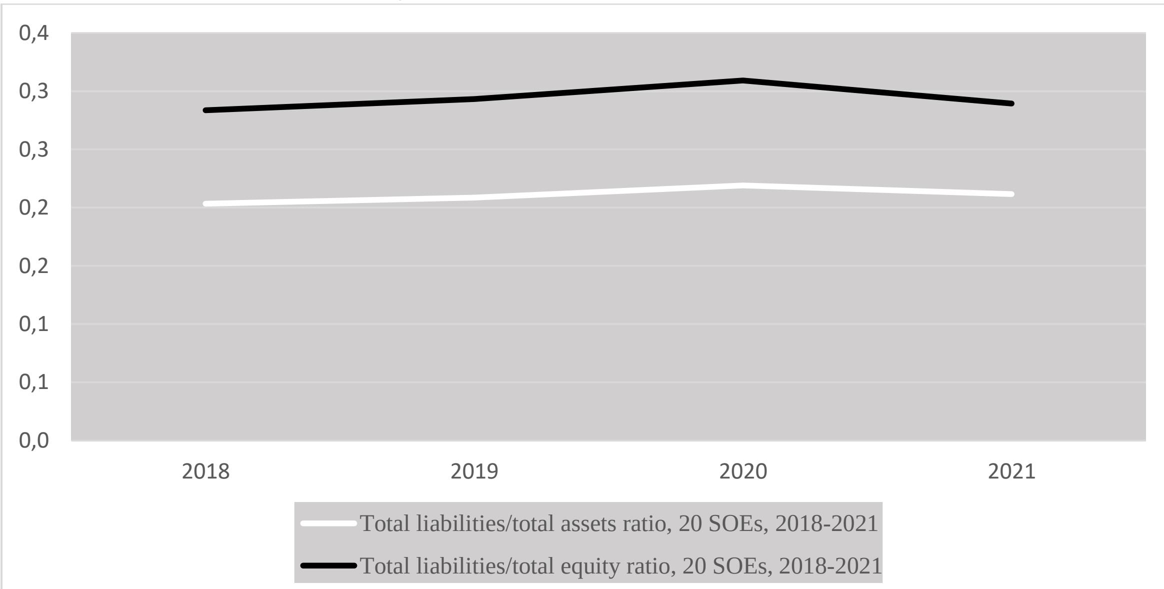
Figure 2: Liquidity trends, current ratio, 20 largest SOEs in Montenegro, 2018-2021



Source: Tax Authority of Montenegro; Author's calculations on the level of 20 SOEs portfolio

Total liabilities at the level of 20 SOEs increased in the observed period, especially in 2020, due to the Covid-19 pandemic. In 2021, they are higher by about 14 percent compared to 2019, which preceded the pandemic caused by Covid-19. Liabilities increased from 18 percent of GDP in 2019 to around 22% of GDP in 2020 (due to a drop in GDP in that year as the pandemic outbreak consequence). Looking at the whole portfolio of 20 SOEs, their solvency was improved in 2021 compared to 2020. However, **solvency risks increased** compared to the pre-pandemic period (see figure 3). Solvency has been measured by two ratios: total liabilities over total assets and total liabilities over total equity.

Figure 3: Solvency trends, 20 largest SOEs in Montenegro, 2018-2021



Source: Tax Authority; author's calculations on the level of 20 SOEs portfolio

The main finding of this analysis of financial indicators for the above-mentioned 20 largest SOEs, over the period 2018-2020, is that the **overall fiscal risks of the SOE sector moved from low before the Covid-19 pandemic to moderate in 2021.** This is partially associated with identified SOE corporate governance weaknesses.

Looking by sector, the analysis of the 20 largest SOEs showed that the sector "Electricity, gas and steam" as the largest sector, records the lowest fiscal risks. The good financial performance of Elektroprivreda Crne Gore A.D. in 2021, contributed to low fiscal risks, both before the pandemic and after, because Elektroprivreda has the largest share in the assets of the SOE sector. On the other hand, the worse performance indicators of CEDIS d.o.o., especially in 2021, had an unfavorable contribution to the overall results of this sector. In general, the favorable indicators and low fiscal risks in the "Electricity, gas, and steam" sector have been significantly contributed by multi-year reforms due to the EU accession negotiations and membership in the Energy Community. This led to improvement of corporate governance, but it still faces weakness, especially in a few companies like Rudnik uglja Pljevlja AD (the Coal Mine Pljevlja JC), Crnogorski elektroistributivni sistem d.o.o. (Energy Distribution System of Montenegro d.o.o), whose financial indicators deteriorated at the same time.

Very high fiscal risks are stemming from the SOEs which operate in "Transport and storage" the second largest sector in Montenegro in which SOEs operate. At the same time, corporate governance in the sector faces many weaknesses, revealed by the strong interference of the state on their competitive position in the marketplace, disclosure and transparency procedures, board member qualifications, selection process, including board diversity policies, and political economy in their operations. Fiscal risks are reflected in very high risks of profitability, leverage, and liquidity, in addition to the fact that the largest part of the government's transfers is aimed at this sector. The situation in the transport sector, in terms of fiscal risks, due to the specificity of the industry, is similar to certain surrounding countries. One of the analyzed 8 SOEs, liquidity indicators in 2021 have improved in "AD Aerodromi Crne Gore" compared to the crisis year 2020, bearing in mind the re-establishment of traffic lines after the lockdown in 2020. On the other hand, SOE "Barska Plovidba AD", "Crnogorska plovidba AD Kotor", "Zeljeznička infrastruktura AD" and "Zeljeznički prevoz AD" faced high liquidity, profitability, and solvency risks in 2021, as in previous years. "Pošta Crne Gore AD" recorded slightly less favorable solvency indicators in 2021 due to an increase in total liabilities, while liquidity and profitability indicators remained at approximately the same level as before the pandemic. The indicators for "Luka Bar AD" were approximately at the pre-pandemic level. Slightly less favorable indicators of solvency and profitability in 2021 were recorded in Monteput d.o.o. compared to the previous two years.

The third largest sector in which SOEs operate in Montenegro is "Agriculture, Forestry, and Fishery". This sector faces increasing profitability risks.

In the sector "Accommodation and food services", liquidity has improved in the post-pandemic period, but profitability is still a challenge. Even before the pandemic, the sector had very low profitability, but since the beginning of the pandemic, it has been operating with a negative result.

5. CONCLUSION

Corporate governance practices in the 20 largest central government-owned SOEs in Montenegro are not aligned with international best practices and OECD Guidelines on Corporate Governance of State-Owned Enterprises (OECD, 2015). Lack of accountability and implementation of best international practices, especially regarding the ownership policy, completion and state aid rules, transparency, and disclosure procedure, and the selection and responsibilities of the boards of directors are the biggest challenges for SOEs in Montenegro at the root of arising fiscal risks. Weak corporate governance mechanisms, especially in a few large sectors like "Transportation and Storage", and partially "Electricity, gas, and steam" is accompanied by increasing fiscal risks.

Results of this research show that fiscal risks stemming from central government-owned SOEs increased from low in 2018 to moderate in 2021, so the overall fiscal risk trajectory is increasing. It is very likely that increasing fiscal risks arising from 20 SOEs, is associated with identified SOE corporate governance weaknesses.

In order to enhance SOEs corporate governance and reduce fiscal risks, Montenegro should modify its legal framework to implement the OECD governance practices and strengthen the coordination and SOE oversight function. SOEs in Montenegro, should align their corporate governance with international best practices which will include transparency in the disclosure process; developing criteria for the appointment of a board of directors in line with OECD guidelines. The SOEs oversight function should be strengthened, through the stronger role of the

Ministry of Finance in overseeing the SOEs' performance. The fiscal risk function to reduce fiscal risks stemming from SOEs should be strengthened.

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SOCIAL PROTECTION EXPENDITURES IN CENTRAL AND EASTERN EUROPEAN COUNTRIES: DOES GOVERNMENT DEBT MATTER?

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ABSTRACT
The paper examines the potential effect of government debt on the social protection expenditure level in Central and Eastern European countries. More specifically, we examined whether governments reduce social protection spending when the fiscal stance worsens and when debt rises, in order to avoid fiscal unsustainability. This is a topical issue, given the population ageing and the level of indebtedness in some countries. Many studies have explored the economic and fiscal effects of rising social protection expenditures, but a few studies have examined the reaction of this specific expenditure category to rising debt levels. In addition, we examine the response of social protection expenditures to the changes in the level of economic activity, unemployment, inequality and population ageing. We found a small, but statistically significant positive effect of government debt to social protection expenditure, in line with the argument of coexistence of rising debt levels and rising social expenditure during recession and confirming their resilience to spending cuts. It could also be argued that these countries are not excessively indebted, and this could potentially contribute to the smaller response to increased debt levels. The results also indicate a negative impact of general government balance, implying that improved fiscal balance leads to lower social spending. The counter-cyclical nature of social protection expenditures is confirmed with the negative impact of GDP growth and the positive impact of unemployment. The negative effect of the Gini coefficient indicates that countries with lower inequality levels dedicate more resources to social protection. We didn't find a strong influence from the dependency ratio.

Keywords: *Social protection expenditure, Government debt, Central and Eastern European countries*

JEL classification: *H53, I38, H6*

1. INTRODUCTION

For decades, social expenditures have increased in many industrialized countries. The intent of social spending is reducing and alleviating inequality and poverty, enhancing social cohesion and protecting people against a set of risks or needs, associated with old age, sickness and/or healthcare, childbearing and family, disability, unemployment, etc. The expanding role of the welfare state (particularly in the EU) and the population ageing have

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led to a continuous rise in social expenditures. In many OECD countries, social expenditure assumes the lion's share of general government expenditure. Public social expenditure relative to GDP increased from 14.4% in 1980 to 20.5% in 2016 in OECD countries, although since the rapid jump in 2008-2009 due to the Great Recession, they were reduced within the fiscal retrenchment movement after the debt crisis and with the economic recovery. The European Union countries are well known for their generous welfare systems; hence their social expenditures are higher than in other OECD countries. There is however variation within the EU, with the Nordic countries allocating much more of their budgets for welfare, compared to the Central and Eastern European countries which allocated the lowest percentage for welfare.

Many theories and studies have tried to explain the difference in the relative importance of social protection expenditures in different countries and establish its determinants. In his seminal work, Esping-Andersen (1990) distinguished between three welfare state regimes (liberal, conservative and social-democratic), with liberal being the least and social-democratic the most generous in their spending on providing social benefits. His classification has later been expanded with other regimes, one of which is the post-socialist regime of the countries of Central and Eastern Europe. The theoretical and empirical literature have found many factors that influence the level of social protection expenditures (political, economic, social, institutional), such as political parties, trade unions, population ageing, modernization, economic development, unemployment, globalization, income inequality, public debt, government deficit etc. (see more in Haelg et al., 2020). Haelg et al. (2020) point that increases in social expenditure may also be quite mechanical, due to demographic changes or cyclical movement in the economy. With the ageing of the population, when less citizens work and provide contributions to social security systems, and simultaneously, more citizens enjoy social security benefits, social expenditure increases. In recessions, unemployment benefits increase and GDP decreases.

The rise in social spending during the last century brought about a significant increase in the total government expenditures and according to many studies, also contributed to the rising public debt. Governments should be careful not to endanger sustainability (Schuknecht and Zemanek, 2018). Critics of the welfare state regularly argue that population ageing renders existing social welfare programs unsustainable. Hence adjustments will be needed to accommodate the predicted growth of spending on pensions and other old-age related expenditures. However, Buchanan and Tullock (1962) argue that social expenditures tend to have a high political, at least in the short-term, cost and it is hard to cut or even restructure social benefits. This goes in line with some findings on the greater resilience of social expenditure to fiscal retrenchment measures compared to other expenditure items and might explain the reluctance to cutting social expenditure and the so called "social dominance" of social expenditure over other public expenditure such as for public investments, defense or economic affairs (Begg et al., 2015; Schuknecht and Zemanek, 2018).

This paper focuses on social protection expenditures in Central and Eastern European countries. We address the potential effect of government debt on the social protection expenditure level. More specifically, we try to examine whether governments reduce social spending when the fiscal stance worsens and when debt rises, in order to avoid fiscal unsustainability. Many studies have explored the economic and fiscal effects of rising social protection expenditures, but a few studies have examined the reaction of this specific expenditure category to rising debt levels. This is a topical issue, given the population ageing and the level of indebtedness in some countries. In addition, we examine the response of social protection expenditures to the changes in the level of economic activity, unemployment, inequality and population ageing. The rest of the paper is structured as follows. Section 2 provides a brief empirical literature review. Section 3 depicts the dynamic sand level of social expenditure in the CEE countries. Section 4 explains the methodology and data, and the results are provided and discussed Section 5. Finally, concluding remarks are given in section 6.

2. LITERATURE REVIEW

The literature on social protection expenditure mainly examines their efficiency and their effects on economic growth, poverty or inequality reduction, quality of life, public debt etc. However, another strand of literature explores the drivers of social expenditures. The early studies, like Wilensky (1974), emphasized the importance of wealth, economic growth, demographics and the age of the social security system. Later on, other factors have also been found relevant, including political and institutional factors, such as the political ideology, democratization, corruption etc. (see for example Hicks and Swank, 1992; Snyder and Yackovlev, 2000; Baqir, 2002), However, more recent studies find a weaker impact of political factors in time. For example, Kittel and Obinger (2003) conclude that compared to socio-economic variables, political factors play a minor role.[1] and they are found to have a stronger influence on education and health spending than on social protection spending.

Most studies emphasize the dominant influence of socio-economic factors on the level of social expenditure. The main determinants found in more recent research are population ageing, economic growth, GDP, unemployment, deindustrialization (see Obinger and Waschal, 2012; Molina-Morales et al., 2013). Income inequality has also been examined as a determining factor of social spending (see Molina-Morales et al., 2013). The impact of demographic changes, particularly population ageing has also been vastly investigated. However, while some studies have found ageing as a significant factor, Haelg et al. (2020) note that the empirical evidence generally shows that ageing as measured for example by the dependency ratio hardly influenced overall social expenditure, public pension and health expenditures. Schuknecht and Zemanek (2018) investigate what caused the rise in social expenditure over the last few decades in OECD countries and find that the business cycle (automatic stabilizing effect of social spending), structural unemployment, and population ageing are statistically significant. Beblavy (2010) examined the drivers of SPE in the European Union countries and found that unemployment and employment rates, old age dependency ratio, and GDP per capita explain more than 50 percent of the variation in social expenditures. Athanasenas et al. (2015) established that the unemployment and the dependency ratio, appear to exhibit a significant positive impact on social protection expenditure growth, while economic growth appears to exhibit a significant negative impact. Tashevska et al. (2019) concluded that social expenditure in the EU countries in the period 2000-2017 were positively affected by government debt, unemployment rate, Gini coefficient, and negatively by the primary balance and GDP growth, whereas the age dependency ratio was not significant. Szymanska (2022) confirmed the negative effect of GDP growth and GDP per capita and the insignificant effect of the dependency ratio for the EU countries for the same period. Gassmann et al. (2016), examining a range of 55 developed and developing countries, found a positive effect from government revenue, poverty gap, GDP per capita, the quality of institutions and people's preferences on social protection expenditure, and a negative effect from the Gini coefficient[2], and did not find a significant impact from demographic factors. For 31 OECD countries over

[1] Some researchers argue that for example left and right wing parties tend to move more toward the middle and respond to social requirements of the voters in a similar manner (Molina-Morales et al., 2013).

[2] They explain this result: "Schwabish et al. (2003) found that while inequality between the middle class and the poor has a small positive impact on the level of social spending, inequality between the rich and the middle class has a large and negative impact on social spending. As the "rich" become more distant from the middle and lower classes, they find it easier to opt out of public programmes and to buy substitutes for social insurance in the private market." (Gassman et al., 2016, p. 16)

the period 1980-2016, Haelg et al. (2020) found a negative effect of budget deficits, trade globalization and fractionalization of the party system, and a positive effect of ageing, unemployment, social globalization, coalition governments and public debt. Murshed et al. (2017) found that social protection expenditure in developing countries in the period 1990-2010 is greater in more egalitarian societies, countries with greater fiscal capacity, higher per capita income and rising democratization enhances social sector spending. Mina (2018) explored 54 developed and developing countries from different regions and found that GDP per capita, national administrative capacity, and the extent of the shadow economy increase the share of social protection expenditures, while labour market flexibility, trade openness, fractionalization, and natural resource abundance decrease it. Ko and Min (2019) found that higher human development index, greater maturity of the democracy and the welfare system contribute to higher social spending, while higher GDP growth and FDI reduce social spending, and population ageing does not have a significant effect.
The relationship between public debt and social expenditures has attracted much attention in the past decades. Some authors have shown that social expenditure is negatively correlated with public debt and budget deficits (Haelg et al., 2020). On the other hand, Schuknecht and Zemanek (2018) find a strong correlation between rising public debt ratios and the rise in social expenditure. Most of this research, however, focuses on the fiscal implications of rising social expenditures and the threat to fiscal sustainability. A few studies, on the other hand, have been concerned with the possible impact of deteriorating fiscal stance and rising debt on social expenditure. In other words, whether countries react to rising debt levels by cutting social expenditure. The increased government indebtedness in many industrialized countries since the 1980s imposed constraints on the expansion and maintenance of social expenditure (Haelg et al., 2020). However, as already noted, social expenditures are considered more resilient to fiscal austerity measures than other types of expenditures (e.g. Baqir, 2002). Some recent studies have found that financing constraints, represented by net lending and public debt ratio influence social expenditure (Lora and Olivera, 2007; Chang et al., 2016; Schuknecht and Zemanek, 2018). Considering a government's policy reaction to excessive debts, Lora and Olivera (2007) using an unbalanced panel of around 50 countries for the period 1985-2003 find that higher debt ratios do reduce social expenditures, as popular opinion holds. However, Chang et al. (2016) argue that higher government debts could be linked with higher social spending as fiscal deficits are typical for a recession, when also a greater demand for social expenditure exists. Some recent studies (Sanz and Velázquez (2007), Haelg et al. (2020) for OECD countries and Tashevska et al. (2019) for EU countries) discover that increasing government debts may be linked to an increase in social spending. Schuknecht and Zemanek (2018) also explore the structure of their financing and find that the increase in social expenditure is financed largely through a reduction of other spending, confirming the 'social dominance' theory. The dominance of social protection expenditure over other government expenditure items (on public infrastructure, education and core public service) was also explored by Tashevska et al. (2020) for the European Union.

3. SOCIAL PROTECTION EXPENDITURES IN CENTRAL AND EASTERN EUROPEAN COUNTRIES

In 2019, total government expenditure in the EU amounted to 46.6% of GDP. Expenditure on 'social protection', which reflects government's core function to redistribute income and wealth, financed by compulsory payments, was by far the most important COFOG[3] division in 2019 in the EU, reaching an average ratio of 19.3% of GDP and 41.5% of total government

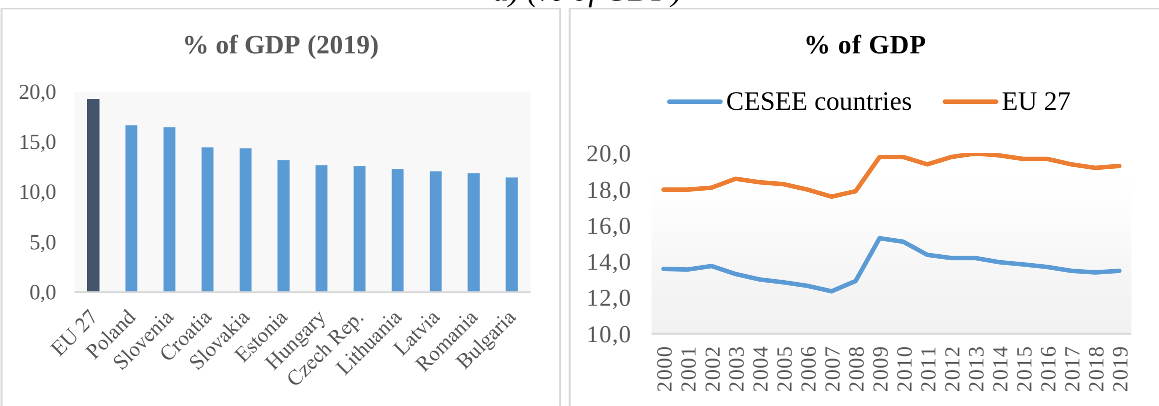
[3] COFOG stands for Classification of expenditures by government function (developed by the Organisation for Economic Co-operation and Development and published by the United Nations Statistical Division).

expenditure. The Social protection category includes the following groups of expenditure: Sickness and disability; old age; survivors; family and children; unemployment; housing; R&D; social protection and social exclusion. They also argue that the rise in social protection expenditure by 0.9 p.p. of GDP from 2003 to 2017 was compensated partially by a decrease in all other government expenditure functions except health. Begg et al. (2015) find it striking that the shares of old-age outlays were so stable up to the crisis and how they appear to have been protected (and have indeed increased) since 2008. Healthcare, similarly, has been gently increasing its share, while spending on unemployment benefits jumped after 2007 due to the larger number of unemployed people.

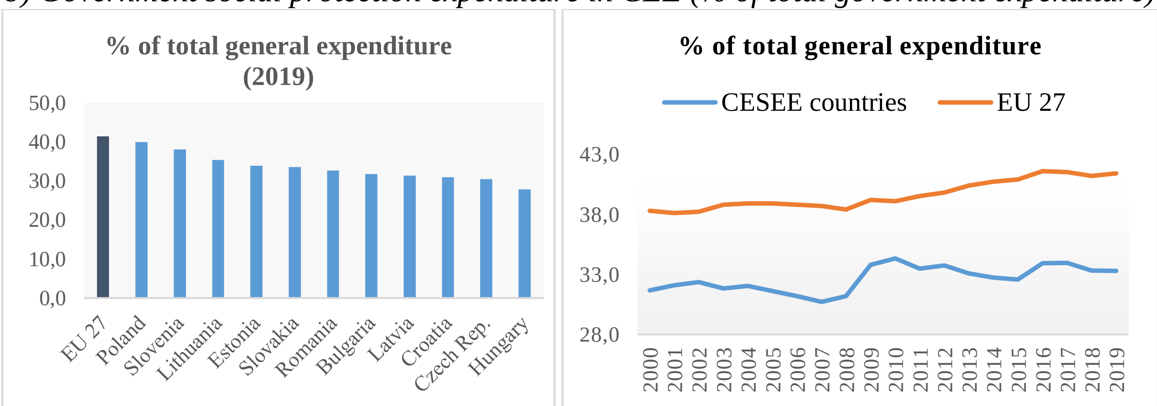
CEE countries have a significantly lower average level of social protection expenditure related to the EU 27 average (13.5% of GDP and 33.3% of total general expenditure in 2019, related to 19.3% and 41.5% respectively). This is not surprising given that these countries generally have a lower level of total public spending as % of GDP compared to the European Union average (40.6% related to 46.6%). Low state budgets in the CEE countries, due to poorer tax collection, reflect negatively on the social protection expenditure and they are lower compared to their EU peers. Figure 1 depicts the dynamics of social protection expenditure incurred by the general government in the CEE countries and its size in 2019. Social protection expenditure in CEE varies from 16.7% of GDP in Poland to only 11.4% of GDP in Bulgaria and 11.8% of GDP. Within their budgets, social protection expenditure accounted for the largest share in Poland (39.9% of total general government expenditure) and the lowest in Hungary (27.7% of total general government expenditure).

Figure 1: Government social protection expenditure in CEE countries

a) (% of GDP)



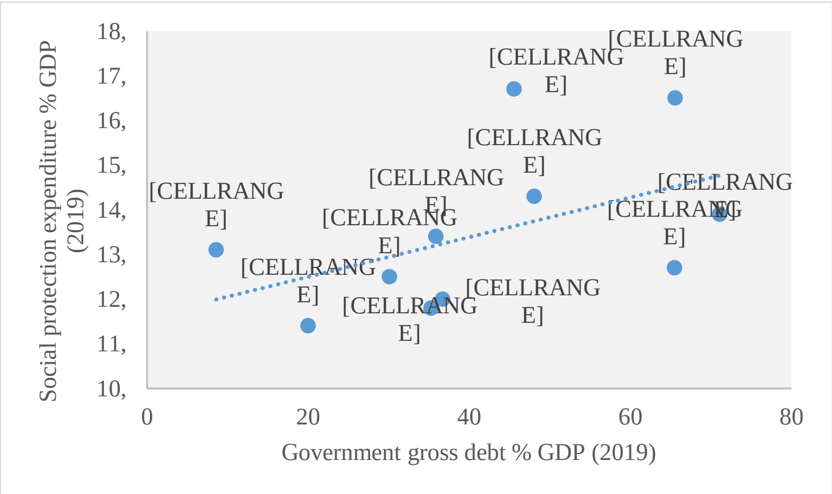
b) Government social protection expenditure in CEE (% of total government expenditure)



(Source: Eurostat database)

Social protection spending, as expected, has significantly increased in the European countries due to financial crisis in 2008. In the pre-crisis period, during times of economic growth, these expentitures were relatevly stable, they have even slightly declined on average (the CEE countries, for example, were adjusting their public finance due to the EU integration process). In a period of positive economic outcomes, social protection expenditure drops as there are normally less people in need and when the denominator has a positive trend. However, as the Global Recession abrupted these favourable trends, social protection expenditure jumped and reached its maximum level in 2009 of 15.3% of GDP in CEE countries and 19.8% in EU 27. This reflected both the counter-cyclical feature of social protection and the implemented massive expansionary measures. In the post-crisis period, social protection spending started to decline as the economies began to recover and less people needed financial asistance and as part of the austerity measures aimed at improving the fiscal stance. However, the CEE countries have experienced a significantly larger decrease (from 15.3% to 13.5% in 2019) compared to the European average (from 19.8% to 19.3% in 2019), probably due to the more limited fiscal space that less developed countries have for financing social expenditures in conditions of growing post-crisis indebtedness.

Figure 2: The relationship between government debt and social protection expenditure in CEE countries



(Source: Eurostat database)

Figure 2 plots the relationship between between social protection expenditure and government gross debt. It indicates a positive relationship between the two variables, meaning that CEE countries with higher social protection expenditure relative to GDP tend to have higher gross debt and vice versa. The same indication arises if the share of social protection expenditure in total government expenditure is plotted against government debt.

4. METHODOLOGY AND DATA

To examine the effect of government debt and a set of socio-economic determinants on social expenditures, several panel regression models are estimated for eleven countries from Central and Eastern Europe – Bulgaria, Czech Republic, Croatia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and Slovenia. Several Balkan countries were primarily considered (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia) but were omitted due to missing data. Annual data are collected for the period 2000 – 2019. The socio-economic indicators included in the model are presented in Table 1.

Table 1. Variables included in the panel regression model

	Indicator	Source
SPE	General government expenditure on social protection (% of GDP)	Eurostat
AD	Age dependency ratio (% of working-age population)	World Bank
GDP	GDP growth (annual %)	World Bank
GINI	Gini coefficient	The Standardized World Income Inequality Database
GGD	General government gross debt (% of GDP)	IMF
GGNLB	General government net lending/borrowing (% of GDP)	IMF
TAX	Tax revenue (% of GDP)	World Bank
UNEMP	Unemployment (% of total labour force)	World Bank

(Source: Authors' representation)

Social protection expenditures are calculated as a percentage of GDP, and they represent social protection expenditure made by the General government, according to the COFOG classification. Social protection expenditure represents the dependent variable, and also its one-period lagged value is included in the regression model in order to examine the inertia of the dynamics of these expenditures. The age dependency ratio represents the ratio of people younger than 15 years or older than 64 years compared to the working-age population (from 15 – 64 years). The increase in this ratio takes into account both the pressure due to demographic ageing and that related to the decline of the fertility rate in the majority of the European countries (Athanasenas et al., 2015). This variable should reflect the burden of the population that is supported by the working population, particularly considering the ageing population. GDP growth as annual percentage of change is calculated at market prices based on constant local currency. The dynamics of this rate should provide an information about the state of the national economy. The Gini coefficient is a well-known indicator of income distribution and inequality, and it is used in this analysis to test the hypothesis about increased social protection expenditures due to increased inequality. It is acquired from the Standardized World Income Inequality Database, which is consisted of comprehensive data on Gini coefficient for countries worldwide. All fiscal variables are expressed as % of GDP. General government gross debt should have an inverse correlation with social protection expenditures in cases when the fiscal reaction function of social protection expenditures shows an authority's reaction in terms of sustainability. General government net lending/borrowing (general government balance) measures the extent to which general government revenue exceed/fall short of general government total expenditure. Tax revenue proxies the fiscal capacity of countries. This variable should explain if the revenue increase leads towards social protection expenditures increase, or the opposite situation where revenue increases are used for different purposes. The unemployment rate as % of total labour force refers to the share of the labour force that is without work but available for and seeking employment. This variable should be positively correlated with social expenditures, as more unemployed people naturally require more social assistance.

Before the models were estimated, the stationarity of the panel data variables was examined.[4] A battery of unit root tests was applied, consisted of tests that assume common unit root process such as Levin, Lin and Chu test and Breitung t-statistic and tests that assume individual unit root processes such as Im, Pesaran and Shin W-statistic, ADF-Fisher χ^2 test and PP-Fisher χ^2 test. The tests were performed for all three specifications (individual effects, individual effects and linear trends and no intercept or linear trend). The tests confirmed that only GDP growth is stationary in its level, Gini coefficient, Government net lending/borrowing, Social protection expenditure, Tax revenue and Unemployment are variables stationary in their first difference and Age dependency and Government gross debt are stationary in their second difference.

5. MODEL ESTIMATION AND RESULTS

The results from three estimated equations are presented in Table 2. All variables included are stationary (variables that had unit root were differenced). The first equation can be noted as:

$$\Delta SPE_{i,t} = \\ \beta_1(\Delta SPE_{t-1}) + \beta_2(\Delta 2AD_t) + \beta_3(\Delta GDP_t) + \beta_3(\Delta GINI_t) + \beta_4(\Delta 2GGD_{t-1}) + \\ \beta_5(\Delta GGNLB_t) + \beta_6(\Delta TAX_t) + \beta_7(\Delta UNEMP_t) + \omega_{i,t}, \quad \omega_{i,t} = \epsilon_i + \upsilon_{i,t}$$

where the heterogeneity (variation) in the cross -sectional dimension occurs via the ϵ_i. This framework requires the assumptions that the new cross-sectional error term, ϵ_i, has zero mean, is independent of the individual observation error term (υ_{it}), has constant variance and is independent of the explanatory variables (Brooks, 2014). The first model proves all variables to be significant, except the Age dependency ratio and Tax revenue. The model was estimated with cross-section random effects in accordance with the Hausman test results. The other two equations were estimated without the insignificant variables, both with the cross-section random effects and cross-section fixed effects due to the value of Hausman statistics of 0.0318 which is not strictly cut-off. All three models were not susceptible to changes since the variable significance and signs remain the same. The specification for the second equation is:

$$\Delta SPE_{i,t} = \beta_1(\Delta SPE_{t-1}) + \beta_2(\Delta GDP_t) + \beta_3(\Delta GINI_t) + \beta_4(\Delta 2GGD_{t-1}) + \\ \beta_5(\Delta GGNLB_t) + \beta_{67}(\Delta UNEMP_t) + \omega_{i,t}, \quad \omega_{i,t} = \epsilon_i + \upsilon_{it}$$

The specification for the third equation estimated with cross-sectional fixed effects is following:

$$\Delta SPE_{i,t} = \beta_1(\Delta SE_{t-1}) + \beta_2(\Delta GDP_t) + \beta_3(\Delta GINI_t) + \beta_4(\Delta 2GGD_{t-1}) + \beta_5(\Delta GGNLB_t) + \\ \beta_{67}(\Delta UNEMP_t) + u_{i,t}, \quad u_{i,t} = \mu_i + \upsilon_{i,t}$$

where the disturbance term, $u_{i,t}$ is decomposed into an individual specific effect, μ_i, and the "remainder disturbance", $\upsilon_{i,t}$, that varies over time and entities (capturing everything that is left unexplained about the dependent variable), (Brooks, 2014).

Table 2. Estimated panel regression models (Dependent variable: Social expenditures)

[4] Due to the limited space, the results from the unit root test are not presented here but are available from the authors upon request.

Variable	Equation 1		Equation 2		Equation 3	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
D(SPE(-1))	-0.26	0.00***	-0.25	0.00***	-0.27	0.00***
D(AD,2)	0.07	0.79	/	/	/	/
GDP	-0.08	0.00***	-0.08	0.00***	-0.09	0.00***
D(GINI)	-0.24	0.08*	-0.24	0.08*	-0.25	0.11
D(GGD(-1),2)	0.03	0.03**	0.03	0.03**	0.03	0.04**
D(GGNLB)	-0.13	0.00***	-0.12	0.00***	-0.11	0.00***
D(TAX)	0.06	0.33	/	/	/	/
D(UNEMP)	0.21	0.00***	0.20	0.00***	0.19	0.00***
C	0.35	0.00***	0.36	0.00***	0.40	0.00***
Adjusted R-squared	0.60		0.60		0.64	
Durbin-Watson stat	1.53		1.51		1.56	
Periods	16		16		16	
Cross-sections	11		11		11	
Observations	175		175		175	
Hausman test probability	0.0961		0.0318		0.0318	
Method	Cross-section random effects		Cross-section random effects		Cross-section fixed effects	

*, **, *** *Statistical significance levels of 10,5 and 1%*
(Source: Authors' calculations)

Our main variables of interest, government debt and government balance are found to be statistically significant predictors of social protection expenditure. The lagged value of general government gross debt has a positive impact on social protection expenditure. This indicates that higher debt levels are associated with higher levels of social expenditure, confirming their resilience to spending cuts compared to other public spending categories, but is also in line with the argument of coexistence of rising debt levels and rising social expenditure during recession, when tax revenues fall and there is an increased demand for social protection at the same time. However, the coefficient is very low, indicating a particularly small effect of debt on the level of expenditure on social protection. The general government balance has inverse and statistically significant effect on social protection expenditure, indicating that improved fiscal balance leads to reduced social spending.

GDP growth has a negative and statistically significant effect on social protection expenditures, and its influence is in accordance with the theoretical expectations. In situations where countries improve their economic performance, social protection expenditure tends to decline. This is due to both the counter-cyclical nature of social protection expenditure, particularly regarding unemployment, less expansionary policies, but also to the higher denominator (GDP) in the social protection variable.

The unemployment rate has the expected positive and statistically significant effect since an increase in unemployment would require an increase in government spending for social protection. The Gini coefficient is only statistically significant at a significance level of 10%, while in the third estimated equation it is insignificant. It does not have the expected sign, it has inverse effect on social protection expenditure, meaning that when the inequality is higher, social expenditure decreases. Indeed, in our sample, the countries with the highest Gini coefficient in 2019 (Bulgaria and Romania) have the lowest level of social protection expenditure, while the countries with the lowest Gini coefficient (Slovakia, Czech Republic and Slovenia) are among the countries with the highest social protection expenditure to GDP.

The age dependency ratio and the tax revenues proved to be statistically insignificant in all three models. Population ageing and the burden of dependent population on the work force thus does not impact greatly social protection, a result also found in several other studies (Gassman et al., 2016; Ko and Min, 2019; Tashevska et al., 2019) The statistically significant lagged social protection expenditure coefficient implies some inertia in the dynamics of this variable, as noted also, for example, by Martin-Mayoral and Sastre (2017).

6. CONCLUSION

Social protection expenditures have been on a general rising trend for decades and they are facing a very unfavourable outlook in the future, particularly in developed countries, due to the expanding role of the welfare state and the demographic changes. Therefore, it is important to understand what drives changes in spending on social protection. However, the empirical literature on social spending mostly focuses on the effectiveness and effects of social spending on certain social, economic, or fiscal variables. There is a smaller body of literature that examines the determinants of social spending. This paper tries to shed light on the determinants of government spending on social protection in the Central and Eastern European countries in the period 2000-2019. In particular, it addresses the question of whether rising government indebtedness and worsening fiscal stance tend to reduce social protection expenditures, i.e. whether governments make efforts to lower this type of spending. This is also a question that has not been vastly explored, especially for the countries of interest.

The empirical investigation pointed to a small, but statistically significant positive effect of government debt to social protection expenditure, in line with the argument of coexistence of rising debt levels and rising social expenditure during recession and confirming their resilience to spending cuts compared to other public spending categories. It could also be argued that these countries are not excessively indebted, and this could potentially attribute to the smaller response to increased debt levels. General government balance has a negative impact on social protection expenditure, implying that improved fiscal balance is associated with lower social spending. This could be related to the cyclicality of government revenues and expenditures, i.e. in times of increased economic activity the government collects more revenues and social protection expenditures drop, as a result of lower unemployment, lower poverty etc. This could also stem from the fiscal austerity measures undertaken during the economic recovery after the Great Recession, when social spending was cut, although not as much as other expenditures. The counter-cyclical nature of social protection expenditures is also confirmed with the negative impact of GDP growth and the positive impact of unemployment. The results (negative effect of the Gini coefficient) indicate that countries with lower inequality levels dedicate more resources to social protection. It is worth noting that although demographic changes are widely recognized as driver of recent and future rising social spending, the dependency ratio did not prove statistically significant in our analysis.

This paper addressed a smaller set of potential determinants of social protection expenditure in the CEE countries, mostly focusing on socio-economic and fiscal determinants. In the future, the model could be complemented with other factors that are found to be relevant in the existing literature, such as political and institutional factors.

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ECONOMIC GROWTH AND MILITARY EXPENDITURES FROM A FISCAL POLICY PERSPECTIVE. EVIDENCE FROM CENTRAL AND EASTERN EUROPEAN COUNTRIES

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ABSTRACT
Using a newly created dataset of detailed and disaggregated military expenditures, this paper studies the impact of military expenditures on economic growth in nine Central and Eastern European countries in 1999-2021. The results of the estimation of a Barro-type endogenous growth model with military expenditures confirm a negative and significant influence of different kinds of military expenditures on economic growth in the long run, and identify personnel expenditures and labour market adjustments as one of the most important channels of influence. To measure the impact of the short-run effect, fiscal multipliers of military expenditures were estimated using SVAR model and significantly negative values were obtained for aggregated and disaggregated military expenditures. Military expenditures tend to crowd-out non-military government expenditures in some cases.

Keywords: *military expenditures; military expenditures and economic growth; fiscal multiplier; fiscal adjustments*

JEL classification: *E.62, H.41*

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THE ANALYSIS OF RE-MUNICIPALIZATION TRENDS IN THE PROVISION OF LOCAL ECONOMIC PUBLIC SERVICES

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ABSTRACT
The paper investigates the experiences with the re-municipalization trend in Slovenia, which was identified after the adoption of the Public-Private Partnership Act (PPPA) in 2006. Under the new legislation, the reorganization process of public enterprises in Slovenia accured, which led to the changes in their ownership structure. The aim of our research is to identify the outcome of the reorganization process and to identify the experience of re-municipalisation of local public utilities, as the research topic has not yet been the subject of extensive research in Slovenia. The special focus is given on the services related to the water and wastewater management. Besides, research intends to identify the motives for the reorganization process, as well as the advantages and disadvantages of the reorganization process. Methodologically, the paper is based on the primary data collection and analysis through a self-prepared, detailed, structured on-line questionnaire sent to all Slovenian municipalities. The responses were collected in the period 2018–2020. The results show that new legislation contributed to the increased public ownership in local public services provision in the area of water and wastewater management by roughly 10%, as the majority of public enterprises were already fully municipally owned, even before the reorganization process. The results also reveal that the most important motives for increasing full public ownership are management problems in a mixed-ownership enterprise, simpler regulation of the service provider, greater control over the service provider, more opportunities to influence business activities, and greater rationality and efficiency of business activities. The research results also show that the reorganization process brought largely advantages. The biggest advantages are better organization of work, improving the quality of utility provision and that municipality is able to monitor the business activities of the enterprise under the decree. The reorganization process lead municipalities into re-municipalization, meaning that full municipal ownership and control has increased.

Keywords: *private-public partnership, re-municipalization, local economic public services, water and wastewater management*

JEL classification: *H44, L33, K23*

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1. INTRODUCTION

The EU and national governments have emphasized and strengthened local-level service provision, especially through environmental protection and renewable energy policies and measures. Dissatisfaction with the outcomes of privatization has led to a reappraisal of the state and of the public sector in the role of rectifying and remedying the shortcomings and failures connected with the market and private sector (Wollmann, 2018, p. 421). During the twentieth century, the trend toward privatization has turned to reverse privatization or re-municipalisation, which is seen as municipalities take the provision of local public services back into their own hands (Gradus and Budding, 2018, pp. 2–3; Gradus, Schoute and Budding, 2019, p. 1; McDonald, 2019, p. 61; Wollmann, 2018, pp. 426). These shifts over time show that not only privatization and contracting out are important phenomena, but also that re-municipalisation has become increasingly important (Gradus and Budding, 2018, p. 2).

Re-municipalisation is observed in numerous countries, but there is still a need for further research in the area to better understand the phenomenon, the motivating factors behind this trend, and its advantages and disadvantages. Therefore, our paper investigates the experiences with the re-municipalization trend in Slovenia, which was identified after the adoption of the Public-Private Partnership Act (PPPA) in 2006. Under the new legislation, the reorganization process of public enterprises in Slovenia accured, which led to the changes in their ownership structure. The special focus of our research is given to the reorganization process of public enterprises in the area of water and wastewater management in Slovenia. The aim of our research is to identify the final outcome of the reorganization process and in this context to identify the experience of re-municipalisation of local public utilities in the field of water and wastewater management in Slovenia, the most important motives for the increase of public ownership and the most important advantages and disadvantages of the reorganization process.

The research topic has not yet been the subject of extensive research in Slovenia. The final outcome of the reorganization process of existing public enterprises is not entirely evident, especially to what extent the municipality buyout was implemented, and what motives guided municipalities in buying up own shares in the utility, which was a necessary condition under the reorganization of existing public enterprises into public enterprises with full municipal ownership.

The paper is structured as follows: the second section presents the literature review on remunicipalization trends, where, on the one hand, the differences between the privatization and re-municipalization of local public services are observed, and on the other hand, the drivers of re-municipalization are presented. The third section gives an insight into the legal amendments in reorganization of public enterprises and re-municipalization trend in Slovenia. The fourth section presents the methodology and data for the research conducted. The fifth section gives an insight into the empirical results, followed by Conclusion.

2. RE-MUNICIPALIZATION TREND IN LOCAL PUBLIC SERVICES PROVISION

2.1. Privatization vs. re-municipalization of local public services

Private provision is a long-standing practice in the US and Europe, as many municipal services began with private delivery (Gradus, Schoute and Budding, 2019, p. 1). This trend has strengthened both the market position and the share of private-sector providers (Wollmann, 2018, p. 421). Supporters of privatization see private provision as the best way to achieve more efficient management of resources and better quality of service, as private providers may be better able to obtain resources that can be invested in service improvement

(González-Gómez, García-Rubio and González-Martínez, 2014, pp. 3–4). The involvement of the private sector is expected to facilitate investment and enhance the efficiency of operations (Nissan, Hall, Lobina and de la Motte, 2004, p. 306). It is also believed that privatization reduces the cost of public service delivery, as competition can have a positive effect on cost savings. However, ownership is not the key factor. Tendering as a factor is more important for privatization, as it is cheaper than in-house production (Soukopová, Klimovský and Ochrana, 2017, pp. 151–152). Besides efficiency and quality, in many cases there are also pragmatic reasons to privatize municipal services. One of them is certainly the relief of the financial burden on the municipal budget (González-Gómez, García-Rubio and González-Martínez, 2014, p. 5).

In line with EU legislation, a certain degree of competitiveness should exist in public utilities. Many authorities have tried to introduce policies that enhance competitiveness in public utilities, but the question has always been raised whether providing public utilities through public or private providers leads to greater efficiency. The trend to privatize public enterprises also leaves the question of efficiency the private sector open. 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 a change in the ownership of public enterprises (Aulich, 2011, p. 250; Bognetti and Obermann, 2012; Greiling and Grüb, 2014, p. 209; Lane, 2002, p. 60). This trend has influenced the transformation of existing traditional public enterprises across Western Europe at various times, and produced various forms of institutional frameworks of the transformed public enterprises. Most existing public enterprises were transformed into joint-stock companies, which today represents the basic form of a public enterprise, with the share of public ownership ranging from minority to total ownership (Lane, 2002, pp. 60–61).

Today, three decades after the first wave of privatization, intense debate over the positive and negative effects of private participation in local public services continues. Opponents of privatization defend public management as the best way of assuring universal access to public services and preventing abuse by private companies of their dominant position in a natural monopoly (González-Gómez, García-Rubio and González-Martínez, 2014, pp. 1–3). Also, providing, commissioning, and organizing public services should remain as close as possible to the needs of the users (Wollmann, 2018, p. 421–422). Therefore, alternatives such as inter-municipal cooperation, re-municipalisation, and municipality-owned firms began to expand at the beginning of the century (Gradus, Schoute and Budding, 2019, p. 1).

Private and public management face many challenges and problems, like lack of resources, inadequate cooperation among municipalities, inefficient administrative structures, an absence of transparency, low rates of citizen participation etc. And, neither privatization nor a reversion to public management appear as solutions to these problems and challenges (González-Gómez, García-Rubio and González-Martínez, 2014, p. 2). The re-emergence of public ownership is also explained as a strategy to deal with pressing social, economic, and ecological problems. Public ownership boasts benefits for local communities, such as lower costs for consumers, better access for underserved populations, providing social services etc. Further, public ownership can support economic development, provide jobs, and enhance local control and participation in economic decision-making (Hanna, 2019, p. 45–46). Even balance sheets favour public provision when taking into account the transaction costs of outsourcing services. There are also financial gains to be had for local authorities when operating public services themselves instead of outsourcing them to private providers (Wollmann, 2018, p. 421). However, there is no guarantee they will prove more efficient and cost-effective than private provision. (Hanna, 2019, p. 46) Even public enterprises with full public ownership have seen extensive commercialization. Market principles, especially efficiency, have led to reductions in staff and investment in many public enterprises (Beveridge, Hüesker and Naumann 2014, p. 69).

2.2. Drivers of re-municipalization

Re-municipalisation is described in different terms: de-privatization, reclaiming public services, taking services back into public hands, and in-sourcing (McDonald, 2019, p. 61). With re-municipalisation, municipalities strive to achieve greater municipal democracy and autonomy. Public ownership can have benefits for local communities, such as lower costs for consumers, more access for underserved populations, providing social services etc. Further, public ownership can support economic development, provide jobs, and enhance local control and participation in economic decision-making (Berlo, Wagner and Heenen, 2017, p. 1; Hanna, 2019, p. 45–46).

The literature review on re-municipalisation as trend provides insight into the various driving factors behind re-municipalisation. Usually, the process of re-municipalisation is intentional and is effected by ending the contract with a private provider prematurely or by not renewing the arrangement after it expires. Such re-municipalisation is often a consequence of dissatisfaction with a private provider, the outcomes of privatization, and with failures in private contracting. Many authors (Bel, 2020; Busshardt, 2014; Clifton, Warner, Gradus and Bel, 2019; McDonald, 2018; Lindholst, 2019; Ulmer and Gerlak, 2019; Valdovinos, 2012) point to disappointment with privatization as the main driving factor for re-municipalisation. Bel (2020), Valdovinos (2012), Nissan, Hall, Lobina and de la Motte (2004) show that corruption is one of the chief failures cited under private management, followed by overpricing, rising contractual and transaction costs, and financial failures (Bel, 2020; Clifton, Warner, Gradus and Bel, 2019; Busshardt, 2014; Ulmer and Gerlak, 2019; Valdovinos, 2012) which are other important reasons behind the failure of private provision, together with deteriorating quality of service, public mistrust of private providers, and operative failures (Clifton, Warner, Gradus and Bel, 2019; Lindholst, 2019; Valdovinos, 2012, Ulmer and Gerlak, 2019).

However, sometimes municipalities are forced to municipalise, even though policymakers would prefer to retain the private service arrangement. This is often the result of the high cost of monitoring, short-term contracts, diminished efficiency gains or, on the other hand, due to an insufficient number of private-sector bidders for a contract. Private firms may also be unwilling to bid on what they see as unprofitable contracts, or may end contracts early (McDonald, 2019, p. 62). However, sometimes the high cost of monitoring and regulating private contracts drives municipalities to re-municipalize, even though they may be satisfied with the quality of the private service. This usually happens with large, long-term concessions and with small, short-term contracts, where in both cases sophisticated and expensive regulatory management is required. Municipalities must also contend with costly teams of lawyers and bureaucrats required for contracting out, which reduces or reverses potential efficiency gains. Naturally, re-municipalisation is often opposed by private providers, who may employ various strategies to maintain their position and to delay the process of re-municipalisation (Berlo, Wagner and Heenen, 2017, p. 1; McDonald, 2019, p. 62).

Some authors also find re-municipalisation blurs political intervention (McDonald, 2019), expresses alternative political thinking, and transforms and socially empowers politics (Cumbers and Becker, 2018) in order to favour or strengthen local politics (Berlo, Wagner and Heenen, 2017). On the other hand, re-municipalisation is also seen as an opportunity to enhance municipal and citizen influence and re-politicize urban utilities, which contributes to post-neoliberal urban governance (Becker, Beveridge and Naumann, 2015); or as an opportunity to make policy in line with or beyond the norms of neo-liberal urban governance (Beveridge, Hüesker and Naumann, 2014). Further on, Albalate and Bel (2020) conclude that politicians do not favour private service delivery and the chance to reform services as do bureaucrats, and Gradus and Budding (2018) found that corporatization is usually not particularly political. Due to the corporatization component in the re-municipalisation scenario, Voorn, Van Genugten and Van Thiel (2020) conclude that re-municipalisation is not an ideologically-oriented trend, as cost savings are far more important factor than political ideology.

Sometimes, re-municipalisation appears as a strategy to overcome pressing economic, social, and ecological problems; however, it cannot guarantee a more sustainable economic and political system (Hanna, 2019), even though it does gain from the benefits of local government (Wollman, 2018). Further, empirical evidence from Warner and Hefetz (2020) show that non-unionised municipalities experience more re-municipalisation than unionized municipalities, which more often opt for new contracts with private providers. Friedländer, Röber and Schaefer (2021) indicate that exercising an appropriate level of influence over the provision of services is the biggest challenge when public government does not opt for in-house provision. Gradus, Schoute and Budding (2019) also found some support for certain economic conditions (unemployment) and ideological factors on the municipal level, namely social democratic forces in charge, resisting change in market forces, and privatisation.

Municipalities have proceeded towards re-municipalisation in two ways: by repurchasing shares that were previously sold to private companies, and by insourcing services that were previously outsourced. When the concession expires, municipalities decide for re-municipalisation as an opportunity to bring services back in-house without the transaction costs associated with the termination of a contract. When the concession has not yet expired, difficulties with the outgoing private provider may arise in connection possible compensation. Often, very high compensation may be required, which is a strong deterrent to early termination of the contract (Beveridge, Hüesker and Naumann, 2014, p. 68; Hall, Lobina and Terhorst, 2013, p. 206; Wollmann, 2018, p. 422).

The negotiation process surrounding compensation is one of the key elements a municipality has to consider when opting for re-municipalisation. Beyond the negotiation process, user involvement is also a key element. User involvement is essential, as it is a key factor in the process, and municipalities guarantee democratic and efficient public services. 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 in public service in terms of investment needs and the cost of guaranteeing efficient performance. However, the re-municipalisation process can vary according to the 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, pp. 115–116).

Most of the studies on re-municipalisation in Europe come to us from Germany, France, and Spain (Voorn, Van Genugten and Van Thiel, 2020). However, the US is also an example of re-municipalisation as highly common practice (McDonald, 2018, 2019). Similarly, we also see evidence of re-municipalisation in the Netherlands (Gradus and Budding, 2018; Gradus, Schoute and Budding, 2019) and Denmark (Lindholst, 2019). The trend of re-municipalisation has accelerated greatly since 2010 (McDonald, 2018) and has largely developed in the water and energy sector, as well as in waste disposal (Busshardt, 2014; Voorn, Van Genugten and Van Thiel, 2020). Even though re-municipalisation is highly common in only a few countries, it is nonetheless a global phenomenon (McDonald, 2018). Yet, it is less common in Eastern Europe, especially in post-socialist countries, but we do nevertheless find examples there as well. Changes in ownership from private back to public, and the tendency toward re-municipalisation of local public services is also observed in

Slovenia. Therefore, we examine the trend and experiences of re-municipalization in provision of local public services Slovenia, which is presented in the following sections.

3. LEGAL CHANGES IN PROVISION OF LOCAL PUBLIC SERVICES IN SLOVENIA

In Slovenia, a form of local public service provision is prescribed by a municipality, by decree, to ensure its implementation within the framework of a functionally and spatially complete supply system. The municipal decree regulates the conditions for the provision and use of public goods; sources of funding and the manner of their formation; and the rights and obligations of users and the position of infrastructure in the public service (Grafenauer, 2009, p. 213).

In Slovenia, public enterprise represent the most common form of local public services provision. In order to enable and encourage mutual help and cooperation between entities from the public and the private sectors, Slovenia adopted the Public-Private Partnership Act in 2006 (PPPA, Official Gazette of RS, no. 127/06). The implementation of the Act in 2007 brought about important changes in the transformation of existing public enterprises, which were required to make the appropriate changes in their organizational status within the specified period, or their founders had to consider adapting their status to the new legislative conditions (Brezovnik, 2009, p. 180; Trpin, 2007, pp. 5–6).

The PPPA defines the legal status of public enterprises. The new regulation aims 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. Two options were envisaged for the transformation of public enterprises with private equity stakes. One option was that a public enterprise could be transformed into a commercial company in accordance with the Companies Act. The other option offered that public enterprise status could be retained and the private equity stakes would in a way be nullified (Kocbek, 2011, p. 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 part to the State or the local community. The decision had to be taken by the founder of the enterprise within three years from the adoption of the Act, i.e., by March 2010. Under the new regulation, a public enterprise may only be an enterprise that is wholly owned by the state or local government.

Table 1: Institutional changes of public enterprises after the PPPA

Public enterprise	Before PPPA	After PPPA
Legal status	No own status (Services of General Economic Interest Act); a part of legal regime of commercial public services	Commercial company (Companies Act) or Public enterprise
Capital	Possible shared capital (public and private)	Public enterprise: only public capital (state or local government)
Ownership	Majority public	Public enterprise: 100% public
Founder	The State, local government, public-private partnership	The State, local government

(Source: own work)

Table 1 presents the changes that the PPPA brought to the institutional framework of public enterprises in Slovenia. Before the reorganization process, public enterprise did not have its own legal status, but was part of a legal regime of commercial public services, and could be founded in one of the forms of commercial companies. After adoption of the PPPA, a public enterprise had a clear definition of its legal status: it could either be transformed into a commercial company or remain a public enterprise. Despite that, Brezovnik (2008) argues that the legal status of public enterprises is still disputed due to missing evidence on the final outcome of reorganization. The majority of public enterprises operate like commercial companies, and on the one hand behave like private law companies, while on the other hand they have public law status. Significant changes were also made in the ownership structure of the public enterprise. Previously, a public enterprise should have had majority public ownership, and therefore also shared capital investments were possible. Under the new regime, only public ownership is required, meaning only public capital investments are possible, either from the State or local government. In view of this definition, the founder of a public enterprise under the new regime may only be the State or a local government.

4. ANALYSIS OF RE-MUNICIPALIZATION TREND IN SLOVENIA

The research topic documents Slovenian experiences in the field of local public services provision, which came about in the period 2007–2009 as the result of the adoption of the PPPA. The research looks at the characteristics of trends in re-municipalisation in the context of the reorganization of public enterprises into fully publicly owned enterprises. The aim of our research is to assess the outcome of the reorganization process, to find out what motives guided municipalities in buying up ownership, which was a necessary condition for the reorganization of existing public enterprises into public enterprises with full municipal ownership. In addition, the advantages and disadvantages of reorganization are analysed.

4.1. Research design and research sample

An empirical investigation was performed using primary data collection through self-prepared, structured and detailed online questionnaire. The study intended to explore the experiences of the reorganization process for local public utility providers and in this context to identify the experiences with re-municipalization in the field of water and wastewater management. The questionnaire was addressed to all 212 Slovenian municipalities, as the majority of public utilities in Slovenia in the field of water and wastewater are managed locally, on the municipal level. To be more specific, the questionnaire was sent by email to all directors of municipal administrations. The questionnaire is segmented to allow respondents to answer only questions relevant to them specifically. In so doing, the questionnaire automatically guides the respondents through the relevant questions. Completing the questionnaire takes some 30–45 minutes. The responses were collected in the period 2018–2020. The collection time of two years did not affect the authenticity and comparability of the data among the respondents, as specific focus was placed on the collection of answers related to past events.

The questionnaire covers 5 thematic parts: (1) the basic data of the respondent, (2) the management of public utilities in the area of drinking water supply and wastewater treatment, (3) the ownership structure of the public utility before the adoption of the new legislation, (4) the changes resulting from the reorganization of existing public enterprises and compliance with the new act, and (5) the pricing of the utilities. However, this paper covers only parts or questions related to re-municipalisation and motives behind it. The questionnaire uses a combination of open-ended questions, multiple-choice answers, and a Likert scale of 1–5. The questionnaire consists of 105 questions. As it is quite extensive it resulted the relatively large volume of incomplete responses. But the respondents who completed the questionnaires in full or in large part were able to provide valuable and relevant information.

Table 2: Research population

Municipalities	Number	Share of total population (%)
Research population total	212	100
Total no of responses	42	19.8
No of (almost) completed surveys	28	13.2
No of incomplete surveys	14	6.6

(Source: own work)

The total population included 212 Slovenian municipalities, where the response rate was slightly less than 20% (42 municipalities responded). Table 2 shows that only 28 municipalities fully or almost fully completed the survey. The actual response rate (fully and almost fully completed surveys) is 13.2%. However, this input should be considered in a sufficient manner to extrapolate the field experiences. In the results analysis we utilize also the data obtained from the surveys not fully completed, therefore the total number of responses differs between the presented results.

4.2. Results and discussion

As already mentioned in section 3, the PPPA demanded reorganization of existing public enterprises with private equity stakes. On one hand, the status of public enterprise can be retained with the transfer of the private ownership part to municipalities, and on the other hand the public enterprise can be transformed into a commercial company in accordance with the Companies Act.

Table 3: Retention of or transformation into full public ownership after PPPA

Retention/transformation	Share of municipalities (%)
Retention of full municipal ownership	67.78
Transformation into full municipal ownership	9.69
	N=30

(Source: own work)

Table 3 shows that most of existing public enterprises have retained full public ownership. Meaning that almost 70% of public enterprises in the area of water and wastewater management were already fully municipally owned, even before PPPA. And, a little less than 10% of public enterprises have transformed into full public ownership. The retention of and transformation of public enterprises into full municipal ownership confirms the presence of trend towards re-municipalisation in local government in Slovenia, and the shift back from private to public provision. Therefore, the implementation of PPPA contributed to an increase in public ownership in local public utilities provision. Mixed public enterprises that retained mixed ownership after the new legislation (transformation into a commercial company) took such decision due to the municipality’s inability to provide funds to purchase shares and because neither owners nor employees were sufficiently interested in such. The motives which guided municipalities to buy up privately held shares or to retain full municipal ownership are presented in the following Table 4.

Table 4: Motivating factors behind full municipal ownership of a public enterprise

Motivating factor	Weighted average
Bad experience with a private provider with shares in utility	2.63
Simpler regulation of the provider	3.91
Greater control over the provider	4.02
More opportunities to influence the business	3.77
Greater rationality and efficiency of business	3.7
Use of in-house orders	3.34
Easier to obtain EU funds	2.84
Avoid public tenders for concessions	2.93
Avoid employee dismissal	2.52
	N=15

Note: A Likert scale 1–5 was used: 1 – I totally disagree, 2 – I disagree, 3 – I neither agree nor disagree, 4 – I agree, 5 – I totally agree.

(Source: own work)

The most important motives detected by municipalities are management problems in a mixed-ownership enterprise, simpler regulation of the service provider, greater control over the service provider, more opportunities to influence the business activities, and more rational and efficient business activities. We found similar motives or drivers of re-municipalization in our literature review. The most frequently cited motive is dissatisfaction with the private provision or provider, poor private management, overpricing, increased contractual and transaction costs, financial failures, deteriorating quality of service, public mistrust, operative failures etc. As these are classical reasons for re-municipalisation, we can again argue that legal amendments (in the form of the PPPA) have served to promote the trend towards re-municipalisation in Slovenia.

Table 5: Advantages of reorganization process

Advantage	Weighted average
Better organization of work	3.75
Developing expertise and improving the quality of utility provision	3.75
Municipality monitors the business of the enterprise according to the decree	3.58
Easier to obtain European funds	3.58
Better use of labour and capital	3.5
Lower labour costs	3.5
Better cooperation between the enterprise and the local community	3.5
Institutional, corporate, and governmental rights are prescribed by municipal decree	3.42
Better job performance	3.36
Lower costs for utility provision / Lower transaction costs	3.33
Lower costs for utility provision due to joint provision of utility (bundled services)	3.25
Total profit from a public enterprise is transferred to the budget and devoted to investment in infrastructure	3.17
Municipality has full control over the performance of public utility providers	3.08
Acquisition of additional municipal financial sources	2.92
	N=12

Note: A Likert scale 1–5 was used: 1 – I totally disagree, 2 – I disagree, 3 – I neither agree nor disagree, 4 – I agree, 5 – I totally agree.
(Source: own work)

The respondent municipalities also expressed the advantages and disadvantages of the reorganization process under the PPPA. As seen from Table 5, municipalities see the biggest advantage of the reorganization process in better organization of work and in developing expertise and improving the quality of utility provision, followed by the municipality monitors the business of the enterprise according to the decree and easier to obtain European funds. We can see that the high cost of monitoring and regulating private contracts often drives municipalities to re-municipalise. And that is highlighted also in the literature review. Municipalities may be forced to re-municipalise, especially in the face of the high cost of monitoring, short-term contracts, deteriorating efficiency, insufficient private-sector bidders for a contract.

Table 6: Disadvantages of reorganization process

Disadvantage	**Weighted average**
Arrangement of a concession relationship requires regulations from many legal acts	2.5
Higher price of public utility	2.44
Regulatory price policy	2.44
Municipality's lack of experience in providing control over the concession in terms of maintaining quality of service for all users, maintaining and growing the value of the property for the municipality at justified prices for services	2.4
Municipality has no control over the concessionaire through founding and corporate rights	2.3
Higher transaction costs due to public tenders for concessions	2
Higher transaction costs for the municipality in controlling the concessionaire	2
Lower quality of public utility	1.9
	N=12

Note: A Likert scale 1–5 was used: 1 – I totally disagree, 2 – I disagree, 3 – I neither agree nor disagree, 4 – I agree, 5 – I totally agree.
(Source: own work)

On the other hand, disadvantages are also seen but are not particularly significant, as the weighted average only moves around the 2-mark, as seen from Table 6. This may indicate that municipalities, as owners of public enterprises, see more advantages in the reorganization process. We can point to the arrangement of a concession relationship requires regulations from many legal acts as the biggest issue, followed by higher price of public utility and regulatory price policy.

Our results, presented in this paper, especially regarding the motives, advantages and disadvantages of the reorganization process or of the re-municipalisation trend in Slovenia are very similar to those found in the literature review on re-municipalisation (in the section 2.2). Our results identify classical reasons for re-municipalisation (management problems, regulation of the service provider, control over the service provider, influence over business activities, and rationality and efficiency of business activities) and therefore confirm the fact that reorganization process of public enterprises promoted the trend of re-municipalisation in Slovenia. Similarly, detected advantages of the reorganization process (e.g. municipality can monitor the business activities of the enterprise under the decree, municipality has full control over the performance of public utility providers) can also be identified in the literature as drivers of re-municipalisation due to high cost of monitoring and regulating private contracts. Disadvantages (e.g. higher price of service, regulatory price policy), on the other hand, can be connected to literature which opposes to re-municipalisation and support privatization, as privatization should bring cost savings, better quality of services, better investment opportunities, etc.

Regardless of mentioned motives, advantages and disadvantages, each municipality has the responsibility as well as the challenge to choose the most appropriate way to serve and fulfil the needs of the local population. In this direction, the results provide useful information for municipalities (as well as for local public utility providers), for organising the delivery of local public utility services in the most efficient way. The results also provide an insight into a unique empirical example of re-municipalisation on the national level. Our research serves as a good basis for further investigation of the field studied, into the field of water and wastewater management as well as other public utility services.

5. CONCLUSION

Public-Private Partnership Act dictated the reorganization of public enterprises such that they retained or transformed into full public enterprises or transformed into commercial companies. Re-municipalisation, as a more recent trend in local public services provision, is also taken into consideration, with a focus on the analysis of the driving factors behind re-municipalisation.

As we have seen in our analysis of the research results, the majority of surveyed public enterprises retained their status as public enterprises (full municipal ownership). Municipalities that bought up private shares became full owners of these public enterprises. The share of such transformed public enterprises is rather small (around 10%), as the majority of existing public enterprises already had 100% municipal ownership before the reorganization process. Full municipal ownership has increased due to the PPPA, and has served to promote re-municipalisation in local government in Slovenia, and the shift back from private to public provision. Classical theoretical reasons for re-municipalisation are seen in our research results, and appear in the context of motivating factors behind full municipal ownership. The reasons identified herein consist in management problems, regulation of the service provider, control over the service provider, influencing the business activities, and more rational and efficient business activities. Similarly, better cooperation between the enterprise and the local community, developing expertise and improving quality of services, better organization of work, better job performance, lower cost for service provision / lower transaction costs, and securing of additional municipal resources are identified as important advantages of the reorganization process for municipalities. By the same token, we have formed these conclusions on the basis of the opinions of respondent municipalities, so a certain degree of subjectivity must be taken into consideration.

The trend towards re-municipalisation presents an opportunity to better fulfil the needs of local communities and an opportunity for municipalities to cooperate mutually and exchange good/bad practices regarding the delivery of local public utility services, with an aim to improve the efficiency and effectiveness of the delivery.

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TRANSPARENCY REPORTS AND AUDIT MARKET ANALYSIS IN THE REPUBLIC OF NORTH MACEDONIA

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ABSTRACT
Transparency reports are a communication link between audit firms and the general public about their work, internal policies, and quality control to increase the trust of information users. On the other hand, the need for transparency in audit firms is a factor that aims to substantially improve and maintain the quality of audits at the highest level. This paper is quantitative and qualitative research on the transparency of audit firms in the Republic of North Macedonia and analysis of the financial data contained in them, focusing on the audit firms' revenue. Through a detailed elaboration of each audit firm's transparency reports in the period from 2007 to 2021, or a total of 372 individual transparency reports, we identified the state of transparency reports that differs in the period from 2007 to 2013 versus 2014 to 2021, positive trends of financial indicators over the years, as well as the structure of total revenues, i.e. participation of the individual services they offer. The hypothesis testing findings are early results, identifying the positive correlation between the number of employees and the audit-related turnover regardless of the audit firms' size and their affiliation with Big 4, an international network, or local audit firms. Between the number of customers, i.e. audit engagements and the audit-related turnover, there is a positive correlation for international network audit firms and local audit firms, but not for the Big 4. The paper contributes to the current literature on audit firms' transparency in order to improve them and their real contribution to improving the quality of audit engagements. The results of the conducted quantitative analysis are a good basis for further in-depth research in identifying potential factors that correlate with the audit firms' revenue.

Keywords: *Transparency report, Audit, Audit firms revenues, Republic of North Macedonia*

JEL classification: *M42*

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1. INTRODUCTION

The major financial scandals and frauds that have occurred despite the conducted audit engagements leave a mark on the quality of the conducted audit. In the aftermath of corporate scandals in the beginning of the twenty-first century audit quality has become a top priority for regulators (Evren, 2019). Transparency is one of the factors that may improve audit quality. Regulators argue that greater transparency of audit firms about their internal governance, quality maintenance measures and controls help reduce asymmetry between audit firms and market participants (Deumes et al., 2012). All this would result in greater confidence, maintaining a high-quality audit, and thus maintaining the stability of the capital market. Transparency is a kind of tool to convince the public that auditors and audit firms operate at a level that meets established auditing standards and a code of ethics. It does not only serve as a disciplinary sanction in case of non-compliance with the above, but also aims to initiate the conduct and maintenance of high quality audits. The transparency of audit firms has a significant role in achieving a higher level of quality in audit practices (Pivac and Čular, 2012).

The purpose of our research is to make a detailed analysis of the transparency reports of audit firms in the Republic of North Macedonia. The paper is divided into three conceptual parts. First, a brief overview of the importance of transparency reports and literature review from previous research, which must be noted that are few. Then a detailed explanation was made about the transparency of the audit firms in the Republic of North Macedonia and the role of the Council for Advancement and Oversight of the Audit in maintaining high quality audits. The third part refers to the conducted research where all individual transparency reports of the audit firms were analyzed. They were divided into three groups: Big 4, International Networks and Others - which included local audit firms. The data were collected for the period from 2007 to 2021 and generated the trends of the earnings of the audit firms, in total and according to the services they offer. In addition, we tested hypotheses about the potential impact of the number of audits conducted (clients) and the number of employees on the audit revenue earned by audit firms.

2. LITERATURE REVIEW

Transparency reports, also known as audit quality reports, are public reports issued by audit firms that contain information about the organizational structure, governance, and systems used to ensure audit quality (CPAB, 2016; Čular, 2017).

IOSCO (2015) believes that transparency reports should be prepared on an annual basis and then made public and easily accessible due to the great interest of investors, regulators and other stakeholders. IOSCO points out the importance of the transparency reports of the audit firms and emphasizes that information should be provided need to be: clear, useful, fact-based and not potentially misleading, unbiased, concise, timely, accurate, and complete in order for the users of the information to get a clear picture of the quality of audit engagements.

The IAASB also recognizes the role that transparency reporting has in improving overall audit quality and believes that the demand for audit quality-related information should be promoted worldwide (Fu et al., 2015).

Ehlinger (2007) conducted a survey on transparency disclosures for Austrian, German and Dutch audit firms. He found out that: There are differences between the countries observed regarding the amount of information given. The quality of the information provided varies over the period of the year. There is a positive correlation between the size of the firm and the amount of information. There are differences in the way information is disclosed between Big Four and

other accounting firms. There are also differences between firms that are members of the international network and those that are not.
Buuren (2010) conducted a survey of 2008 transparency reports from Germany, France, the United Kingdom, Netherland, Belgium and Austria. From the analysis of the reports and their comparison with the requirements of the 8th directive of the EU, it was concluded that most audit firms provide information on control structures, but not information on audit performance. The Big Four and the audit firms that are part of the international network have more and more detailed information compared to the others. The state and relevant laws also affect the requirements for the preparation of transparency reports, and this causes differences in the reports between countries.
Girdhar & Jeppesen (2019) examines transparency reports from the Big Four accounting firms in the United Kingdom, Germany and Denmark. They analyzed the content of the transparency report and conduct semi-structured interviews with the key figures of the four major firms responsible for creating the transparency report. The results show that the content of the transparency report is inconsistent and the practice of transparency reporting is inconsistent across the Big Four network.
Deumes et al. (2012) investigated whether disclosures of audit firm governance were relevant to the quality of the actual audit. Based on a sample of 103 audit firm transparency reports from many EU member states, they found that audit firms differ in the scope and type of corporate governance disclosures. However, no relevance to the actual audit quality can be found, except that it is weakly related to the audit company's statement regarding the effectiveness of the internal quality management system.
Audit quality is difficult to define, and the assessment of the audit quality is subjective. Therefore, disclosing more information does not guarantee that the behavior will change. While transparency can improve the availability and delivery of audit services, there are other factors that transparency alone may not be able to resolve. Nevertheless, additional disclosures are of significant benefit to investors, audit committees, regulatory agencies, and other stakeholders in assessing the quality of audits by audit firms and engagement teams in decision making (Čular, 2014).

3. TRANSPARENCY OF AUDIT FIRMS IN THE REPUBLIC OF NORTH MACEDONIA

In accordance with the global practices and the needs for standardization, the audit engagements performed in domestic practice are regulated by the legislation for which the Assembly of North Macedonia is responsible, and the professional framework established by the professional international organizations. Domestic audit practice applies audit standards and codes of ethics adopted by relevant professional international organizations influencing the creation of the audit profession globally: the International Federation of Accountants (IFAC), the Institute of Internal Auditors (IIA) and the International Supreme Audit Institutions (INTOSAI). The establishment of the Institute of Certified Auditors of the Republic of Macedonia (ICARM) in May 2006, which gained the status of a full member of IFAC, is of exceptional importance in establishing and continuously improving the quality of the audit profession. The Association of Internal Auditors of Macedonia (AIAM) as a member of IIA Global, also has a key role in the development of the internal audit profession in North Macedonia.
The Government of the Republic of North Macedonia, at the suggestion of the Minister of Finance, in order to promote and oversight audits, established the Council for Advancement od Oversight of the Audit of the Republic of North Macedonia (hereinafter CAOA) as an

independent and autonomous regulatory body with public authorizations established in Audit Law (Official Gazette, 2010a). According to the CAOA (2021) latest updated data in November 2021 in North Macedonia there are: 28 Licensed Audit Firms and 13 Licensed Certified Auditors - Sole Proprietor or a total 228 Licensed Certified Auditors.
Article 35 of the Audit Law (Official Gazette, 2010b) indicates that the Audit Firms and Licensed Certified Auditors - Sole Proprietor are obliged to submit the annual transparency report to the CAOA and publish it in at least one public bulletin or on its website, within three months from the end of the financial year. Transparency reports are a means of communication between auditors and the public about the quality of audit work (Buuren, 2010). The content of the transparency report as set out in Article 35 of the Audit Law is in line with the Eighth EU Directive and it shall contain (Official Gazette, 2010a):

a) a description of the legal structure and ownership of the audit firm.
b) a description of the professional network and legal structural arrangements in the network where it belongs.
c) a description of the management structure of the audit firm.
d) a description of the internal quality control system of the audit firm and a statement of the authorized competent body of the audit firm on the effectivity of the functioning of the system.
e) the date on which the last check for quality verification was performed by the auditor in accordance with Article 20 of this Law.
f) a list of auditees who were audited during the previous year.
g) a statement regarding the independent operation of the audit firm confirming the existence of internal procedures for verifying the harmonization of independence and their application.
h) a statement on the policy followed by the audit firm during the previous year.
i) financial information on the total income realized by the audit and other allowances, broken down into four categories: services of auditing annual and consolidated accounts, additional services on quality verification, tax counseling services and other non-auditing services, and
j) Information on the basis upon which the fee of the certified auditor shall be calculated.

- The transparency report shall be signed by the representative of the audit firm.

Table 1 compares the segments of the Transparency Report according to the Audit Law of 2005 and 2010. There is an extension of the transparency report with additional information requirements related to the date of the last check on quality assurance of the auditor, a statement on the independent operation of the audit firm confirming the existence of internal procedures for verifying the compliance of the independence and their implementation, and information on the basis of which the statutory auditor's fee is determined.

Table 1: Segments of the transparency reports according to the Audit Law from 2005 and Audit Law from 2010

Audit Law 2005 (Article 26)	Audit Law 2010 (Article 35)
(1) description of the legal structure and ownership; (2) description of the professional network and both the legal and the structural arrangements in the network they belong to; (3) description of the governance structure of the audit firm or the statutory auditor – sole proprietor; (4) description of the internal quality control system of the audit firm or the statutory auditor – sole proprietor and a statement by the administrative or the management body on the effectiveness of its functioning; (5) list of auditees during the preceding year; (6) statement on the policy implemented by the audit firm or the statutory auditor – sole proprietor concerning the continuing education of the statutory auditors and (7) financial information on the total revenues realized on the basis of audit carried out and on the basis of other fees, broken down by four categories of audit services, additional services for quality assurance, tax advisory services and other non-audit services.	(1) description of the legal structure and ownership; (2) description of the professional network and both the legal and the structural arrangements in the network they belong to; (3) description of the governance structure of the audit firm or the statutory auditor – sole proprietor; (4) description of the internal quality control system of the audit firm or the statutory auditor – sole proprietor and a statement by the administrative or the management body on the effectiveness of its functioning; (5) list of auditees during the preceding year; (6) statement on the policy implemented by the audit firm or the statutory auditor – sole proprietor concerning the continuing education of the statutory auditors and (7) financial information on the total revenues realized on the basis of audit carried out and on the basis of other fees, broken down by four categories of audit services, additional services for quality assurance, tax advisory services and other non-audit services. (8) **date on carrying out the last check on quality assurance of the auditor;** (9) **statement on independent operations of the audit firm, confirming the existence of internal procedures for check of independence compliance and their implementation and** (10) **information on the basis on which the fee of the statutory auditor is determined**

Source: Audit Law (2005) and Audit Law (2010).

All transparency reports are available on the official websites of the audit firms and also available on the official website of the CAOA, through the following link: https://sunr.mk/izveshtai-za-transparentnost-2/. The Council summarizes all individual reports in a group report for each year separately.

Although the Audit Law was adopted much earlier and all directions are clearly given, still looking in detail at the reports it can be noticed that there is a big difference in the structure of the reports and the availability of information before and after 2014. In 2014, the CAOA Board created the Transparency Report Preparation Guide which was then distributed to all audit firms and certified auditors - sole proprietor. It can be stated that since 2014 all publicly published transparency reports have been prepared in accordance with legal requirements and guidelines.

The transparency reports contain sections that indicate the audit firm's policies for the internal quality control system and only brief information about the last audit quality assurance check performed. The results of the conducted quality control have not been made public and this raises the question of whether this information is really sufficient and whether the transparency reports really affect the performance of the audit engagements.

3.1. Council for Advancement and Oversight of the Audit of the Republic of North Macedonia (CAOA)

The mission of the CAOA is through expert analysis, recommendations, advice and independent public oversight of the audit, to work towards the advancement of the auditing profession and to encourage adherence to high professional standards. The CAOA consists of seven members, one of whom is the president. In order to maintain the relevance and independence of the CAOA, the members of the Council are elected on the proposal of the highest state institutions, and then elected by the Government. The Minister of Finance proposes the President of the Council, and the other six members are in fact representatives of the National Bank of the Republic of North Macedonia, the Insurance Supervision Agency, the Securities and Exchange Commission of the Republic of North Macedonia, a representative from the ranks of large commercial entities and two authorized auditors proposed by ICARM. CAOA Performs the work in accordance with Article 8 of the Audit Law, and some of those tasks are (CAOA, 2021; Official Gazette, 2009b):

- Provide guidelines for the Institute of Certified Auditors on matters of its competence pursuant to this Law.
- Give its agreement on the Statute and the acts of the Institute of Certified Auditors of the Republic of Macedonia in relation to control and disciplinary procedures.
- Carry out control over the Institute of Certified Auditors of the Republic of Macedonia in the process of implementation of control and disciplinary procedures in accordance with the advice and recommendations of the Council.
- Give its agreement on the annual programme and the annual work report of the Institute of Certified Auditors.
- Follow the implementation of the annual programme for audit quality control of the Institute of Certified Auditors, - check the necessary documentation for issuing audit licences.
- Check the transparency report in accordance with Article 35 of this Law, - follow the procedure implemented by the Institute of Certified Auditors of the Republic of Macedonia for the recognition of an auditor qualification acquired abroad.
- At the request of the person fulfilling the conditions referred to in Article 25 of this Law, the Council shall issue a certified auditor licence.
- Issue, at the suggestion of the Institute of Certified Auditors of the Republic of Macedonia, an auditing license to audit firms and to certified auditors.
- Sole proprietors fulfilling the conditions referred to in Article 25 of this Law, and
- Establish cooperation with the relevant international institutions.

The values contribute to the achievement of the goals of the Council, appreciating that this is achieved by strengthening the internal organization and increasing the efficiency and effectiveness in the audit work. The role that CAOA has for the development of domestic audit practice is indisputable, as well as the role in establishing cooperation with foreign and international organizations.

4. RESEARCH METHODOLOGY

The sample of the research consists of 372 transparency reports of audit firms in the period from 2007 to 2021. All reports were downloaded from the official CAOA website and then we manually verified and extracted all the information. The financial data were expressed in MKD

which were calculated in EUR. Audit firms were categorized into three groups: (1) Big 4, (2) International Networks and (3) Other - local audit firms.
Data was collected for each group separately:

- Total **Revenues**, then divided according to the services they offer:
  - Audit-related turnover
  - Tax advisory services
  - Other non-audit services
  - Other assurance services
- The number of conducted audits, i.e., **clients**
- The number of **employees**

In accordance with the objectives of our research and the availability of information, the following research question is set:

RQ: *Does audit-related turnover of audit firms in North Macedonia is related to the number of employees and the number of clients?*

In order to give an answer to the research question, three individual hypotheses have been set that refer to the three categories of auditing firms, namely:
H_1: The audit-related turnover is correlated to the number of clients and the number of employees at Big4
H_2: The audit-related turnover is correlated to the number of clients and the number of employees at international audit network
H_3: The audit-related turnover is correlated to the number of clients and the number of employees at other (local) firms.

Table 2 provides an overview of the variables together with their abbreviations and the measurement type. To measure the variables referring to the audit-related turnover, Absolute amount of revenues by audit services among the audit firms (big4, international and others) was taken in the given period. For conducted audits by the audit firms, the number of clients per year was employed and for the variable related to the Employees at the audit firms, the Total number of employees per year was used.

Table 2: Description of the variables

Variables	**Abbreviation**	**Measurement**
Audit-related turnover for Big4 firms	TURNOVER_BIG4	Absolute amount of revenues by audit services among the Big 4 (2014 to 2021)
Audit-related turnover for international audit network	TURNOVER_ INTERNATIONAL	Absolute amount of revenues by audit services among the international audit network (2014 to 2021)
Audit-related turnover for other audit firms	TURNOVER_OTHERS	Absolute amount of revenues by audit services among the other audit firms (2014 to 2021)
Conducted audits by Big4 firms	CLIENTS_BIG4	The number of clients per year for the Big4 (2014 to 2021)
Conducted audits by international audit network	CLIENTS_ INTERNATIONAL	The number of clients per year for the international audit network (2014 to 2021)

Conducted audits by other audit firms	CLIENTS_OTHERS	The number of clients per year for the other audit firms (2014 to 2021)
Employees at Big4 firms	EMPLOYEES_BIG4	Total number of employees per year at Big4 (2014 to 2021)
Employees at international audit network	EMPLOYEES_ INTERNATIONAL	Total number of employees per year at international audit network (2014 to 2021)
Employees at other audit firms	EMPLOYEES_OTHERS	Total number of employees per year at other audit firms (2014 to 2021)

Source: Authors' text

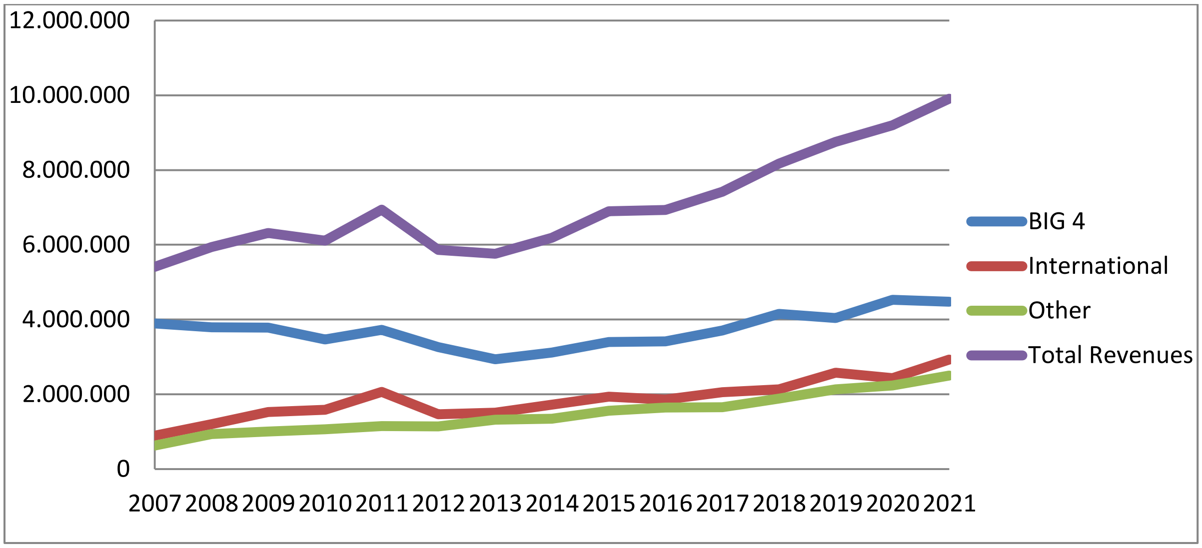
The processing of the collected data was done using SPSS software through **Descriptive statistics** to to identify the basic findings, such as average number of clients, average number of employees, average price per engagement depending on the size of the audit firm, etc., **Trend analysis** - to identify revenue trends in audit firms in the period from 2007 to 2021, and **Spearman rank-order correlation** to indicates whether it exists positive or negative monotonic relationship between the variables.

5. RESULTS AND DISCUSSION

First of all, we must emphasize that in accordance with the legal framework and the Guide for preparation of the transparency report, all audit firms have submitted a report in the period from 2007 to 2021. There is a drastic difference in the structure and scope of information in the period from 2007 to 2013 and from 2014 to 2021. The second period is distinguished by greater standardization and the same information that is published by all audit firms, regardless of their size. Although there are differences in the size of the reports and the detail of the information, all the necessary segments are covered by all audit firms. The number of audit firms varies from year to year, but this is due solely to local audit firms. In the analysis, first all audit firms are analyzed in general, and then by groups.

Figure 1 shows the trend of total revenues generated by audit firms operating in the Republic of North Macedonia and divided by groups. It can be seen that there is a continuous average growth in the total and individual revenues of the audit firms categorized by groups. Most of the growth of total revenues is due to the growth of revenues of international networks and other audit firms. Big 4 in absolute amount of revenue continuously dominates during the analyzed period and we believe that it will continue, due to the available resources and the support they have. However, from this chart it can be seen that the Big 4 curve is moving further and further away from the Total Revenue curve.

Figure 1: Total revenues of audit firms

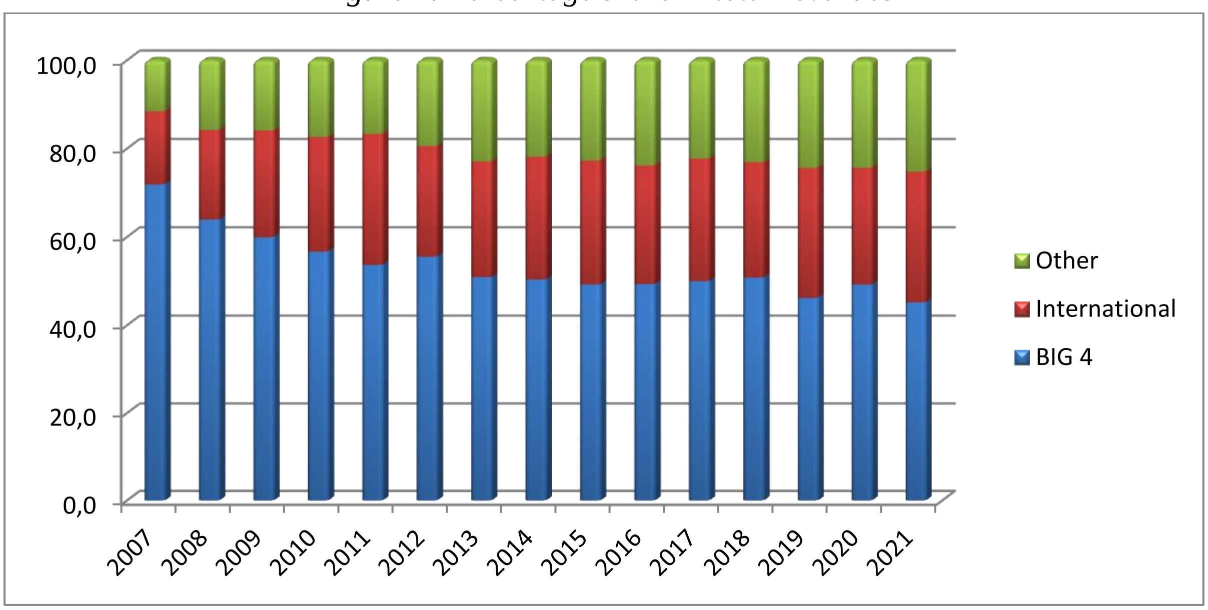


Source: Authors' calculation

For a better understanding of the percentage share in total revenues and better discussion, the results are shown in Figure 2.

Figure 2 shows the percentage share of groups of audit firms in total revenues. As mentioned above, Big 4 dominates in revenue generation, but has seen a continuous decline in total share. International audit networks, in contrast, from 2007 to 2021 recorded significant growth and show their importance and relevance in the domestic market. Local audit firms also record continuous growth over the years analyzed and the result is positive, as they manage to take their place in the market alongside international audit networks and the Big 4 audit firms.

Figure 2: Percentage share in total revenues



Source: Authors' calculation

Table 3 shows the structure of audit firms' revenues. It is easy to see that most of the total revenue comes from audit engagements, statutory and contractual audits, then the category of other non-audit services which include accounting services, valuation, expertise and the like. After them, the earnings of audit firms depend on tax advisory services and finally on other assurance services. The last category - other assurance services is with a percentage of 0 in the period from 2007 to 2012 and 1% in 2013. Assurance revenues can be seen to be presented as a separate item from 2013 and 2014, when the transparency reports start to be standardized and report on all segments separately. Most likely in the period from 2007 to 2012/3, the revenues generated from this type of services are calculated in the first item - audit engagements.

Table 3: Revenue structure

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Audit engagements	75%	83%	82%	84.6%	76%	83%	75.4%	67.2%	69%	70.1%	68%	64.3%	63%	63%	59%
Tax advisory services	10%	4%	4%	4.8%	13%	5%	4.4%	7.3%	8%	8.4%	7%	7.3%	9%	9%	12%
Other non-audit services	15%	13%	14%	10.6%	11%	12%	19.2%	21.4%	19%	18.2%	20%	24.3%	23%	25%	24%
Other assurance services	0%	0%	0%	0%	0%	0%	1%	4.1%	4%	3.3%	5%	4.1%	5%	3%	5%

Source: Authors' calculation

Table 4 shows the average values per audit firm. The data refer to the period from 2014 to 2021 due to the availability of information on the number of employees. As we have already mentioned since 2014, the transparency reports have standardized structure and more available information. The results are quite logical. What can be pointed out is that Big 4 audit firm earns the most for an audit engagement, where they have the highest amount of revenue and the lowest number of clients, due to the size of the client. Also, most of the employees per audit firm are from Big 4. The results show that the international audit networks earn more than the local audit firms, where they have the highest number of engagements, and the lowest price per engagement, which is completely opposite from Big 4. All this is due to the type and the size of the clients, i.e., the complexity of the engagement.

Table 4: Descriptive statistics

Average price for audit engagement - Big 4									
	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**TOTAL (2014-2021)**
Audit-related turnover in EURO	527,326	631,426	603,942	612,797	600,712	607,850	656,801	612,423	4,853,276
Average Number of Audits	42	51	47	51	47	51	45	39	373
Average price for audit engagement - Big 4	12,631	12,321	12,782	12,135	12,713	12,037	14,596	15,603	**13,102**
Average number of employees	23	26	29	28	28	26	30	33	28
Average price for audit engagement – International									
	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**TOTAL (2014-2021)**
Audit-related turnover in EURO	197,417	213,074	235,297	265,190	281,468	299,086	282,966	291,938	2,066,435
Average Number of Audits	56	59	70	78	72	76	74	49	534
Average price for audit	3,513	3,624	3,361	3,409	3,909	3,946	3,824	5,982	**3,946**

engagement – International									
Average number of employees	16	18	19	19	22	22	23	21	20
Average price for audit engagement – Others									
	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**TOTAL (2014-2021)**
Audit-related turnover in EURO	58,704	71,223	79,024	85,194	90,150	100,174	102,310	107,035	693,814
Average Number of Audits	33	46	46	50	52	53	54	54	389
Average price for audit engagement - Other	1,776	1,558	1,727	1,690	1,738	1,875	1,891	1,891	**1,768**
Average number of employees	6	6	6	6	7	7	6	7	6

Source: Authors' calculation

5.1. BIG 4

After summarizing the general data for all audit firms, the analysis continues in more detail in elaborating the individual groups of audit firms and testing the set hypotheses. For the needs of hypothesis testing, only the data from 2014 to 2021 are considered. Hypotheses are tested for individual category especially because of the relevance of the data and the possibility of comparing data for audit firms of the same or similar rank. Due to the large dispersion of information in terms of number of clients, number of employees and audit-related turnover, the results would not be appropriate and the model would be irrelevant.

Table 5 provides an overview of the revenue structure of Big 4 audit firms. Viewed through the time frame that is covered, the revenues from audit engagements show a continuous decline. But on the other hand, other non-audit services are becoming a drastically significant segment of the earnings of Big 4, where in 2021 it is as much as 40 % of total revenues.

Table 5: Revenue structure – Big 4

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Audit engagements	71%	82%	85%	89%	87%	86%	77%	68%	74%	71%	66%	58%	60%	58%	55%
Tax advisory services	14%	1%	1%	0%	1%	2%	3%	6%	5%	7%	4%	5%	6%	6%	4%
Other non-audit services	16%	16%	14%	10%	13%	12%	20%	24%	19%	19%	27%	34%	31%	36%	40%
Other assurance services	0%	0%	0%	0%	0%	0%	0%	3%	2%	3%	3%	2%	3%	1%	1%

Source: Authors' calculation

Starting with a basic analysis, with the previously analyzed audit-related turnover, as well as the number of clients and number of employees, in this section, the relationship between the number of employees and the audit-related turnover at Big4 firms is statistically proved (see table 5).

Table 6: Correlation matrix for BIG4 – H_1

Correlations					
			TURNOVER_ BIG4	CLIENTS_ BIG4	EMPLOYEES_ BIG4
Spearman's rho	TURNOVER_ BIG4	Correlation Coefficient	1.000	.131	.820**
		Sig. (2-tailed)		.475	.000
		N	32	32	32
	CLIENTS_ BIG4	Correlation Coefficient	.131	1.000	.136
		Sig. (2-tailed)	.475		.459
		N	32	32	32
	EMPLOYEES_ BIG4	Correlation Coefficient	**.820****	.136	1.000
		Sig. (2-tailed)	**.000**	.459	
		N	32	32	32
**. Correlation is significant at the 0.01 level (2-tailed).					

Source: Authors' calculation

The Spearman's correlation result shows that there is a significant positive correlation between the TURNOVER_BIG4 and EMPLOPYEES_BIG4, r(32) = .820, p= .000, and there is no correlation between CLIENTS_BIG4 and TURNOVER_BIG4. This means that H1 is partially accepted. The result is logical, since Big 4 usually work with the largest companies, joint stock companies where they dedicate a huge part of their time and resources, for which they are then paid for their engagement. The second variable - the number of employees proves to be significant, and from here, the more employees the auditing firm has, the more it will be able to contract a larger client, more engagements and, accordingly, to generate more revenue.

5.2. International audit network

The structure of service revenues in the International Audit Networks is shown in Table 7. It can be seen that the results and the trend are similar to Big 4. Revenues are continuously increasing in absolute terms, but in terms of relative share, revenues from audit engagements are less represented than at the beginning of the analyzed period. Accounting, appraisal, expertise, etc. services are growing significantly and are becoming more important in generating revenue for these audit firms. Unlike Big 4, Tax advisory services have a significant share of revenue in this group of audit firms.

Table 7: Revenue structure – International audit network

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Audit engagements	89%	81%	76,5%	74%	55%	71%	67,4%	57%	55%	63%	64%	66%	58%	58%	50%
Tax advisory services	1%	11%	7,1%	15%	38%	12%	10%	11%	10%	11%	11%	10,7%	13%	13%	27%
Other non-audit services	10%	8%	16,4%	11%	7%	16%	20,4%	28%	31%	23%	21%	20,7%	26%	25%	12%
Other assurance services	0%	0%	0%	0%	0%	1%	2,2%	4%	4%	3%	4%	2,6%	3%	4%	11%

Source: Authors' calculation

In this part, the intention is to determine the relationship between the audit-related turnover and the number of clients and employees at the International audit network (see table 8).

Table 8: Correlation matrix for International Audit Network – H_2

Correlations					
			TURNOVER_ INTERNATIONAL	CLIENTS_ INTERNATIONAL	EMPLOYEES_ INTERNATIONAL
Spearman's rho	TURNOVER_ INTERNATIONAL	Correlation Coefficient	1.000	.830**	.463**
		Sig. (2-tailed)		.000	.002
		N	41	41	41
	CLIENTS_ INTERNATIONAL	Correlation Coefficient	**.830****	1.000	.231
		Sig. (2-tailed)	**.000**		.147
		N	41	41	41
	EMPLOYEES_ INTERNATIONAL	Correlation Coefficient	**.463****	.231	1.000
		Sig. (2-tailed)	**.002**	.147	
		N	41	41	41
**. Correlation is significant at the 0.01 level (2-tailed).					

Source: Authors' calculation

From the results, it can be concluded that the number of clients, r (41) = .830, p= .000, and number of employees , r(41) = .463, p= .002, have positive correlation with the audit-related turnover at the international audit network. This result means that every increase/decrease in number of the audit clients and the number of employees, the audit firms' revenues also increase/decrease, so we can conclude that H1 is fully accepted.

5.3. Others (local audit firms)

Table 9 shows the revenue structure of local audit firms. Most of the revenues are due to the services related to the performed statutory and contractual audits. Local audit firms differ from Big 4 and international audit networks in that tax-advisory services are second in importance to revenue generation, followed by assurance services and even other non-audit services.

Table 9: Revenue structure – Others (local audit firms)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Audit engagements	84,2%	87%	83%	85%	80%	89,7%	82%	78%	77,5%	76,7%	77%	77%	75%	78%	74%
Tax advisory services	1,4%	3%	9%	4%	10%	3,6%	2%	7%	10,3%	8,7%	8%	8%	8%	10%	10%
Other non-audit services	14,4%	10%	8%	11%	10%	6,1%	15%	8%	4,2%	10%	4%	6%	5%	4%	12%
Other assurance services	0%	0%	0%	0%	0%	0,6%	1%	7%	8%	4,6%	11%	9%	12%	8%	4%

Source: Authors' calculation

For local audit firms, there is a positive strong correlation between the determined variables, which indicates the fact that the audit-related turnover is significantly related to the number of performed audits i.e. clients, r(208) = .974, p= .000, but also to the number of employees in the audit firms, r(208) = .881, p= .000.

Table 10: Correlation matrix for Others (Local) Firms – H_3

Correlations					
			TURNOVER_ OTHERS	CLIENTS_ OTHERS	EMPLOYEES_ OTHERS
Spearman's rho	TURNOVER_ OTHERS	Correlation Coefficient	1.000	.974**	.881**
		Sig. (2-tailed)		.000	.000
		N	210	208	208
	CLIENTS_ OTHERS	Correlation Coefficient	**.974****	1.000	.866**
		Sig. (2-tailed)	**.000**		.000
		N	208	208	206
	EMPLOYEES_ OTHERS	Correlation Coefficient	**.881****	.866**	1.000
		Sig. (2-tailed)	**.000**	.000	
		N	208	206	208
**. Correlation is significant at the 0.01 level (2-tailed).					

Source: Authors' calculation

Local audit companies are generally smaller than Big 4 and international audit networks and their resources are more limited. The results themselves show that the more clients the auditing firms will be able to have, the more they will be able to generate more income, also from the aspect of the employees, i.e. the larger the team of employees the greater the opportunity for earnings.

Disadvantages of the Transparency Reports and Research Limitations

We faced several limitations in conducting the research. A limiting factor in the scope of the research is the change in the content of the transparency reports with the changes in the Audit Law in 2010 and the inclusion of new elements as well as the identified differences in the content of the transparency reports before and after the adoption of the Guide by CAOA. For that reason, the research was done on the data from the transparency reports in the period from 2014. Pursuant to the Law on Audit, the quality control of the audit is positioned in ICARM. Quality controllers have their own methodology for selecting audit firms and audit engagements that will be subject to quality control in accordance with ISCQ 1 and ISA 220. For quality controls, transparency reports have no use value in selecting potential quality control entities. Such an approach limits the scope of our research to examine whether the information presented in the transparency reports, especially when isolating certain illogicalities, was a red flag for initiating quality control. Also, the Audit Law does not provide for sanctions for untrue and biased presentation of data in transparency reports by audit firms. In our research, we started from the assumption that the presented data are correct and in all aspects correspond to the real situation of the audit firms.

6. CONCLUSION

Audit firms in the Republic of North Macedonia prepare and publicly publish transparency reports for a period of three months after the end of the financial year. In accordance with the law and the guidelines provided by the CAOA, all audit firms, regardless of their size and affiliation with Big 4, an international network or not, meet the required structure and transparency report requirements. The analyzed period can be divided into two parts: from 2007 to 2013 and from 2014 to 2021, because in 2014 a Transparency Report Guide was issued by the CAOA council and represents a significant progress in the transparency of audit firms. However, the information that is publicly available does not indicate the results of the conducted quality control and is one of the biggest limitations in the reports.

From the conducted detailed research of the separate reports on the transparency of the audit firms divided into three categories, we confirmed our expectations for the dominance of the big 4 firms in terms of revenue generation and number of employees, but we also identified significant progress and growing international audit networks and local audit firms. The number of employees is a factor that has a proportional impact on audit-related turnover in all audit firms, while the number of clients has proven to be significant only in international and local audit firms.

This research presents early results on the state of transparency reports of audit firms in the Republic of North Macedonia, the trend and structure of their revenues and the potential correlation between the number of clients and number of employees with audit-related turnover.

The conducted research is a solid basis for future research in which a relation will be established between the data from the transparency reports with the reports from the Macedonian Stock Exchange for the public interest entities and the audit firms that were engaged for conducting an audit. We see the potential for future research in linking the obtained data with the audited financial statements of the companies submitted to the Central Registry of the Republic of North Macedonia, which could isolate whether all companies required by the Law on Trade Companies are subject to statutory audit or there are companies that circumvent this obligation thus affecting the market for audit services.

We encourage and challenge all academic and scientific researchers as well as all stakeholders in the audit profession to deepen their transparency reporting research, to develop more discussions and events that will provide better and more detailed guidance on what the transparency report should look like and what it should contain in order to have a real impact on the quality of the audit engagements.

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THE ROLE OF SUPREME AUDIT INSTITUTIONS IN BETTER MANAGING PUBLIC SECTOR ASSETS - SOME EVIDENCE FROM NORTH MACEDONIA[1]

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Abstract
Public Sector Asset Management is a crucial process for the progress of a society, while Supreme Audit Institutions are designated as one of the main stakeholders related to that process. Although PSAM has been the subject of research in recent years, especially by western countries that have established the concept of New Public Management for a long time, there is still a lack of evidence on the meaning and role of public sector auditing for improving that process. The purpose of this paper is to provide empirical evidence on the role of the Supreme Audit Institution in the Republic of North Macedonia for better PSAM, through quantitative research using the survey method, i.e structured questionnaire that was delivered to all public sector auditors who are employed by the Supreme Audit Institution of the Republic of North Macedonia. The obtained results show that the state auditors audit the public sector assets with regularity audits more than with performance audits. State auditors are familiar with INTOSAI's GUID 5260 and according to them SAI alone is not a sufficient PSAM control mechanism. The limitation of the study is the measurement of the variables from the survey that is based only on the perception of the state auditors.

Keywords: *State auditors, public sector asset management, supreme audit institutions*

JEL classification: *H83*

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1. INTRODUCTION

Linked to public sector reforms, public sector assets are crucial for the delivery of public services and for performing wider set of government's basic functions. Thus, their management and maintenance are essential to governments and citizens and are addressed as the central institutional building block of modern societies (Detter & Fölster, 2015). With the proliferation of private-inspired management approaches in the public sector and the pursuit of an increasing emphasis on effective asset management, this process is becoming an increasingly prominent public financial management function (World Bank, 2020).

Governments are accountable for providing quality public services to their citizens at the most favourable terms. They are, among other issues, responsible for managing a diversified public asset portfolio. Public sector asset management (hereinafter: PSAM) policies and practices can vary significantly between countries depending on accounting practices, the size and composition of the asset portfolio, and the organizational and legal aspects of public administration (Grubišić et al., 2009).

Following the international trends in conducting public sector reforms and the need for North Macedonia to move closer to the requirements of the EU on the path of its accession to the EU, undertaking public sector financial management reforms package is considered a priority. Efforts that are to take place are such that reforms are viewed as managerial reforms where changes to public sector reporting, including reporting on state assets, are to make for a series of sub-reforms. (Dionisijev & Roje, 2020).

The influence of Supreme audit institutions (hereinafter: SAI) on the better management of public assets is crucial, as these institutions represent an enforced control mechanism. Their reports often point out the need for greater clarity in PSAM regulatory frameworks, supportive information systems, and clearer accountability lines (Roje, Popović & Flynn, 2020). The Center for Financial Reporting Reform (CFRR) by The World Bank (2020) in their report entitled "*Strengthening Fixed Asset Management through Public Sector Accounting*" point out the importance of the SAI in the PSAM, according to which "SAIs in most jurisdictions are traditionally mainly concerned with the ex-post evaluation of year-end financial statements, but also their ex-ante involvement in the process of establishing a balance sheet is considered beneficial. Countries that successfully completed accrual accounting reforms and implemented an IPSAS compliant asset accounting engaged with the SAI throughout that process. Besides its involvement in the establishment of the accounting framework, the SAI acted as a sparring partner in determining the relevant accounting estimates and measurement parameters. A step-by-step strategy for auditing and testing balance sheets is considered crucial so that the entire open balance sheet is audited upon completion of the accounting transition project. Following the initial revision of the newly established balance sheet, SAIs are required to support the process of PSAM, their assessments, and audits."

The purpose of this paper is to provide evidence on the existing role of SAI in fostering PSAM in North Macedonia. In the international literature on public sector asset management, South-Eastern Europe has so far been the subject of remarkably little work. Some issues concerning these countries are peculiar, but others may also apply to other national settings: for example, the unresolved definition of ownership rights and the lack of systematic information on public assets. Finally, this paper represents a follow-up of the already published discussion paper (Dionisijev & Roje, 2020) which concluded that the challenges of the SAI in PSAM processes remain at conducting a larger number of performance audits, providing more concise and clear recommendations, and monitoring the implementation of recommendations through conducting audit follow-ups. This paper offers empirical evidence on the perception of the state auditors.

2. LITERATURE REVIEW - PUBLIC SECTOR ASSET MANAGEMENT AND THE SUPREME AUDIT INSTITUTIONS

Although there are not many research studies in the field of PSAM in the Balkans and in North Macedonia in particular, the importance of establishing sound policies in the entire process of PSAM is acknowledged worldwide. Grubišić et al. (2009) investigate the relationship between New Public Management (hereinafter: NPM) and the objectives of PSAM, as well as the current regulations and practice of the entire process of PSAM in Croatia, finally paying attention to the classification, valuation and appropriate use of public assets, and with their paper they introduce and indicate the importance of PSAM in Croatia, but their research is also significant for other countries in the region. Azuma (2002) points out that to ensure that Parliament's control over the cabinet is effective, it is essential to maintain the reliability of performance reports and financial statements. In advanced Western countries that have introduced NPM theory, it is the SAI independence from that tries to maintain and improve the reliability of performance reports and financial statements.

PSAM is affected by various factors, such as political influence, legal framework, regulations, organizational arrangement, administrative decisions, and the composition of stakeholders (Fernholz & Fernholz, 2007). The goals of PSAM can be generally classified into two categories: traditional and nontraditional (Kaganova & Nayyar-Stone, 2000). The traditional goal is to supply appropriate properties for providing public goods and services at the least cost, based on market valuation. Typical examples the nontraditional goals include supporting economic development, promoting social development, and developing governmental revenue sources (Simons, 1994; Fernholz & Fernholz, 2006; Dent & Bond, 2007; Kaganova & Nayyar-Stone, 2000). Besides, accounting reforms and requirements in the public sector exert strong impact on the operation of PSAM (Kraus, 2004; Kaganova et al., 2006).

PSAM has been producing considerable effects in the domain of public management. To ensure that PSAM achieves its goals and objectives in serving government agencies, the processes of asset management need to be effectively monitored in different dimensions. In addition, oversight over PSAM helps produce accountable and transparent government by assuring constituents that tax money is spent reasonably and that publicly owned properties are utilized efficiently (Hentschel & Utter, 2006).

Considering the structure of PSAM, monitoring and oversight covers the following aspects of PSAM: monitoring of compliance of laws and regulations; monitoring of effectiveness of policies & procedures; contract monitoring (cost, schedule, performance, quality); performance measurement; and financial accountability monitoring (purpose, time, amount). Monitoring and oversight are a kind of managerial control and a process by which management at different levels evaluates and audits the PSAM process and performance against previously determined standards and takes corrective measures if necessary (Hitt et al., 1989).

Government needs to have an effective control and audit mechanism (OECE, 2007). This mechanism is backed up by a legal framework, policy, procedures, and organization of PSAM operations. Several components exist to contribute to compliance to integrity and transparency codes. One is sufficient and timely information on compliance provided by the internal control system, and another is auditors who are sufficiently informed about both PSAM operation and the control system. Still another is enforcement of control and audit requirements and follow-up on findings and recommendations of control and audit.

In 2019, INTOSAI issued GUID 5260 - Governance of Public Assets, which is a document that has been developed by the Working Group on the Fight Against Corruption and Money Laundering, in the light of the impact of the global financial crisis and after recognizing the need for guidelines related to the role of SAIs in enhancing integrity, transparency, accountability and good governance for public assets in public entities (INTOSAI, 2019). This guideline is focused on "creating a common front against corruption by efficiently promoting institutional awareness, standards, policies and best practices with due consideration to the mandate, authority and capacities of SAIs. This represents a framework for SAIs to implement supreme auditing actions bearing in mind the public entities' ethical standards or codes of conduct, as well as their social responsibilities, with the understanding that each public institution should be held fully responsible for its own public assets management" (INTOSAI, 2019).

In the GUID 5260, in addition to the other stakeholders related to the entire process of PSAM, SAIs are also listed as important. They encourage and support the performance of public duties in accordance with the principles of good governance. Assessments of the organization's operations are made during SAIs' compliance, financial and performance audits and depending on their specific legislative mandate, SAIs may communicate their findings and recommendations to interested stakeholders. Through their daily work, SAIs help build integrity, transparency and accountability, and public confidence by enabling oversight, accountability, and governance in the public sector (INTOSAI P-1, 2019)

In accordance with its mandate, in enhancing good governance, each SAI should create a comprehensive strategy of combating corruption, money laundering and other types of wrongdoing. One of the most important elements of an SAI's program for combating wrongdoing is the work it does in strengthening public institutions, which are the elements of the national integrity system. Each public institution, within its statutory powers, supports this national integrity system like pillars that support the roof of a building. Sound governance in such a system is based on integrity, transparency, and accountability (Dobrowolski, 2012).

INTOSAI (2019) stated that in compliance with their legal powers, SAIs' efforts to enhance good governance should be multifaceted, and these efforts may include, but are not limited to: incorporation of good governance issues in an SAI's routine audit work; increasing public awareness of the significance of ongoing integrity, transparency and accountability within the government; improving methods and tools of combating wrongdoing such as corruption, fraud, abuse of power, waste, etc.; providing a means for whistleblowers to report instances of such wrongdoing; and collaborating with other institutions that have active roles in curbing such wrongdoing and enhancing the principles of good governance.

3. METHODOLOGY

The data collection in this study is carried out through a questionnaire. The structured questionnaire was sent to all state auditors employed by the SAI of North Macedonia. The survey questionnaire was web-based. Thus, the access link was sent to all state auditors, and it consisted of 23 questions. The questions were structured as follows:

- 3 questions about ***general characteristics*** of the respondents (job title, education and experience).
- 8 questions about ***regularity audits and PSAM***.
- 2 questions about ***performance audits and PSAM***.

- 4 questions about ***GUID 5260***.
- 5 questions about ***auditors' opinions***.

The survey was conducted in the period July to August 2022 and the questionnaire was answered by 66 state auditors employed by the SAO. The total population in the survey (the number of state auditors in the SAO) is 104, hence the response rate is **63%.** The subject of research is the role of the state audit in improving the PSAM process, while the purpose of the research is to provide empirical evidence on the perception of public sector auditors for their role in fostering and improving the process of PSAM.

This paper tries to answer the general research question, as follows:

- **How can the State Audit improve the PSAM processes?**

For the purposes of the research, several specific questions were set:

1. Which type of audit has the greatest impact on improving the PSAM? Regularity audits or performance audits?
2. What is the percentage share of public sector auditors in conducting audits related to PSAM?
3. For which asset-related assertions, auditors most often find irregularities?
4. What is the level of implementation of given recommendations related to the PSAM? Have follow-up checks on performance audit recommendations been conducted and how many public sector auditors have been involved in those?
5. What is the opinion of public sector auditors regarding PSAM control mechanisms? Is the state audit sufficient to provide solutions to key issues arising from PSAM?

The processing of the collected data was done through several statistical methods and tests, using SPSS software:

- Cronbach's alpha to identify internal consistency in respondents 'responses.
- Descriptive statistics to perceive the aggregate statistics that quantitatively describe the answers of the respondents.
- ANOVA analysis to examine the differences in the mean values of responses by the state audit management (Category B) and filed state auditors (Category V).

4. RESULTS AND DISCUSSION

As noted in the literature review, PSAM plays a key role for the successful functioning of the public sector, while state audit is significant in implementing control in the management of public sector assets. Before any further analysis of the results, reliability analysis was carried out. According to many authors (Tuan, Chin, & Shieh, 2005; George & Mallery, 2003), Cronbach's Alpha is considered a measure of certainty, and the coefficient α must be greater than 0.7 ($\alpha \geq 0.7$) for the answers to be considered relevant and acceptable for further analysis. For the calculation of the Cronbach's Alpha indicator the questions that identify the characteristics of the respondents and two questions that are elaborated separately, where the respondents had the opportunity for multiple choice and additional field to add their opinion, were excluded.

Cronbach's Alpha is 0.835, which means that the results can be considered relevant and appropriate conclusions can be drawn.

Table 1: Descriptive statistics the Characteristics of the Respondents

Feature	Description	Number	Percent
Job Title and Department	- State Auditor in Audit Department (Category V - Junior Auditor, Auditor, Senior Auditor, Principal Auditor)	54	60.94%
	- State Auditor in Audit Department (Category B - (Assistant Audit Manager, Audit Manager, Assistant to the Auditor General, Advisor to the Auditor General))	12	1.56%
	Total	**66**	**100.00%**
Education	Secondary	0	0%
	Bachelor	57	86%
	Master/PhD	9	14%
	Total	**66**	**100%**
Work experience in the SAO	0-5	18	27.2%
	6-10	17	25.7%
	11-15	30	45.6%
	over 15 years	1	1.5%
	Total	**66**	**100.00%**

(Source: Authors' calculation)

Furthermore, Table 1 shows the descriptive statistics of the characteristics of the respondents, where it can be noted that 12 of the respondents are state auditors employed in Category B (Assistant Audit Manager, Audit Manager, Assistant to the Auditor General, Advisor to the Auditor General), while 54 are state auditors employed in category C (Junior Auditor, Auditor, Senior Auditor, Principal Auditor). All state auditors have higher education or master's/PhD degree. The largest representation is the auditors who have work experience from 11 to 15 years.

Regularity Audits and PSAM (Financial audits and Compliance audits)

In the section on the regularity audit and PSAM, the state auditors were asked a total of 8 questions. Most of the questions were composed with "YES" and "NO" answers, where in the analysis "1" is used for NO, and "5" is used for YES (see table 2).

Table 2: Descriptive Statistics – Regularity Audit

	N	Minimum	Maximum	Sum	**Mean**	Std. Deviation
Have you ever audited tangible (fixed) assets in public sector institutions with a Regularity audit?	66	1.0	5.0	306.0	**4.636**	1.1587
With a financial audit, do you inspect the existence of the assets (whether the assets really exist)?	66	5.0	5.0	330.0	**5.000**	0.0000
Do you inspect the rights and obligations for the assets (that the audited entity has the rights over the assets) to the assets?	66	5.0	5.0	330.0	**5.000**	0.0000
Do you inspect the completeness of the assets (all assets that should be recorded in the	66	5.0	5.0	330.0	**5.000**	0.0000

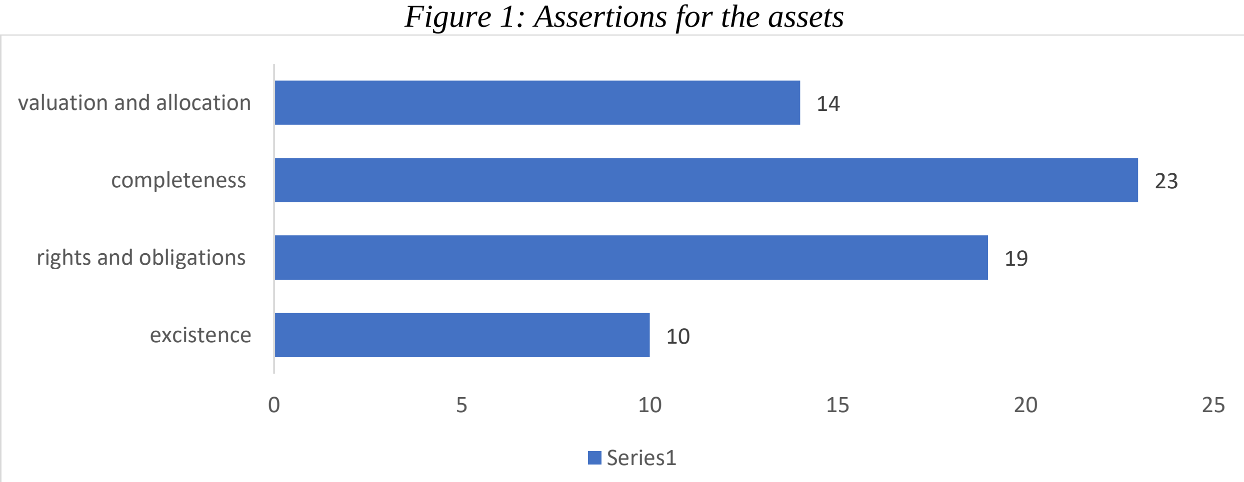
accounts are de facto recorded)?						
Do you inspect the valuation of the assets (all assets are included in the financial statements in the correct amounts, and any amount resulting from an adjustment due to valuation or allocation is correct recorded)?	66	1.0	5.0	314.0	**4.758**	.9617
In your opinion, how often do you identify conditions (or findings) for the above assertions for public sector assets and make recommendations to overcome them?	66	3.0	5.0	270.0	**4.091**	.7174
How often have the audited entities implemented the recommendations related to the findings on public sector assets when you perform a follow-up audit?	66	2.0	5.0	207.0	**3.136**	.8751

(Source: Authors' calculation)

On question of whether the auditors have ever audited tangible (fixed) assets in public sector institutions with a regularity audit, the mean value of the answers received is 4,636, which means that most of the auditors **(61 auditors or 92% of the respondents)** have once participated in a regularity audit and audited tangible (fixed) assets. The following 4 questions referred to whether, in auditing assets, auditors examine: ***existence, rights and obligations, completeness, and valuation and allocation***. Except for valuation and allocation (mean: 4,758), all state auditors inspect the other management assertions (existence, rights and obligations, completeness) related to tangible - fixed assets (mean value: 5). When asked how often the auditors determine conditions related to the stated assertions, they gave an answer with great certainty (mean value: 4.091), i.e. they very often determine irregularities related to public assets with the regularity audit, but according to ANOVA (Appendix) there is a difference in answers between the groups of respondents (field state auditors and state auditors managers) for this question.

In relation to which assertion they most often establish irregularities, the most frequently answered assertion is that of the ***completeness of the assets*** (23), then the ***rights and obligations*** related to the assets (19), ***valuation and allocation*** (14) and finally, the least irregularities related to the ***existence*** of assets (10) (see Figure 1).

Figure 1: Assertions for the assets



(Source: Authors' calculation)

Finally, the auditors were asked how often the audited entities implement the given recommendations for improving asset management, and here it can be concluded that the recommendations of the auditors are not so often implemented (mean value: 3.136).

Performance Audits and PSAM

In the performance audit and PSAM section, two questions were asked. The first refers to whether the auditors have ever participated in a performance audit related to PSAM, and here the mean value is 1,606, that is, a few of the auditors were part of such a performance audit (10 auditors – 15% of the respondents) - see table 3.

Table 3: Descriptive Statistics – Performance Audit

	N	Minimum	Maximum	Sum	**Mean**	Std. Deviation
Have you ever been part of a Performance Audit related to public sector asset management?	66	1.0	5.0	106.0	**1.606**	1.4452

(Source: Authors' calculation)

The second question referred to those auditors who took part of a performance audit, and the question was on which topic they performed an audit related to PSAM (see table 4).

Table 4: Topics on Performance Audit related to PSAM

	Answers
If you were part of a performance audit related to PSAM, please state the topic of the performance audit:	Inventory of assets, receivables and liabilities of the Office for General and Common Works of the Government of RSM
	Effectiveness of the management of the real estate property of the Republic of Macedonia used by the state administration bodies

(Source: Authors' calculation)

From the responses received, it can be concluded that a small number of state auditors participated in a performance audit related to the PSAM theme and that for Effectiveness of the management of the real estate property of the Republic of Macedonia used by the state administration bodies and Inventory of assets, receivables and liabilities of the Office for General and Common Works of the Government of North Macedonia.

GUID 5260 - Governance of Public Assets

In the next section, the auditors were asked questions about GUID 5260 – Governance of Public Assets (see table 5).

Table 5: Descriptive Statistics – GUID 5269

	N	Minimum	Maximum	Sum	**Mean**	Std. Deviation
Are you familiar with the GUID 5260 (Governance of Public Assets) from the INTOSAI Framework of Professional Pronouncements?	66	1.0	5.0	262.0	**3.970**	1.7626
In compliance with their legal powers, SAIs' efforts to enhance good governance should be multifaceted. Certain efforts are listed in the GUID 5260. Rate the efforts that your SAO fulfills (from 1 to 5, 1-least, 5-most) • incorporation of good governance issues in an SAI's routine audit work.	66	3.0	5.0	280.0	**4.242**	.6807
• increasing public awareness of the significance of ongoing integrity, transparency, and accountability within the government.	66	1.0	5.0	280.0	**4.242**	1.0237
• improving methods and tools of combating wrongdoing such as corruption, fraud, abuse of power, etc.	66	1.0	5.0	279.0	**4.227**	1.0640
• providing a means for whistleblowers to report instances of such wrongdoing;	66	1.0	5.0	220.0	**3.333**	1.3849
• collaborating with other institutions that have active roles in curbing such wrongdoing and enhancing the principles of good governance.	66	2.0	5.0	288.0	**4.364**	.9053
The GUID 5260 list the roles and responsibilities of key stakeholders in the process for good governance of public assets. In your opinion, please rate the stakeholders (1-least significant, 5 – most significant) · Legislators and regulators	66	3.0	5.0	290.0	**4.394**	.7622
· Audit Committees	66	1.0	5.0	226.0	**3.424**	1.2286
· Financial intelligence units	66	2.0	5.0	238.0	**3.606**	.8749
· SAI	66	4.0	5.0	311.0	**4.712**	.4562
· Other external audits	66	1.0	5.0	211.0	**3.197**	1.1665
· Internal auditors	66	1.0	5.0	246.0	**3.727**	1.2222
· Managers	66	2.0	5.0	274.0	**4.152**	.9322
· Employees	66	2.0	5.0	254.0	**3.848**	.9805
· Other stakeholders (such as NGOs, media, international organizations)	66	2.0	5.0	242.0	**3.667**	.9171
Do you, as state auditors, often determine deficiencies in asset registers in audited entities?	66	1.0	5.0	290.0	**4.394**	1.4452

(Source: Authors' calculation)

Results show that most of the auditors are familiar with this GUID 5260 (mean value 3.97). In compliance with their legal powers, SAIs' efforts to enhance good governance should be multifaceted and certain efforts are listed in the GUID 5260. The auditors have responded with great certainty to all efforts, mostly for ***collaborating with other institutions that have active roles in curbing such wrongdoing and enhancing the principles of good governance*** (mean value 4.394), and at least for ***providing a means for whistleblowers to report instances of such wrongdoing*** (mean value 3.333).

Regarding the question on the stakeholders involved in the process for the good governance of public assets, the auditors replied with great certainty that the **SAIs** are the most important in PSAM (mean value: 4.712), and the least important are **Other external audits** (mean value: 3.197), but according to ANOVA (Appendix) there is a difference in the answers between the groups for this question.

At the end of this section, the GUID 5260 defines the Asset Register as the cornerstone of an asset management framework for entities, no matter the size of their asset portfolio, in that it keeps asset information as well as a historical record of both financial and non -financial information over each asset's life cycle for the purposes of asset planning, assisting in meeting accounting standards and legislative compliance, monitoring performance, and accountability. The auditors have answered that they very often determine deficiencies in the asset registers of the audited entities (mean value: 4,394).

Auditors' opinions

In the last section of the questionnaire, the auditors were asked several questions about their perceptions and opinions related to the improvement of PSAM in North Macedonia (see table 6). The auditors agree that the state audit is not sufficient for efficient management of public ass (mean value 2,455), but also that in North Macedonia there is no need to establish a new institution that will be in charge only of PSAM issues. Also, the auditors in North Macedonia are pessimistic that the transition to the accrual basis of accounting in the public sector would improve the management of public assets.

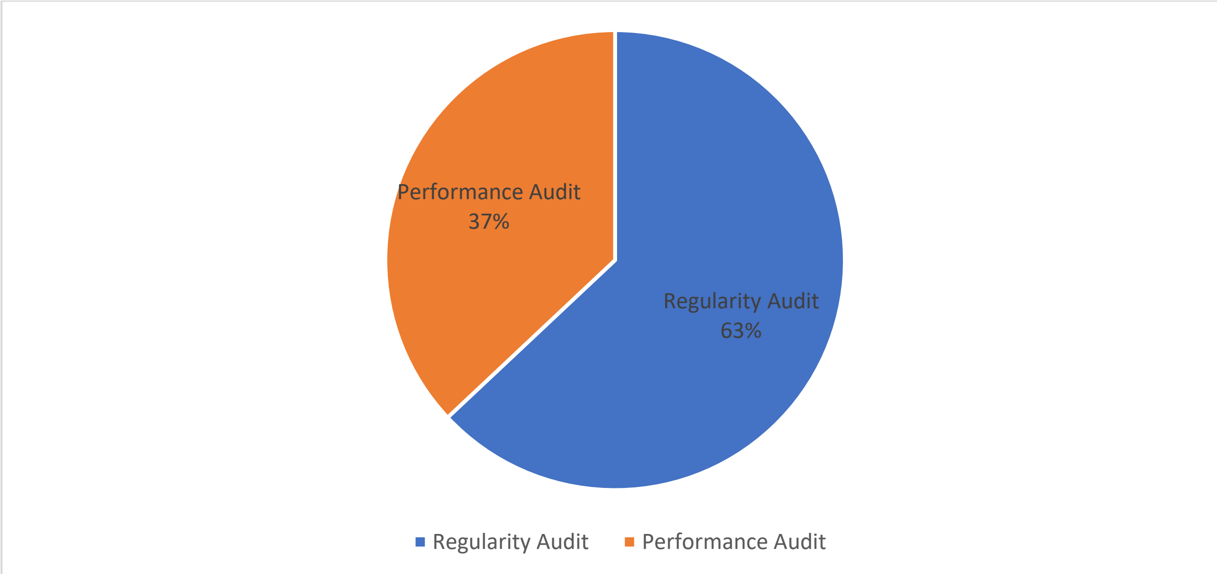
Table 6: Descriptive Statistics – Auditors' opinions

	N	Minimum	Maximum	Sum	**Mean**	Std. Deviation
Is the state audit a sufficient control mechanism in the state for efficient management of public sector assets?	66	1.0	5.0	162.0	**2.455**	1.9389
Is there a need to establish a new institution in charge only of the problem of managing public sector assets in NM?	66	1.0	5.0	142.0	**2.152**	1.8250
Will the transition to accrual-based accounting in the public sector contribute to better management of public assets?	66	1.0	5.0	182.0	**2.758**	2.0005

(Source: Authors' calculation)

Regarding the question of which audit is more significant for improving PSAM, two-thirds of the respondents agree that it is the Regularity Audit (see Figure 2).

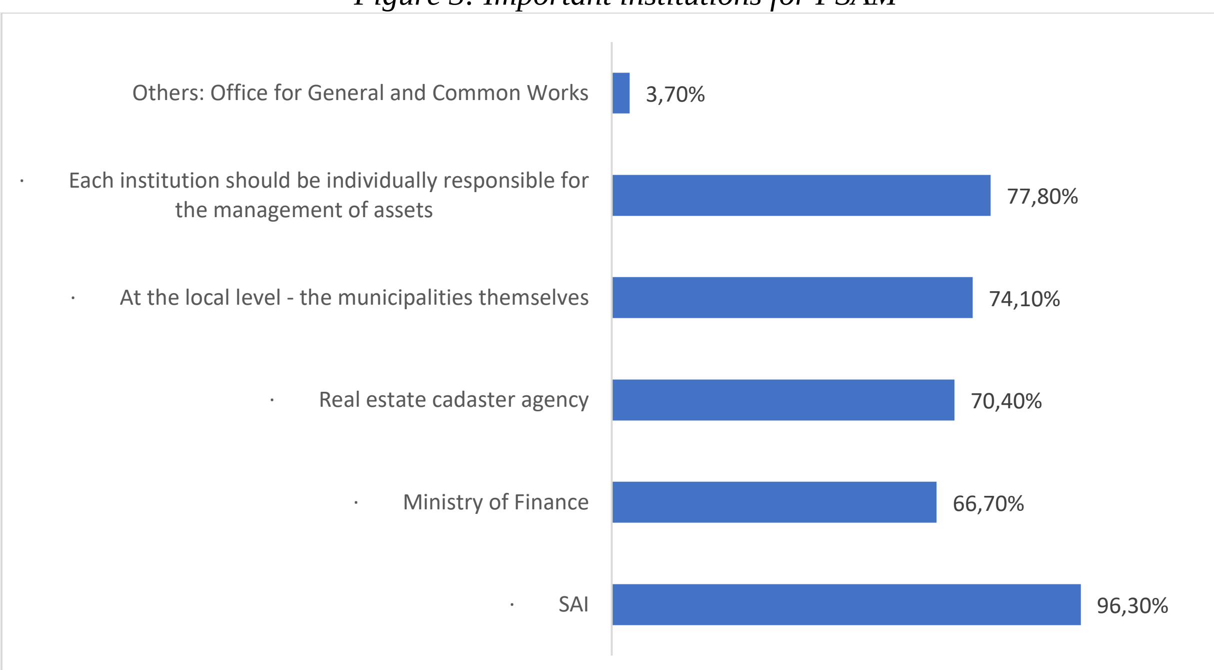
Figure 2: Regularity audit vs Performance audit



(Source: Authors' calculation)

As for the question of which institution the survey participants regard as the most important in North Macedonia when it comes to PSAM, the given answers are presented in Figure 3.

Figure 3: Important institutions for PSAM



(Source: Authors' calculation)

As evidenced in Figure 3, the most significant institution for improving PSAM is the SAI (96.30%), then that each separate institution from the public sector should be responsible for good management of assets (77.80%), the Municipalities at the local level (74.10%) , the Cadastre Agency (70.40%), the Ministry of Finance (66.70%) and other institutions.
Lastly, the auditors also gave their recommendations for improving the situation with PSAM in North Macedonia, and that a complete inventory and recording of the property at the disposal of the state is needed; it is necessary to initiate a legal regulation of the way of recording the state property and its presentation in the financial statements; as well as education, training of the employees responsible for managing the assets.

5. CONCLUSION

Public sector asset management (PSAM) has been a topic of academic debate and research for several decades. Globally, there are many studies and papers on PSAM, but also the role of the SAI in improving that process, but in the Balkan region, those studies are scarce and still missing. Reviewing the efficiency of asset use and providing firm recommendations for governments to act upon can trigger significant improvements: conducting regular audits on governments' annual financial statements. With this research, we aimed to provide empirical evidence on the role of the SAI of North Macedonia for better PSAM and to draw certain conclusions about what influence the state audit has on PSAM, by exploring the perception of the state auditors in North Macedonia.
The findings of this study show that the regularity audit has greater importance for PSAM improvement, and the majority of auditors have ever audited public sector assets with the regularity audit, compared to performance audits that relate to public sector assets that are not represented by a large percentage of auditors. In terms of an irregularity related to asset assertions, the auditors determine the most conditions for the completeness of the assts, and the least for the existence of the assets. Although the auditors often give recommendations to overcome the conditions, the recommendations are not systematically implemented by the audited entities. Furthermore, state auditors believe that SAI is the biggest factor in controlling PSAM, but also that other institutions, such as: the Ministry of Finance, municipalities, the cadastre agency, that should have a role in better managing the PSAM process, that is, that state audit as a control mechanism it must not be unique.
Lastly, the state audit improves the PSAM through regularity audits, and less often performance audits by giving specific recommendations to overcome certain conditions related to the PSAM, however, as such, it is not sufficient for full control of PSAM.
Although the limitation of this paper is found in the measurement of the variables from the survey that is based only on the perception of the state auditors, it contributes to the existing literature on PSAM and leaves a lot of room for further research, especially for comparative studies of the role of SAI in better management of public sector assets.

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APPENDIX

Appendix A1: ANOVA

ANOVA						
		Sum of Squares	**df**	**Mean Square**	**F**	Sig.
Have you ever audited fixed assets in public sector institutions with a Regularity audit?	**Between Groups**	1.939	1	1.939	1.455	.232
	Within Groups	85.333	64	1.333		
	Total	87.273	65			
With a financial audit, do you inspect the existence of the assets (whether the assets really exist)?	**Between Groups**	0.000	1	0.000		
	Within Groups	0.000	64	0.000		
	Total	0.000	65			
Do you inspect the rights and obligations for the assets (that the audited entity has the rights over the assets) to the assets?	**Between Groups**	0.000	1	0.000		
	Within Groups	0.000	64	0.000		
	Total	0.000	65			
Do you inspect the completeness of the assets (all assets that should be recorded in the accounts are de facto recorded)?	**Between Groups**	0.000	1	0.000		
	Within Groups	0.000	64	0.000		
	Total	0.000	65			
Do you inspect the valuation of the assets (all assets are included in the financial statements in the correct amounts, and any amount resulting from an adjustment due to valuation or allocation is correct recorded)?	**Between Groups**	.121	1	.121	.129	.720
	Within Groups	60.000	64	.938		
	Total	60.121	65			
In your opinion, how often do you identify conditions (or findings) for the above assertions for public sector assets and make recommendations to overcome them?	**Between Groups**	6.371	1	6.371	15.056	.000
	Within Groups	27.083	64	.423		
	Total	33.455	65			
How often have the audited entities implemented the recommendations related to the findings on public sector assets when you perform a follow-up audit?	**Between Groups**	.013	1	.013	.017	.896
	Within Groups	49.759	64	.777		
	Total	49.773	65			
Have you ever been part of a Performance Audit related to public sector asset management?	**Between Groups**	.054	1	.054	.025	.874
	Within Groups	135.704	64	2.120		
	Total	135.758	65			
Are you familiar with the GUID 5260 (Governance of Public Assets) from the INTOSAI Framework of Professional Pronouncements?	**Between Groups**	1.939	1	1.939	.621	.434
	Within Groups	200.000	64	3.125		
	Total	201.939	65			
In compliance with their legal	**Between**	.445	1	.445	.960	.331

powers, SAIs' efforts to enhance good governance should be multifaceted. Certain efforts are listed in the GUID 5260. Rate the efforts that your SAO fulfills (from 1 to 5, 1-least, 5-most) • incorporation of good governance issues in an SAI's routine audit work.	**Groups**					
	Within Groups	29.676	64	.464		
	Total	30.121	65			
• increasing public awareness of the significance of ongoing integrity, transparency and accountability within the government.	**Between Groups**	.084	1	.084	.079	.779
	Within Groups	68.037	64	1.063		
	Total	68.121	65			
• improving methods and tools of combating wrongdoing such as corruption, fraud, abuse of power, etc.	**Between Groups**	.304	1	.304	.265	.608
	Within Groups	73.287	64	1.145		
	Total	73.591	65			
• providing a means for whistleblowers to report instances of such wrongdoing;	**Between Groups**	.407	1	.407	.210	.648
	Within Groups	124.259	64	1.942		
	Total	124.667	65			
• collaborating with other institutions that have active roles in curbing such wrongdoing and enhancing the principles of good governance.	**Between Groups**	.189	1	.189	.228	.634
	Within Groups	53.083	64	.829		
	Total	53.273	65			
The GUID 5260 list the roles and responsibilities of key stakeholders in the process for good governance of public assets. In your opinion, please rate the stakeholders (1-least significant, 5 – most significant) • Legislators and regulators	**Between Groups**	1.859	1	1.859	3.315	.073
	Within Groups	35.898	64	.561		
	Total	37.758	65			
• Audit Committees	**Between Groups**	.371	1	.371	.243	.624
	Within Groups	97.750	64	1.527		
	Total	98.121	65			
· Government	**Between Groups**	.054	1	.054	.069	.793
	Within Groups	49.704	64	.777		
	Total	49.758	65			
· Financial intelligence units	**Between Groups**	.243	1	.243	1.172	.283
	Within Groups	13.287	64	.208		
	Total	13.530	65			
· SAI	**Between Groups**	.708	1	.708	.516	.475
	Within Groups	87.731	64	1.371		
	Total	88.439	65			

· Other external audits	**Between Groups**	6.971	1	6.971	4.950	.030
	Within Groups	90.120	64	1.408		
	Total	97.091	65			
Internal auditors	**Between Groups**	.142	1	.142	.162	.689
	Within Groups	56.343	64	.880		
	Total	56.485	65			
·Managers	**Between Groups**	1.485	1	1.485	1.558	.217
	Within Groups	61.000	64	.953		
	Total	62.485	65			
· Employees	**Between Groups**	.102	1	.102	.119	.731
	Within Groups	54.565	64	.853		
	Total	54.667	65			
· Other stakeholders (such as NGOs, media, international organizations)	**Between Groups**	5.387	1	5.387	2.645	.109
	Within Groups	130.370	64	2.037		
	Total	135.758	65			
Do you, as state auditors, often determine deficiencies in asset registers in audited entities?	**Between Groups**	3.030	1	3.030	.804	.373
	Within Groups	241.333	64	3.771		
	Total	244.364	65			
Is the state audit a sufficient control mechanism in the state for efficient management of public sector assets?	**Between Groups**	.485	1	.485	.144	.706
	Within Groups	216.000	64	3.375		
	Total	216.485	65			
Is there a need to establish a new institution in charge only of the problem of managing public sector assets in NM?	**Between Groups**	4.862	1	4.862	1.219	.274
	Within Groups	255.259	64	3.988		
	Total	260.121	65			

(Source: Authors' calculation)

WHO PAYS LESS? CORPORATE INCOME TAX BURDEN OF LISTED CORPORATIONS IN SERBIA AND NORTH MACEDONIA

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ABSTRACT
Serbia and North Macedonia are two transition countries with relatively low statutory corporate tax rates (STRs) of 15% and 10%, respectively. As tax planning and legal tax avoidance became a factor of corporate competitiveness, it is important to measure and compare corporate tax burden between corporations. Therefore, the main objective of the paper is to calculate and compare corporate tax burden for corporations listed on Belgrade and Macedonian stock exchanges, included in BELEX15 and MBI10 stock exchange indices. On the other side, many measures of corporate tax burden have been developed in the past decades, though the ideal measure of corporate tax burden is yet to be designed. We have calculated effective corporate income tax rates (ETRs), as the most widely used measure of corporate tax burden. ETR is calculated as a relation between current corporate income tax expense and pre-tax profit. We have showed that corporations in Serbia have lower ETRs than corporations in North Macedonia, despite the STR being higher in Serbia. Contrary to the North Macedonian corporations, the difference between ETR and STR is statistically significant in Serbian corporations. However, we argue that ETRs do not enable cross-national comparison of corporate income tax burden when countries impose different STRs. In this regard, we propose several options to overcome such obstacle, but argue that the relation between ETR and STR is the best measure of corporate income tax burden in such environment. We have reached several conclusions and addressed recommendations to many interest groups, though we emphasize the relatively small sample as the largest limitation of our research.

Keywords: *Corporation, Corporate tax, Tax avoidance, Effective tax rate, Stock exchange, Transition economies*

JEL classification: *H25, H26, M41*

1. INTRODUCTION

The ideal scenario for the growth and development of the corporation is that the whole earnings stay in the corporation. Such closed circle of the funds flow maximizes the corporation potential to save or invest. However, in the real world, many factors break the closed circle and lead to the outflows from the corporation. Corporate income tax may be one of the best examples as it accounts for the portion of the profit paid outside of the corporation to the national tax authorities. Therefore, it is not surprising that corporations often seek for the strategies of tax planning and tax avoidance in order to minimize their corporate income tax burden.

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The significance of the corporate income tax has grown in the last few decades both from the microeconomic and macroeconomic aspect. Namely, successful management of corporate income tax became the factor of the corporation competitiveness, so corporations started to compare tax burden among themselves (Dyreng *et al.*, 2010). Therefore, corporations strive to ensure compliance with the corporate income tax regulation, but also to minimize the tax burden as much as possible.

From the macroeconomic point of view, national governments (in particular those of developing transition and post-transition countries) use corporate income tax as an instrument to attract foreign direct investments and accelerate economic growth and development. Ali Abbas and Klemm (2013) point out at global "race to the bottom" as countries reduce statutory corporate income tax rates (STRs) to become more attractive than other countries for foreign investors.

The subject of the paper is corporate income taxation of corporations in Serbia and North Macedonia. There are many reasons to explain the comparison between corporations from Serbia and North Macedonia. Both countries were part of the former Socialist Federal Republic of Yugoslavia and are developing transition European countries that are recognized candidates for membership of the European Union. Serbia and North Macedonia also have many similarities regarding the corporate taxation. Both Serbia (Marjanović and Domazet, 2021) and North Macedonia (Gruevski and Gaber, 2020) aim to attract more foreign capital and foster the investment, so they impose, compared with other European countries, relatively low STRs – 15% in Serbia and 10% in North Macedonia.

The paper has two main objectives. The first objective of the paper is to measure corporate income tax burden of listed corporations on Belgrade Stock Exchange and Macedonian Stock Exchange. The second objective of the paper is to compare the corporate income tax burden of these corporations that operate in countries with different STRs.

Corporate income tax research based on microeconomic data is relatively scarce in transition and post-transition European countries (Vržina *et al.*, 2020; Bubanić and Šimović, 2021). Therefore, our research aims to contribute to the existing literature on measuring tax burden and the research results may be useful both from microeconomic and macroeconomic aspect. First, we believe that management of corporations may benefit from the findings on the corporate income tax burden in different countries, with the results being particularly useful for managers of multinational corporations that operate in both Serbia and North Macedonia. Second, national tax authorities may benefit from the information on effective tax burden in neighboring countries. Usually, national tax authorities may directly rely only on the information on STRs in these countries. However, STRs may be significantly different to the effective corporate income tax burden.

Besides the introduction and conclusion, the paper consists of three parts. In the first part is given the theoretical background on the issues of corporate income tax avoidance and measures of tax burden. The second part explains the research methodology, while research results are presented in the third part of the paper.

2. THEORETICAL BACKGROUND

Since STR does not capture the effects of tax planning (those prescribed by the tax law) and tax avoidance (those based on using the tax loopholes), tax researchers developed several corporate income tax measures. Probably the most widely used measure is effective corporate income tax rate – ETR (Hanlon and Heitzman, 2010). However, several variations of ETR exist in tax theory and practice. For instance, International Accounting Standard (IAS) 12 – Income Taxes, requires the calculation of the ETR as a relation between total corporate income tax expense (sum of current and deferred tax expense, reduced for deferred tax income) and pre-tax profit. On the other hand, in the numerator of the ETR may also be used current corporate income tax expense or outflow for the corporate income tax from the cash flow statement. In addition, in the denominator may be used different results instead of pre-tax profit, such as earnings before interest and taxes (EBIT) or earnings before interest, taxes, depreciation and amortization (EBITDA).

ETR does not have any standard absolute value that should be used for comparison. However, ETR should be interpreted bearing in mind STR as a reference. In this regard, researchers usually employ the following logic:

- if ETR < STR, the corporation is successful in managing its corporate income tax burden;
- if ETR = STR, the corporation has corporate income tax burden as prescribed by the tax law and
- if ETR > STR, the corporation is not enough successful in managing its corporate income tax burden.

Tax researchers and practitioners should bear in mind that ETRs are related to the STR (Dias and Reis, 2018). Therefore, relying on the ETRs for comparison purposes may be dubious when the STRs are different. There may be identified at least four circumstances in which the employment of ETRs is not appropriate:

- comparison of ETRs for the corporations headquartered in the same country, but in the different regions of country, with the country imposing different STRs for corporations headquartered in different regions;
- comparison of ETRs for the corporations headquartered in the same country, but operate in different industries, with the country imposing different STRs for corporations operating in different industries;
- comparison of historical ETRs for the same corporation, but the STR was changed during the period of analysis and
- comparison of ETRs for the corporations headquartered in different countries, with different countries imposing different STRs.

Assume that the corporation reported ETR of 12% and its foreign competitor reported ETR of 11%. It is clear that the corporation has higher corporate income tax burden as it should pay one percent of the pre-tax profit more to the national tax authorities. At the first, it seems that the foreign competitor is better in managing the corporate income tax burden. It may be, however, assumed that the corporation is headquartered in a country imposing STR of 15%, while on its foreign competitor is imposed STR of 10%. Different STRs lead to the fact that the corporation lowered their tax burden three percent below the STR, while its foreign competitor has ETR even one percent higher than the STR. As a result, it may be concluded that the corporation is more successful in managing tax burden than its foreign competitor.

Due to presented weakness of the ETRs, some additional measures of corporate income tax burden have been developed. Some authors use the difference between STR and ETR (STR-ETR) in order to overcome the problem of different STRs. In this regard, corporations intend to have as higher as possible STR-ETR. Reference value for the measure STR-ETR is null percent and researchers usually employ the following logic:

- if STR-ETR < 0%, the corporation is not enough successful in managing its corporate income tax burden as ETR is higher than STR;
- if STR-ETR = 0%, the corporation has ETR equal to STR and
- if STR-ETR > 0%, the corporation is successful in managing its corporate income tax burden as ETR is lower than STR.

For instance, Chen *et al.* (2014) use STR-ETR to measure corporate income tax burden in a single-country analysis, but in the country that imposes different STRs for countries in different regions. Thomsen and Watrin (2018) and Tang (2019) use STR-ETR to measure corporate income tax burden for corporations headquartered in different countries across the world.

However, we argue that STR-ETR measure is not the best way to overcome the problem of different STRs as it may lead to unreliable conclusions. Assume that the corporation headquartered in the country with STR of 10% reports the ETR of 5% and its foreign competitor headquartered in the country with STR of 15% reports the ETR of 10%. Using the STR-ETR measure, it may be concluded that both corporations had ETR five percent lower than STR, implying that corporations are equally successful in managing their corporate income tax burden. However, this measure ignores the fact that the corporation lowered its corporate income tax burden from 10% to 5%, thus lowering the tax burden by one half (5%/10%), while its foreign competitor lowered corporate income tax burden from 15% to 10%, thus lowering the tax burden by only the one third (10%/15%).

Based on previous argument, we argue that the relation between ETR and STR (ETR/STR) is better measure to compare corporate income tax burden for corporations with different STRs. Similar to the ETR measure, corporations intend to have as lower as possible ETR/STR. Reference value for the measure ETR/STR is one and researchers usually employ the following logic:

- if ETR/STR < 1, the corporation is successful in managing its corporate income tax burden as ETR is lower than STR;
- if ETR/STR = 1, the corporation has ETR equal to STR and
- if ETR/STR > 1, the corporation is not enough successful in managing its corporate income tax burden as ETR is higher than STR.

Despite the fact that the ETR/STR is a more recent measure than ETR and STR-ETR, it has already been employed in some important studies. Tang *et al.* (2017) use ETR/STR in a single-country context to measure corporate income tax burden for corporations in a country that imposes different STRs for different types of corporations. Fernandez-Rodriguez *et al.* (2021) use ETR/STR in a multi-country context to compare corporate income tax burden for corporations headquartered in countries with different STRs.

3. RESEARCH METHODOLOGY

3.1. Context analysis

Taxation of the corporate income in Serbia and North Macedonia has many similarities. Besides the fact that both countries impose relatively low STRs, they have significantly lowered STRs in the last three decades. At the beginning of the XXI century, Serbia imposed STR of 20%. During the past two decades, STR is changed several times with the minimum of 10% and, from 2013, the STR is set at 15%. On the other hand, North Macedonia had STR of 15% at the beginning of the XXI century and, from 2008, the STR is set at 10%. In addition, in neither country are imposed municipal nor local government corporate income taxes.

The process of corporate income taxation in both countries is regulated by national Corporate Income Tax Law. The basis for the calculation of tax burden is pre-tax profit from the income statement that is adjusted according to the tax law provisions. Taxable period in both countries is one year. Corporations are obliged to monthly pay in advance corporate income tax. If advance payments are bigger than the calculated tax burden, corporations may request the refund of overpaid tax.

Like most of the European countries, no tax loss carryback is allowed in both Serbia and North Macedonia. On the other hand, tax losses may be carried forward in Serbia up to five

years, while standard tax loss carryforward period in North Macedonia is three years. Due to the global pandemic, tax losses reported in 2020 and 2021 may be carried forward up to five years.
However, corporate income taxation systems of Serbia and North Macedonia differ in some aspects. For instance, Serbia allows group taxation (tax consolidation) for parent entity and subsidiaries when parent entity has more than 75% of control in subsidiary. On the contrary, group taxation is not allowed in North Macedonia.
Both countries offer important, albeit different, investment tax incentives. In Serbia is offered investment tax incentive to the corporations that invest in certain non-current assets more than one billion Serbian dinars and employ a hundred workers on a permanent basis. On the other hand, in North Macedonia is offered investment tax relief that allows corporations to reduce the taxable profit for the amount of profit reinvested in certain tangible and intangible assets.

3.2. Corporate income tax data and measures

One of the most important pillars for each national economy is the stock exchange (Miller, 1998). In this regard, we have compared the ETRs for the corporations quoted on the Belgrade Stock Exchange – the only financial stock exchange in Serbia, and Macedonian Stock Exchange – the only financial stock exchange in North Macedonia. Although the number of quoted corporations in both countries significantly declined in the last decade (Marinković *et al.*, 2013; Boshkovska *et al.*, 2017), some of the most important corporations for the economic growth of these countries are still quoted on the stock exchanges. We have opted to compare ETRs for corporations from the main indices of both stock exchanges as it covers blue chips from the market. Therefore, we have sampled corporations from Serbia from the *BELEX15* index and North Macedonia from the *MBI10* index.
As of 1 July 2022, each index covered ten corporations, listed in the Table 1. Data from the table indicates that *BELEX15* covers nine non-financial and one financial (insurance) corporation, while *MBI10* covers five non-financial and five financial (banking) corporations. In addition, *BELEX15* covers only five corporations from the capital of Serbia – Belgrade, while *MBI10* covers nine corporations from the capital of North Macedonia – Skopje. However, both countries impose equal corporate income tax provisions on financial and non-financial corporations and on corporations from different regions, so differences in indices structure should not distort research results.

Table 1: List of sampled corporations

BELEX15	*MBI10*
Aerodrom Nikola Tesla, Belgrade	Alkaloid, Skopje
Alfa Plam, Vranje	Granit, Skopje
Dunav Insurance, Belgrade	Komercijalna Bank, Skopje
Energoprojekt Holding, Belgrade	Makedonijaturist, Skopje
Fintel Energija, Belgrade	Makedonski Telekom, Skopje
Impol Seval, Sevojno	Makpetrol, Skopje
Jedinstvo, Sevojno	NLB Bank, Skopje
Messer Tehnogas, Belgrade	Stopanska Bank, Bitola
Metalac, Gornji Milanovac	Stopanska Bank, Skopje
NIS, Novi Sad	TTK Bank, Skopje

We have retrieved the financial data of the sampled corporations from the official Internet presentations of the Belgrade Stock Exchange (www.belex.rs) and Macedonian Stock

Exchange (www.mse.mk). The paper covers the period between 2018 and 2020, so the sample initially consists of 30 observations per country. However, observations with negative pre-tax result are eliminated as they do not have clear economic meaning (Hanlon and Heitzman, 2010). We have used the data from individual financial statements in order to mitigate the impact of non-resident related party entities on corporate income tax (Lazar, 2014).

Since listed corporations in both countries are required to follow the full version of International Financial Reporting Standards (IFRS), including the IAS 12 – Income Taxes, we believe that data on corporate income tax, presented in income statement of corporations, is generally comparable on cross-national level. Reliability of the data has also been ensured by the fact that financial statements of each listed corporation in both countries have to be audited.

Since the reliability of reported deferred tax expense may be dubious (Brouwer and Naarding, 2018), we have opted to use current ETR. Hazir (2019) argues that current tax expense, used in the numerator of current ETR, is the "real" tax expense, as it represents the amount of tax burden from the tax return filed to the national tax authorities. In addition, pre-tax profit, used in the denominator of current ETR, may be considered as the nearest approximation of taxable profit.

Since the corporations in neither Serbia nor North Macedonia are allowed to use tax loss carryback, the current tax expense may not be negative, so the current ETR takes the value between 0% to $+\infty$. This also implies that STR-ETR measure takes the value between $-\infty$ and STR, while ETR/STR measure takes the value between 0 and $+\infty$.

Besides descriptive statistics, we have also used statistical tests to examine the statistical significance of the difference between employed measures of corporate income tax burden (ETR, STR-ETR and ETR/STR) and their referent values (STR, 0 and 1, respectively) for each country. Such methodology is applied in previous research (Vržina and Dimitrijević, 2020). Since the sample size is relatively small, we have used Shapiro-Wilk test to examine the normality of the distribution of employed measures. In the case of normal distribution, we use parametric t-test for independent samples, and nonparametric Mann-Whitney U test otherwise.

4. RESEARCH RESULTS

Table 2 presents the descriptive statistics for ETR for corporations that are part of *BELEX15* and *MBI10* stock indices. Indicators presented in the table are calculated for 23 observations for Belgrade Stock Exchange and 29 observations for Macedonian Stock Exchange as seven and one observation, respectively, were removed due to negative pre-tax result.

Table 2: Descriptive statistics for ETR

BELEX15	Stock index	*MBI10*
7.216%	Arithmetic mean	9.031%
6.068%	Median	9.635%
0.000%	Minimum	0.000%
20.154%	Maximum	13.631%

(Source: authors' calculation)

Presented results indicate that Serbian corporations have lower both arithmetic mean and median than North Macedonian corporations, although STR being higher in Serbia. Unlike for North Macedonia, the median of ETR for Serbian corporations is significantly lower than arithmetic mean, thus indicating observations with relatively high ETRs.

In both countries are recorded observations with the ETR of 0% - the corporations that did not report the current corporate income tax expense despite reporting positive pre-tax result. In this regard, only one observation from North Macedonia reported ETR of 0%, while as much as seven observations from Serbia reported the ETR of 0%. Two corporations from Serbia reported ETR of 0% in each sampled year, although they reported positive pre-tax result in each year. On the other hand, 13 observations from North Macedonia reported ETR higher than STR (10%), while only four observations from Serbia reported ETR higher than STR (15%).

A specific feature of the sample lies in the fact it captures the year 2020, remembered for the beginning of the global virus pandemic. It is interesting to notice that nine sampled North Macedonian corporations reported lower ETR for 2020 than for 2019, while for tenth corporation it was not possible to calculate ETR for 2020 due to pre-tax loss. On the other hand, four Serbian corporations reported higher ETR for 2020 than for 2019, two corporations reported the ETR of 0% in both years, while for four corporations it was not possible to study the change in ETR as they reported pre-tax loss in at least one of the two mentioned years.

As Serbia and North Macedonia impose different STRs, it is necessary to control the variability of ETR for the differences in STRs. Therefore, the descriptive statistics for the STR-ETR measure are presented in Table 3. Results from the table confirm the findings from the previous table – however, using STR-ETR measure leads to some more detailed conclusions. Namely, descriptive statistics of the ETR showed that arithmetic mean of ETR for Serbian corporations is only 1.8% lower than arithmetic mean of ETR for North Macedonian corporations. The inclusion of the STR in the analysis shows that arithmetic mean of ETR for Serbian corporations deviates as much as 7.784% from the STR, while arithmetic mean of ETR for North Macedonian corporations deviates only 0.969% from the STR, implying that Serbian corporations are significantly more successful in managing their corporate income tax burden.

Table 3: Descriptive statistics for STR-ETR

BELEX15	Stock index	*MBI10*
7.784%	Arithmetic mean	0.969%
8.932%	Median	0.365%
-5.154%	Minimum	-3.631%
15.000%	Maximum	10.000%

(Source: authors' calculation)

Table 4: Descriptive statistics for ETR/STR

BELEX15	Stock index	*MBI10*
0.481	Arithmetic mean	0.903
0.405	Median	0.964
0.000	Minimum	0.000
1.344	Maximum	1.363

(Source: authors' calculation)

As argued in the theoretical background of the paper, ETR/STR measure is better than STR-ETR to compare tax burden of corporations with different STRs imposed. Therefore, in the Table 4 is presented the descriptive statistics for the ETR/STR measure. It may be concluded that corporations from Serbia are nearly twice as successful as the North Macedonian corporations in managing the corporate income tax burden. Namely, Serbian corporations have, on the average, real corporate income tax burden equal to 48.1% of the statutory corporate income tax burden. On the contrary, North Macedonian corporations have, on the average, real corporate income tax burden equal to 90.3% of the statutory corporate income tax burden.

In the Table 5 are presented the results of Mann-Whitney U tests for the difference between ETR and STR in both countries. Nonparametric tests are used since Shapiro-Wilk test showed that no one employed variable follows the normal distribution.

Results of the Mann-Whitney U test show that the difference between ETR and STR in Serbia is statistically significant. In other words, Serbian corporations have statistically significantly lower ETRs than STR. On the other hand, the difference between ETR and STR in North Macedonia is not statistically significant. Therefore, North Macedonian corporations have statistically insignificantly lower ETRs than STR. Such findings confirm that Serbian corporations are more successful in managing corporate income tax burden than North Macedonian corporations. In addition, the results of the Mann-Whitney U tests are same if STR-ETR is compared with 0% (as a referent value) or if ETR/STR is compared with one (as a referent value), so the results of these statistical tests are not tabulated.

Table 5: Significance of difference between ETR and STR

	Serbia	North Macedonia
Mann-Whitney U	92.000	377.000
Z-statistic	-4.059	-0.723
p-value	***0.000	0.470

(Note: statistically significant at the 10% (*), 5% (**) and 1% (***) levels)

Although each observation may be treated as the separate issue, there can be identified some common features at the whole sample level to explain the significant differences in ETRs of Serbian and North Macedonian corporations. First, it is possible that the difference in ETRs is due to differences in tax loss carryforward practices. Corporations in Serbia are allowed to significantly longer carry forward their tax losses – currently, this period is five years, but tax losses reported prior to 2010 are allowed to be carried forward up to ten years, so such tax losses may be used to reduce corporate income tax burden in the sampled years. In addition, a fact that more sampled observations (seven) from Serbia than from North Macedonia (one) reported pre-tax loss implies that corporations from Serbia more frequently experience losses than North Macedonian corporations and, consequently, use tax loss carryforward to the higher extent.

It is also possible that differences in ETRs between corporations in Serbia and North Macedonia stem from different investment tax incentive rules. From the large corporation perspective, Serbian corporations are in better position than North Macedonian ones, as they may use investment tax incentive in the ten-year period. Theoretically, it implies that investment by Serbian corporation in only one year enable it to reduce its corporate income tax burden in the next ten years.

Group taxation (tax consolidation) may be the additional reason of the differences in ETRs. Many sampled Serbian corporations have parent entity headquartered in Serbia and/or have subsidiaries in which they have more than 75% (usually the whole 100%) of the control. Therefore, it is possible that taxable profits and tax losses are netted between group members. However, the extent to which Serbian corporations use group taxation is not known, as the data on group taxation is not publicly available.

It is important to recognize that the share of financial institutions in North Macedonian sample is significantly higher than the share in Serbian sample. Although the corporate income tax system in both countries is not different to financial institutions, it is possible that they have different ETRs than non-financial corporations due to the different nature of their industries. However, previous research (Vržina, 2019) shows that the arithmetic mean and median values of current ETRs for banks in Serbia is even lower than reported in this research, so different structure of the samples should not distort the research results.

5. CONCLUSION

Research in this paper has been conducted with the aim to measure and compare corporate income tax burden of listed corporations in Serbia and North Macedonia as two low-tax transition European countries. Therefore, we have sampled corporations covered by main stock indices of Belgrade Stock Exchange and Macedonian Stock Exchange, using the period between 2018 and 2020.

The research results showed that ETRs of sampled corporations are, on the average, below the STRs. However, ETRs of the North Macedonian corporations are only slightly lower than STR of 10%, while ETRs of Serbian corporations are significantly lower than STR of 15%. We have also calculated STR-ETR measure as well as ETR/STR measure to include the impact of different STRs in studied countries on research results.

We proved both theoretically and practically that ETR/STR is the best measure of corporate income tax burden when studied corporations are headquartered in different countries with different STRs. For instance, we found that corporations in Serbia, on the average, have only 1.8% lower ETR than corporations in North Macedonia. However, ETR/STR measure showed that corporations in Serbia have real corporate income tax burden of only 48% of the statutory corporate income tax burden, while corporations in North Macedonia have real corporate income tax burden of 90% of the statutory corporate income tax burden. Therefore, we have concluded that Serbian corporations are nearly twice as successful as the North Macedonian corporations in managing the corporate income tax burden.

We believe that the results of our research may be of interest to many interest groups. We show that researchers and managers of multinational corporations should use ETR/STR measure to compare corporate income tax burden of corporations or subsidiaries when there are imposed different STRs. In addition, managers of multinational corporations should ignore STR, but use expected ETRs, when deciding on the location of the foreign investments. National governments should also strive to calculate effective corporate tax burden, rather than using STRs, when comparing tax burden with neighboring countries.

Results of this research should be used in the light of certain limitations. The research sample is very small and covers only blue chips of stock exchanges of both countries. It is possible that research results would be different if number of corporations or sampling period are changed. In addition, sample includes both financial and non-financial corporations, although they have completely different nature of their industries.

Future research should also include limited liability corporations as many largest corporations, employers and exporters of both countries are registered in that legal form. It might be useful to include corporations from other neighboring countries to compare research results. In addition, the separate analysis for financial and non-financial corporations may be useful.

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IDENTIFYING PROFITABILITY DETERMINANTS IN THE HOTEL INDUSTRY PRE AND DURING THE COVID-19 PANDEMIC IN THE REPUBLIC OF NORTH MACEDONIA

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ABSTRACT
This study aims to explore the impact of the current challenges that the hotel industry is experiencing with the COVID-19 pandemic. The empirical analysis identifies the key determinants that have a significant impact on the improvement of the current situation of the hotel industry. The paper elaborates the ongoing situation of the pandemic in the global service industry; Special attention is given of the pre-pandemic and in the pandemic situation in the hotel industry in North Macedonia.
The present pandemic resulted in global challenges, especially affecting the economy and the healthcare system of different countries. It has also posed spillover effects on the global industries, including tourism and travel that nowadays are the major contributors to the service industry worldwide. Since tourism had a great impact on raising the economy in many countries, national economy included, this research main goal is to identify the determinants that have affected the hotel profits the most in this time of pandemic through the appropriate literature and theoretical background, and with empirical analysis. The analysis includes exploratory factor analysis, reliability analysis, and regression model. For this analysis, a data from 120 questionnaires were used. Management from different hotels from all parts of the country were interviewed.
Revealing the main determinants that affect the improvement of the existing situation in the hotel industry could contribute to the improvement of the decision-making process in an emerging crisis environment. It can also trigger the most affected parts of the hotel businesses and point out to segments which need the most attention. Lessons learned can contribute to better preparation for similar risks in the future.

Keywords: *tourism, firm performance, exploratory factor analysis*

JEL classification: *L38, L25, C38*

1. INTRODUCTION

Hospitality is an important part of the world economy and contributes significantly to increasing economic growth and development (Gössling, et al., 2020). Due to the pandemic with the COVID-19 virus, the world economy still experiences enormous instability. Restrictions and protocols by the governments have contributed to a significantly reduced ability to travel from one country to another, and thus a ban on staying or organizing events in some of the catering facilities and hotels. The outcome was reduction of income in the hotels according to the reduced work, and thus to the reduction of the staff - the need for human capital. However, the process of returning to the same way of life as before the pandemic is slowly starting and governments are easing all these restrictions and measures, they recommend working with reduced capacity and with strict guidelines for social distancing.

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Hospitality, more specifically hotels, does face high operating costs, as their survival largely depends only on the increase in demand for their services by consumers. To find out what will make them return to the previous state great efforts and detailed research are needed on the factors that would influence the improvement of the hotel industry in the years of the pandemic.

The primary goal of this research is to identify the main factors that directly influence the profitability of the hotels, as part of the hospitality industry in Republic of North Macedonia. For better understanding of the pandemic influence, the same factors are investigated in pre-pandemic period (2019) and in the height of the pandemic (2020) by using primary data collected directly from the hotel management. The analysis results appear to have different outcomes in the pre-pandemic and in the pandemic period.

The paper is structured in the following manner: the first part of the paper gives a brief introduction into the hotel industry during the pandemic and a short explanation of the results from the analysis. The second part of the paper explores the current literature review of the similar research and their findings. The third part explains the theoretical foundations of the exploratory factor analysis. The complete analysis with description of the data, methodology , questionnaire and results from the factor analysis, reliability analysis and logistic regression models is presented in the fourth part. The last, fifth section contains discussion and the main conclusion from the research.

2. LITERATURE REVIEW

The COVID-19 pandemic changed the hotel industry completely and opened a new area of research where the main determinants of profitability are to be examined to keep a sustainable growth. Great challenges were presented both to hotel managers and researchers. As the topic becomes more important, there are number of papers from research in diverse economies that explore the profitability factors. Profitability performance analysis on Malaysian hotel industry during Covid-19 pandemic is analyzed by (Said, et al., 2021). They use four variables such as leverage, liquidity, net asset turnover and size of the company for hotels listed under Bursa Malaysia. Their results confirm that leverage and net asset turnover have a positive influence on the profitability, while liquidity and company size seem to cause a decrease in the company's profit.

The impact of the pandemic shock onto the hotel industry in Taiwan has been analyzed by (Zhang, et al., 2022). Their empirical results emphasize the need for the hotel industry of Taiwan to take the rolling adjustment and optimization of financial flexibility after the COVID-19 pandemic for long-term sustainability.

Interesting approach in analysis of the hospitality industry reaction to the pandemic can be found in (Piga, et al., 2022). They investigate short-term recovery strategies during the pandemic in two environments differently hit by COVID-19, London, and Munich. They find that hotels with a more managerial approach have more proactively applied dynamic pricing strategies. Hoteliers also make use of a more streamlined booking portfolio to cope with the crisis.

To define the determinants of hotel profitability in China, (Xian, 2021) introduces new construct (variable) – Crisis Severity into a Partial Least Model. He collects data from hotel managers across the country. The conclusion was drawn the crisis severity significantly influences the hotel performance.

Non-financial factors affecting the operational performance of hospitality industry in Vietnam is analyzed by (Phan, et al., 2021). Data were collected from 346 Vietnam's hospitality companies. Using structural equation modelling they find service quality, flexibility and resource utilization have positive effect on the company's performance. Service quality had an indirect impact on the performance.

Number of papers examine the hospitality performance and its determinants. Analysis for Portuguese hotel industry performance for period 2016 to 2020 can be found in (Lima Santos, et al., 2021). The response to coronavirus pandemic from the Indian hospitality and tourism business was analyzed by (Sanjeev & Tiwari, 2021). Their state that the pandemic has prompted advances in technology, profit management, training, service blueprinting an online education. Comparison of financial performance before after pandemic in the hospitality business in Indonesia was done by (Malikah, 2021). The analysis did not seem to find a significant effect before and during pandemic by analyzing the solvency ratios.

3. THEORETICAL FOUNDATIONS AND POSTULATES OF EXPLORATORY FACTOR ANALYSIS

Many scientific studies are characterized using numerous variables (Rietveld & Van Hout, 2011). Examples of such research are studies using questionnaires. Due to the large amount of data obtained, the research can become very complex. But despite the great complexity brought by the huge database, one/some of the variables can measure a different aspect of the same variable (Kassambara, 2017).

The factor analysis was created to avoid such situations. Applying factor analysis requires a large set of variables, in which there is the potential for the data to be reduced or summarized, using a smaller set of factors or components (Harman, 1976). Factor analysis attempts to group interrelated variables into several sets of underlying variables (Gray, 2017). Specifically, the purpose of factor analysis is to reduce the dimensionality of the original database and to interpret the new space, covered by a reduced number of new dimensions, which should be the basis of the old ones or to explain the variance in the observed variables in relation to of the underlying latent factors. Thus, not only factor analysis offers the opportunity to gain a clear view of the data base, but also increases the possibility of using the result in subsequent analyzes (Tuan, et al., 2017).

According to the factors, factor analysis can be confirmatory and exploratory. Confirmatory factor analysis involves entering a predetermined number of factors for analysis and which variables are most likely to be correlated within each factor. It indicates clear expectations about which factors will be encountered in the analysis and which variables may influence the factors. Unlike confirmatory analysis, exploratory analysis or exploratory factor analysis aims to explore the relationships between variables and does not have an *a priori* determined number of factors. In the exploratory factor analysis, the final number of factors is determined according to the obtained data and then the factors are interpreted.

4. DATA AND METHODOLOGY

4.1. Questionnaire

For this purpose, 43 questions have been prepared, which cover various aspects of hotel operations, in normal conditions as well as in pandemic conditions. The complete questionnaire and the calculated descriptive statistics for each question are shown in Table 1:

Table1. Questionnaire used for the empirical analysis

Section/question	M	σ
INSURANCE AND FINANCIAL RECOVERY		
1. Assess the extent of business disruption	1,80	1,135
2. Assess supply chain demand	1,97	1,045
3. Degree of cancellation of potential events during the pandemic	1,75	1,272
4. Degree of cancellation of potential accommodations, scheduled rooms for day/night stay during the pandemic	1,83	1,110
SUPPLY AND GLOBAL TRADE		
5. How do supply and demand react to each other during the pandemic with the COVID-19	1,78	0,963

virus specifically on the hotel you represent?		
6. Do you think that a larger number of tourists prefer private accommodation to a hotel in the Republic of North Macedonia during the pandemic?	3,15	1,241
HEALTH AND WELL-BEING OF EMPLOYEES AND GUESTS		
7. What is the level of communication between you as a subsidiary and foreign client (organizations, individuals) during the pandemic?	2,58	1,418
8. Do your colleagues/employees take care of their health and the health of everyone around them by wearing protective masks and using appropriate disinfectants?	4,83	0,545
9. Are your colleagues/employees enabled to use the public health system in the country?	4,78	0,611
10. Are the hotel employees who are most exposed to the virus provided adequate protection by managing their shifts, their distance from each other and the distance from guests?	4,82	0,550
SKILLED STAFF AND WORKFORCE		
11. Is the approach of the superiors to the employees of the hotel appropriate if one of the employees needs to be sent to home isolation or treatment?	4,88	0,434
12. What is the degree of interaction between staff and mutual aid in stressful situations?	4,41	0,815
13. What is the representation of individuals necessary for a specific job position without significant experience?	3,25	1,087
14. What is the extent of business trips, in order to acquire appropriate knowledge in or outside the country?	2,21	1,414
15. Is there a presence of a sense of hierarchy among employees (through expressions of awe, fear, tears, flattery, etc.)?	4,36	0,986
16. Degree of pleasant relationship between designated boss/manager and co-worker in a specific department:	4,43	0,886
WAGES OF EMPLOYEES		
17. What is generally the percentage of employees' monthly incomes according to their employment contracts during the pandemic?	3,50	1,328
18. Do the employees receive lower monthly income according to the contract, the same or additional bonuses according to the income generated by the hotel during the pandemic?	3,31	1,377
19. Is there a drastic difference between the pay of co-workers and managers?	3,98	1,202
20. Rate the extent of hotel employees leaving or employees whose contracts were not extended solely due to the current pandemic situation:	3,58	1,424
ROOM MAINTENANCE		
21. Is the maintenance of the rooms suggested (by you) to be double or more times during the day, according to the situation?	4,38	1,030
22. Is the maintenance of the rest of the rooms twice or more times during the day, according to the situation?	4,58	0,857
23. Placement of disinfectants throughout all rooms in the hotel (lobbies, toilets, conference rooms, rooms, corridors, terraces):	4,81	0,584
24. Placement of protective masks throughout all rooms in the hotel (lobbies, toilets, conference rooms, rooms, corridors, terraces):	3,70	1,526
25. Degree of consumption of cleaning products during a pandemic in relation to before the start of the pandemic:	4,48	0,830
BRAND PROTECTION		
26. If you are available on Booking, Airbnb, or a similar site for the same services, evaluate the feedback from the guests accordingly:	3,69	1,314
27. How many types of promotional materials (flyers, banners, billboards, television ads, radio ads) does your hotel have?	2,78	1,429
28. On how many social media (Instagram, Facebook, LinkedIn, Glassdoor, Hosco) is your hotel available?	2,83	1,074
29. Rate the level of customer user experience (UX - User Experience) of your website (or decency of your Facebook/Instagram profile if you don't have a website):	3,51	1,160
30. What is the degree of observance of the hotel's standards (designated in Brand Identity/Awareness) by the hotel's employees?	4,29	0,844
FINANCIAL INVESTMENTS		
31. Regarding 2019, how do you evaluate your investment in capital assets?	3,08	1,241
32. Regarding 2019, how do you evaluate your investment in working capital?	2,97	1,130
33. Regarding 2019, how do you evaluate your investment in human capital?	3,00	1,360
RISK		
34. How often do you elaborate on possible risks for your hotel?	3,73	1,130

35. How often have you been able to identify a given risk?	3,63	0,926
36. How quickly is your branch/hotel able to recover from an accident?	3,58	1,149
AUTHORITY AND PROTOCOLS		
37. Degree of observance of the protocols designated by the Government in terms of hygiene in the hotel:	4,77	0,546
38. Degree of observance of the protocols designated by the Government regarding the holding of events in the hotel:	4,62	0,801
39. Degree of observance of the protocols designated by the Government regarding stay in the hotel:	4,79	0,500
TECHNOLOGY AND INFORMATION SECURITY		
40. Do you have adequate software for processing reservation data?	4,16	1,283
41. Do you own the appropriate software for processing data and organizing events?	3,62	1,409
42. Do you have a suitable VR/360° panoramic view on your website or social media?	2,68	1,656
43. Do you have suitable digital elements (screens/totems) for displaying promotional materials, advertisements, and road signs in the hotel?	3,46	1,500

Source: Authors' calculations

4.2 Factor analysis

The correlation analysis leads to conclusion that all variables have a correlation coefficient greater than 0.3, which means that at this stage there will be no variables that would be removed from further analysis. Also, there is no correlation coefficient higher than 0.9, which means that the problem of multicollinearity between the variables does not exist.

The level of the correlation coefficients is also highly significant, which is a good indicator of forming factors in further analysis.

The value of the Kaiser-Meyer-Olkin measure of the appropriateness of the sample selection is 0.607, while it is known that a minimum of 0.5 is recommended (Kaiser, 1974), so for the conducted analysis it can be said that the measure is satisfactory, that is the sample size is adequate for a factor analysis.

The Bartlett's Test tests the null hypothesis that the source correlation matrix is a unit matrix. For the factor analysis to be successful, it is necessary to have certain relationships between the variables, and if the correlation matrix is a single matrix, then all the correlation coefficients will be zero. Hence, it is necessary to have a test that will verify that the correlation matrix is not a single matrix, which would mean that there are some dependencies between the variables that would be included in the analysis. In the example, the value of the test is 3,053.279 (p=0.000), whereby it can be concluded that the alternative hypothesis is accepted, which states that the correlation matrix is no single, there are dependencies between the variables, so the factor analysis is appropriate.

The next part of the analysis covers the factor extraction. The first part of this process is to determine the linear components within the considered sample, or the so-called eigenvectors, by calculating the eigenvalues of the correlation matrix. It is known that there are as many components (eigenvalues) in the correlation matrix as there are variables, but most of them will not be significant. To determine the significance of a particular vector one should check the magnitude of the corresponding eigenvalue. Then, a certain criterion can be applied to determine which factor will be retained in the analysis and which will be rejected as insignificant. In the results obtained with the statistical software SPSS, and shown in the table below, a list of eigenvalues is obtained, that belong to each factor before extraction, after extraction and after rotation:

Before extraction, 43 linear components were identified in the sample. The eigenvalues calculated for each factor represent the variance explained by a certain linear component, and apart from the absolute value, the percentages of the explained variance are also found in the table (for example, factor 1 explains 15.72 % of the total variance). Often the first few factors explain most of the variance, while the remaining factors explain much smaller portions of the total variance. In the further procedure, all factors that have eigenvalues greater than 1 are extracted, thus the number of factors that will be considered further is 13. Eigenvalues belonging to these 13 factors (expressed in absolute values and as percentages of the total variance) in the column "Sum from the extraction of the squared loadings". In the last part of the table is the column "Sum of the rotation of the squared loads", where the eigenvalues of the factors after the rotation are shown. The role of the rotation is to optimize the factor structure and in doing so equalize the relative importance of the thirteen factors. Before the rotation, factor 1 contained 15.72% of the total variance, while after the rotation this percentage was reduced to 7.52%. The factor matrix and the scree plot also show that only 13 factors should be extracted (available upon request).

After confirming the number of factors and the reliability of the model, the following results concern the rotation of the factors. The rotated factor matrix containing the factor loadings for each variable on each factor is available upon request.

The variables are ordered according to the magnitude of their factor loadings. If the rotated factor matrix is compared with the factor matrix, before the rotation, most of the variables had high loading values only on the first factor, while the values of the other factors are lower. With the rotation of the factor structure, the situation is becoming clarified.

Based on the obtained results, despite the fact that 13 factors were initially obtained in the analysis, only 8 of them can be defined in a logical factor (construct). In the proposed factor 9, the questions are significantly differ to derive a logical context, while in the proposed factors 10, 11, 12 and 13 there is only one question, which could not be interpreted as a factor which should be a set of several variables.

Tthe most important factors that have a significant role in the hotel industry during a pandemic are the following:

- ✓ Factor 1 – Investments of the hotels;
- ✓ Factor 2 – Health care in hotels;
- ✓ Factor 3 – Social media and promotion;
- ✓ Factor 4 – Adherence to government protocols;
- ✓ Factor 5 – Cancellations of arrangements;
- ✓ Factor 6 – Salaries and income;
- ✓ Factor 7 – Hygiene and protection;
- ✓ Factor 8 – Digital equipment and promotion.
- ✓

4.3 Reliability analysis

A generally accepted rule of thumb says that a reliability coefficient value of 0.6 – 0.7 indicates an acceptable level of reliability, a value greater than 0.8 indicates an even better level of reliability. However, values greater than 0.95 are not always acceptable because they may indicate redundant variables in the factor (Hulin, et al., 2001). It can be seen from the table that all factors have a reliability coefficient value greater than 0.6, which indicates that there is internal consistency in the factors, that is, the groups of questions within the factors are well connected as a group:

Table 2. Cronbach Alpha value for extracted factors

Factors	Cronbach alpha	Number of variables
Factor 1 – Hotel investments	0,853	3
Factor 2 – Health care in hotels	0,824	4
Factor 3 – Social media and promotion	0,619	2
Factor 4 – Adherence to government protocols	0,818	3

Factor 5 – Cancellations of arrangements	0,804	2
Factor 6 – Salaries and income	0,808	2
Factor 7 – Hygiene and protection	0,637	3
Factor 8 – Digital equipment and promotion	0,703	4

Source: Authors' calculations

4.4 Logistic regression

After the independent variables have been obtained by the exploratory factor analysis, and they have been confirmed by the reliability analysis, the next part of the analysis is determining how these factors affect the achieved financial results of the hotel operations. The independent variables are known to be shown on an interval scale, but the dependent variables used in the analysis to measure financial results – realized profit in 2019 (before the pandemic) and realized profit in 2020 (at the height of the pandemic) are shown as categorical variables, i.e., category of realized profit up to 3 million euro and category of realized profit over 3 million euro.

Logistic regression is a multiple regression where the dependent variable is a categorical variable. Due to the fact that in the research the dependent variable is categorical, logistic regression is used to determine the dependence between financial performance and the group of previously determined factors significant for operations in pandemic conditions.

Logistic regression is largely like straight-line regression, with the difference that, instead of predicting the value of the dependent variable based on the values of the independent variables, logistic regression predicts the probability that an observation will be in a particular category of the dependent variable, if known values for the independent variables for that same observation.

Two logistic regressions were carried out in the analysis, where in the first model the dependent variable is the profit made by the hotels in 2019, while in the second model the dependent variable is the profit made by the hotels in 2020. The independent variables remain the same in both models.

By comparing the obtained results, an effort will be made to explain the determinants that positively affect the financial results before and during the pandemic. It should be noted that when answering the questionnaire, some of the respondents did not give the answer that refers to the dependent variables, more precisely, 41 respondents (out of 120) did not answer the question about the profit made in 2019 and 17 respondents (out of 120) did not answer the question about the realized profit in 2020. This could be interpreted as a relative limitation of the obtained results, especially in the case of the first model.

Table 3. Classification table for the first model (block 0)

Observed values	Predicted values		
	Profit 2019		Accuracy percentage
Profit 2019	Up to 3 million euro	Over 3 million euro	
Up to 3 million euro	0	23	0.0
Over 3 million euro	0	56	100.0
Total percentage			70.9

Source: Authors' calculations

Table 4. Classification table for the second model (block 0)

Observed values	Predicted values		
	Profit 2019		Accuracy percentage
Profit 2019	Up to 3 million euro	Over 3 million euro	

Up to 3 million euro	82	0	100.0
Over 3 million euro	21	0	0.0
Total percentage			79.6

Source: Authors' calculations

The tables below show the results obtained with the statistical software SPSS, which indicate how accurately the model groups the observations into appropriate groups (categories) in the first stage of the analysis. This percentage in the first model is 70.9%, while in the second is 79.6%, which is satisfactory, considering that values of 50% and above are considered good.

When performing logistic regression, groups of statistics are calculated that belong to two blocks, block 0 and block 1. Block 0 starts the analysis by first showing the classification tables, the model where only the constant is included in it and a table showing the variables not included in the model. In both models the constant is statistically significant, in the first model $b_0 = 89$ $(p = 0.0 < 0.05)$ and in the second model $b_0 = 1.362$ $(p = 0.0 < 0.05)$. In addition, tables are shown for the variables that are not entered in the equations of the model, where it is necessary to consider the overall statistics. This statistic tells us whether the variables not in the model are statistically significant from zero, that is, whether adding one or more of these variables to the model would significantly improve its predictive power. This statistic is also called the residual Chi-square statistic, and if the p-value is greater than 0.05 it would mean that including all variables in the model (which were previously excluded, as in the first block 0) would not cause a significant improvement in the predictive power of the model.

In the analysis, the value of the residual Chi-square statistic in the first model is 34.44 $(p = 0.0 < 0.05)$, while in the second model it is 35.192 $(p = 0.0 < 0.05)$, which indicates that the inclusion of independent variables in both models would significantly improve their predictive power.

In the same direction, that is, to determine how much better the model has more power for predicting the dependent variable, the -2 Log likelihood statistic is also used. This statistic is calculated in the section called Iteration history, and is calculated in the initial block 0, where the model is composed only of the constant, and is further calculated in block 1, where the model is expanded with all independent variables. If the model increases its predictive power by including the remaining independent variables, the value of the -2 logarithm of the maximum likelihood statistic should decrease. In the first model that takes profit in 2019 as a dependent variable, the value of the statistic -2 logarithm of the highest probability in the initial model where only the constant is entered is 95.349, while when expanding the model with eight variables this statistic decreases to 60.174 for the first iteration step, 48.14 for the second iteration step, 43.341 for the third iteration step, 41.392 for the fourth iteration step, and 40.994 for the remaining four iteration steps. In the second model where the dependent variable is the profit for 2020, the value of the statistic -2 logarithm of the highest probability in the initial model where only the constant is entered is 104.729, while with the extension of the model with the independent variables this statistic decreases to 76.523 for the first step per iteration, 68.356 for the second iteration step, 67.008 for the third iteration step, and 66.941 for the remaining three iteration steps. From the above, it can be concluded that in both models, the predictive power increases with the inclusion of the independent variables in the model.

Table 5. Classification table for the first model (block 1)

Observed values	Predicted values		
	Profit 2019		Accuracy percentage
Profit 2019	Up to 3 million euro	Over 3 million euro	

Up to 3 million euro	17	6	73.9
Over 3 million euro	2	54	96.4
Total percentage			89.9

Source: Authors' calculations

By including the independent variables in the model, the results grouped in block 1 are obtained, where, among other things, the classification tables are recalculated. From the presentation in the tables below, it can be concluded that the total percentage of correctly classified observations in both models has increased, 89.9% correctly grouped observations in the model where the dependent variable is profit in 2019 and 92.2% correctly grouped observations in the model where the dependent variable is profit in 2020. This indicates that by including the group of independent variables the models are significantly improved.

Table 6. Classification table for the second model (block 1)

Observed values	Predicted values		
	Profit 2019		Accuracy percentage
Profit 2019	Up to 3 million euro	Over 3 million euro	
Up to 3 million euro	82	0	100.0
Over 3 million euro	8	13	61.9
Total percentage			92.2

Source: Authors' calculations

The following results are of special importance because in them the scores of the coefficients of the independent variables in the models are calculated. The b values are the same parameter estimate values as in linear regression, or in logistic regression they tell the value to be substituted into the regression equation to calculate the probability that a particular observation is in one of the two groups of the dependent variable. It is known that in straight line regression the value of the parameter b shows the magnitude of the change in the dependent variable if the independent variable changes by one of its own units. And in logistic regression, the interpretation of this parameter is similar, that is, it shows us the change that will occur in the logistic function if the independent variable changes by one of its units. The value of the change in the logistic function is calculated as the natural logarithm of the odds of the occurrence of the dependent variable.

Of great importance for this interpretation is the Wald statistic, which has a Chi-square distribution and tells whether the coefficient b for a certain independent variable is statistically different from zero. If this claim is confirmed as true, then it can be assumed that the independent variable has a significant contribution to the prediction of the dependent variable.

To explain how much of the variation that occurs in the dependent variable can be explained through the estimated model, two statistics are calculated, which are equivalent to the coefficient of determination in straight line regression. These two statistics Cox and Snell R^2 and Nagelkerke R^2. In the first model, the Cox and Snell R^2 statistic is 0.497, while the Nagelkerke R^2 is 0.710, which can mean that the explained variation in the dependent variable based on the model ranges from 49.7% to 71.0%. In the second model, the values of these statistics are lower, that is, the Cox and Snell P^2 statistic is 0.303, while the Nagelkerke P^2 is 0.477, indicating that perhaps additional variables would need to be included in the model.

The following results are of special importance because in them the scores of the coefficients of the independent variables in the models are calculated. The B values are the same parameter estimate values as in linear regression, or in logistic regression they tell the value to be substituted into the regression equation to calculate the probability that a particular observation is in one of the two groups (categories) of the dependent variable. It is known that in straight line regression the value of the parameter b shows the magnitude of the change in the dependent variable if the independent variable changes by one of its own units. And in logistic regression, the interpretation of this parameter is similar, that is, it shows us the change that will occur in the logistic function if the independent variable changes by one of its units. The value of the change in the logistic function is calculated as the natural logarithm of the odds of the occurrence of the dependent variable.

Of great importance for this interpretation is the Wald statistic, which has a Chi-square distribution and tells whether the coefficient b for a certain independent variable is statistically different from zero. If this claim is confirmed as true, then it can be assumed that the independent variable has a significant contribution to the prediction of the dependent variable.

Table 7. Estimated parameters for the model where the dependent variable is the profit (in 2019)

Independent variable	B	Standard error	Wald stat.	p-value	$Exp(B)$	95 % interval trust $Exp(B)$	
						Lower	Upper
Investments of the hotels	1.67	0.60	7.82	0.01	5.32	1.65	17.18
Health care in hotels	1.36	0.61	4.94	0.03	3.90	1.17	12.97
Social media and promotion	1.83	0.72	6.45	0.01	6.22	1.52	25.48
Adherence to government protocols	-3.89	1.75	4.94	0.03	0.02	0.00	0.63
Cancellations of arrangements	-1.56	0.56	7.73	0.01	0.21	0.07	0.63
Salaries and income	-1.39	0.56	6.13	0.01	0.25	0.08	0.75
Hygiene and protection	-1.54	0.93	2.74	0.10	0.21	0.04	1.33
Digital equipment and promotion	-0.30	0.64	0.23	0.63	0.74	0.21	2.57
Constant	3.02	0.99	9.23	0.00	20.46		

Source: Authors' calculations

The table shows the results for the first model, an attempt is made to determine the statistical significance of the group of independent variables on the financial results (profit) in the period before the pandemic (2019). The most important element to consider here is the Wald statistic and the corresponding p-values. From what is shown, it can be concluded that all seven independent variables contribute statistically significantly to the model as their p-values are less than the critical value of 0.05. Only the independent variable Digital Equipment and Promotion is not statistically significant, as its p-value is 0.63 and is greater than the critical value 0.05.

The table shows the results of the model in which the dependent variable is profit in 2020, to see if the same independent variables continue to have an impact on the financial results of hotel operations in 2020, that is, in conditions of a pandemic. From the Wald statistic and corresponding p-values, it can be concluded that the variables hotel investment, social media and promotion, adherence to government protocols, and hygiene and protection contribute statistically significantly to the model. The variables of hotel health care, arrangement

cancellations, wages and salaries, and digital equipment have no statistically significant contribution to the constructed model.
When analyzing the results in both models, there is another result that is significant for their interpretation, that is the odds ratio, which is shown in the table as $Exp(B)$, and for it an interval of confidence for each variable. This rate of chances if there are values greater than one means that as the independent variable increases, the chances of the hotel moving from the first group - profit up to 3 million denars to the second group - profit over 3 million denars increases. If the value of the odds ratio is less than one, the opposite is true, as the independent variable increases, the chances of increasing profits decrease. In both models, only those statistics of the variables that contribute statistically significantly to the model will be considered.

Table 8. Estimated parameters for the model, where the dependent variable is the profit (in 2020)

Independent variable	B	Standard error	Wald stat.	p-value	$Exp(B)$	95 % interval trust $Exp(B)$	
						Lower	Upper
Investments of the hotels	1.03	0.38	7.26	0.01	2.79	1.32	5.90
Health care in hotels	0.21	0.32	0.44	0.51	1.24	0.66	2.33
Social media and promotion	1.01	0.44	5.30	0.02	2.75	1.16	6.53
Adherence to government protocols	-0.72	0.26	7.51	0.01	0.49	0.29	0.82
Cancellations of arrangements	0.05	0.35	0.02	0.88	1.05	0.53	2.09
Salaries and income	0.27	0.37	0.52	0.47	1.31	0.63	2.70
Hygiene and protection	-1.32	0.40	11.12	0.00	0.27	0.12	0.58
Digital equipment and promotion	0.51	0.52	0.99	0.32	1.67	0.61	4.59
Constant	-2.03	0.40	26.04	0.00	0.13		

Source: Authors' calculations

In conditions of normal economic development, in the period before the pandemic, with an increase in hotel investments, hotel health care and social media and promotion, the chances of increasing profits also increase (the chances increase by 5.32 times when investing in hotels, 3.9 times for health care and 6.22 times for social media and promotion). For the rest of the variables, the value of the chance rate is less than one, so an increase in these variables would mean a decrease in profits – with an increase in compliance with government protocols, the chances of increasing profits decrease by 0.02 times (this value is almost equal to zero, and taking into account that in 2019 there were no such type of protocols, the interpretation will be taken as insignificant), with an increase in cancellations of arrangements, the chances of increasing profits will decrease by 0.21 times, with an increase in wages and incomes, the odds of increasing profits decrease by 0.25 times and with increasing hygiene and sanitation, the odds of increasing profits decrease by 0.21 times (again, this measure is more significant in pandemic conditions).
In the conditions of a pandemic, the chances of increasing profits are significantly lower, which is logical, but they still exist. Namely, when increasing the investments of the hotels, it is expected to achieve higher profits by 2.79 times, and when using social media and promotion, the chances of an increase in profits increase by 2.75 times. For the rest of the variables that contribute significantly to the model, adherence to government protocols and

hygiene and protection, the odds ratio is below one, which means that with an increase in these variables, the chance of a decrease in profits increases (0.49 times and 0.27 times respectively).

5. DISCUSSION AND CONCLUSION

The tourism and hospitality industry in Republic of North Macedonia marked continuous growth in the pre-pandemic period. The impact from the pandemic and its restriction caused a severe negative impact on these very important industries for the national economy. Now, the industries must search for innovative approach to attract tourists, especially from the Balkan countries and to promote regional tourism. One way is to reduce the prices of the hotel services. The profit would still be greater than the profit realized in 2020 and 2021. Increased prices would only repel the tourists, especially in time of upcoming recession. Stimulating the local tourism becomes fundamental for the Macedonian tourist industry. The help from the government has been requested in 2020. The government could implement a set of measures, such as creating a data base to follow the global supply and demand in the tourism industry. Also, government can contribute with organizing seminars where renown world specialists would share their experience with the small business from the national economy. They could teach the business how to advertise to be seen on the international market by using modern approach. Small business would benefit by this kind of initiative by the government (Bartik, et al., 2020).

The results from this research emphasize the importance of the hotel adaptation towards the digital technology. It becomes the main tool in traveling, starting from finding the appropriate transport, lodgings and their prices, information about location and tourist attractions nearby, services provided by the hotels, possibility for comparison of several hotels. Hotel management should transfer their promotional activities to their web sites and social media (Kotler, et al., 2010). Using digital technology, a real representation of the hotel and its features (rooms, restaurants, reception, lobby, conference halls and bars) can be truly achieved. This is a crucial recommendation, having in mind that only 25% of the respondents of the Macedonian hotels (located in the capital) use VR/360°, while the remaining 74% have only partial or none so ever digital representation of their hotel.

Under normal operating conditions, analyzing the pre-pandemic period, the results from this research show that hotels have achieved higher profits by continuously investing in capital (both working and human capital), working on active promotion of their hotel through all media (flyers, banners, billboards, television, radio advertising), social media and their own website, and having sanitary and health condition up to the required standards.

When the hotels operate under restrictions due the pandemic, chances for profit increase are significantly lower. The results from the research have proven that the increase in investments can contribute to increase in profits. The hotels should focus their activities on continuous and active promotion of their services, using digital and nondigital media. Special attention is to be given on the digital promotion, which increases the changes for profit. Following the government protocols for hygiene and health protection also has a positive impact on the hotel’s profit.

This paper contributes to better understanding of the Macedonian hotel industry and its determinants for improved financial performance, pre and during the pandemics. It accentuates the importance of the digital technology and its implementation by the hotels, so they can achieve competitiveness and increase profit. Using the digital technology becomes essential in the post-COVID era, where the world has massively shifted to increased usage of the technology in many significant parts of the everyday life and work.

Best to author’s knowledge, no similar research has been done in the Republic of North Macedonia in the previous years. It has a valuable theoretical and especially practical implication since it points out the key determinants for the profitability in one of the most important sectors – hotels and hospitality industry.

This research also has its limitations. It was conducted on 120 representatives of hotel management from different parts of the country in the height of the pandemic. To confirm the main factors of profit, longitudinal analysis should be performed. The same questionnaire realized in current post-pandemic period could confirm the results, or new determinants of the profitability may arise.

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THE IMPACT OF PROBLEMATIC LOANS ON THE BANKING COMPETITIVENESS – case study of OTP group

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ABSTRACT
Credit risk as a risk in basic, traditional, and most important banking business – the bank loan, is one of the biggest financial risks, considering that borrowers (debtors) defaults, directly affect the bank's financial result and capital, and thus its competitiveness in the market. The impact of problematic loans on banking operations will be discussed for 2019-2021 on the example of OTP banking Group operating in 11 countries, to find out if there is a relation between NPL volume and the banking competitiveness. A comparative analysis method has been applied, comparing the profit, the NPL rate and the market position within the banking sector of the country to which each Group member belongs. Results has shown that the reduction in the volume of non-performing loans affected the increase in the competitiveness of banks, as well as that member banks located in European Union countries have a lower percentage of non-performing loans in relation to the member banks of the group operating in countries outside the European Union. The reduction of the percentage of bad loans is certainly in harmonization with the regulations of the European Union, but also in their better implementation.

Keywords: *NPL, COMPETITIVNESS, BANKING,*

JEL classification: *G21, G32*

1. INTRODUCTION

Credit risk is "the risk of potential occurrence of adverse effects on the bank's financial result and capital due to debtor's default to meet its obligations to the bank" (National Bank of Serbia, 2020), and as such, generates the possibility of bad loans increase. The global economic crisis caused by the Covid pandemic has brought credit risk management into the focus of the banking sector striving to prevent an increase in the number of bad loans. Considering its importance and the influence of the credit risk possibility on the success in business and the bank's liquidity position, it is necessary to manage risk. For this purpose, a number of rules have been established, including the Basel Accords. In 1988, the international risk-based capital standard was set in the form of an agreement known as Basel I, and later, the 2004, Basel II Accord as well as the 2010 Basel III Accord, regulating and improving the risk management process to adequately cover all risks with capital (Basel Committee for Banking Supervision, 2010). The increase in the amount of non-performing loans (NPL) in the bank's assets requires an increase in provisions for potential losses in the future, which reduces the amount available for lending and directly affects the bank's financial results (Mirković and Knežević, 2014). This paper will analyze the relationship between the increase in non-performing loans and the bank's business results and competitiveness on the example of the OTP banking group. OTP Group stands out for its business results as one of the best

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banking groups since its Hungarian subsidiary was declared in 2021 the "Best Bank in Central and Eastern Europe," according to the annual ranking by the magazine "Banker," a member of the Financial Times group, and received the award "The best bank in Central and Eastern Europe by the Euromoney Awards for excellence in 2021. In addition, the OTP Group members are declared the best bank in Serbia, Bulgaria, Montenegro, and Albania. In Hungary, Montenegro, Croatia and Slovenia, they received the "Bank of the Year" award. (OTP bank Plc, 2022)

This paper consists of five parts. First, “Introduction” is opening the theme with causes of NPLs and reasons for risk management as well as the reasons for choosing OTP group as a subject of the research. In the second part, “Literature Review” is given an overview of relevant literature considering bank risk management, the causes of bad loans and the impact of banking concentration, competition, and management, on the increase of bad loans and on the financial result and bank operations. The third part “Non –Performing loans - definitions, regulations and measures for reduction” provides an explanation of terms, definitions, EBA guidelines for the NPL reduction and ECB measures with the data on measures implemented in countries members of OTP banking group. In the fourth part, “Data and Discussion” is explained loan quality, NPL rates, market share and profit of the OTP Bank Group members in observed period. In the “Conclusion”, which is the last, fifth part of the paper, are given the findings. The results confirmed that bank market share and bank profit impact changes in NPL volume in bank group members which is also correlated with the banking competitiveness.

2. LITERATURE REVIEW

Bank risk management, the causes of bad investments, and especially the impact of banking concentration, competition, and management, on the increase of bad loans and on the financial result and bank operations, and therefore on the market position and competitiveness, as well as the mutual correlation of all of these factors are topics that are constantly current in economic theory. In 2012, a study of the effects of banking concentration on NPLs was carried out for banks from 10 Central and Eastern European countries (Slovenia, Slovakia, Poland, Bulgaria, Latvia, Lithuania, Estonia, Czech Republic, Croatia, and Hungary) covering the 2000-2009 period and obtained ambiguous results. Namely, a higher concentration level reduces NPLs in Slovakia, Latvia, and Estonia and increases them in Lithuania, Slovenia, Poland, Bulgaria, and Croatia, so it can be concluded that banking concentration does not reduce credit risk (Çifter, 2012).

Research conducted on Norwegian banks in the 1992-2014 period aimed to determine the relationship between NPLs and various measures of competition using accounting data. A non-linear relationship between market concentration and credit risk was found. For banks with a low concentration level, an increase in concentration affects the decrease in the NPL rate, and when a certain concentration level is exceeded, an increase in concentration affects the increase in the NPL rate. Using the interest margin and H-statistic as measures of competition, a positive linear relationship was found between competition and the NPL rate level, proving that competition increases credit risk (Heimdal and Solberg, 2015).

The research conducted in Macedonia analyzing the impact of specific banking and macroeconomic determinants on the NPLs of companies and households for the 2003Q4 to 2014Q4 period, showed that the profitability of banks, the increase in the number of loans to companies and households and growth of gross domestic product has a negative impact, while unemployment and bank solvency have a positive impact on the increase in NPL volume. Interestingly, when it comes to household loans, the results show that changes in the exchange rate have a negative effect, while inflation has a positive effect on the increase in NPLs (Kjosevski et al., 2019).

In 2019, the impact of financial development on NPLs was analyzed on a sample of 134 countries for the 2003-2014 period using the World Bank database of financial development indicators. The results showed that the increase in the NPLs level is related to financial development, implying a greater presence of foreign banks and more financial intermediation, which may be due to the lack of adequate supervision of banks when it comes to cross-country analysis, but the regional analysis shows NPL volume decreases in increasing financial development conditions. On the other hand, economic crises and banking concentration influenced the increase in NPLs (Ozili, 2019).

Karadima and Lauri (2020) used Lerner's index and CR5 and HHI, on a sample of 646 banks from 19 European Union member states to investigate the impact of banking concentration on NPLs. Focusing on the 2005-2017 period, they came to an conclusion that banking concentration has a positive effect on smaller increases or larger decreases in NPL rates in non-eurozone countries compared to eurozone countries. They also concluded that a greater presence of foreign banks is associated with a lower level of NPLs, change in the level of NPLs is caused by the market power of commercial banks, and that competition affects the reduction of the growth of new NPLs.

Research on the effects of NPLs and financial instability on banking competition, which was conducted within the Eurozone credit market in the period 2002Q1-2016Q4, showed that NPLs positively affected the increase in marginal costs and the degree of competition in the banking market and that higher NPL rate and greater financial instability increased competition on the credit market (Fernandez, 2020).

Whether the increase in NPLs can lead to reduced profitability of banks and credit activities is the question that the scientific work on 34 Vietnamese commercial banks in the 2005-2015 period tried to answer. The research showed that NPLs significantly negatively affect profitability and credit activity and reduce banks' attempts to improve loan offers (Vinh, 2017).

3. NON–PERFORMING LOANS – DEFINITIONS, REGULATIONS, AND MEASURES FOR REDUCTION

Problematic loans, i.e. NPLs do not have a generally accepted definition, but the definition adopted by most central banks is that they are generally loans with 90 or more days past due or loans unlikely to be collected without enforcement of collateral, regardless of the number of days past due or exposure (Bank for international settlement, 2016). NPLs can be expressed through the NPL rate, which indicates the coefficient of non-performing loans, better known as the NPL coefficient, which is the ratio of the amount of NPL in the bank's loan portfolio to the total amount of unpaid loans of the bank, and as such is an indicator of the bank's efficiency in receiving repayment of its loans (Hanks, 2018). According to the "Decision on the classification of bank balance sheet assets and off-balance sheet items" (National bank of Serbia, 2019), NPLs are “all claims on extended loans where payments of principal and interest are overdue by 90 days or more, based on which three-month (and higher) worth of interest payments are capitalized, refinanced, or delayed; or less than 90 days when there are other reasons to believe that the bank will not be able to collect the total claim on loan”.

There was a need to determine the impairment of financial assets and liabilities, so the International Accounting Standards Board (IASB) published in July 2014 the IFRS 9 - international financial reporting standard that introduced the concept of expected credit loss (ECL), which serves to recognize impairment and regulates the classification and measurement of financial assets and liabilities. Credit impairment recognizes impairments on an individual or collective basis in three stages. The first stage is loans up to 30 days past due

(dpd), the second stage is 30 - 90 dpd loans, and the third stage includes NPL or 90+ dpd loans (Bank for International Settlement, 2017).
The action plan of the European Commission to reduce NPLs primarily implies the implementation of regulations that contain measures to reduce the level of the NPL portfolio (amendment of Directive 2014/59/EU, Directive 98/26/EC, Directive 2019/878, adoption of Regulation 2019/876 of the European Parliament and the Council on the amendment of Regulation (EU) No. 575/2013 and Regulation (EU No. 648/2012), adopted Guidelines on loan origination and monitoring, and the statutory creditworthiness provisions that banks must set aside in case of losses in the future, a proposal for a regulation that would encourage out-of-court procedures for recovery and the development of a secondary market of bad investments (Preuss et al., 2020).
The European Central Bank (ECB) has issued Guidance to banks on NPLs, which contains a strategy for managing NPLs and consists of assessments of the business environment, i.e., internal and external conditions affecting the collection of NPLs and the effect on capital, the development of a strategy for NPLs with qualitative (development of operational capabilities), and quantitative goals (NPL reduction forecast), implementation of the operational plan with the implementation of organizational changes and full integration of the strategy for NPLs into management processes (ECB, 2017). A year later, the European Banking Authority (EBA) issued final guidelines on risk management through additional strategies: retention strategy, portfolio reduction, change in type of exposure or collateral and legal options (EBA, 2018).
The central banks of the Eurozone countries and most of the other central banks are implementing the Guidelines published by the EBA and the Action Plan of the European Parliament and the Council. In 2020, the Croatian National Bank ordered banks to develop and submit internal strategies for managing NPLs by March 2021 in order to be able to identify risks at an early stage and manage exposure and perform increased supervision over the implementation of those strategies in accordance with the European Central Bank's Guidelines. During the pandemic, Bulgaria and Croatia had similar measures: a moratorium on loans, public guarantees, direct financing, and tax incentives. In addition, the Croatian National Bank reduced required reserves from 12% to 9% in March 2020 (Darvas & Martins, 2022). In 2020, the National Bank of Romania lowered the reference interest rate, maintained the system liquidity at a moderate level, maintained the stability of the exchange rate and acquired part of government bonds on the secondary market to increase yields. In the spring of 2021, with the reappearance of inflation, liquidity control was tightened, purchases of government bonds were stopped, and reference rate and interest rates were increased (Isărescu, 2022). The Bank of Slovenia requested the World Bank assistance in the management of micro, small and medium-sized enterprises, which resulted in the adoption of the "Manual for the effective management of non-profitable MSME loans," which, among other things, foresees the recognition of early warning signs, formation of a unit within the bank to manage bad investments, selection of suitable personnel, portfolio segmentation, collateral analysis, selection of strategies, negotiations, restructuring, initiation of court proceedings for collection (World bank, 2017). The most significant is generally credit risk management through early detection of deterioration in asset quality, management of bad assets in vulnerable sectors, and a moratorium on loan repayments (Bank of Slovenia, 2021). The Central Bank of Hungary organized the National Asset Management Agency (NAMA), which in the 2012-2020 period implemented the Program for the Preservation of the Homes of Debtors with Mortgage Loans, so real estate became state-owned property, and beneficiaries participating in the program, 38,000 of them, rented these properties from the state at significantly more favorable prices with the possibility of buying them (Central bank of Hungary, 2021).

By adopting “The Strategy for Solving Non-Performing Loans” in 2015, the National Bank of Serbia (NBS), greatly contributed to reducing bad loans. The measures were to strengthen the banks' capacity through a new regulatory framework, to do collateral assessments more adequately, to develop the market for bad investments through tax reliefs when writing off NPLs to sell them, to establish procedures for assessing collaterals and internal procedures for valuing bank assets, improving the conditions for out-of-court restructuring, improving the legal framework for enforcement and bankruptcy proceedings and the legal framework for mortgages (NBS, 2015). During the Covid pandemic, the NBS provided more favorable financing conditions by reducing interest rates in general, reference interest rates, and interest rates on deposit and credit facilities. At the same time, dinar and foreign currency liquidity increased, and the ECB and NBS established a repo line in July 2020 to ensure liquidity in euros. There are also loans with the guarantee scheme of the Republic of Serbia and a series of moratoriums on loan repayments (NBS, 2020). The measures of the Central Bank of Montenegro for reduction are shown in the "Decision on minimum standards for risk management in credit institutions" and refer to monitoring the quality of loans, managing bad loans through strategies and strict procedures and operational plans, restructuring, changing the type of exposure or collection of credit exposure through the acquisition of debtor's property, applying legal options through out-of-court settlements and initiating bankruptcy proceedings and others (Central Bank of Montenegro, 2021). In addition, measures were applied to alleviate the Covid pandemic through three packages of measures (Ivanović et al., 2021), various reliefs for the economy and citizens through subventions, additional benefits, moratoriums on repayments, and new lending to the economy and citizens. Albania's Economic Reform Programme 2018-2020 foresees in reform number 10 reducing the level of NPLs in the banking system through 12 measures that include the write-off and sale of receivables, the recovery of bad investments, restructuring, monitoring, strengthening the institutional framework, and adapting the existing legal framework through new legislative solutions (Republic of Albania, 2018). Measures for out-of-court treatment of problematic placements include postponement of the due date of obligations, additional financing, liquidation of secondary businesses that are not directly related to the borrower's core business, increasing capital through financing, introducing changes in the way of conducting business, selling assets and converting assets into equity capital (Bank of Albania, 2019). As part of the response to the crisis caused by the Covid pandemic, interest rates were reduced, liquidity was increased, state guarantees were provided, a moratorium on loan repayments was offered, and a purchase agreement was concluded with the European Central Bank in 2020 for EUR 400 million to increase the liquidity of banks in case of need (EBRD, 2021).

In Moldova, loans are classified in accordance with the "Regulation on the classification of assets and contingent liabilities," approved by the Decision of the Board of Directors of NBM No. 231/2011. As for the practices of other countries, the approach is conservative as it prescribes that the financial position of the other party, compliance with contractual obligations, ability to pay based on historical data with an estimate of future cash flows, credit history, property status and ability to pay, guarantors, market value of collateral and degree of liquidity, etc., will be allowed for in the assessment (National bank of Moldova, 2011). Furthermore, in 2020, the National Bank of Moldova introduced a number of measures as relief for banks, the economy, and citizens, including restructuring existing obligations with modifying or postponing the due date of obligations, without classifying such loans in a worse investment category (National bank of Moldova, 2020).

In 2017, Ukrainian NPLs were at a dramatically high level of 60% in state-owned banks and 40% in international banks. After the National Bank of Ukraine adopted the methodology and policy of managing disputed receivables to the instructions of the European Union, Basel standards, and IFRS standards and applied the measures of monitoring, write-offs, and restructuring of placements in 2017, the level of NPLs fell to 30-40% in 2018-2021 (National bank of Ukraine, 2017). The National Bank of Ukraine authorized state banks to sell bad loans below their value, so this is the main measure to reduce the NPL volume state banks will apply in 2022 (Kozlovskyy, 2022).

Russia has a high level of NPLs, reaching 10% of the total loan portfolio in 2018. In 2020, it was at the level of 9%. In 2021, the Bank of the Russian Federation decided that households can suspend repayments for six months and advised creditors to restructure their investments and suspend the foreclosure of mortgaged real estate. In addition, borrowers can convert their foreign currency obligations from mortgage loans into rubles until May 31, 2022 (Black Sea trade and development bank, 2020). In order to prevent an increase in the number of bad placements, banks are allowed not to reduce the assessments of the quality of loans issued to those affected by sanctions and not to reduce assessments of the restructured loans. Therefore, since Banks do not have additional provisioning costs, this strengthens their financial stability and increases the amount of money available for new financing (Bank of Russia, 2021).

4. DATA AND DISCUSION

OTP Group has been listed on the Budapest Stock Exchange since 1995 and today has 17 million clients with 40,000 employees in 11 countries, where it operates in more than 1,700 branches. For the purposes of this paper, a comparative analysis of the NPL indicators of the Group member banks was performed for the 2019-2021 period, namely: Hungary, Croatia (OTP Bank Croatia), Slovenia (SKB Bank), Bulgaria (DSK Bank), Montenegro (Crnogorska Komercijalna Banka), Serbia (OTP banka Srbija ad), Albania (OTP Albania), Moldova (Mobiasbank), Romania (OTP bank Romania), Russia (OAO OTP bank) and Ukraine (CJSC OTP bank). OTP bank Slovensko (Slovakia), which was sold in 2019 to the KBC group, was excluded. The NPL rate and the possibility of its reduction or increase in relation to the quality of the credit portfolio and profit of the Group members will be analyzed for each Group member, as well as the market position within the banking sector of the country to which each Group member belongs.

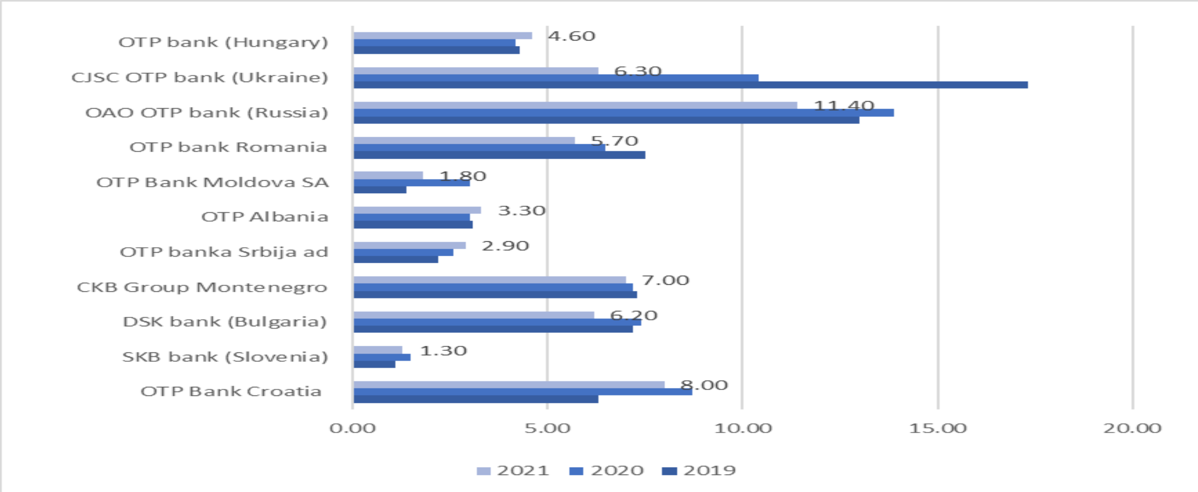
Table 1: Loan quality

Loans under IFRS 9/gross customer loans												
OTP GROUP DATA	Stage 1			Stage 2			Stage 3			90+ dpd		
	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
OTP Bank Croatia	83.20%	76.60%	80%	10.50%	14.70%	12.10%	6.30%	8.70%	8%	3.70%	4.20%	4.10%
Own coverage of stage loans under IFRS 9(%)	0.80%	0.80%	0.60%	3.55%	5.70%	5.90%	63.60%	53.90%	61.40%			
SKB bank (Slovenia)	98.90%	82.90%	86%	0%	15.60%	12.70%	1.10%	1.50%	1.30%	0.40%	0.40%	0.40%
Own coverage of stage loans under IFRS 9(%)	0.40%	0.50%	0.30%	0%	4.30%	5%	8.70%	36.30%	56.10%			
DSK bank (Bulgaria)	88.60%	81.30%	84%	4.30%	11.30%	9.80%	7.20%	7.40%	6.20%	4.60%	4.80%	3.90%
Own coverage of stage loans under IFRS 9(%)	1.10%	1%	1%	9.80%	12.60%	15.50%	62%	65.60%	68.20%			
OTP CKB Group Montenegro	88.80%	81.40%	76.70%	3.90%	11.40%	16.30%	7.30%	7.20%	7%	5.30%	4.80%	4.50%
Own coverage of stage loans under IFRS 9(%)	1.10%	1.30%	1%	4.80%	9.30%	6.50%	68.20%	63.90%	66%			
Otp banka Srbija ad	96%	88.80%	89.90%	1.80%	8.60%	7.20%	2.20%	2.60%	2.90%	1.70%	1.50%	1.90%
Own coverage of stage loans under IFRS 9(%)	0.40%	0.80%	0.70%	5.80%	8.50%	6.10%	50%	53.60%	54%			
OTP Albania	93.80%	79.50%	87%	3.10%	17.50%	9.70%	3.10%	3%	3.30%	1.50%	2.20%	1.60%
Own coverage of stage loans under IFRS 9(%)	1.20%	1.30%	1.20%	10.10%	10.40%	11.40%	33.10%	54.20%	73.30%			
Mobiasbank(Moldova)	97.80%	92%	91.90%	0.80%	5.10%	6.20%	1.40%	3%	1.80%	0.40%	1.60%	1.30%
Own coverage of stage loans under IFRS 9(%)	1%	1.10%	1.30%	23.60%	19.50%	13.60%	39.70%	48%	54.30%			
OTP bank Romania	83.90%	80.20%	79.80%	8.70%	13.30%	14.50%	7.50%	6.50%	5.70%	5%	4.50%	3.50%
Own coverage of stage loans under IFRS 9(%)	1.30%	1%	1%	5.70%	9%	8.40%	53.70%	54.60%	57.50%			
OAO Otp bank (Russia)	75%	74.80%	76.50%	12%	11.30%	12.10%	13%	13.90%	11.40%	12.30%	13%	11.60%
Own coverage of stage loans under IFRS 9(%)	5.30%	4.60%	3.80%	27.40%	43.10%	31.10%	93.40%	93.40%	95.10%			
CJSC OTP bank(Ukraine)	73.80%	82.40%	87.10%	8.90%	7.20%	6.60%	17.30%	10.40%	6.30%	11.10%	6.40%	3.30%
Own coverage of stage loans under IFRS 9(%)	0.90%	1.90%	1.90%	8.30%	15.90%	18.50%	77.90%	74.30%	69.90%			
OTP bank(Hungary)	91.40%	77.90%	78.00%	4.20%	18%	17.40%	4.30%	4.20%	4.60%	3.20%	3.10%	2.50%
Own coverage of stage loans under IFRS 9(%)	0.80%	0.80%	1%	12.40%	10.10%	8.90%	55.40%	54.50%	42.70%			

(*Source: Data from annual reports of OTP bank Plc*)

According to the Table 1, the quality of the loan portfolio for all Group members is given by stages: 1- loans up to 30 days overdue (active placements), stage 2- loans that need to be monitored and which are 30-90 days in arrears , and phase 3 - NPL (more than 90 days in arrears or those that do not have the ability to pay, or have been sued, or they are restructured, or in bankruptcy and therefore belong to this group of loans). The presentation of the NPL rate within the OTP banking group is given in Figure 1. According to the latest data available for 2021, SKB from Slovenia had the lowest NPL rate of only 1.3%, while OAO OTP from Russia had the highest NPL rate of 11.4%. It is evident that due to the Covid pandemic in 2020, there was an increase in the NPL ratio in 6 countries, while in 5 countries the NPL ratio decreased (Hungary, Ukraine, Romania, Albania, Montenegro).

Figure 1: the OTP group - NPL rate



(*Source: Data from annual reports of OTP bank Plc*)

OTP bank Nyrt was founded in 1949 in Hungary as the National Savings Bank, and today it is the absolute market leader with a 25% market share. Stage 2 of the loan portfolio shows that the number of loans 30-60 days past due is decreasing after the jump in 2020 caused by the Covid pandemic, which further means that the number of loans from which new NPLs could be generated is decreasing (Table1). The NPL volume rose to 4.60% in 2021 (Figure 1).

OTP Group entered the Serbian banking sector by purchasing Zepter banka ad Beograd, Niška banka ad Niš, Kulska banka ad Novi Sad (2008), Vojvođanska banka ad Novi Sad (2019), and Societe general banka ad Beograd (2021). Currently, with a 13.1% market share, it is the second largest bank when it comes to assets. Phase 2 loans that are under monitoring do not tend to move into NPL, as their rate is declining and was lower in 2021 than in 2020, leading to an improvement in the loan portfolio (Table 1).

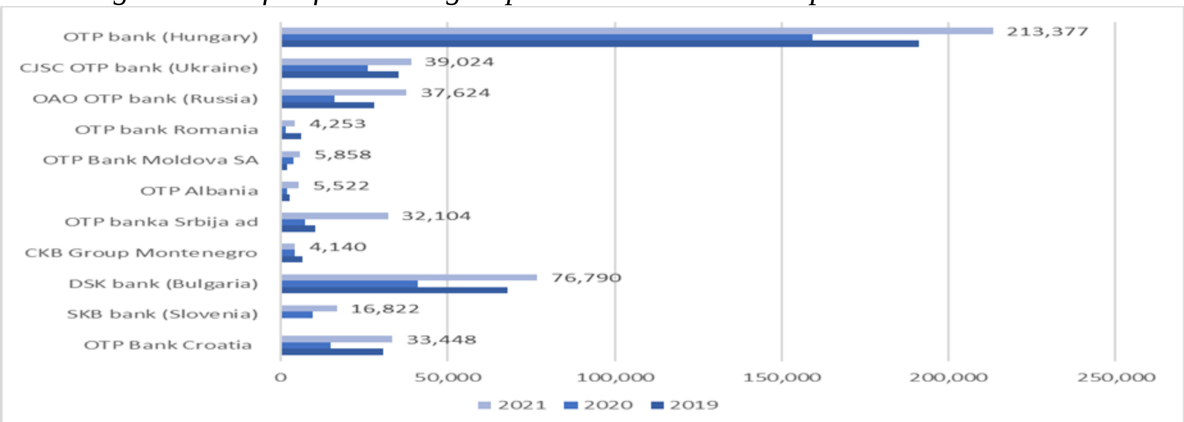
Crnogorska Komercijalna banka (CKB), a member of the OTP Group, merged Societe Generale Montenegro (2019) and Podgorička banka ad (2020) and leads with a market share of 14% and assets worth over one billion euros. The share of NPLs in the total share of loans fell from 7.3% in 2019 to 7% in 2021 (Figure 1). However, lending also decreased in the observed period, and overdue loans increased, so there is a tendency for NPLs to increase in the future (Table 1).

OTP banka Hrvatska dd is the fourth bank in terms of assets, with a market share of 9.89%. It was created by the purchase of Nova banka and the takeover of Banco Popolare Croatia in 2014, and Splitska banka in 2018. The percentage of NPLs in the total volume of loans increases in 2020 compared to 2019 and decreases in 2021 (Figure 1). Lending increased and overdue loans decreased (Table 1).

OTP Group entered the Albanian market in 2018 by purchasing the subsidiary of Societe General Bank in Albania and now operates under the name OTP Bank Albania SA with a market share of 6.4% and is the fifth largest bank in the market. The purchase of Alpha Bank

of Albania increased the market share to 11%. The percentage of NPL volume decreases and increases again in 2021 (Figure 1), but having in mind that overdue loans are decreasing, the NPL portfolio is also expected to decrease in the following period (Table 1).
OTP Group entered the Slovenian market by purchasing SKB Bank at the end of 2019 from Societe General Bank, the fourth bank on the market with a market share of almost 10%. In the spring of 2021, it bought Nova KBM, the second largest bank in the Slovenian market, with a market share of 20.5%. The NPL ratio is the lowest within the OTP Group ranging from 1.10% (2019) to 1.50% (2020) and 1.30% in 2021. Given that lending is on the rise, and the number of delinquent loans is decreasing, the NPL portfolio is not expected to increase.
In 2006, OTP Bank Plc. bought Raiffeissen bank Ukraine, which is now called OTP bank JSC and is currently the 9th largest bank in terms of assets in Ukraine with a market share of 2.65%. The NPL ratio was 17.30% in 2019, but it is decreasing progressively to reach 6.30% in 2021 (Figure 1). Loans in arrears are decreasing, but are forecast to increase again due to the current special operation of the Russian Federation in Ukraine (Table 1).
DKS Bank has been part of the OTP Group since 2003, in 2019 it merged with Societe General Expressbank in Bulgaria, and in 2021 the new bank is the second largest in the market with a market share of 18%. The NPL rate increases in 2020 and decreases in 2021 (Figure 1), as well as the number of overdue loans, which shows a further tendency to decrease the NPL portfolio (Table 1).
OTP Group entered the Russian market in 2006 by purchasing Investmentsberbank and it is the 46th largest bank on the market. Of all subsidiaries of OTP Bank, the NPL ratio is the highest in Russia and amounted to 13% in 2019, 13.90% in 2020, and 11.40% in 2021 (Figure 1). At the same time, in 2021, the number of overdue loans increased, which, in addition to inflation and the crisis caused by the special operation in Ukraine, and the sanctions that the Russian economy is facing, threatens to drastically increase the NPL portfolio in the future.
OTP Bank Romania is the ninth largest bank in Romania, with a market share of 4%. It was created by the purchase of RObanka in 2004 and merged with Millennium Bank Romania in 2015. The NPL ratio in the total loan portfolio is progressively decreasing (Figure 1). However, there are reasons for concern since the number of overdue loans, which can easily become non-performing investments, has increased (Table 1).
In 2019, OTP Bank Nyrt took over a majority share of 96.69% from Société Générale in the bank "Mobiasbancă - Groupe Société Générale" SA, and operates under the new name OTP Bank SA. It is currently the fourth bank in terms of assets in Moldova, with a 13.3% market share. Although the NPL is very low, the number of loans past due has increased (Table 1), so additional attention is required when monitoring loans.

Figure 2: Profit of the OTP group members in observed period in HUF million



(*Source: Data from annual reports of OTP bank Plc*)

As it is shown in Figure 2, OTP bank Hungary has the absolute highest profit and it amounts to HUF 213,337 million in 2021. DSK Bank also had a fantastic result in 2021 in the amount of HUF 76,790 million. Both Ukrainian and Russian subsidiaries achieved significant income despite the high values of the NPLs rates. CJSC OTP bank Ukraine had HUF 39,024 million profit in 2021, and OAO OTP bank Russia HUF 37,624 million, representing 7.9% of the entire group's profit. The lowest profit in 2021 was achieved by the Montenegrin subsidiary of the OTP Group in the amount of HUF 4,140 million, but the problem with it is that the profit constantly decreases from year to year, unlike other members of the group.

The research results show a decrease in NPLs in the total loan volume, which is directly proportional to the increase in the profit of the banks and the increase in the market share, and thus the competitiveness of the banks. A higher profit of the banks indicates a decrease in NPL. Out of 11 member banks of the Group, this thesis was confirmed on the example of seven banks with the exception of the Group's subsidiaries in Serbia, Albania, Montenegro and Hungary. Market leaders with a greater competitive advantage in terms of both market share and operating results have the lowest NPL rate in the overall portfolio. OTP Slovenia has the lowest percentage of NPLs in the total loan volume. Although it is the fourth in the market, it has by far the best result with values reduced from 1.50% to 1.30% in 2021 with a doubled profit, followed by OTP Moldova SA, which also made a significant profit and reduced NPL rate to 1.80% in 2021. In addition, OTP Bank in Hungary is the absolute leader in the Hungarian market with record high profits and a relatively low NPL rate of 4.60%. Serbia and Albania, as members of the OTP Group from the countries that received the status of members in the process of joining the EU, have surprisingly good credit quality, resulting from a successfully implemented risk management strategy. Therefore, the Serbian subsidiary had an NPL level of 2.90% and tripled its profits in 2021. It is the market leader in terms of the number of loans granted and the second largest bank, while the Albanian subsidiary more than doubled its profits in 2021 and has a 3.30% NPL rate. The Serbian and Albanian subsidiaries owe good profit-related results partly to the increase in market share. Still, their NPL portfolio, as well as that of OTP Bank Hungary, slightly increased, which may also be the result of challenges during the merger of banks. When it comes to OTP bank Hungary, the measures of the European Central Bank from 2020, which imply the interest rate reduction to promote economic growth and public consumption, have affected the increase in inflation, which had a negative impact on the level of NPLs. Among the members of the OTP Group from the EU countries, the poorest result was recorded for DSK Bank Bulgaria, which achieved exceptional profits and is the second largest bank in terms of assets in the Bulgarian market, but its NPL volume is higher than the profit of OTP Bank Romania, which is only 9th by size with a 4% market share in the banking sector of Romania and with the lowest profit of all EU OTP Group members. At the back are the subsidiaries in Ukraine and Russia; they both have worse market positions than other members of the OTP Group (Ukraine is 9th in terms of assets, and Russia is only 46th in the Russian banking market) and the largest NPL volume. OTP bank Moldova also has a very good result considering that it belongs to the banking market outside the EU zone, and Moldova has not yet received the status of a member country in the process of joining the EU. At the same time, OTP CKB Montenegro recorded a decrease in NPLs and a decrease in profits in the observed period.

5. CONCLUSION

The economic crisis that hit the world due to the Covid pandemic did not have much of an impact on the OTP banking group loan quality, as shown by the share of NPLs in the total loan portfolio for all three observed years: in 2019 as the year that preceded the economic crisis caused by the Covid pandemic, in 2020 as the year in which financial instability was expressed, and in 2021. The thesis confirmed that banks with better performance, greater market share in the banking sector of the country in which they operate, and greater profit had a smaller volume of NPLs. From the attached data on the operations of the Group members, it is evident that the EU member countries, which have the lowest NPL volume, showed a better result. Good example is the subsidiary of OTP Bank in Slovenia standing out as the 4th bank in terms of assets in the Slovenian banking market with the NPL rate of 1.30% in 2021 and a fantastically low percentage of loans that are more than 90 days past due, which is stable at 0.4% throughout all three years.

OTP Bank in Hungary, as the absolute market leader with a 25% market share, showed the highest profit, but also a very low share of NPLs in the total credit portfolio of 4.60% in 2021. OTP Group members from Albania, Moldova and Serbia recorded a significant increase in profit in the observed period and a very low NPL rate, which indicates the successful implementation of credit risk strategies.

It was found that as the business profit increases, the NPL percentage in the total credit portfolio decreases, which was confirmed in the example of 7 out of 11 Group members (the exceptions are the Hungarian, Serbian, Albanian and Montenegrin members of the OTP group).

Considering all the above, the conclusion is that NPLs are negatively correlated with banks' competitiveness since the results showed that the NPL volume is lower in banks with better operating results and, therefore, a better market position.

In addition, when the NPL ratio increases, profit decreases, which was confirmed by the example of the Group member banks from Serbia, Russia, Bulgaria, Slovenia, and Croatia during the critical year of 2020, when all of them recorded a decrease in profit. The strength and financial stability of the OTP Group are also reflected in the fact that 6 out of 11 Group members successfully resisted the financial instability in the most challenging year (2020) and that the NPL did not increase but continued to decrease continuously (banks in Hungary, Croatia, Montenegro, Romania, Ukraine, and Albania).

The banks of the EU member states showed greater recovery in 2021 since the banking markets within the EU are less susceptible to external shocks and are far more stable. Given that banks from Ukraine and Russia, which are in conflict, operate within the OTP Group, it remains to be seen how much the NPL portfolio will increase in these countries and how these results will affect the profitability of subsidiaries in those countries as well as their competitive advantage and the market position of the entire Group, which could be the subject of further research.

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LITERATURE REVIEW ON DEA BANKS' APPLICATION IN THE WESTERN BALKANS

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ABSTRACT
This study aims to identify and present the relevant studies employing DEA applications in bank efficiency evaluation in six Western Balkan (WB) countries as follows: North Macedonia, Serbia, Montenegro, Kosovo, Albania and Bosnia and Herzegovina (B&H).
This article implements an extensive systematic literature review of studies that employ the DEA methodology in the efficiency evaluation of Western Balkan countries' banking systems. The conducted literature review has surveyed the Scopus, Web of Science (SSCI and SCI papers) and Google Scholar databases with „Data Envelopment Analysis", „Western Balkan" (and each of the WB countries as keywords) and „Bank" as keywords for the search following the PRISMA guidelines for systematic literature review. Thereafter, a manual survey of these studies was conducted, which eventually resulted in 31 papers regarding the efficiency of WB countries' banking systems.
This study provides an in-depth literature review on bank efficiency studies with DEA in each of the analysed Western Balkan countries (eight in Serbia, six in North Macedonia, none in Montenegro, three in Albania, three in Kosovo, five in Bosnia and Herzegovina and six cross-country studies that include any of these Western Balkan countries), as well as a presentation of their used models, the selected variables and their findings. The findings reveal that, in most cases, the large banks in WB are most efficient and the small-sized banks are the least efficient.
This literature review indicates that the surveyed studies have been published in the period between 2008 and 2022. The findings primarily show the applicability of DEA in the bank efficiency literature.

Keywords: *Data Envelopment Analysis (DEA), Banking, Western Balkan, efficiency measurement, nonparametric approach.*

JEL classification: *G21, G34, N24.*

1. INTRODUCTION

Besides their traditional activities, commercial banks in developing countries play a very important role in their national country's economic development, financial stability and thus, prosperity. Therefore, it comes as no surprise that their efficiency is regularly and consistently measured and evaluated. Their efficiency could be evaluated using the ratio

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indicators, the parametric and the nonparametric methodologies. DEA is nowadays one of the most popular and applied nonparametric methodologies, that is especially convenient for small samples, which in general includes the banking industry.

The main objective of this work is to identify and present the relevant studies employing DEA applications in bank efficiency evaluation in the six observed Western Balkan (WB) countries as follows: North Macedonia, Serbia, Montenegro, Kosovo, Albania and Bosnia and Herzegovina (B&H). For this purpose, the methodology known as PRISMA-compliant systematic literature review (SLR) has been conducted, which includes exploration and a survey of the three globally renowned scientific databases (i.e. Scopus, Web of Science and Google Scholar) in search of all the DEA applications in the banking sectors in the Western Balkan countries. The efficiency of commercial banks in the Western Balkan is vital, since all the banking sectors are banco-centric and their efficient operations impact the overall financial stability. The leading non-parametric methodology DEA is "the most widely used efficiency evaluation method" (Radojicic et al., 2018) and especially convenient for homogeneous peer units such as banks.

The findings of this paper reveal new insights to policymakers and government officials, as well as bank stakeholders, potential investors and the interested public, thus offering a solid scientific and practical contribution. Notwithstanding, at the best of authors' knowledge, there is not any published paper synthesizing all the relevant papers applying the DEA methodology in the Western Balkan countries and their findings. Interestingly, the findings also confirm that, in most cases, the large banks in WB are most efficient and the small-sized banks are the least efficient.

The motivation behind this review can be mirrored in the effort to present and promote the DEA methodology as a very convenient method to be used in the bank evaluation in the Western Balkan countries, as well as the world, for that matter. Moreover, the authors believe that this paper would bring awareness to other scholars regarding the negligence and avoidance of the DEA methodology by academic members from the Western Balkan, which could contribute to its wider spread and application, not only in the banking sector, but any other sector as well.

The remainder of this paper is structured as follows. After the introduction, a short theoretical background on the DEA methodology is presented. Section 3 presents the research design and process and Section 4 reveals the results of this review: a qualitative review of the 31 surveyed papers together with their used DEA models, variables and findings. Section 5 opens up a discussion and Section 6 concludes this paper.

2. DATA ENVELOPMENT ANALYSIS (DEA)

DEA is the leading nonparametric methodology that has been widely used in efficiency measurement in various industries since its introduction in the seminal paper of Charnes, Cooper and Rhodes (1978). Little it is known that DEA has been first and foremost developed for measuring efficiency of non-profit organizations, but its applicability and easiness to use have been the reasons of the ever-rising popularity of this nonparametric methodology.

Data Envelopment Analysis (DEA) is a data-oriented approach and a linear programming approach used for tackling and comparing the relative efficiency of a set of units called decision-making units (DMUs). It is an effective methodology for performance measurement commonly used in recent years and a popular analytical tool in the „new field of interdisciplinary research of operations research, management science and mathematical economics" (Chen, 2019). It is considered an "excellent and easy-to-apply approach for modelling operational processes for performance evaluation" (Cooper et al., 2011). By means of mathematical programming technique, it allows for a relative comparison of the efficiency and performance of each DMU relative to the other entities included in the analysis. This is done through the projection of all DMUs to the DEA frontier and comparing the deviations from the frontier of DEA production (Cvetkoska, 2010; Fan & Sun, 2017). Therefore, DEA is also a frontier methodology.

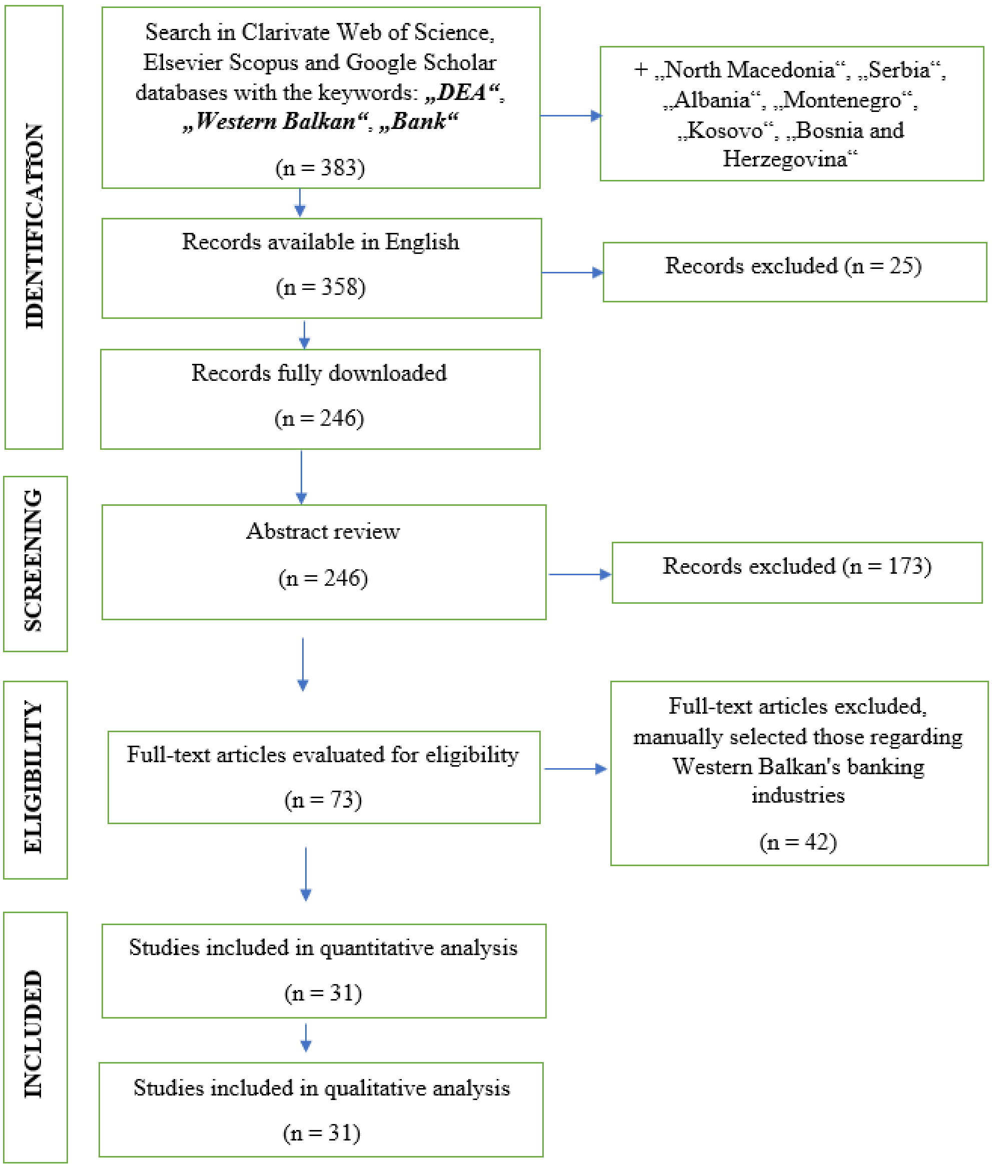
DEA has a few advantages over parametric methodologies. First and foremost, it does not require a prior specification of the model, and it provides information on whether the observed DMUs are positioned below or above the „efficient frontier" instead (Giustiniani & Ross, 2008). Second, there is no need for pre-required "knowledge of the explicit functional form linking input variables and output variables nor a priori determination of the weights for these variables" (Fotova Čiković & Lozić, 2022). Third, it can handle the use of multiple input and output variables. However, the DEA methodology is not flawless. For example, it is mostly recommended for small samples and its main disadvantage is the assumption "that random errors do not exist", but this leads to "frontier sensitivity to extreme observations and measurement errors" (Jemrić & Vujčić, 2002).

CCR and BCC are the basic DEA models. The CCR model has been introduced in 1978 and the latter has been developed and introduced in 1984 by Banker, Charnes and Cooper. The main difference between these models is the assumption regarding the returns to scale. The CCR model has a constant return to scale, whereas the BCC model variable return to scale (and therefore, it represents an extension to the CCR model).

3. RESEARCH DESIGN

The used methodology for this work is a systematic literature review (SLR), which represents a very powerful methodology for summarizing past findings in a research field. For this reason, three globally reputable scientific databases have been surveyed, as follows: Google Scholar, Scopus and Clarivate Web of Science. The PRISMA-guided literature review and the research design are presented in Figure 1. In the first step of the research, a survey of the above-mentioned databases has been conducted with the use of several keywords and key phrases in order to encompass all relevant published studies. The used keywords are as follows: "DATA ENVELOPMENT ANALYSIS (DEA)", "WESTERN BALKAN", "BANK" and/or "NORTH MACEDONIA", "SERBIA", "MONTENEGRO", "ALBANIA", "KOSOVO", "BOSNIA AND HERZEGOVINA". In the second step, the search was refined and the focus was set on studies published in the English language and on fully downloadable studies. No publication period has been pre-set, which means all the published studies since the introduction of DEA in 1978 have been included. In the following steps (screening and eligibility), an exclusion criterion has been applied to duplicate papers (i.e. papers that were indexed in both Scopus and Clarivate Web of Science database) and to papers that did not concern the banking sectors in Western Balkan countries (which was decided after the initial screening and abstract review). Finally, after applying all of the exclusion criteria, 31 publications remained in the inclusion phase, and they represent the basis for our further and more qualitative analysis, which is carried out in the next section.

Figure 1: The research design and the PRISMA-guided literature review process.



(Source: Authors)

4. RESEARCH RESULTS - APPLICATIONS OF DEA IN BANK EFFICIENCY EVALUATION IN THE WESTERN BALKAN COUNTRIES

This study provides an in-depth literature review on bank efficiency studies with DEA in each of the analysed Western Balkan countries (eight in Serbia, six in North Macedonia, none in Montenegro, three in Albania, three in Kosovo, five in Bosnia and Herzegovina and six cross-country studies that include any of these Western Balkan countries). A detailed overview of the scholarly literature regarding the bank efficiency in each of the analysed countries follows in subsections 4.1.- 4.6.

4.1. Studies on Bank Efficiency with DEA in Serbia

Mihailović et al. (2009) employed the DEA methodology and the I-distance procedure to rank the banks in Serbia in the year 2005. They have selected three inputs (total asset, total capital and number of employees) and two outputs (Interest revenue and revenue before taxation) for their output-oriented Andersen – Petersen's DEA model. The findings show that only 9 out of 41 banks in Serbia were relative efficient in 2005. Their scientific contribution is reflected in the implementation and combination of two different methodologies when solving the complicated problem of ranking.

Marković et al. (2015) measure the productivity change of commercial banks in Serbia over the period 2007- 2010. They implement the DEA methodology with assets, the number of employees and equity as inputs and the total revenue and EBT as outputs and the Malmquist index to estimate the bank efficiency and productivity changes. The obtained results indicate that the mean efficiency of the banking sector in Serbia "does not substantively change from year to year". Furthermore, they found that the decrease in productivity in the banking sector is not related to technical efficiency, but rather to the reduction in technology.

Radojicic et al. (2015) have introduced a novel DEA approach, namely DEA based on the bootstrapping distance-based analysis (DBA). They use four inputs (Number of employees, Fixed assets, Capital and Deposits) and three outputs (Loans, Other placement and Noninterest income) to a sample of 29 Serbian banks that operate in 2010. In this study, they develop six different DEA models: 3 models assumed constant return to scale, and 3 assumed a variable return to scale, 2 models did not use any weight restriction while 4 models did. The obtained results show that in the CCR model there were 7 efficient banks, whereas in the BCC model 18 banks were efficient. The mean efficiency result in the CCR model is 0.867 while in the BCC it is 0.9302.

Popović, Stanković & Marjanović (2017) focus on the efficiency of Serbian banks in the period from 2014 to 2016 with the implementation of the input-oriented CRS/VRS DEA methodology. They used interest expenditure, total assets, number of employees and operating expenditures as input variables, whereas interest income and profit before tax as output variables. Their findings show that "almost two-thirds of banks operated inefficiently in the observed period".

Lukić, Sokić & Kljenak (2017) implemented the DEA CCR input-oriented model to a sample of thirty (30) banks in the year 2016. They chose total assets, number of employees and capital as inputs and operating income and net profit as outputs. Their findings indicate that only eight banks were relative efficient, whereas the remaining 22 operated inefficiently.

Savić et al. (2012) implemented the input-oriented window CCR DEA technique with an intermediation approach for the sample of 28 Serbian banks in the period from 2005 to 2011, with two inputs (Interest expenses and Non-interest expenses) and two outputs (Interest income and Non-interest income) for the profit efficiency model and four inputs (Number of employees, Fixed assets and intangible investments, Capital and Deposits) and two outputs (Granted loans and deposits and Non-interest income) for the operating efficiency model. Their findings from the profit efficiency model show that only two banks are efficient in the whole observed period, while all the other banks show inefficiencies. According to the operating efficiency model, Erste Bank and Findomestic bank are the only banks that sustained their efficiency (with an exception in the year 2006 for Erste Bank). Furthermore, the majority of banks note efficiency scores between 60% and 70%, regardless of whether it is a profit or operating efficiency of the bank.

Radojicic et al. (2018) have analysed the efficiency of 25 Serbian banks from the period 2005–2016. In their study, they highlight the "importance of applying weight restrictions in Data Envelopment Analysis (DEA)" and thus, they introduce a novel approach to GAR DEA, which is based is based on the multivariate statistics I-distance method. They have selected deposits, personnel expenses, fixed assets and capital as inputs and loans, other placements and non-interest income as outputs for this model. The obtained results indicate that the average efficiency in the observed period was between 0.869 and 0.940. At least 11 banks were efficient in each analysed year, whereas three banks noted relative efficiency in the whole analysed period. The lowest efficiency score was noted in 2010, whereas the highest was in 2005, 2008 and 2013.

Bošković & Krstić (2020) have combined the BCC DEA with the Balanced Scorecard to assess the relative efficiency of all branches of a bank in Serbia, whose identity and observed year are not disclosed. The scientific contribution of this paper is in the fact that the authors "have applied four interconnected DEA models, one for each one of the BSC perspectives, by using the outputs of one model as inputs for the following model". Each of these four DEA models has two inputs and two outputs. Their findings indicate that the average efficiency of all the analysed branches (a total of ten) varies from 87% to 94.30%.

4.2. Studies on Bank Efficiency with DEA in North Macedonia

Giustianiani & Ross (2008) have measured the degree of competition and relative efficiency of the Macedonian banking system in 33 quarters from end-1997 to end-2005, with the application of both CCR and BCC DEA models with adopting the intermediation approach. They selected deposits (sight, bank, short and long-term deposits) and borrowings (short and long-term) as inputs, whereas loans (placements to other banks and clients) and securities (holdings of central bank bills, government treasury bills and other equity investments) as outputs. The results from the CCR and BCC DEA model show that the average efficiency of the whole banking system was highest in 1997 (0.77 in the CCR and 0.92 in the BCC model), whereas lowest in 2001 (0.45 and 0.75 for CCR and BCC respectively). Moreover, the obtained results from the BCC DEA model show that large banks are in general more efficient than small banks and foreign banks are more efficient than domestic banks. The CCR DEA model confirms that foreign banks are on average more efficient than domestic banks but does not support the result that large banks are more efficient than small-sized banks.

Micajkova & Poposka (2013) estimate the technical, pure technical and scale efficiency of the Macedonian banking sector in the period 2008-2011. They implement both the input-oriented CCR and BCC DEA models, with total deposits received and labour costs as input variables and loans to banks and customers, and investments as output variables. The efficiency results show that the average efficiency of the Macedonian banking system has noted an increase in the period 2008-2010, which was followed by a decrease in 2011. Moreover, they found that large banks are the group of banks with the "highest pure efficiency but the greatest scale inefficiency", whereas the group of small banks is technically the least efficient.

Naumovska & Cvetkoska (2014) have implemented the output-oriented CCR DEA model to evaluate the relative efficiency of Macedonian banks in the period from 2003 – 2012. In their DEA model, they have chosen deposits and operating costs as input variables and loans and net interest income as output variables. The efficiency results show that Macedonian banks were most efficient in the year 2008 (90.3%), whereas 2012 was the least efficient year with an efficiency result of 79.8%.

Naumovska & Cvetkoska (2016) use the same variables and period as in Naumovska & Cvetkoska (2014) to assess the relative efficiency of Macedonian commercial banks. However, they implement the output-oriented BCC DEA model. The obtained results show that four banks are relative efficient in the whole analysed period (2003 – 2012). The Macedonian banking system was most efficient in 2008 and least efficient in 2009 with 93.6% and 86.9%, respectively.

Fotova Čiković & Cvetkoska (2017) implement the output-oriented BCC DEA window analysis technique with three inputs (Total deposits, Interest costs and Operating / non-interest costs) and three outputs (Total loans, Interest revenue and Non-interest revenue). They analyse the period from 2008 to 2015 and their sample consists of 14 commercial banks operating in North Macedonia. The obtained results show that the average relative efficiency of the whole sample in the analysed period is 88.70%. Moreover, the lowest efficiency result was noted in 2011, whereas the highest efficiency was in 2015 (83.26% and 96.35% respectively). They also found that the group of large banks is the most efficient in the whole banking sector.

The output-oriented BCC DEA window analysis model has been applied by ***Cvetkoska and Fotova Čiković (2020)*** to a sample of 14 Macedonian banks in the period from 2007 to 2017. They have chosen two input variables (interest and non-interest expenses) and two output variables (interest and non-interest revenue) for their DEA model. Their findings indicate that the GFC (global financial crisis) has left quite an impact on the banking system, lowering its efficiency. According to the results, 2011 has been the least efficient year (with an efficiency score of 65.25%), whereas the year before the GFC has been most efficient (the year 2007 with an efficiency score of 84.04%).

4.3. Studies on Bank Efficiency in Albania

Spaho (2015) measures the efficiency of Albanian banks for the year 2013, using both input-oriented and output-oriented CCR and BCC DEA methods with the intermediation approach and the Tobit regression. The input and output variables for the DEA model were: non-interest expenses and total deposits as inputs and non-interest income and total loans as outputs. The findings of this study showed an average efficiency score of 0.813 with a standard deviation of 0.2. Five of the analysed banks were relative efficient in 2013, whereas the other inefficient banks noted efficiency scores between 0.256 and 0.961.

Spaho, Mitre & Shehu (2015) measured the technical efficiency and the super-efficiency of Albanian banks in Albania in the year 2014 using the input-oriented BCC DEA model with the intermediation approach. The variables for the DEA model are total deposits, personnel expenses and fixed assets as inputs and total loans and investments as outputs. The findings show that only 4 out of 16 banks were technically inefficient. The least efficient bank is ProCredit bank with a BCC efficiency score of 0.867. They furthermore ranked the banks using the super-efficiency model. The overall efficiency of Albanian banks in 2014 is relatively high.

Braimllari & Benga (2019) have analysed the cost efficiency of Albanian banks in the period 2015-2017 using the input-oriented BCC DEA with the intermediation approach. In their DEA model, they selected three inputs (total deposits, number of employees and fixed assets) and two outputs (total loans and other earning assets). The results for the technical efficiency show that "7 out of 16 banks were technically efficient in 2015; 8 out of 16 banks were technically efficient in 2016 and 9 out of 15 banks were technically efficient in 2017", showing that each year more banks are technically efficient. As for cost efficiency, the findings show that each year six banks were cost-efficient. The average efficiency score for 2015, 2016 and 2017 were 0.829, 0.804 and 0.837, respectively.

4.4. Studies on Bank Efficiency in Kosovo

Zogjani & Kelmendi (2015) focus on the impact of the global financial crisis 2008/09 on the banking efficiency in Kosovo. In their study, they implemented the DEA methodology with a constant and variable return to scale and the OLS method. The selected variables for the DEA model are total assets and the number of employees as inputs and the level of loans and the level of bank profits as outputs. Their findings indicate „a constant increase of efficiency from 0.795 (CRS & VRS) in 2008 to 0.832 (CRS) and 0.913 (VRS) in 2010".

Zogjani, Mazelliu & Humolli (2018) analyse the efficiency of banking electronic services in Kosovo in the period 2012-2016 with the application of CRS and VRS DEA method and OLS. In their DEA model, they have chosen one input (Net Profit) and three outputs (ATM

Withdrawals, ATM Withdrawals and E-banking Services). Based on the obtained results, the highest technical efficiency based on both CRS and VRS DEA models is noted in the year 2013, whereas the lowest was in 2015 (CRS = 0.70 and VRS = 0.97).

Sahiti & Sahiti (2021) focus on the credit risk efficiency to a sample of seven commercial banks in Kosovo for the period 2008-2016 with DEA methodology and Tobit regression. In their DEA model, they have selected three inputs (Ratio of total loans to total assets, Ratio of deposit reserve to total deposits and Credit report overdue) and two outputs (Return on equity and Return on assets). The results from the DEA model show that no bank has been relative efficient in all of the analysed years. Moreover, the results show that Kosovo's commercial banks during this study period experienced a more allocative efficiency than technical and cost-efficiency. Their findings show "a statistically significant positive relationship between bank efficiency, capital adequacy, and loans". Interestingly, they found that profitability, deposits, costs, bank size, GDP growth, and inflation, are not statistically significant.

4.5. Studies on Bank Efficiency with DEA in Bosnia and Herzegovina

Efendić & Avdić (2011) explored the technical, cost, allocative and scale efficiency of 19 banks in B&H in the year 2009, using the intermediation approach through the input-oriented DEA methodology. Their findings indicate that the B&H banks are "on average significantly inefficient". Moreover, they found large banks to be the most efficient group in the market and domestic-owned banks to be on average more technically efficient than foreign-owned and banks with mixed ownership. However, foreign-owned banks were found to be more cost-efficient than domestic banks.

Abu-Alkheil et al. (2012) have conducted research which focuses on the efficiency performance of two Islamic banks (namely, the Bosna Bank International - BBI in Bosnia & Herzegovina and the Islamic Bank of Britain - IBB in the UK) in comparison with small conventional banks in each country and with small and large Islamic banks from Muslim-majority countries. Their study includes cross-country bank-level panel data for a sample of 23 Islamic banks in 10 countries. However, they focus on 12 small conventional commercial banks in B&H and the UK, six from each country. The DEA methodology with an intermediation approach, OLS regression analysis and Malmquist indexes have been implemented for the four years from 2005 to 2008. The chosen inputs are total deposits and short-term funding, total expenses, and total staff costs, whereas the chosen outputs are as follows: total (non) interest-bearing loans and total revenues. Their findings indicate that both IBB and BBI are technically inefficient and "lag relatively behind their conventional peer banks in terms of efficiency and productivity performance". BBI shows higher efficiency relative to conventional banks than IBB.

Memić & Škaljić-Memić (2013) have focused on the efficiency of B&H banks by implementing DEA methodology for the period from 2008 to 2010 (three years). In their study, they have compared the performances of banks in FBH and RS, taking into consideration the different legal frameworks under which the banks operate. They have applied a modified DEA model suggested by Halkos and Salamouris (2004), with financial ratios as outputs while inputs are not taken directly into consideration. The outputs, i.e. the five financial ratios are ROA, ROE, NIM, 1/EFF and P/L. Their sample constitutes of 26 out of 29 commercial banks operating on the B&H market and the results of the modified DEA model have ranked all of them and banks have been categorized in one of the four predefined efficiency groups: highly efficient, relatively efficient, average efficient and inefficient. They conclude that the "overall average efficiency of the banking sector has improved over the analysed period, even though the profitability has declined". Furthermore, the five-ratio DEA model shows that in one out of the three observed periods, small-sized banks in Bosnia & Herzegovina are more efficient than large banks.

Efendić (2017) has employed the multistage DEA with an output-oriented intermediation approach on a pooled sample of banks in B&H on "a grand-frontier (one frontier for all banks and all years)" in an effort to compare the Islamic and conventional banking efficiency in B&H. The observed period is from 2002 to 2015. The selected variables for the DEA model are as follows: Fixed assets, Deposits, Equity and Operating expenses as inputs and Loans and Other earning assets as outputs. The average efficiency for the whole B&H banking sector "is at a seventy-seven per cent moderate level", which highlights the improvement possibilities and potentials for the B&H banks. The obtained results show that conventional banks note higher efficiency than the existing Islamic bank. Moreover, they show that larger banks note higher efficiency than small-sized banks.
Husejinović (2019) has applied the DEA methodology with two inputs (Capital and Number of Employees) and three output variables (Loan Amount, Deposit Amount and P/L Amount) to measure the efficiency of banks in the Federation of BH in the period 2016-2017. The findings of his research show that large banks note higher efficiency than small-sized banks. Moreover, the efficiency results show a "significant difference in the relative efficiency" of the top two banks and the rest of the banks in the analysed sample. The large UniCredit bank is the most efficient in both 2016 and 2017.

4.6. Cross-country studies on bank efficiencies with DEA in the Western Balkans

Toci (2009) investigates the intermediation bank efficiency in four SEE countries, namely Bulgaria, Croatia, Kosovo and Montenegro in the period 2002-2005, by implementing both CRS and VRS output-oriented multi-stage DEA models. He chose deposits and total costs as input variables and loans net of provisions and total revenues as output variables. The findings indicate that foreign-owned banks „outperform domestic banks in terms of the number of banks dominating the frontier and average efficiency in both the CRS and VRS models and the gap was increasing over the years".
Anayiotos et al. (2010) measure the relative efficiency of banks in emerging Europe in the period before and right after the crisis (i.e. from 2007-2009), using a Data Envelopment Analysis (DEA) under the intermediation approach on a sample of 125 large commercial banks from 14 emerging European economies. They selected total capital, interest expense and operating expense as inputs, whereas total loans, pre-tax profit and securities portfolio as outputs. Their findings suggest that banks were increasingly efficient during the pre-crisis boom, but their relative efficiency fell during the crisis. Moreover, they found "foreign-owned banks in emerging Europe to be less efficient than their mother banks", but were more efficient than domestic banks in the period before the crisis.
Toci & Hashi (2013) explored the intermediation efficiency of banks in four South-East Europe countries (Bulgaria, Croatia, Kosovo and Montenegro) in the period from 2002 to 2005 with an application of the output-oriented DEA model and the Malmquist Index. They implemented both the CRS and VRS DEA models with deposits and total costs as inputs and loans net of provisions and total revenues as outputs. Their findings show that "Bulgarian banks are, on average, more efficient in intermediation than Croatian banks, while banks in Kosovo appear to be the least efficient compared to other countries in the region". Furthermore, the efficiency results indicate that foreign banks are more efficient than domestic banks and more importantly, that the efficiency gap had "continuously widened". They also found large banks to be more efficient than small-sized banks.
Varesi (2015) conducted a comparative study of the banking efficiencies of six Western Balkan countries (Albania, Bosnia & Herzegovina, Kosovo, Macedonia FYR, Montenegro and Serbia) in the period from 2007 to 2012. She used both CCR and BCC DEA models with an intermediation approach with two inputs (Number of branches and Total assets) and one output (Total loans). The average technical efficiency from the DEA CRS model for the

whole analysed period 2007-2012 and the whole sample is at 0.686 or 68.6%. The BCC DEA model show higher technical efficiency results of 0.921 (92.1%) and the scale results (CRSTE/VRSTE) are at 0.735 (73.5%). The obtained results show that Albania notes the lowest technical efficiency (0.433) whereas Montenegro highest efficiency. The other four Western Balkan countries noted efficiency results as follows: Kosovo noted 0.481, Macedonia 0.616, Serbia 0.617 and Bosnia and Herzegovina 0.939.

Cvetkoska, Fotova Čiković & Tasheva (2021) have measured the relative efficiency of the banking sectors of three developing economies, i.e. North Macedonia, Serbia and Croatia with the implementation of the DEA BCC output-oriented model in the period from 2015 to 2019. They have selected interest and other operating (non-interest) expenses as input variables, and interest and other operating (non-interest) revenues as output variables. They furthermore apply the super-efficiency procedure and identify outliers and provide targets for improvement for the inefficient banks by using DEA. Their findings show that the Macedonian commercial banking system notes the highest efficiency (91.1%), and is followed by the Croatian (90.9%) and the Serbian (81.9%) banking system.

Milenković et al. (2022) employed a two-stage DEA analysis for the Western Balkan countries in the period from 2015 to 2019. In the first stage of their research, they explored the efficiency of the intermediate function of banks with the application of an output-oriented DEA model using three inputs (deposits, labor costs, and capital) and two outputs (loans and investments), whereas in the second phase they employed the regression analysis to determine the influence of the bank size, type of bank and mergers and acquisitions (M&A) transactions on the banks' efficiency. In their study, they focus on six Western Balkan countries (Serbia, Bosnia and Herzegovina, Montenegro, North Macedonia, and Albania).

A synthesis of the above-stated findings is given in Table 1 below.

Table 1. Findings of the surveyed papers.

North Macedonia	***Bosnia and Herzegovina***	***Serbia***	***Albania***	***Kosovo***
The average efficiency of the whole banking system was highest in 1997, whereas lowest in 2001. Large banks are in general more efficient than small banks and foreign banks are more efficient than domestic banks **(Giustianiani & Ross, 2008)**	Large banks are the most efficient group in the market and domestic-owned banks are on average more technically efficient than foreign-owned and banks with mixed ownership **(Efendić & Avdić, 2011)**	Only 9 out of 41 banks in Serbia were relative efficient in 2005 **(Mihailović et al., 2009)**	An average efficiency score of 0.813. Five of the analysed banks were relative efficient in 2013 **(Spaho, 2015)**	„A constant increase of efficiency from 0.795 (CRS & VRS) in 2008 to 0.832 (CRS) and 0.913 (VRS) in 2010" **(Zogjani & Kelmendi, 2015)**
Large banks are the group of banks with the "highest pure efficiency but the greatest scale inefficiency", whereas the group of small banks is technically the least efficient **(Micajkova & Poposka, 2013)**	Both IBB and BBI are technically inefficient" **(Abu-Alkheil et al., 2012)**	The mean efficiency of the banking sector in Serbia "does not substantively change from year to year" **(Marković et al., 2015)**	The overall efficiency of Albanian banks in 2014 is relatively high **(Spaho, Mitre & Shehu, 2015)**	Highest technical efficiency is noted in 2013, whereas the lowest in 2015 **(Zogjani, Mazelliu & Humolli, 2018)**

Macedonian banks were most efficient in the year 2008 (90.3%), whereas 2012 was the least efficient year with an efficiency result of 79.8% **(Naumovska & Cvetkoska, 2014)**	The "overall average efficiency of the banking sector has improved over the analysed period, even though the profitability has declined" **(Memić & Škaljić-Memić, 2013)**	The mean efficiency result in the CCR model is 0.867 while in the BCC it is 0.9302 **(Radojicic et al., 2015)**	Each year more banks are technically efficient **(Braimllari & Benga, 2019)**	"A statistically significant positive relationship between bank efficiency, capital adequacy, and loans" **(Sahiti & Sahiti, 2021)**
The Macedonian banking system was most efficient in 2008 and least efficient in 2009 **(Naumovska & Cvetkoska, 2016)**	Conventional banks note higher efficiency than the existing Islamic bank. Larger banks note higher efficiency than small-sized banks **(Efendić, 2017)**	"Almost two-thirds of banks operated inefficiently in the observed period" **(Popović, Stanković & Marjanović, 2017)**		
Average relative efficiency is 88.70%. The lowest efficiency result was noted in 2011, whereas the highest efficiency was in 2015. The group of large banks is the most efficient in the whole banking sector **(Fotova Čiković & Cvetkoska, 2017)**	Large banks note higher efficiency than small-sized banks **(Husejinović, 2019)**	Only eight banks were relative efficient, whereas the remaining 22 operated inefficiently **(Lukić, Sokić & Kljenak, 2017)**		
2011 has been the least efficient year, whereas the year 2007 was most efficient **(Cvetkoska and Fotova Čiković, 2020)**		The majority of banks note efficiency scores between 60% and 70%, regardless of whether it is a profit or operating efficiency of the bank **(Savić et al., 2012)**		

		The lowest efficiency score was noted in 2010, whereas the highest was in 2005, 2008 and 2013. The obtained results indicate that the average efficiency in the observed period was between 0.869 and 0.940 **(Radojicic et al., 2018)**		
		The average efficiency of all the analysed branches (a total of ten) varies from 87% to 94.30% **(Bošković & Krstić, 2020)**		
Cross-country studies				
Foreign-owned banks „outperform domestic banks in terms of the number of banks dominating the frontier and average efficiency in both the CRS and VRS models and the gap was increasing over the years” **(Toci, 2009)**	“Foreign-owned banks in emerging Europe to be less efficient than their mother banks” **(Anayiotos et al., 2010)**	Foreign banks are more efficient than domestic banks and large banks to be more efficient than small-sized banks **(Toci & Hashi, 2013)**	Albania notes the lowest technical efficiency whereas Montenegro highest efficiency **(Varesi, 2015)**	The Macedonian commercial banking system notes the highest efficiency (91.1%), and is followed by the Croatian (90.9%) and the Serbian (81.9%) banking system **(Cvetkoska et al., 2021)**

The impact of the COVID-19 pandemic on the banking sector efficiencies has not been explored yet. Therefore, this study will be the first empirical study that would incorporate the first COVID-19 year and its impact on the Western Balkan banking systems.

5. DISCUSSION OF THE RESULTS

Banks hold a very special position in the financial systems of developing countries, such as the Western Balkan countries. Their financial systems are “bank-centric” and impact massively on the stability of the whole financial system. Therefore, the need to investigate the efficiency of banks has become crucial to the maintenance of the national financial stability.
The DEA methodology is the leading nonparametric approach for efficiency measurement that is mostly used in the banking industry, along with the supply chain, public sector, agriculture and transportation industry (Emrouznejad & Yang, 2018).

The conducted in-depth systematic PRISMA-compliant literature review reveals many interesting facts and states in the Western Balkan countries that bring new insights for bank management, governments and regulators. This review has highlighted the discrepancies in the application of the DEA in different countries (i.e. by different scholars). For example, most of these studies have been published regarding the Serbian and Macedonian banking sectors, and there aren't any studies employing DEA in the evaluation of banking in Montenegro. Therefore, in future work, the application of the DEA methodology in an empirical assessment of the relative efficiency of the Montenegrin banking system is recommended. Considering the great advantages DEA has to offer, this study represents an incentive for scholars in the observed Western Balkan countries to employ this methodology more often in banking but also other industries.
This literature review indicates that the surveyed studies have been published in the period between 2008 and 2022. Most of the 31 surveyed papers employ both the CCR and BCC DEA models. However, there are some differences between the applications between countries. For instance, the studies regarding the Macedonian banking sector mostly apply the BCC DEA model, whereas the Serbian studies mostly employ the CCR DEA model. The studies regarding the Kosovar banking system all include both the BCC and CCR DEA models. Only 3 studies (Savić et al., 2012; Fotova Čiković & Cvetkoska, 2017; and Cvetkoska and Fotova Čiković, 2020) have incorporated the window technique DEA model, which calls for the additional presentation of the window DEA methodology in future work. Many different approaches have been combined with the DEA methodology in this review, such as the I-distance procedure in Mihailović et al. (2009); the superefficiency procedure in Cvetkoska, Fotova Čiković & Tasheva (2021) and Spaho, Mitre & Shehu (2015); the Malmquist Index in Marković et al. (2015), Abu-Alkheil et al. (2012) and Toci & Hashi (2013); the OLS method in Abu-Alkheil et al. (2012), Zogjani & Kelmendi (2015) and Zogjani, Mazelliu & Humolli (2018); the bootstrapping distance-based analysis (DBA) in Radojicic et al. (2015); the Tobit regression in Sahiti & Sahiti (2021) and Spaho (2015); the Balanced Scorecard in Bošković & Krstić (2020) etc. Moreover, Radojicic et al. (2018) have introduced a novel approach to GAR DEA, which is based is based on the multivariate statistics I-distance method.

6. CONCLUSION

The findings of these studies are really interesting and reveal new insights that could be beneficial to all bank stakeholders. As shown in Table 1, most of the surveyed papers found that large banks are the most efficient group of banks in the Western Balkan countries (Giustianiani & Ross, 2008; Efendić & Avdić, 2011; Efendić, 2017; Toci & Hashi, 2013; Fotova Čiković & Cvetkoska, 2017; Micajkova & Poposka, 2013). Moreover, most of these studies found that foreign banks are more efficient than domestic banks (Giustianiani & Ross, 2008; Toci, 2009; and Toci & Hashi, 2013). However, some studies claim quite the opposite. Namely, Anayiotos et al. (2010) found "foreign-owned banks in emerging Europe to be less efficient than their mother banks", but were more efficient than domestic banks in the period before the crisis and Efendić & Avdić (2011) found domestic-owned banks to be on average more technically efficient than foreign-owned and banks with mixed ownership. Sahiti & Sahiti (2021) concluded that there is "a statistically significant positive relationship between bank efficiency, capital adequacy, and loans".
The main objective of this paper is to identify, survey, analyse and summarize the past findings regarding the efficiency of the banking sectors with the Data Envelopment Analysis methodology in the six observed Western Balkan countries as follows: North Macedonia, Serbia, Montenegro, Kosovo, Albania and Bosnia and Herzegovina (B&H). Notwithstanding,

another goal was to give a short theoretical background on the DEA methodology and present its strengths and limitations.

This paper is not without limitations. Namely, the authors have explored all the relevant scientific databases in order to identify all the published relevant work in this field. However, there is a possibility that not all published work regarding bank efficiency with DEA in the Western Balkans has been presented in this review.

In future work, the authors will focus on an empirical study incorporating all of the banking sectors in these six Western Balkan countries to reveal how has the COVID-19 pandemic reflected in the banks' efficiency in these countries. This would represent a major scientific contribution to this research field, since there has not been a published study regarding the efficiency of the banking sectors of the six Western Balkan countries, and there has not been a study comparing the impact the COVID-19 pandemics had on the efficiency and performance of these countries' banking systems.

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EMPIRICAL REVISITING OF THE MACEDONIAN MTPL INSURANCE CASE AND THE UNDERLYING FACTORS OF INFLUENCE

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ABSTRACT
Motor third-party liability insurance (MTPL) remains one of the dominant insurance classes in the Macedonian economy even besides the government regulated tariff system imposed. Pinpoint the key variables of interest has spurred debates for a prolonged period but without growing results in global literature, decreasing the ability to observe relationships important for the future liberalized system. Through a fixed effects panel regression this paper estimates the impact of MTPL premiums, claims, number of contracts, and market share on MTPL premium dynamics during the 2012-2021 period. The Macedonian empirical case suggests that the previous period number of contracts is not a significant determinant, unlike others. A positive impact is noted for the number of claims per contract, one period lagged MTPL premium per contract and MTPL concentration of the market. Adverse influence is found for the share of MTPL insurance in total GWP per company, one period lagged claims per contract and the market concentration of MTPL claims. Such observations help us understand the underlying forces in a non-liberalized MTPL market and propose business expectations for the future.

Keywords: *MTPL insurance, finance, panel regression.*

JEL classification: *G22, C33.*

1. INTRODUCTION

The concept of insurance can be traced back to 1750 BC in the Code of Hammurabi, with the earliest concepts where the lender would get an additional payment from the borrower in exchange for a promise that the loan would be canceled in case of a stolen ship. However, independent insurance contracts that were unrelated to agreements or loans first appeared in Genoa, Italy in the late 14th century. Ever since, a small fee for underwriting a certain insurable risk has been gradually developed, reaching today's point insurance industry. With the invention of motor vehicles and the consequent development of urban areas, the need for a motor insurance rose. Third-party liability seemed to be an insurable risk worth of attention, soon after becoming compulsory in most countries. Motor Third Party Liability Insurance (MTPL) makes sure that any injuries to individuals or damage to their property that results from an accident for which the driver and/or the owner of the vehicle were at fault is covered. A vehicle's owner or a legitimate possessor approved by the owner on behalf of the owner

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may purchase a policy. In terms of premium volume, motor insurance is typically considered the non-life insurers' strongest segment of business.
This paper studies the topic of motor third-party liability insurance (MTPL) in the Republic of North Macedonia throughout the last decade. As the compulsory insurance is conditional on a car registering, this class remains the dominant in the Macedonian insurance sector waging at about 42% (ISA, 2022) of total gross written premium in non-life insurance. Such levels signal a poorly developed insurance market, with further development hindered by a weak insurance culture among economic agents and general issues with proper risk valuation. Finding the underlying linkages between a collection of variables affecting MTPL insurance premium can aid insurance firms and policy writers in making future business decisions. We employ a quantitative approach while simultaneously using inductive and deductive methods to explain the underlying forces.
Through a fixed effects panel regression framework, we study the individual movements for the respective 11 non-life insurance companies in North Macedonia as well as the total market during the 2012 – 2021 period. The main research hypothesis is that MTPL gross written premium dynamics can be significantly determined by the number of contracts, gross claims liquidated (paid), market share of companies and share of MTPL insurance in total gross written premium (GWP). We also assume that certain autoregressive components may exist as an underlying force, so we observe one period lagged values of the number of policies, premiums and claims.
The paper is set up in the following manner. After the introduction to the research, we pay specific attention to renown work in the field related to insurance, modelling and MTPL determinants, which helps us understand the theoretical framework of our study. Next, a detailed methodological approach is provided focused on data acquiring, descriptive statistics and econometric modelling. Section 4 reviews and discusses the findings before presenting a brief conclusion to the subject.

2. THEORETICAL FRAMEWORK

Insurance businesses serve as risk underwriters, preventing risk-averse people from enduring the full effects of activities that negatively affect them (Spence and Zeckhauser, 1971). A requirement for mandatory vehicle third-party liability insurance evolved because of urban traffic congestion, population growth, and technology advancement. The Macedonian insurance industry has up to now used a bonus-malus tariff mechanism. Since risk appraisal and pooling is the main idea, premium differential amongst insurers, which represents risk heterogeneity, is a valid strategy (Henckaerts *et al.*, 2018). North Macedonia declared interest in liberalizing the MTPL rates more than a decade ago, however the insufficient and sparse data may be a major obstacle in its realization (Tomeski, 2012). It should provide higher competitiveness between companies as the German experience shows, but it should not be blatantly considered a 'price war' (Eling and Luhnen, 2008). The price-cutting activities in liability insurance markets was also studied by Harrington and Danzon (1994). Additionally, it has been demonstrated in several instances that the growth of the insurance industry is significantly influenced by the state of the economy (Ward and Zurbruegg, 2000; Skalská, 2018). Born and Bujakowski (2022) point out the importance of monetary stability, consumer safeguards, licensing and trading practices, and government transfers, affecting property-casualty and life-health insurance consumption.
Our study departs from the purely macroeconomic factors that were previously examined in studies of non-life insurance demand (Poposki *et al.*, 2015) and insurance expenditures (Trinh *et al.*, 2016). Instead, we show the innate consumer preferences and the idiosyncratic microeconomic linkages that are unique to each insurance entity. Based on a Latvian study (Spilbergs *et al.*, 2021), it is confirmed that macroeconomic shocks (especially those induced

by the COVID-19 pandemic) significantly influence the insurance market and its performance related to premiums and claims.
It is important to note that consumer behavior may also be examined in alternative ways, such as by examining how customers switch between underwriters, as showed though a Markov property system by Blazheska and Ivanovski (2021). Through a simultaneous equations approach, Zanghieri (2017) relates claims frequency, the average cost of claims and premiums for the Italian motor insurance, obtaining better forecasting performance than standard approaches. A significant breakthrough in estimating determinants of profitability and growth in motor insurance business is done by Maichel-Guggemoos and Wagner (2018), using panel data for the German insurance market between 2002 and 2014. Comparing mutuals to listed businesses, they show how they have cheaper premiums, total claims costs, and operational expenditures per contract. Additionally, compared to typical businesses selling through agents or brokers, direct insurance companies have reduced rates and operational costs per contract.
This research introduces an econometric approach in modelling short-term relationship on the Macedonian MTPL insurance market and contributes to the literature as one of the few papers doing so for the case of a Western Balkan economy.

3. METHODOLOGY

This section is devoted to the methodological nexus behind the research. First, a brief explanation of the data acquiring process and the descriptive analytical approach is presented. This will help us understand the condition of the Macedonian MTPL insurance market as well as the existing barriers due to the regulated regime. Next, a detailed revisiting of the most utilized regression methods is provided based on the data at disposal – the panel regression method.

3.1. Data acquiring and analysis

The study is focused on the post-financial crisis of 2008 and analyzes a decade of MTPL insurance dynamics in North Macedonia, throughout the period between 2012 and 2021. Quarterly data has been analyzed for each of the eleven insurance companies in the Macedonian insurance sector. Observations for each variable of interest was obtained through the national ISA reports on business performance of insurance undertakings. The reports are published quarterly with cumulative parameters, so differencing the entire dataset was necessary to obtain information for each of the 40 quarters. Now, a total of eleven non-life insurance companies operate, i.e.: 1) Insurance Makedonija, 2) Triglav Insurance, 3) Sava, 4) Euroins, 5) Winner – Vienna Insurance Group, 6) Eurolink, 7) Grawe non-life, 8) Uniqa, 9) Insurance policy, 10) Halk Insurance, and 11) Croatia non-life.
Each will be analyzed separately and as an integral part of the econometric modeling. A subject of interest to this study are the gross written premium (total GWP), technical premium, and share of insurance operations in GWP. Of particular significance to the research are the motor third-party liability insurance (MTPL gross written premium), the number of contracts concluded (MTPL policies), and gross claims paid for MTPL insurance. Due to the significant seasonal component present in the time-series for each variable of interest, the census X-12 method was employed for seasonal adjustments. Data are portrayed continuously for the insurance companies that faced a process of acquisition in the last decade, labeled as they are named today. Table 1 depicts the summary of descriptive statistics for the seasonally unadjusted general market data.

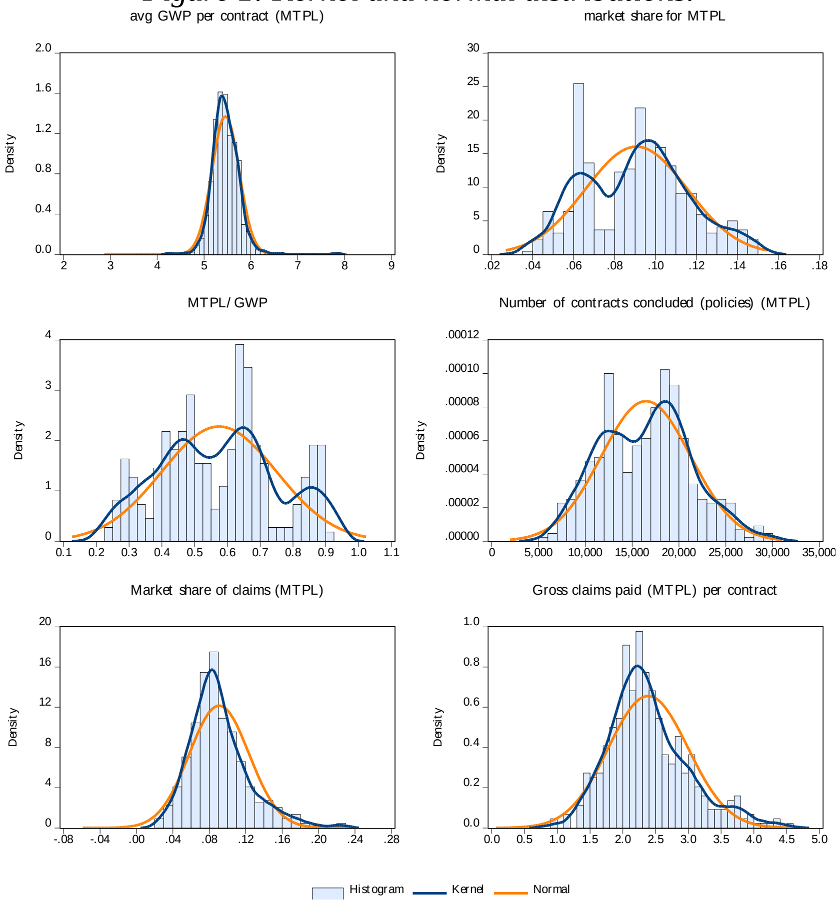
Table 1: Descriptive statistics, seasonally unadjusted panel data (2012Q1 – 2021Q4).

	MTPL premium per contract (in 000 MKD)	Market share of MTPL insurance	MTPL to GWP ratio	Number of MTPL contracts concluded	Market share of MTPL claims	Gross claims per contract (in 000 MKD)
Mean	5.4595	0.0907	0.5746	16478.11	0.0909	2.3878
Median	5.4406	0.0929	0.5884	16788.34	0.0861	2.2981
Maximum	7.8261	0.1486	0.9110	29756.17	0.2279	4.5089
Minimum	4.2787	0.0394	0.2333	5938.081	0.0215	0.9164
Std. Dev.	0.2905	0.0249	0.1751	4775.634	0.0328	0.6082
Skewness	1.3060	0.1326	0.1089	0.1715	1.0184	0.7184
Kurtosis	13.4008	2.3782	2.1710	2.5471	4.7325	3.6753
Observations	440	440	440	440	440	440

(Source: ISA reports on business performance in the insurance industry; Own calculations)

The common sample descriptive stats indicate the premium stability of the compulsory MTPL, which is till date a government regulated class of insurance in North Macedonia. A special tariff and bonus-malus system is employed and since it applies to all non-life insurance companies, significant differences in MTPL premium are unobservant. The average MTPL insurance premium per contract is found to be 5,459.5 MKD while the average MTPL gross claims per contract are 2,387.8 MKD for the period of interest. Even though a positive gap exists, the claims are more volatile with a standard deviation of 608.2 MKD, contrary to 290.5 MKD for the MTPL premium. On average, the insurance companies have 9.07% of market share in the national MTPL insurance with the highest concentration being 14.86%.

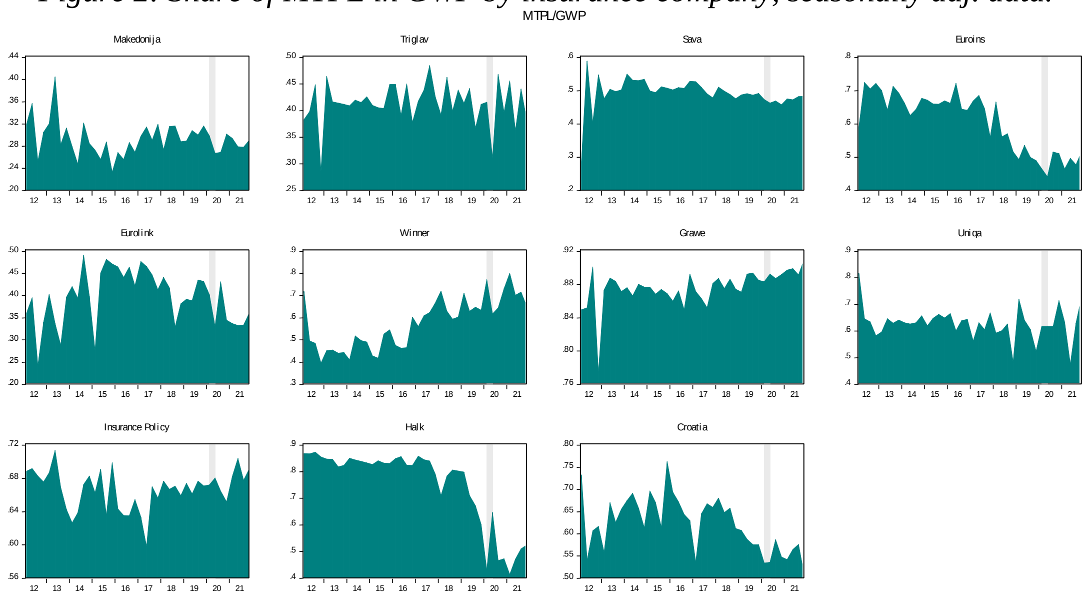
Figure 1: Kernel and normal distributions.



(Source: Own calculations)

The global practice implies that a high share of MTPL insurance in the total gross written premium is a typical characteristic of an underdeveloped insurance market. With an average share of 57.46% in GWP, the compulsory MTPL is the dominant class of insurance in the Macedonian market making it especially underdeveloped. The depicted kernel distributions are a nonparametric representation of the probability density function for each variable, which shows a significant non-normal distribution represented by a larger proportion of tailed outliers in the data. Such properties can be accounted to the different insurance strategies by the companies, as some are exclusively focused on MTPL insurance. The deseasonalized data for share of MTPL gross written premiums in total gross written premiums (GWP) are depicted in Graph 2 with clear disproportions observable between companies with opposing market strategies. The shaded area indicates the first two quarters of 2020 with the COVID-19 pandemic dramatically changing business operations in the following year. While companies such as Winner, Grawe and Insurance Policy increased the share of MTPL in total GWP (65%, 91.1% and 69.2%, respectively), a positive turn towards overall market development of other insurance classes is driven by Insurance Makedonija, Euroins, Eurolink, Halk and Croatia Insurance.

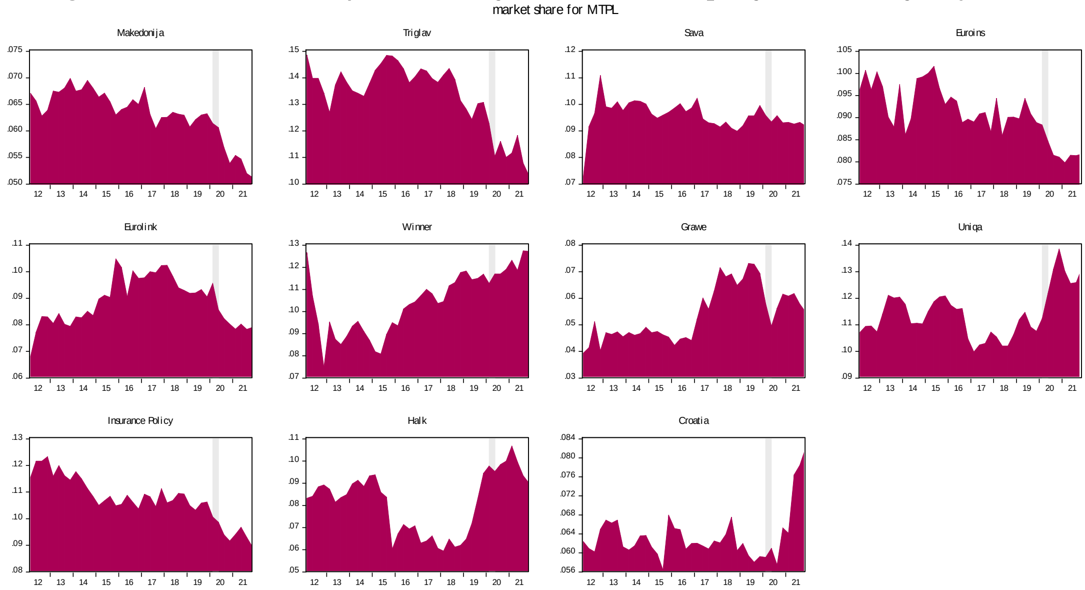
Figure 2: Share of MTPL in GWP by insurance company, seasonally adj. data.



(Source: Own calculations)

The concentration of the Macedonian MTPL insurance market is rapidly changing. For example, Triglav Insurance as former leaders in MTPL market share a decade ago significantly reduced their market share by 4.6 percentage points. Winner approximately returned to the 2011 market share of MTPL (12.7%), with the lowest state of 7.5% reached in 2012Q4. As insured individuals from companies such as Makedonija Insurance, Triglav and Eurolink faced strategy change of business operations of the insurers, they gradually increased the MTPL market shares of Winner, Uniqa and Croatia Insurance.

Figure 3: Market share for MTPL by insurance company, seasonally adj. data.



(Source: Own calculations)

The market structure and the regulatory principles employed for the case of compulsory motor third-party liability insurance in North Macedonia are clearly observable through the MTPL gross written premium and the number of MTPL contracts concluded. These two variables follow a remarkably similar dynamic which can be accounted to the government-set tariff system but a significant difference from this relationship is not expected soon or at least not until the full MTPL market liberalization is employed.

Figure 4: Gross written MTPL premium (left axis) and number of contracts concluded (right axis) by insurance company, seasonally adj. data.

(Source: Own calculations)

The volatility difference between the MTPL premium per contract and the MTPL claims per contract is presented in the following Figure 5. The administrative tariff system retains the average premium approximately at 5,500 MKD with minor fluctuations between underwriters. This can be accounted to the uncertainty nature of risks, as predicting the outcome and its moment of occurrence is relatively impossible. On contrary, GWP is easier to predict as it largely depends on the business activity of insurance companies. The correlation between the gross written premiums and claims is estimated at 0.36403, signaling a moderate but direct relationship.

Figure 5: Average GWP per contract (MTPL) & Gross claims paid per contract (MTPL), seasonally adj. data.

(Source: Own calculations)

Table 2: Covariance and correlation.

Covariance	MTPL per contract	Market share (MTPL)	MTPL/GWP ratio	Contracts	Market share (MTPL claims)	Claims per contract
MTPL per contract	0.08419					
Market share (MTPL)	0.00162	0.00062				
MTPL/GWP ratio	-0.01099	-0.00083	0.03057			
Contracts	121.807	105.377	-131.942	22754849		
Market share (MTPL claims)	0.00254	0.00063	-0.00133	103.5301	0.00107	
Claims per contract	0.06417	0.00005	-0.01544	-97.5237	0.01152	0.36903
Correlation						
MTPL per contract	1.00000					
Market share (MTPL)	0.22468***	1.00000				
MTPL/GWP ratio	-0.21653***	-0.19009***	1.00000			
Contracts	0.08801*	0.88982***	-0.15819***	1.00000		
Market share (MTPL claims)	0.26663***	0.7730***	-0.23286***	0.66220***	1.00000	
Claims per contract	0.36403***	0.00369	-0.14533***	-0.03365	0.57880***	1.00000

$^{***, **, *}$ *indicate 1%, 5%, and 10% significance, respectively.*

(Source: Own calculations)

3.2. Econometric approach

For establishing the econometric relationship between the variables of interest, we use the panel regression model with fixed effects as the most suitable estimation approach suggested by the Hausmann test presented in the following Table 3.

Table 3: Hausmann test.

H_0: *random effects model*			
H_1: *fixed effects model*			
Test Summary	χ^2 Statistic	χ^2 d.f.	Probability
Cross-section random	103.84740	7	0.0000

(Source: Own calculations)

The fixed effects panel regression can be depicted as

$$y_{i,t} = c_i + \beta_{1i}x_{1i,t} + \beta_{2i}x_{2i,t} + \cdots + \beta_{ki}x_{ki,t} + \varepsilon_{it} \tag{1}$$

where y is the dependent variable of interest for company i at time t, while x_k is the k-th number of independent variables. With β we denote the estimated slope coefficients and c_i is assumed to be the group-specific intercept in the panel regression. In line with classical linear regression models (CLRM), ε is a random error term, assumed to be white noise with $N\sim(0, \sigma_i^2)$ distribution. Additionally, if we momentarily omit the time subscripts for simplicity, we can obtain the following reduced form

$$Y_i = c_i + \mathrm{B_i}X_i + \varepsilon_i \tag{2}$$

in which Y is a $(n \times 1)$ vector of the dependent variable per insurer, B is a $(n \times n)$ matrix of slope coefficients, and X is a $(n \times 1)$ vector of independent variables included in the model. Due to the specific nature of the regression model, all variables except the dependent variable are considered exogenous. The proposed econometric model does not include dummy variables and is modeled entirely on seasonally adjusted data.

By using a panel regression model, we avoid the problem of losing too many degrees of freedom and support the goodness-of-fit of the model, since we use quarterly data (40 quarters between 2012Q1 and 2021Q4 to be exact) and estimate a total of 8 coefficients (including the group-specific intercept and the lagged regressors). Alongside the 11 cross-sections (insurance companies), a total of 429 balanced panel observations are reached. The modeled structure in this research has the following form

$$\begin{aligned}\left(\frac{MTPL}{c}\right)_{i,t} = \mu_i + \beta_{1i}\left(\frac{MTPL}{GWP}\right)_{i,t} + \beta_{2i}\left(\frac{CL}{c}\right)_{i,t} + \beta_{3i}\left(\frac{CL}{c}\right)_{i,t-1} + \beta_{4i}c_{i,t-1} \\ + \beta_{5i}\left(\frac{MTPL}{c}\right)_{i,t-1} + \beta_{6i}\left(\frac{MTPL_i}{MTPL_{market}}\right)_t + \beta_{7i}\left(\frac{CL_i}{CL_{market}}\right)_t + \varepsilon_{it}\end{aligned} \tag{3}$$

in which $MTPL$ is the motor third party liability insurance premium, c is the number of MTPL contracts concluded, GWP is the total gross written premium, CL is the MTPL gross claims concluded (liquidated), while $MTPL_{market}$ and CL_{market} are the total market MTPL premium and total market MTPL claims concluded, respectively.

4. RESULTS AND DISCUSSION

Due to the government's mandatory pricing scheme, little variations between firms can be seen in their gross MTPL premium per contract. The existing tariff risk categorization (based on motor power, age, prior insured risk occurrences leading to the bonus-malus system, etc.) and the characteristics of the new insured customers in each company are the only idiosyncratic factors contributing to the variances at this time.

Table 4: Modelling estimates.

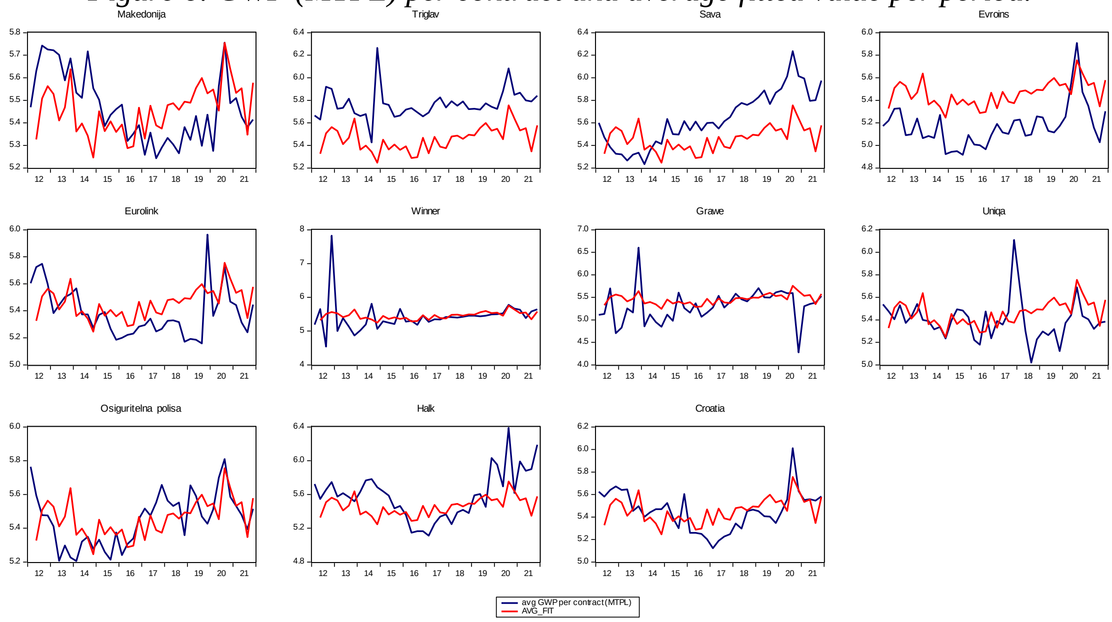
	Model 1		Model 2		Model 3	
	Coefficient	*St. Error*	*Coefficient*	*St. Error*	*Coefficient*	*St. Error*
Group-specific const.	4.5814***	0.3098	4.3077***	0.2984	3.8223***	0.25889
MTPL/GWP ratio	-0.5402***	0.1676	-0.5268***	0.1598	-0.4994***	0.14068
Claims per contr.			0.1462***	0.0225	0.5733***	0.03970
Claims per contr. (-1)	-0.0583***	0.0223	-0.1113***	0.0228	-0.0744***	0.01982
Contracts (-1)	0.0000**	0.0000	0.0000***	0.0000	0.00000	0.00000
MTPL per contr. (-1)	0.2095***	0.0490	0.2162***	0.0467	0.1030**	0.04246
Market share (MTPL)					16.0170***	1.73908
Market share (claims)					-14.6442***	1.19863
R^2	0.3442		0.4049		0.5652	
Adjusted R^2	0.3220		0.3833		0.5472	
F - statistic	15.5171		18.7343		31.4245	
Prob. (F - statistic)	0.0000		0.0000		0.0000	
DW statistic	2.1420		2.1554		1.8714	

***, **, * *indicate 1%, 5%, and 10% significance, respectively.*

(Source: Own calculations)

We used a threefold approach in the modelling, by subsequently adding explanatory variables. The adjusted coefficients of determination show that 32.2%, 38.33%, and 54.72% of the total variation in the MTPL premiums per contract is explained by the first, second, and third model, respectively. The data used are in thousands and percentages, depending on the variable of interest. It is noted that a greater MTPL to GWP ratio lowers the MTPL premium by approximately 500 MKD (526.8 MKD in the second and 540.2 MKD in the first model. The nominal value of claims per MTPL contract has a positive contemporaneous connection, even if it is sign inconsistent with its lagged value; with a 1000 MKD increase in claims per contract increasing the premium by 573 MKD on average, *ceteris paribus*. If we take into consideration the impact of the number of claims per contract from the prior quarter, we discover an inverse connection. The client's mood and views of a firm facing increased claims, together with the number of claims resolved has a significant importance in their decision for buying MTPL insurance from the specific insurer, with a decline of 74.4 MKD on average for the MTPL premium per contract for a 1000 MKD rise in claims, on average. The largest impact is observed in the second model, with the impact waged at 111.3 MKD. It has been found that the influence of the number of contracts signed is minimal and statistically negligible in the last model, even though a significant estimate is obtained in the first two. The dependent variable's lagged value appears to be a substantial predictor of its present value, with growing MTPL premium per contract in the prior period resulting in an average increase in MTPL premium per contract of 103 MKD today. This might be caused by a variety of circumstances, but if the insurance provider adopts an active marketing approach for MTPL insurance, this should attract more new customers and increase the proportion of higher-risk contracts covered by the tariff system. As a result, their insurance contract premium will be greater. As might be predicted, a larger MTPL market share result in a higher MTPL premium per contract. For an average and ceteris paribus 10% greater market share, the accumulation of new and current clients in the hazardous portfolio of an insurance underwriter results in an increase in premium per contract by 1,601.7 MKD. The market share for MTPL claims, on the other hand, exhibits an inverse and substantial connection when the same reasoning is used. This is mainly because customers feel there is an inadequate operations and risk assessment (even if there is a tariff system existing), which is based on their views of the company's reputation.

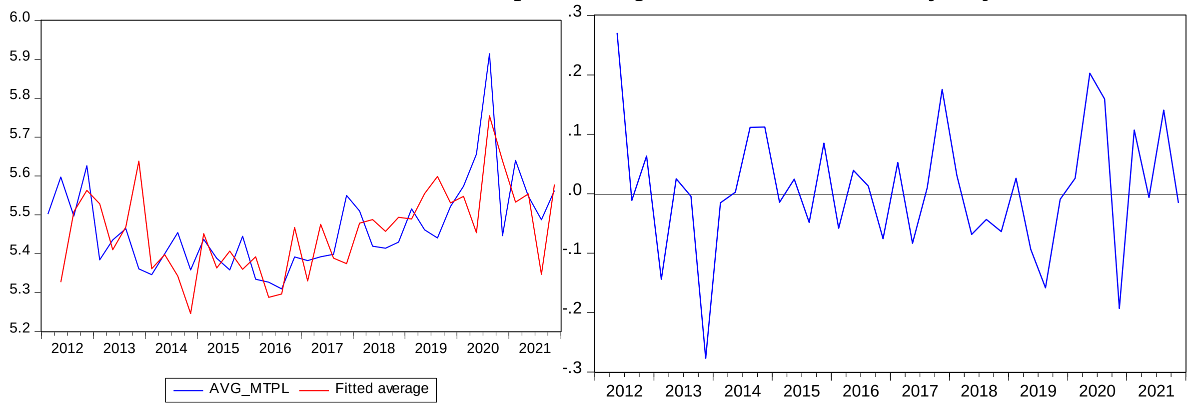
Figure 6: GWP (MTPL) per contract and average fitted value per period.



(Source: Own calculations)

Figure 6 portrays the MTPL premium per contract and the model fitted value for each period observed. This shows how each insurance company stands in relation to the econometric relationship built, noting any larger discrepancies that may indicate larger/lower premium than empirically expected. Larger premiums are notable for Triglav, Sava, as well as Halk Insurance which experiences growing levels in the recent two years. Undervalued premiums can be noted in the cases of Insurance Makedonija, Euroins, Eurolink and Uniqa. It may be expected that on the long run, premiums should converge to their empirical fitted level. Similar inspection can be made in terms of the average market MTPL premium. On average, the market premium of the MTPL insurance is lower than the fitted value, even though a similar dynamic is observed. This may indicate that insurers deliberately avoid greater premium rising, retaining market position.

Figure 7: Fitted values of average MTPL insurance premium per contract and average market MTPL insurance premium per contract, seasonally adj.

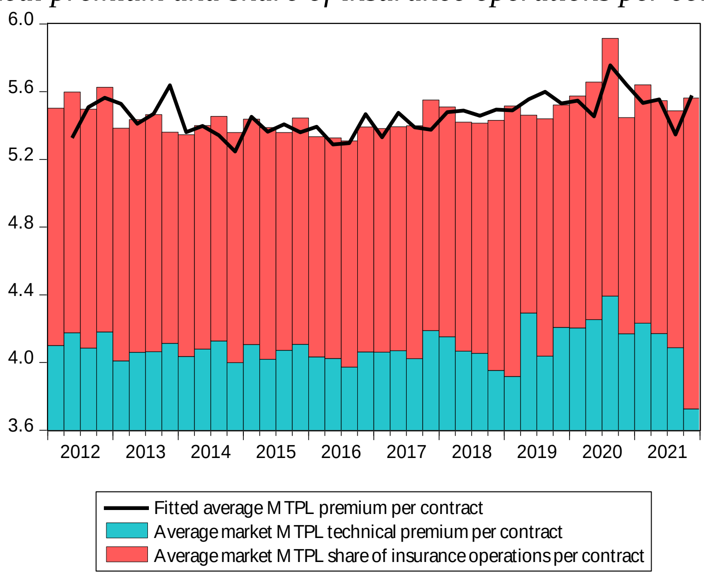


(Source: Own calculations)

On average, technical premiums share in total gross written premium (MTPL) wages between 75 and 70% per contract, with the rest accounting to the share of costs for insurance operations. A notable increase in the share of insurance operations (while the average MTPL

GWP changed inconsiderably) is found in the last quarter of 2021. The continuous proportions may be under serious impact in a setting of a liberalized market. In an event of a higher competitiveness, market premiums are expected to decrease. However, risk cannot be artificially de-valued, so technical premiums should not experience larger changes. As a result, insurance companies would have to dramatically lower the cost of insurance operations, optimizing business complexity and lowering agent provisions. Moreover, a potential operational risk may rise for certain companies with undiversified insurance portfolios. The choice is clear – either lower premiums to remain competitive and risk larger and more frequent claims, risking insolvency, or lose market positioning. We believe that with the introduction of a liberalized market some preexisting foundations may be severed and even though a 'market clearance' is healthy it may prove to be distortion inhibitor without a proper foundation. Appropriate risk valuation though big data analytics and actuarial models is necessary as well as a responsible and timed decisions made by the national supervisors and regulators. The study, however, faces certain limitations. Because it is carried out within a government-regulated system of mandatory insurance the proposed model should not be taken without corrections in a liberalized setting. The correlations between these factors may be disrupted by a conceivable future liberalization since insurance firms' unfettered pricing setting would be primarily influenced by a new approach to risk assessment and corporate strategy. Macroeconomic factors should also have a significant impact on the whole model because they are known to have an impact on business cycles, pricing (particularly fossil fuel costs, which are closely tied to the frequency of driving automobiles), and the disposable income of economic agents.

Figure 8: Fitted values of average MTPL insurance premium per contract and average MTPL technical premium and share of insurance operations per contract.



(Source: Own calculations)

5. CONCLUSION

Focusing on the dominant insurance class in North Macedonia is of key importance for future unfolding trends. The study contributes to the global empirical literature, studying the case of an underdeveloped Western Balkan insurance market. The results of the econometric research proved that the microeconomic factors significantly influence MTPL premium in the Macedonian insurance market. The frequency of claims per contract, one-period delayed

MTPL premium per contract (which reflects both the strategy of the insurance business and how the customer perceives their activities), and MTPL concentration of the market all show favorable effects. One period lagged claims per contract (to account for both the insurance company's and the client's next period decisions) and the market concentration of MTPL claims are shown to have a negative impact on the overall GWP share of MTPL insurance for each firm. Such elements, as well as the general market policies of regulators and supervisors, should be considered for future commercial actions. Specific attention by the ISA should be paid on the settlement of claims since the occurrence of a claim plays a significant role in determining intermarket customer fluctuations between companies. Liberalizing the MTPL insurance market in North Macedonia should be made with caution, as the share of insurance operations in premiums remain substantially high. Greater competition would significantly reduce premiums, meaning that insurance companies would have to optimize the share of insurance operations in the gross premiums paid by customers. Three out of eleven insurance companies have shares of MTPL insurance in their total portfolio above 70%, making them highly dependent on the present regulated price. Market liberalization will consequently reduce their GWP substantially and put significant amount of pressure in reduce the operational costs (predominantly agent and brokerage provisions). In an instance, the most severe cases of MTPL market liberalization often mentioned are Greece, Bulgaria, and Romania which experienced significant market disruptions (such as large numbers of insurance companies going bankrupt or being subject to excessive mergers or acquisitions) due to extremely low premiums and the lack of insurance discipline. On contrary, positive cases in Western European economies, Austria, Hungary, and Slovenia resulted in sustainable competition, better risk selection and premium differentiation among clients. Besides determining the right moment for full liberalization of the market, the national supervisor should consider the acquisition of more precise and big data, which might lay the groundwork for a better MTPL insurance risk assessment. Therefore, sound policies should be introduced by the national regulators, having in mind the broad public interest.

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THE IMPACT OF THE INVESTMENT IN EMPLOYEE TRAINING ON THE PROFIT OF SMALL COMPANIES

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ABSTRACT
In order to survive in the market, managers need to be constantly looking for the best solution that will enable them to survive in the dynamic business environment they face in their daily lives. Today, human resource management is not just hiring and firing people, administering salaries, designing and implementing benefit programs, and implementing the strategic intentions of top management, but also plays an active role in formulating business strategies (Khanka, 2003). This paper focuses on the review of small business literature and the importance of training and productivity development of employees in the small business sector. The structure and program of employee training and development will also be reviewed so that we can finally draw conclusions about how this affects employee performance. Today's global economy is having a major impact on the difficulty of staying competitive and making a profit. Whether it is a company that offers customers a tangible, in fact physical product or a company that offers any service, a trained employee will be much more successful in selling that product, that an employee who has little or no knowledge of it, or no sales knowledge. The training focuses on making employee development activities for their current jobs and the development prepares employees for future roles and responsibilities. Organizations that invest in effective training and human resource development tend to achieve both short-term and long-term benefits. Given previous research on the interference of employee training in the operational process of companies, the purpose of this paper is to continue the study and clarify how companies that invest in employee training should apply, formalize and implement managerial functions in the desired workforce, and at the same time to have a successful functioning.

Keywords: *Management, Small business, Human resources, Training, Job satisfaction, Job performance, Profitability*

JEL classification: J240, J280, M540

1. INTRODUCTION

According to European Commission, small and medium-sized enterprises (SMEs) are the backbone of Europe's economy. They represent 99% of all businesses in the EU. They employ around 100 million people, account for more than half of Europe's GDP and play a key role in adding value in every sector of the economy. The Small and Medium Sized Enterprises (hereinafter: SME) sector is the engine of growth and development in any

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economy, it creates healthy competition, it is a source of innovation, knowledge and entrepreneurial human resources, it is important during common economic conditions, but it is even more important at the time of crisis (Debarliev S. & Iliev-J. A., 2015). In order to meet the ever changing customer needs, as well as staying competitive on the market, companies must invest in one of their most valuable assets, the employees. According to several studies regarding the subject of training and development of employees, the ultimate conclusion is that companies should deal in a very specific way with training needs so that they can give the opportunity to the employees to constantly upgrade their skills and knowledge as well as to improve work-related capabilities. The most important role of training and development is to upgrade the employees' skills and abilities for ongoing and future tasks and responsibilities.

It is very important for company managers to understand that having a well trained and skilled staff is one of the most important things to keep their business alive. In our country, employee training, especially regarding small businesses, is still something not very much used and practiced. We must agree that employee training and development is a financially expensive process, and that's the reason why most of our locally based companies can't afford to do it, or at least not doing it in a proper way. Unqualified staff with limited knowledge or no knowledge at all can bring more harm to the employer and the company, than good. Mistakes done through the working process can affect directly the quality of services and selling. Training and development is about managing and empowering people, the vital assets of any business or firm. (Salah, 2016).

The main objective of this paper is to understand weather employee training and development has impact on their job performance, job satisfaction and companies profitability overall.

According to Salah (2016), on-the-job methods of training are highly recommended to organizations. These methods ensure that there is no loss of man hours, such as in the case with off-the-job trainings where employees must travel out of the country or out of station to attend a training and development program. Training has been an important variable in increasing organizational productivity. Most of researches, showed that training is a fundamental and effectual instrument in success full accomplishment of the firm's goals and objectives, resulting in higher performance and productivity of the organization. (Bhat Z.H., 2013).

2. LITERATURE REVIEW

Small business management, is the ongoing process of owning and operating an established business (Hatten, 2012). Small businesses are privately owned corporations, partnerships, or sole proprietorships that have fewer employees and/or less annual revenue than a regular-sized business or corporation (Burton, 2017). A definition of a small business must have three criteria. First, it must be measurable and observable. For example, a definition predicated on the type of management structure would be unacceptable as this attribute is very difficult to measure. The second criterion is that any definition of a small business must be congruent with the perceptions of the market system. The third criterion is that any definition of a small business must be meaningful (Osteryoung and Newman, 1993). Small enterprises are defined as enterprises that employ fewer than 50 persons and whose annual turnover or annual balance sheet total does not exceed EUR 10 million (European Union, 2020). Small businesses usually do not take into account the future demand and needs for the specific profiles of employees. In other words, small businesses usually do not perform timely planning of human resources. Although many small businesses create a business plan, this document most often does not include a component of human resources, which means that

the business plan of small businesses does not carry out correctly the assessment of the required number and competence of employees in the future (Petković and Poljasevic, 2015). Training is the use of systematic and planned instruction activities to promote learning. The approach can be summarized in the phrase ‘learner- based training’. It is one of several responses an organization can undertake to promote learning (Armstrong and Taylor, 2014). The Oxford English Dictionary definition of training defines it as a practical education in any profession, art or craft. General training is distinguished by its applicability to many employers. Specific training is defined as the acquisition of a skill valuable to one employer only. An example would be induction training which is unique to the particular company and does not have transfer value (Garavan, 1997). Whereas some employees might wish to stay in their existing job and find satisfaction through the enhancement of their job specific skills, others define successful development as promotion and increased pay (McDowall and Saunders, (2010). There are four approaches used for employee development. These approaches are: Education, assessment, Job experiences and behaviors that are strengthened by each development method. (Sheikha N.A.A. and Khrawis H. A., 2008).
According to a research by O'Regan et. al., (2014), a ‘training and knowledge’ culture certainly impacts on productivity whilst, at the same time, encouraging creativity, where ‘being creative’ can certainly become the fuel of the future. After all, it is the combination of an employee’s capabilities and efforts that would enhance the undertaking of business activities (O'Regan, Stainer and Sims, 2010). In a perfect world with no financial impediments or time constraints, all employees would receive as much training and professional development as they could consume. In the real world, however, the ‘needs’ of the employer, as opposed to the ‘wants’ of the employee, drive these kinds of training programs (Walters M.L. & Griffin W., 2013). A study by Schmidt (2014), confirms that employees value training and deem it a necessary part of the job. Organizations that offer effective job training may find they have better trained and more satisfied employees (Schmidt, 2014). According to Schmidt findings, job training satisfaction was not only highly correlated with job satisfaction but also significantly related to the time spent in training, training methodology, and content (Huang, 2020). A study of nurses in the United Kingdom found that dissatisfaction with promotion and training opportunities had a stronger impact on job satisfaction than dissatisfaction with workload or pay (Schmidt, 2010). According to a research by Sheikha and Khrawish (2008), employee development has an important role in increasing productivity and profitability because the employee development is a necessary component of a company’s efforts to improve quality. The organization ensures a better quality of work life (QWT - quality of work life) and gives better training to employees to get efficient and effective results in the form of growth and profitability for the organization (Yadav, R., et.al, 2019).

2. FORMULATION OF HYPOTHESIS

In view of this research, we have formulated the following hypotheses:
Hypothesis 1*: Companies that invest in employees’ training will have better results in terms of employees’ satisfaction and performance than those with lower training and development investments*
Hypothesis 2*: Companies that invest in employees’ training will have better results in terms of profitability than those with lower training and development investments.*

3. METHODS OF ANALYZING DATA AND TESTING HYPOTHESES

In our research we have analyzed those studies that examine the effect and returns of employee training in companies' profitability and employees' satisfaction and performance. More precisely, three studies have been taken in consideration as point of view for our research, Schmidt, (2004), Al-Saudi et.al (2016), and Spasova E., (2018).

For our survey we have done an empirical analysis. As the basis of this research, a survey questionnaire was constructed for a period of about 3 weeks. The questioner was formulated based on a similar questioner used by Schmidt (2004) for the "*The Job Training and Job Satisfaction Survey* ".Our survey uses a six point Likert scale. Respondents are asked to rank the degree to which they agree or disagree with the statement posed. The questionnaire was fulfilled online. The hypotheses formulated, were tested using data obtained from a questionnaire distributed to 150 employees in different companies in North Macedonia. We collected the responses within a period of one month. A total of 85 questionnaires were valid. The data has been analyzed according to the SPSS computerized statistical program in order to find out Spearman Correlation. This will be needed for identifying the relationships between independent and dependent variables in order to determine the independent variables affecting the dependent variables.

Our questioner is mainly focused in job satisfaction and performance, whereas data about influence of the training and development on the profitability of the companies is taken as a secondary data from a previous research realized by Spasova E. (2018).

4. DISCUSSION

4.1. Correlation between training and development and job satisfaction

Regarding the **Hypothesis 1,** before giving conclusions about our survey, we will give some explanations about the two studies have been taken in consideration about job satisfaction as point of view for our research.

"The Job Training and Job Satisfaction Survey" by Schmidt (2014), can be used to measure employee attitudes and beliefs about on-the-job training and overall job satisfaction. It can also measure the relationship between satisfaction with on-the-job training and overall job satisfaction. It can be used in all workplaces. The Survey consists of 43 statements regarding various aspects of the job followed by a series of demographic questions about the on-the-job training employees receive. In summary about job satisfaction, opportunities and rewards include satisfaction with pay, pay raises, promotion opportunities and rewards given for good performance. There are twelve items on the instrument relating to this construct. Satisfaction with supervision examines employees' feelings about his/her immediate supervisor. This construct is measured using four items. The instrument also includes four items measuring each of the following constructs: satisfaction with fringe benefits, satisfaction with coworkers, and satisfaction with the nature of the work performed by the employee. Satisfaction with operating conditions, including rules and procedures, is also measured using four items. The Job Training facets of this survey measure employee satisfaction with on-the-job training. In this part is measured organizational support for training, employee feelings about training, and employee satisfaction with training. Additionally, the survey contains five questions regarding training methodology, training content, and time spent in training. Schmidt's survey uses a six point Likert scale. Respondents are asked to rank the degree to which they agree or disagree with the statement posed.

Regarding the second survey taken in consideration by Al-Saudi et.al (2016), the study population consists of 100 officers working in the Department of Lands and Survey / center of the circle (Public Legislators). The sample was given 100 questionnaires to fill. The final total of questionnaires subjected for the study was 83. The study focused on trainees who were enrolled in training courses in a specific period of time is two years. The question that needed to be answered in this survey was “Does training have an effect on the development and the performance of employees in the department of Lands and Survey?”. Study objectives of the survey were identifying the effect of training on job stability and employee loyalty, clarifying the impact of training on employee attitude and behavior, and statement as to whether the return on investment in training is higher than the budget spent on training. After processing the data received from the questioner, these are the conclusions that can be summarized as follows:

1. Giving employees the opportunity to apply what they learned in training courses improves performance.
2. There is a strong desire among staff to apply what they have learned during the training.
3. Employees feel after training that they have more ability to be creative with their expressions as well as come up with new ideas solve their work problems.
4. The majority of staff feels that they make fewer mistakes, at work, after returning from training.
5. The majority of employees feel that training programmers lead to improvements in their attitudes, behaviors and skills.
6. The majority of employees feel that training programs contribute to improving the overall climate for employment service and create a positive relationship between the service and its staff and help to develop a spirit of cooperation and coordination among them.

Variables

Hypothesis 1
Independent variable: On the job training
Indicators: Respondents' statements
Dependent variable: Usage of OTJ training.

Independent variable: Training opportunities
Indicators: Respondents' statements
Dependent variable: Satisfaction in salary upgrade

Independent variable: Planned learning.
Indicators: Respondents' statements
Dependent variable: High satisfaction in promotion.

Correlations

			On the job training	Usage of OTJ training
Spearman's rho	On the job training	Correlation Coefficient	1,000	,578**
		Sig. (2-tailed)	.	,000
		N	80	80
	Usage of OTJ training	Correlation Coefficient	,578**	1,000
		Sig. (2-tailed)	,000	.
		N	80	80

**. Correlation is significant at the 0.01 level (2-tailed).

There is a positive correlation between On the job training and usage of OTJ training. As the OTJ training level rises, so does the level of usage of the OTJ knowledge goes up. Employees taking part in OTJ training are more self-confident about their performance after completing the training, so that reflects on the usage of the same skills learned.

Correlations

			Training opportunities	Satisfaction in salary upgrade
Spearman's rho	Training opportunities	Correlation Coefficient	1,000	,544**
		Sig. (2-tailed)	.	,000
		N	80	80
	Satisfaction in salary upgrade	Correlation Coefficient	,544**	1,000
		Sig. (2-tailed)	,000	.
		N	80	80

**. Correlation is significant at the 0.01 level (2-tailed).

There is a significant correlation between training opportunities and satisfaction in salary upgrade. Therefore, with increasing opportunities for training, the satisfaction level for salary upgrade rises as well. Well trained employees are a very strong asset for a company, so when a company invests in training and developing its human resources, it automatically reflects on their job performance in a positive way. Taking this in consideration, it is well expected that performers with higher level of working knowledge, have higher chances for getting a salary increase.

Correlations

			Planned learning	High satisfaction in promotion
Spearman's rho	Planned learning	Correlation Coefficient	1,000	,407**
		Sig. (2-tailed)	.	,000
		N	80	80
	High satisfaction in promotion	Correlation Coefficient	,407**	1,000
		Sig. (2-tailed)	,000	.
		N	80	80

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation between planned learning and satisfaction in promotion is a positive one, letting us know that in a working environment where there is planned training and development there is a higher level of satisfaction in promotion. Employees with higher level of knowledge about their job, have higher chances of getting a promotion.

4.2. Correlation between training and development and organizational profitability

Hypothesis H2, which says that "*Companies that invest in employees' training will have better results in terms of profitability than those with lower training and development investments",* is verified taking in consideration collected data from the author Spasova E. (2018). In order to prove her hypotheses, the author uses a survey questionnaire of 26 questions. In the empirical part of the research, the author used a survey method - a procedure that, based on a survey questionnaire, will investigate and collect data, attitudes, information and opinions about the subject of research and content analysis. There has been used as well the interview method - the managers were interviewed and their views regarding the subject of research were analyzed. Her research went through 3 phases. First of all, finding organizations that have human resources department, ensuring consent from responsible staff from the organizations for conducting the survey, preparing the questionnaires and ensuring a sufficient number of them for conducting the survey (1 week). Secondary phase was realization of the research: implementation of the survey (15 days), and final phase was analysis of the results of completed survey questionnaires (4 weeks). According to the collected and analyzed data by Spasova E. (2018), these are the conclusion regarding the impact of employee training and development on the company's profitability.

1. Respondents believe that inadequate employee training has a negative effect on the organization (75% gave a positive answer) and that the lack of properly qualified workers leads to a decrease in organizational growth (75% gave a positive answer).
2. Appropriate training and development of employees results in a high rate of performance that results in organizational growth, the largest number of employees agree (73% gave a positive answer).
3. Poor performance of workers is the result of inadequate orientation by the organization (60% gave a positive answer), and their inadequate development has a negative impact on organizational competitiveness (63% gave a positive answer).
4. Appropriate trainings contribute to the reduction of production costs by reducing waste (70% gave a positive answer) and by minimizing the cases of work accidents (79% gave a positive answer), but they also contribute to reducing the abandonment of the organization, and therefore reducing costs for new hires (72% gave a positive answer).

At the end of her research she states that, training has an impact on the organization as a whole and its advantages are reflected in the improvement of organizational performance: profitability, efficiency, productivity, cost reduction, improvement of quality and quantity, reduction of employee turnover and so on.

5. FUTURE RESEARCH

In our country, there are not enough studies regarding how the training of employees affects their performance and the well-being of the company in general. Considering the fact that the data regarding the impact of training on the company's profitability are taken as secondary data from previous studies, our future focus will be on structuring a research based largely on how employee training affects the profitability of the company. The main idea is that in the future a questionnaire will be compiled which will be distributed only to the managers of the companies that are directly connected with the company's financial income, so that we can receive the most accurate data regarding this part.

6. CONCLUSION

Both of research hypotheses are verified and supported. The first hypothesis which says that *"Companies that invest in employees' training will have better results in terms of employees' satisfaction and performance than those with lower training and development investments"* is supported taking in consideration the results from correlation of the variables explained above.

The second hypothesis which says that "*Companies that invest in employees' training will have better results in terms of profitability than those with lower training and development investments"* is supported as well, taking in consideration the previous research done by Spasova E. (2016).

We came to the conclusion that employee training and education is one of the key methods for a successful operation of a company. The training should be designed in such a way that the need for training should be identified primarily, which employee needs training and what training method should be implemented, depending on the needs. It has been unequivocally proven that, a company with properly trained staff in terms of customer behavior, customer service, the way that the company sells its products/services, as well as other aspects that directly affect customers, will have a much higher success in attracting new customers and retaining existing ones. Based on the literature reviewed for this paper, the main conclusion is that employee training and development are very important factors that influence the overall well-being of a company. There is no doubt that a well-programmed training program for new, as well as existing employees, will have positive effects on the performance of employees, and consequently on the success of the company. Apart from the financial benefits, companies with various programs for training and development of employees, as well as their support, will also have benefits in retaining the most valued resource for work, actually the human resource, while remaining competitive in the market with strong human capital. Apart from the organization, employee trainings have a positive contribution for the employees themselves. The training gives them the opportunity to perfect themselves in what they do, and precisely because of this employees do their work with great pleasure in a totally independent way, which results in keeping their jobs. Without specialized training programs, employees would not be able to use their full potential to complete their activities. By investing in employee training, they are helped to become more professional, more productive and more motivated in the workplace. Training is very important for any organization. There is no doubt that any investment in employee training and development is worthwhile and has a huge positive impact on the organization, whether it is a small, medium or large organization. Both methods of training, on-the-job or off-the-job have their own contributions to the improvement of employees.

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CSR REPORTING DURING THE COVID-19 PANDEMIC: A COMMON WAY TO DISCLOSE NEW SOCIAL AND ECONOMIC CHALLENGES

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ABSTRACT
The COVID-19 pandemic caused numerous socio-economic problems in addition to health consequences. Namely, during the pandemic, many companies suspended their operations, and trade was also disrupted in most industrial sectors. Furthermore, a number of existing assumptions, concepts and practices of corporate social responsibility (CSR) and sustainability were clearly questioned in this period. In this difficult context, companies are called upon to contribute to overcome the crisis with their socially responsible business and make a positive contribution to society. CSR disclosure plays an important role in informing socially responsible investors and other interested stakeholders about the challenges faced by companies in terms of CSR during the pandemic, as well as the CSR activities undertaken during this period. Keeping this in mind, the aim of the conducted research is to examine whether the COVID-19 pandemic affected the level of disclosure, as well as the change in CSR disclosure priorities among companies operating on two Southeast European frontier markets – Republic of Serbia and North Macedonia, through a comparative review of CSR reporting practices, in accordance with the GRI framework. The research includes 37 companies included in the structure of the BELEXline and MBI10 indices in the period before (2014-2019) and during the COVID-19 pandemic (2020-2021). Judging from the Economic and Social Disclosure Index structure and value trends, the findings indicate that: 1) the COVID-19 pandemic did not negatively affect the level of CSR disclosure, 2) social issues of sustainability were given priority in reporting, especially issues related to finding an alternative to layoffs, worker protection and safety at work. In this way, companies proactively interacted with stakeholders by disclosing additional CSR information focused on the existing social and economic challenges and their sustainability achievements during the pandemic period.

Keywords: *COVID-19 pandemic, corporate social responsibility, CSR reporting*

JEL classification: *M14, M41, G30*

1. INTRODUCTION

The world has changed dramatically since the emergence of the COVID-19 pandemic. The pandemic swiftly and harshly affected people's lives and economies around the world, forcing

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businesses and governments to quickly make necessary and difficult decisions to balance risks to individual health and economic health (Manuel and Herron, 2020). This period caused an unprecedented financial shock to global economies that led to a number of disruptions such as reduced labor supply due to the spread of infectious disease, reduced productivity, layoffs, lost income due to illness, disruptions in supply chains due to lockdowns, reduced household consumption and reduced investment of the businesses (Carroll, 2021). On societal level, it seems that no one was prepared for a large-scale of outbreak, with societies today more open than ever, and relying on importing of important products, such as food, energy, and medical equipment (Donthu and Gustafsson, 2020). The crisis is characterized by sudden shocks both on the side of aggregate supply and aggregate demand. The main trigger for negative repercussions was caused by global measures aimed at preventing the spread of the virus, which involved the temporary suspension or limited operation of certain activities. Accordingly, the impact of the pandemic on industries worldwide is large and highly asymmetric.

Namely, this extremely difficult period contributed to the suspension of operations of many companies, especially in the field of tourism and hospitality, and there was also trade disruption in most industrial sectors. The companies have been more focused on issues such as workforce, occupational health and safety, the supply chain, consumer demand, sales, and cash flow. One of the few companies that experienced growth in this period are those whose services were available online. In addition to the suspension of operations, the negative impact of the pandemic on companies was also manifested in the form of a drop in income, disruption of working capital and cash flow. Companies could not fully rely on governments for subsidies and aid that were also at a loss as to how to overcome the numerous problems caused by COVID-19 (Didier et al., 2021).

Alongside with significant disruptions and limitations in the operations of business entities, COVID-19 pandemic generated room for giving priority to social responsibility and intensifying the development of long-term sustainable business practices. Pandemic influenced companies to change their priorities regarding the dimensions of corporate social responsibility and sustainability (reorientation from the environmental towards social and economic dimension), and consequently the way companies report on their sustainability practices.

The contribution of the research is reflected in the fact that, to the authors' best knowledge, this is the first study that provides a comparative overview of CSR reporting practices in the period before and during the pandemic in two Southeast Europe frontier markets. Also, the results of this research shed light on the CSR of companies listed on the Belgrade and Macedonian Stock Exchanges in response to the pandemic and inform stakeholders about managerial disclosure decisions during a crisis.

The paper is organized as follows: the impact of the COVID-19 pandemic on CSR is reviewed in Section 2. Section 3 discusses CSR disclosure during the pandemic period. Next, Section 4 describes the dataset, research method and also discusses the research findings. The last section concludes the paper.

2. THE IMPACT OF COVID-19 PANDEMIC ON CORPORATE SOCIAL RESPONSIBILITY (CSR)

With the onset of the COVID-19, a wave of the studies on the consequences of pandemic for sustainability and CSR has emerged. The pandemic has caused changes in the way companies perceive their sustainability goals, as well in the way of balancing between the long-term sustainability of companies' operations and their profitability (García-Sánchez and García-Sánchez, 2020). It was expected that companies' CSR would be put to the test and that their

long-term CSR investments might be reduced as a result of a lack of resources (He and Harris, 2020). Consequently, during the pandemic period, the managers of certain companies focused primarily on short-term profit realization due to the increasing pressure to survive (Meirun et al., 2022), which resulted in them devoting less to socially responsible and sustainable business considering that CSR in this period could represent an unacceptable „luxury“ (He and Harris, 2020).
Contrary to this understanding, Singer (2020) points out that companies with strong sustainability initiatives serve as a reminder that commitment to sustainability issues is not a „luxury“ that companies can afford only in periods without crisis, since the companies that have invested in sustainability and socially responsible business managed better in the period of crisis and overcame it more easily. A similar conclusion was reached by Norton (2020), who followed the movement of the value of shares of companies with different ESG profiles, where the research results showed that it was companies with a better ESG profile, i.e. a higher degree of sustainability, had a smaller decline in the value of shares during the pandemic period compared to companies with a lower sustainability score.
Ursic and Smogavc Cestar (2022) state that at the outbreak of the pandemic in March 2020, the concept of CSR provided a theoretical and applied framework that considered finding fundamental responses to the social aspects of crisis action in business operations. Faced with increased pressure from the community, companies were actually called upon to adhere to the concept of CSR in their operations, as well as to adapt their CSR policies to the new pandemic context. In this sense, they were expected to take initiatives not only in favor of their employees and consumers, but also a wide range of philanthropic activities in support of the entire community and society in general (Raimo et al., 2021). He and Harris (2020) believe that the pandemic, which caused numerous health, social and economic consequences, provided the opportunity for companies to direct themselves towards more authentic CSR and provide their contribution to solving urgent global social issues.
Some authors also investigated whether the pandemic influenced companies to change their priorities regarding the dimensions of CSR and sustainability. So for example, Zhang et al. (2022) in their research have come to the conclusion that during the COVID-19 pandemic there is a change in priorities, whereby the social dimension of sustainability is highlighted as a priority. Within this dimension, the occupational health and safety plan, as well as engagement in philanthropic activities, are highlighted in the short term, while in the long term, the creation of new jobs is also mentioned in addition to the previously mentioned priorities. Barreiro-Gen et al. (2020) in their study on a sample of 635 organizations also have come to the same conclusion that in the pandemic period there is a greater focus on the social dimension of sustainability, while at the same time the importance of environmental dimension decreased. García-Sánchez and García-Sánchez (2020) concluded in their empirical research that during COVID-19, the economic dimension of sustainability was the most important for some large companies in Spain. Carroll (2021) pointed out that the economic responsibility of companies became highlighted during the pandemic, considering that in this period, the financial sustainability of a company was a much broader concept than just making profit for owners and that was primarily interrelated with continuing to provide the goods, services and jobs that
CSR and the COVID-19 pandemic consumers and employees need.

3. CSR REPORTING DURING COVID-19 PANDEMIC

A corporate social responsibility (CSR) report, or a sustainability report is usually an annual report published by companies with the goal of publicly reporting the impact of economic, environmental and social practices along with the positive and negative impacts of these practices on the realization of sustainable development goals (Humphreys and Trotman, 2022). The economic dimension of reporting refers to reporting on the company’s impact on the economic conditions of stakeholders, as well as on the economic system at local, national and global level. Environmental dimension of reporting involves reporting on the company's impact on living and non-living natural systems, including existing ecosystems, while social dimension of reporting discusses the company's impact on the social systems in which the company operates (Theresia and Triwacananingrum, 2022).

Considering the importance of accurate disclosure of information about companies' operations, corporate disclosure in periods of uncertainty and crisis faces numerous challenges. As the COVID-19 pandemic has negatively affected companies around the world, the approach to communicating “bad news” to interested stakeholders in company reports is a topic of great interest. Existing literature has already identified that there is significant information asymmetry between companies and external stakeholders, while also suggesting that any uncertainty in the business environment and the occurrence of a crisis tend to increase information asymmetry (Ghosh and Olsen, 2009). Namely, the way in which the information in the reports is presented is extremely important for investment decisions, considering that in periods of crisis, managers can use strategies that involve concealing bad news (Merkl-Davies and Brennan, 2017) or opportunistic managers can increase information asymmetry between the company and its stakeholders in order to fulfill some of their personal goals.

The COVID-19 pandemic has caused a change in the priorities of companies and has affected how CSR reports are prepared. The changes brought about by the pandemic raise important questions about the use of CSR reports by both managers and investors. Anticipated long-term effects on health, economic situation and work environment imposed the need for accountants and auditors to make new judgments in an environment dominated by marked uncertainty (Humphreys and Trotman, 2022). Also, in this period, companies are faced with financial pressures and a lack of funds, which can inevitably affect the sustainability issues that companies will address, the content of CSR reports, as well as the need to revise these reports (Humphreys and Trotman, 2022). Considering that CSR information requires resources and causes certain costs, managers can limit the disclosure of such information. Bahadar and Zaman (2022) state that during the pandemic, managers can influence the reduction of uncertainty caused by it by disclosing additional information about their business, such as CSR information. Levy (2021) also points out that in the pandemic period when managers face social and ethical challenges, they need to proactively communicate with consumers and employees by adopting better communication strategies. Humphreys and Trotman (2021) believe that in the coming period, socially responsible investors will demand reports that are more focused on what has actually been achieved in terms of sustainability during the pandemic period, instead of reports focused on the sustainability initiatives that have been undertaken. Given that the long-term management of social and environmental risks has also gained importance during the pandemic, investors may also increasingly demand disclosure of sustainability risks.

4. MATERIALS, METHODS AND RESULTS

4.1.Research design

With regard to the current situation caused by the pandemic and the changes that have consequently occurred, large and successful companies operating in the two Southeast European frontier markets – The Republic of Serbia and North Macedonia, are expected to overcome the crisis with their CSR operations and make a positive contribution to society. Accordingly, the empirical part of this paper is focused on researching whether the situation caused by the COVID-19 pandemic affected their CSR disclosure practices. Given that the position and trends regarding CSR disclosure in these markets have not yet sufficiently captured wider academic attention, we will attempt to fill the gap existing in empirical research, as well as to provide answers to two important research questions:

RQ1: What is the scope of CSR disclosure among companies included in the BELEXline and MBI10 stock exchange indices before and during the COVID-19 pandemic?

RQ2: Has the COVID-19 pandemic affected changes in CSR disclosure priorities for companies included in the BELEXline and MBI10 indices?

When it comes to the regulation in the CSR reporting area, in the Republic of Serbia, the obligation of non-financial reporting was introduced into the legislation in October 2019 with the adoption of the new Law on Accounting (which entered into force on January 1, 2020). In accordance with Article 64 of the Law, starting from the financial reports that are prepared on December 31, 2021, i.e. the Annual Business Report for 2021, those liable for the preparation of non-financial reports are obliged to include such information in the Annual Business Report (Law on Accounting, 2020). With regard to North Macedonia, there is no legal obligation to disclose information on non-financial indicators. However, in the Law on Companies from 2016 pursuant to Article 348, paragraph 7, companies, among other things, shall disclose information on their activities in the field of research and development, as well as information on the rights and benefits of the management and supervisory board members within the annual business report (Law on Companies, 2016).

In order to evaluate CSR disclosure, researchers broadly use the method of content analysis (Ehsan et al., 2018). Although there are several different approaches to this method, the most objective one involves formulating a Disclosure Index that overcomes the limitation of using descriptive data only. In this approach, the presence or absence of certain information is determined by simple binary coding (for example assign 1 if the information exists or 0 if the information is nonexistent) and then the index is calculated based on the aggregate result of all selected information (Ehsan et al., 2018). This study employs content analysis technique and develops two indices: Economic Disclosure Index (EconDI) and Social Disclosure Index (SocDI), in line with the results of research studies in which it was determined that during the COVID-19 pandemic the priority was given to the economic (García-Sánchez and García-Sánchez, 2020; Carroll, 2021) and social issues of sustainability (Zhang et al., 2022; Barreiro-Gen et al., 2020).

The structure of the EconDI consists of 13 indicators covered by the GRI 200 standards, while 30 indicators from the GRI 400 standards make up the structure of this index Social Disclosure Index (see Table 1).

Table 1. List of economic and social indicators

Economic indicators
GRI 201-1 Direct economic value generated and distributed
GRI 201-2 Financial implications and other risks and opportunities due to climate change
GRI 201-3 Defined benefit plan obligations and other retirement plans
GRI 201-4 Financial assistance received from government
GRI 202-1 Ratios of standard entry level wage by gender compared to local minimum wage
GRI 202-2 Proportion of senior management hired from the local community
GRI 203-1 Infrastructure investments and services supported
GRI 203-2 Significant indirect economic impacts
GRI 204-1 Proportion of spending on local suppliers
GRI 205-1 Operations assessed for risks related to corruption
GRI 205-2 Communication and training about anti-corruption policies and procedures
GRI 205-3 Confirmed incidents of corruption and actions taken
GRI 206-1 Legal actions for anti-competitive behavior, anti-trust, and monopoly practices

Social indicators
GRI 401-1 New employee hires and employee turnover
GRI 401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees
GRI 401-3 Parental leave
GRI 402-1 Minimum notice periods regarding operational changes
GRI 403-1 Workers representation in formal joint management–worker health and safety committees
GRI 403-2 Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities
GRI 403-3 Workers with high incidence or high risk of diseases related to their occupation
GRI 403-4 Health and safety topics covered in formal agreements with trade unions
GRI 404-1 Average hours of training per year per employee
GRI 404-2 Programs for upgrading employee skills and transition assistance programs
GRI 404-3 Percentage of employees receiving regular performance and career development reviews
GRI 405-1 Diversity of governance bodies and employees
GRI 405-2 Ratio of basic salary and remuneration of women to men
GRI 406-1 Incidents of discrimination and corrective actions taken
GRI 407-1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk
GRI 408-1 Operations and suppliers at significant risk for incidents of child labor
GRI 409-1 Operations and suppliers at significant risk for incidents of forced or compulsory labor
GRI 411-1 Incidents of violations involving rights of indigenous peoples
GRI 412-2 Employee training on human rights policies or procedures
GRI 413-1 Operations with local community engagement, impact assessments, and development programs
GRI 414-1 New suppliers that were screened using social criteria
GRI 414-2 Negative social impacts in the supply chain and actions taken
GRI 415-1 Political contributions
GRI 416-1 Assessment of the health and safety impacts of product and service categories
GRI 416-2 Incidents of non-compliance concerning the health and safety impacts of products and services
GRI 417-1 Requirements for product and service information and labeling
GRI 417-2 Incidents of non-compliance concerning product and service information and labeling
GRI 417-3 Incidents of non-compliance concerning marketing communications
GRI 418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data
GRI 419-1 Non-compliance with laws and regulations in the social and economic area

(Source: GRI, 2020)

We used a binary scoring method of the CSR disclosures recorded in 1) annual reports, 2) CSR/sustainability reports and/or 3) web (online) content as a separate CSR heading, where the index positions in this paper are coded with 0 (if the information on the indicators is not disclosed), 1 (if the information in the report is descriptive) and 2 (if the information on the indicators is disclosed and is quantitative). The EconDI and SocDI were developed in two steps: (1) first, each indicator based on GRI standards was assigned a corresponding score (0, 1 or 2). Scores are not weighted, being assumed that each indicator is equally important; (2) after that, the highest values of EconDI and SocDI were determined as a sum of equally weighted index positions. The maximum value of the EconDI was 26, while the maximum value of the SocDI was 60.

4.2. Sample description

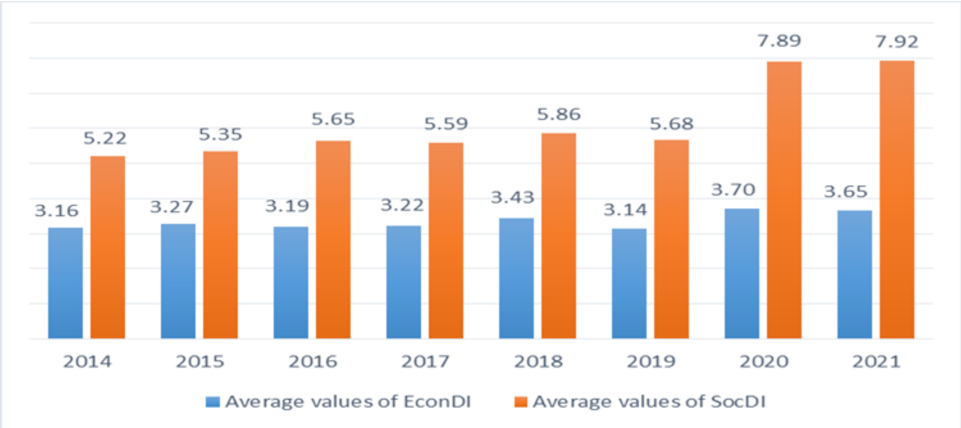
In order to investigate the practice of non-financial reporting in the period before and during the COVID-19 pandemic on two selected frontier markets, we used a sample of companies included in two stock market indices - BELEXline and MBI10. When deciding on the companies included in the mentioned indices, we had in mind that the stock market indices adequately reflected the situation on the market. The used method for sampling was the purposive sampling method, where the criteria were as follows: (1) companies that were listed on the Belgrade and the Macedonian Stock Exchange consistently in the period 2014-2021; (2) companies that issued annual reports and/or CSR/sustainability reports from 2014 to 2021. The original research sample included 39 companies, however, due to the lack of annual reports in certain years, the final research sample did not include the companies "Fintel energija" and "Žitopek", which were part of the BELEXline index. Consequently, the final research sample consisted of 37 companies, namely 27 companies whose shares were included in the BELEXline index (23 companies from the real sector and 4 companies from the financial sector) and 10 companies that were of MBI10 index (5 companies from the real sector and 5 companies from the financial sector).

4.3. Results and discussion

In total, 296 annual reports published in the period from 2014 to 2021 by 37 companies, have been analyzed. With regard to the general aspects of reporting on CSR and sustainability issues only 5 companies out of a total of 37 (13.51%) prepare a separate non-financial report and/or CSR/sustainability report. These are companies whose shares are included in the BELEXline index. Namely, the company NIS is the only one that compiles a sustainability report based on GRI standards in the form of a separate report, ALTA bank prepares a CSR report, while the companies Energoprojekt Holding, Dunav osiguranje and Impol Seval disclose non-financial reports as part of their annual reports. This indicates that the companies in the sample are still not inclined to prepare a separate report exclusively for CSR issues. In the last two years of the observed period, i.e. during the pandemic, 13 companies from the sample (6 companies from North Macedonia and 7 companies from the Republic of Serbia) paid attention to issues related to the COVID-19 pandemic in a specific section of their annual report. The impact of the pandemic on these companies' business was mainly explained, as well as the measures that the companies took in order to overcome the crisis they faced.

Based on the movement of EconDI and SocDI average values shown in Graph 1, it can be seen that the pandemic did not adversely affect the CSR disclosure of the companies included in BELEXline and MBI10. On the contrary, in 2020 and 2021 significantly higher average values of EconDI and SocDI have been recorded. This leads to the conclusion that most companies from the sample recognized the importance of disclosing additional information in the period of crisis in order to reduce information asymmetry. In this way, all interested stakeholders were informed about the potential negative impact of the COVID-19 pandemic on the companies' operations, as well as the initiatives taken by the companies in terms of CSR. The average values of EconDI did not vary significantly in the observed period while a more significant drop in the EconDI average value is observed in 2019.

Graph 1: Average value of the Economic and Social Disclosure Index in Serbia and North Macedonia

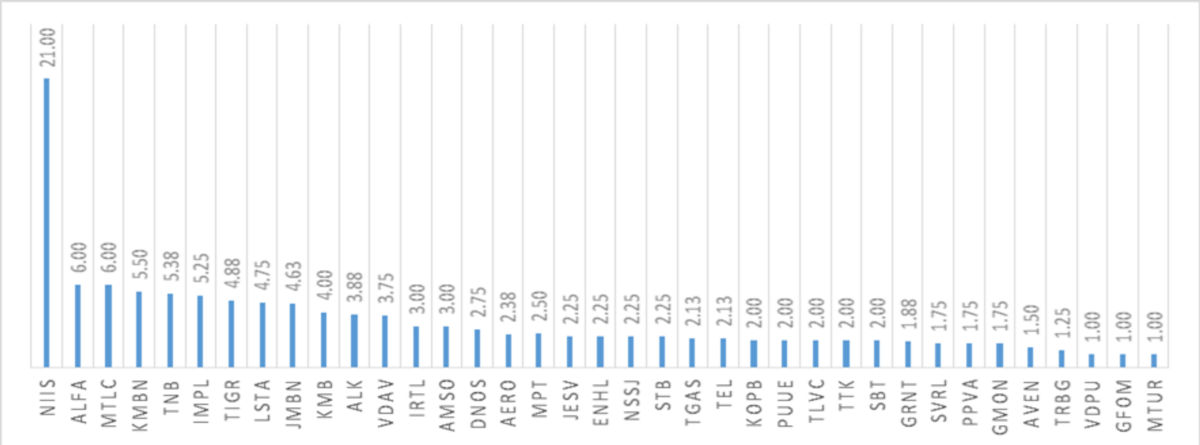


(Source: Authors' calculation)

With regard to the social dimension of sustainability, the growing trend of disclosing information on social performance is evident, especially in 2020 and 2021 (Graph 1). Namely, in the period of the pandemic, in addition to numerous other issues of sustainability, companies were also faced with questions related to finding alternatives to laying off workers, as well as questions related to workers' protection, safety at work, programs for workers' education in newly created circumstances when certain companies switched to online work if their operations allowed for it. As a consequence, analyzed companies directed their focus precisely to the social dimension of sustainability and disclosed information on a greater number of social performance indicators closely related to the previously mentioned questions.

With regard to the trend of EconDI average values in the period from 2014 to 2021, it can be seen from Graph 2 that the highest average value of this index is 21.00 (the maximum index value is 26) achieved by the company NIS. The results are quite expected, taking into account the fact that the company NIS has many years of experience in CSR disclosure, given that it is the only company in the sample that reports on all economic performance indicators covered by *GRI 200*: Economic. Furthermore, we can see on the graph an evident drop in the EconDI average values, where the next two companies, Alfa Plam and Metalac, have EconDI average values of 6.00. These companies disclose information only on the following indicators: *GRI 201-3* Defined benefit plan obligations and other retirement plans, *GRI 203-1* Infrastructure investments and services supported, *GRI 203-2* Significant indirect economic impacts and *GRI 205-2* Communication and training about anti-corruption policies and procedures.

Graph 2: The EconDI average value trend in the period 2014-2021

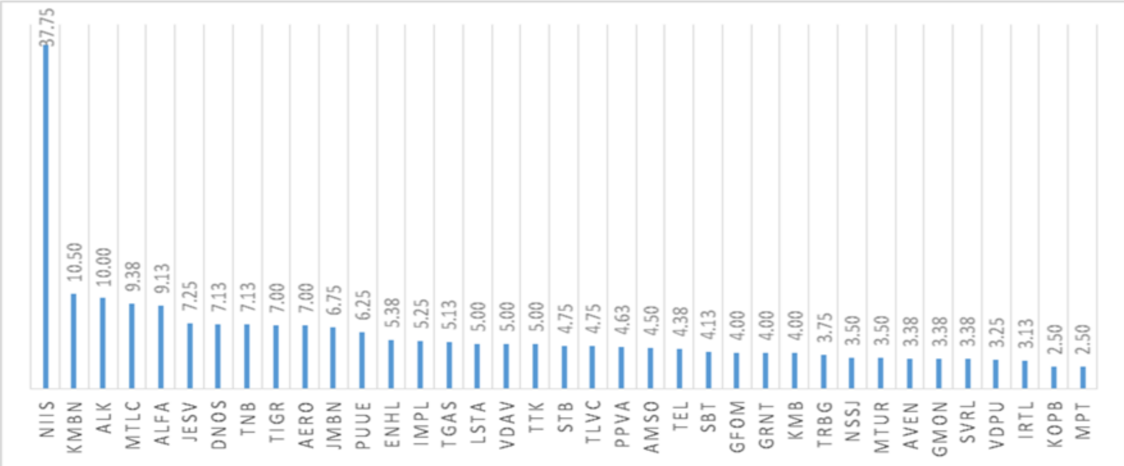


(Source: Authors' calculation)

Companies whose shares are included in the MBI10 have significantly lower EconDI average values compared to companies included in the BELEXline index. Among the companies included in the MBI10 index, NLB banka Skopje stands out, achieving an average index value of 5.38. For fourteen companies from the sample (37.83%), the EconDi average values range from 2.00 to 2.75. The companies VP Dunav, Goša FOM and Makedonija Turist have the lowest EconDI average value of 1.00, which in the eight-year period only published information about the *GRI 201-3* Defined benefit plan obligations and other retirement plans indicator, which was of a descriptive nature.

There is a significant gap between company that is the leader in the field of CSR and the followers, that are doing limited or almost nothing (Graph 3). The highest SocDI average value of 37.75 (the maximum value of SocDI 60) is achieved by the company NIS, which in the observed period disclosed information on the largest number of indicators covered by *GRI 400:Social*. However, the information on the indicators was mostly of a descriptive nature. It is followed by Komercijalna banka, which achieves an average index value of 10.50, which corresponds to a compliance level of 17.50% of the maximum SocDI value. Namely, the improvement in CSR disclosure at Komercijalna banka was inspected especially in the period of the pandemic, given that a larger amount of information on social performance indicators was disclosed in order to achieve greater business transparency.

Graph 3: The SocDI average value trend in the period 2014-2021



(Source: Authors' calculation)

Regarding the disclosure of social performance indicators by companies listed on the Macedonian Stock Exchange, the company Alkaloid stands out, as a company with a long tradition, whose SocDI average value is 10.00. For the largest number of companies from the sample, SocDI average value ranges between 3.13 and 5.38. The companies Kopaonik and Makpetrol have the lowest SocDI average values in the observed period, which disclosed information only about the *GRI 401-1* New employee hires and employee turnover and, in the last two years, information about the *GRI 419-1* Non-compliance with laws and regulations in the social and economic area.

Regarding the economic dimension of sustainability, as shown in Table 2, the most frequently disclosed indicators in the pre-pandemic period refer to *GRI 201-3* Defined benefit plan obligations and other retirement plans and *GRI 203-2* Significant indirect economic impacts. These are easily quantified and measured indicators. During the pandemic, a greater number of companies disclosed information about the *GRI 203-2* indicator disclosing information about supporting their local communities with donations, in order to help them overcome the crisis caused by the pandemic. The indicator that gained importance during the pandemic was *GRI 201-4* Financial assistance received from government given that ten companies from the sample (27.02%) disclosed information on financial assistance received from the government to help overcome the negative impact of the crisis on their business.

Table 2: Most commonly disclosed social and economic indicators before and during COVID-19 pandemic

Indicators		*Before COVID-19 pandemic*						*During COVID-19 pandemic*	
		2014	2015	2016	2017	2018	2019	2020	2021
Economic indicators	GRI 201-3	94.59%	94.59%	94.59%	94.59%	97.30%	91.89%	94.59%	94.59%
	GRI 203-2	40.54%	37.84%	35.14%	43.24%	45.95%	40.54%	45.95%	45.95%
	GRI 201-4	8.11%	5.41%	5.41%	5.41%	5.41%	5.41%	27.02%	27.02%

Social indicators	GRI 401-1	97.30%	97.30%	97.30%	97.30%	100%	100%	100%	100%
	GRI 404-2	32.43%	40.54%	43.24%	45.95%	45.95%	43.24%	51.35%	54.05%
	GRI 405-1	59.45%	64.86%	64.86%	64.86%	64.86%	62.16%	78.38%	78.38%
	GRI 403-4	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	54.05%	56.76%

(Source: Authors' calculation)

In respect of the social dimension of sustainability, the *GRI 401-1* New employee hires and employee turnover indicator is the most represented indicator in companies' reports, and as can be seen from the Table 2, all companies in the sample have disclosed this information in the last four years. The indicator was particularly significant in the period of the pandemic, considering that a large number of companies faced the issue of laying off workers, but also hiring new workers whose profession is primarily related to online business, so that companies from the sample where this was possible could continue to operate smoothly. Other indicators that were represented in the period before, but also during the pandemic are *GRI 404-2* Programs for upgrading employee skills and transition assistance programs and *GRI 405-1* Diversity of governance bodies and employees, whereby the focus of the education program during the pandemic period was changed. Employees were mostly educated on how to smoothly carry out their work tasks in changed business circumstances and the programs were mostly implemented online. The social performance indicator that gained the most importance during the pandemic is the *GRI 403-4* Health and safety topics covered in formal agreements with trade unions (21 companies disclosed information about it in 2021), given that companies tried to prevent and suppress infectious disease among employees by applying various protective measures.

4. CONCLUSION

The COVID-19 pandemic has caused significant negative short-term and long-term economic effects that have challenged the way companies operate and increased uncertainty among their stakeholder. In this situation, when the future of the company's business was uncertain, companies faced the dilemma of whether to increase the level of CSR disclosure and thereby reduce information asymmetry, or to limit the disclosure in order not to expose themselves to additional costs in a period when they are already facing financial pressures.

The research results presented in this paper show that the pandemic did not adversely affect the CSR disclosure practices of companies listed on the Belgrade and Macedonian Stock Exchanges, given that the average values of EconDI and SocDI during 2020 and 2021 were higher compared to the period 2014-2019. Although in the pre-pandemic period, companies operating on these frontier markets showed a serious level of resistance related to transparency and accountability towards sustainability performance, it is evident that during the pandemic period, most companies in the sample recognized the importance of disclosing additional CSR information in order to proactively communicate with their stakeholders and thereby reduce the information asymmetry, as well as to emphasize the positive contribution of their CSR activities for easier overcoming of the society-related crisis, which was in line with the expectations of stakeholders.

Regarding the disclosed information, the social dimension of sustainability was dominant (average values of SocDI 7.89 in 2020 and 7.92 in 2021), given that the most significant topics for companies were the issues of dismissal of workers, followed by issues related to occupational health and safety, as well as issues related to CSR activities that provide assistance to local communities. We consider this result consistent with similar studies (Zhang et al., 2022; Barreiro-Gen et al., 2020) who concluded that during the pandemic, companies must adapt their CSR policies to the new pandemic environment, take initiatives for the benefit of their employees and the entire community, as well as contribute to solving urgent global social issues. The highest SocDI average value is achieved by the company NIS whose shares are included in BELEXline index. With regard to the trend of EconDI average values, companies whose shares are included in the MBI10 have significantly lower EconDI average values compared to companies included in the BELEXline index. This is a consequence of a modest stakeholder pressures, investors` passiveness immanent to this frontier market and the lack of normative pressure on sustainability reporting at this capital market. Our findings contribute to the ongoing research on the CSR disclosure during COVID-19 period and offers some important messages to policy makers, investors and companies.

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Research-in-progress

HOW DOES EU MEMBERSHIP AFFECT NON-FINANCIAL REPORTING? EVIDENCE FROM SELECTED BALKAN COUNTRIES

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ABSTRACT
Non-financial reporting is a form of transparency disclosure where companies disclose information that is not primarily focused on their financial performance, but information related to their activities that contribute to society through environmental protection, social matters, employees, human rights, anti-corruption and other activities affecting the supply chain.
The purpose of this research is to analyze non-financial disclosure in selected Balkan countries and to determine how EU membership affects the scope of non-financial reporting. Four countries are included in the research, two of which are EU countries and two are non-EU countries. A total of 40 blue-chip companies that are part of the national stock market indexes for the period of 2019 to 2021 were taken as a sample in the research. We applied content analysis to 120 Audited Consolidated Annual Reports, individual Non-financial Disclosure Reports and all tabs and sub-tabs of official websites from which we identified variables to be statistically tested. A detailed descriptive and comparative analysis will be made to qualitatively and quantitatively describe the characteristics of non-financial reporting in the respective countries, and then the Multivariate Kruskal-Wallis will be conducted to test whether EU membership affects the extent, title, type, and length of the report on non-financial information.

Keywords: *Non-financial reporting, EU membership, Balkan countries.*

JEL classification: *M14, M40.*

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1. INTRODUCTION

The connection with the environment is an essential survival tactic that makes it possible for companies to be independent, self-sufficient, and most importantly, sustainable. An organization must reduce to a minimum all negative effects, including emissions, waste, social issues, and unjust treatment of personnel, in order to achieve maximum sustainability in commercial operations. Non-financial reporting (NFR) is defined by Erkens et al. (2015) as disclosure supplied to outsiders of the organization on aspects of performance other than the typical assessment of financial performance from the perspective of shareholders and debt-holders. This concept includes, but is not limited to, things disclosed outside of financial statements pertaining to social and environmental accounting, corporate social responsibility (CSR), and intellectual capital. Non-financial information (NFI) has grown in importance as a strategic component for a company's survival and development (Ioannou & Serafeim, 2017). Therefore, a company's survival can no longer be attributed solely to an economic dimension of profit maximization; rather, it must be discussed in a broader context that takes into account how the company manages the risks associated with the long-term social and environmental impacts of its operations as well as how it exhibits social responsibility (Milne & Gray, 2007). As a result, NFI in annual reports has drawn the attention of more researchers, practitioners, and standard-setters (Manes-Rossi et al., 2018). Capital market participants, i.e. large public entities are increasingly emphasizing the value of non-financial information. By increasing the transparency and accountability of NFI, sustainability reports are a valuable instrument for boosting engagement with stakeholder groups and allow businesses to show that they are socially responsible (Patten,2014). Stakeholders are increasingly interested and demand greater consistency in promoting the culture and responsibility of companies. Banks, investors, regulators and others include non-financial factors in the rating of companies and thereby impose the need to disclose non-financial information as part of the mandatory annual reporting of companies (Deloitte, 2021). Non-financial reports fall under various headings and categories of reporting, such as integrated reports, social responsibility reports, sustainability reports, and reports on corporate social responsibility (Stolowy & Paugam, 2018).

In accordance with the European Union Directive 2014/95/EU, Public Interest Entities (PIEs) in Europe are required to prepare a "Non-financial statement" covering environmental and social issues, respect for human rights, and the fight against corruption and bribery (EU, 2014). Croatia and Slovenia, as EU member states, have implemented the provisions of the Directive into national accounting laws, making non-financial reporting mandatory. On the other hand, in North Macedonia, non-financial reporting is not legally regulated and is voluntary, but is promoted through a guide and recommendations, while in Serbia non-financial reporting is voluntary as of 2020, and from 2021 it is mandatory for large public companies.

In this regard, the purpose of this research is to ascertain the differences in non-financial reporting practices between EU countries and non-EU countries, i.e. to investigate whether blue-chip companies listed on national stock exchanges, which comprise the market stock indexes, publish non-financial information. In this research in progress paper we have identified the main variables through which we will conduct statistical testing to examine the impact of EU membership on the extent, title, type and length of the report on non-financial information. As variables we identified all recurring patterns through the detailed analysis of the reports through content analysis for each separate segment, mentioned above. The paper is divided into several sections, where we first give a brief introduction to the matter, then a literature review on which we base our research and preliminary results and research methodology perspective in which we present the preliminary results obtained and the methodology we plan to implement. Finally, we provide a brief summary of the preliminary and expected results and our goals for completing the research.

2. LITERATURE REVIEW

The expansion of reporting practices and the interest of investors show how firms are reacting to both rising regulation and cultural changes in how people view businesses' operations (Trpeska et al., 2021). The European Union Directive 2014/95/EU (European Union, 2014) on non-financial disclosure and diversity (NFRD) is changing how large European corporations report and disclose NFI on economic, social, and environmental issues. Beginning in 2017, the NFRD mandates major enterprises and organizations with more than 500 employees to include "non-financial and diversity information" in their management reports. The NFRD has a dual materiality approach, requiring enterprises to disclose not just how sustainability issues affect them, but also how their operations harm society and the environment (Christensen et al., 2021). The EU is actively examining this directive and exploring measures to improve it, such as implementing specific criteria or audit requirements (European Commission, 2020). There is interest in presenting early information regarding the changes in accounting and reporting processes due to the requirements of the EU NFRD (La Torre et al., 2020).

One of the most well-known frameworks for disclosing the economic, environmental, and social concerns facing a business is the Global Reporting Initiative (GRI) framework (Laskar, 2018). Business in The Community (BiTC), the Dow Jones Sustainability Index (DJSI), the Business Ethics 100, the AccountAbility (AA) rating (Hopkins, 2005), the International Integrated Reporting Council (IIRC), the Carbon Disclosure Project, the Sustainability Accounting Standard Board (SASB), and the Global Framework for Climate Risk Disclosures (GFCRD) are additional frameworks that have been developed (Siew et al., 2013; Emeka-Nwokeji & Osisioma, 2019).

Strict government regulation puts all companies within the mandatory limits, as laws usually provide standard rules for all organizations within a jurisdiction or category defined by law (Jackson et al., 2020). Increased transparency according to these standards reduces information asymmetries between companies and stakeholders. According to Dave (2017), social obligations should be voluntarily fulfilled rather than mandated, otherwise, the purpose of the action may be lost and the law unintentionally obeyed.

According to Johari & Komathy (2019), Europe had the greatest rate of sustainability disclosure at over 49%, followed by Asia at 15%, North America at 14%, Latin America at 12%, Oceania at 6%, and Africa at 4%. Doni et al. (2020) study the quantity and quality of NFI provided by 60 Italian companies prior to the EU NFRD to see whether their past voluntary sustainability activities influenced mandatory non-financial disclosures following the new legislation. They discover that prior, existing abilities and competence in NFR positively contribute to legislation compliance and ensure quality in NFI.

The 250 largest firms in the world (the G250), or 96% of them, reported on their sustainability performance, according to the KPMG (2020)'s Survey of Sustainability Reporting. A total of 80% of the N100, a group of 5,200 businesses made up of the 100 biggest firms in 52 nations, report NFI.

According to Deloitte (2022)'s survey, as markets continue to demand transparency, more than half of executives (57% of survey respondents) say that data availability and data quality remain their top challenges when it comes to environmental, social and governance (ESG) data disclosure. Only 21% of survey respondents currently have an ESG council or working group in

place to drive strategic attention to ESG topics, but 57% of survey respondents are actively working to establish one (Deloitte, 2022).
According to Levkov and Palamidovska-Sterjadovska (2019) research, which included 102 banks that were actively operating in the Western Balkan countries for a three-year period (2015–2017), foreign and local banks in North Macedonia achieved an equal average score for CSR reporting, while foreign banks in Serbia, Kosovo, Bosnia and Herzegovina, and Montenegro attained a higher score, i.e. a higher level of NFI disclosure. In general, their analysis demonstrates that there are discrepancies in the disclosure of CSR initiatives in various marketplaces, taking the Western Balkan Countries into consideration. In a study on the relationship between sustainability reporting and business performance, Aifuwa (2020) draws the conclusion that there is a strong correlation between these two areas.
The content analysis approach and a binary scoring method of the NFR (Branco & Rodrigues, 2006; Hinson et al., 2010; Matuszak et al., 2019; Levkov & Palamidovska-Sterjadovska, 2019; Trpeska et al., 2021) was used to identify social responsibility disclosure in annual reports and websites.

3. PRELIMINARY RESULTS AND RESEARCH METHODOLOGY PERSPECTIVE

To achieve the set goals of the research, a content analysis was conducted to identify levels and trends in NFR in four Balkan countries, two of which are EU member states: Slovenia and Croatia, and two non-EU countries: North Macedonia and Serbia. In the research, we analyzed the top 10 blue-chip companies in each country that are part of the national stock market index, i.e. companies that show the capital market movements.
The sample we used is composed of 40 companies that we analyzed for the period from 2019 to 2021. In fact, we used only secondary data that was extracted from the audited consolidated annual reports, individual non-financial disclosure reports and all tabs and sub-tabs of the official websites.
Table 1 summarizes the basic characteristics of the database from which information on the companies representing the analyzed countries was taken.

Table 1: Research sample

EU Membership	**non-EU**		**EU**	
Country	**North Macedonia**	**Serbia**	**Croatia**	**Slovenia**
Stock Exchange	Macedonian Stock Exchange	Belgrade Stock Exchange	Zagreb Stock Exchange	Ljubljana Stock Exchange
Stock Market Index	MBI10	BELEX15	CROBEX10	SBITOP
Number of companies	10	10	10	10

Source: Authors' calculation

All listed market stock indexes as of 31.12.2021 consisted of 10 companies, only BELEX15 included 15 companies, but for consistency in the research, only the first 10 companies by market capitalization were included. Due to the difference in the sector affiliation, they will be analyzed from the aspect of whether they belong to the financial sector (banks and insurance companies) or

to the real business sector (manufacturing, energetics, telecommunications, oil and gas, engineering and construction and others).
Our analysis aims to answer the following research question:

- **Is EU membership related to the scope and content of non-financial reporting (NFR)?**

For this purpose, we will use the binary scoring method to generate a score according to which we could rank the companies included in the research. The generation of points will take place according to the disclosed information. As standards of good practice and what should be included in the non-financial reporting, we use the standards set in the directive 2014/95/EU and the guidelines from the European Commission.
Table 2 summarizes the score generation methodology:

Table 2: Methodology for generating non-financial disclosure score

		"Yes"	"No"
Data availability	Qualitative non-financial data	1	0
	Quantitative non-financial data	1	0
Non-financial reporting referring to:	Environment	1	0
	Social & Employee matters	1	0
	Human rights	1	0
	Anticorruption and bribery	1	0
	Other matters	1	0
Maximum points per company per year		7	0
Maximum points per company for 3 years period (2019-2021)		21	0

Source: Authors' calculation

A company is awarded a disclosure point if it provides qualitative non-financial information, and an additional point if this information is supplemented with quantitative information. The research uses the individual segments that should be included in the NFR of companies, according to the 2014/95/EU directive. European Commission in Guidelines on non-financial reporting (methodology for reporting non-financial information) lists the key performance indicators (KPIs) according to which we will be guided in the research on whether companies will receive 1 point for fulfilling the corresponding criterion or not (EU Commission, 2017):

- ***Environment***: non-financial information related to material disclosure for the prevention and control of pollution, the impact on the environment from the use of energy, the emission of harmful particles and/or polluted water, the development of green products and services, etc.
- ***Social & Employee matters***: non-financial information related to employment matters, including consultation and/or employee participation, employment and working conditions, human capital management, health and safety at work, community relations, including the social and economic development of local communities and more.
- ***Human rights***: non-financial information related to the process for receiving and resolving complaints, as well as mitigating and providing legal remedies for human rights violations, respect for freedom of association, operations and suppliers at significant risk of human rights violations and others.
- ***Anticorruption and bribery***: non-financial information related to anti-corruption policies, procedures and standards, implementation and use of whistleblowing mechanisms, internal control processes and resources intended to prevent corruption and bribery and others.

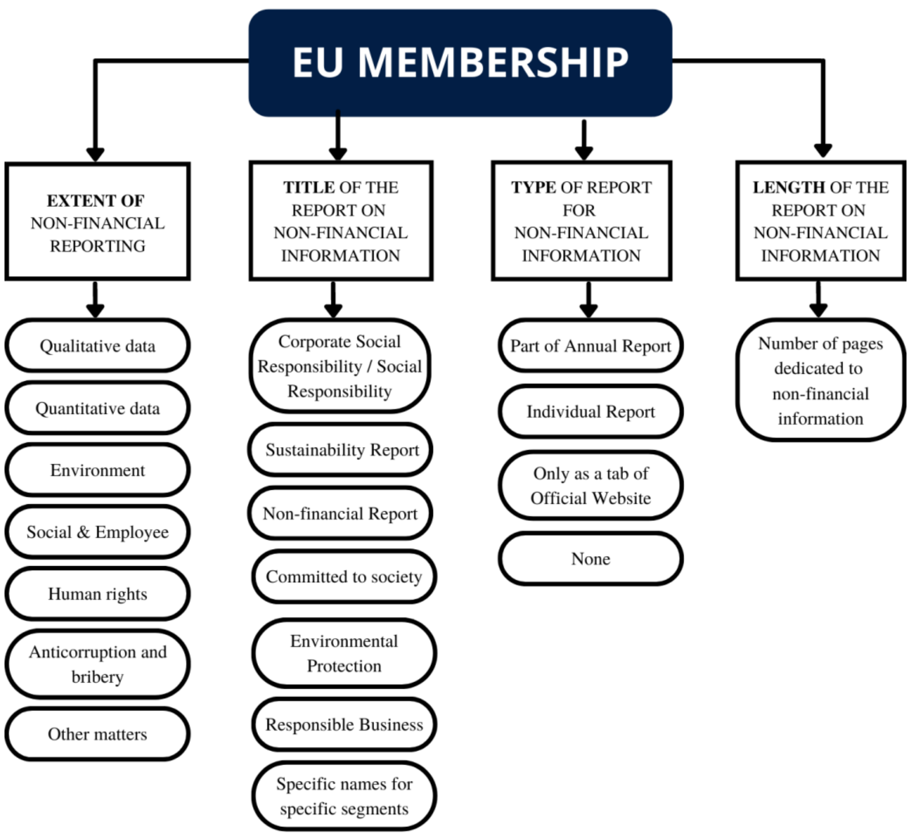
- **Other matters**: non-financial information related to labor practices, including child labor and forced labor, human trafficking and other human rights issues, deforestation and other risks related to biological diversity, Supply chains and support of domestic, small and medium-sized companies and others.

Through detailed content analysis, we tried to extract all significant segments related to NFR in order to make a comparison on non-financial information disclosure in companies between EU countries and non-EU countries. In addition to generating points based on compliance with the EU directive, several other parameters were also included in the survey in order to derive a more detailed basis with which we could answer the following set research sub-questions:

- Does EU membership affect the **extent** of non-financial reporting?
- Does EU membership affect the **title** of the report on non-financial information?
- Does EU membership affect the **type** of report for non-financial information?
- Does EU membership affect the **length** of the report on non-financial information?

By analyzing the companies' reports, we have identified several repeating patterns that we will use as variables in the statistical testing. Graphic 1 summarizes the identified variables for each segment separately which will be analyzed in detail:

Graphic 1: Variables for testing research questions



Source: Authors' calculation

Our plan is to conduct a qualitative and quantitative analysis for each segment separately in order to obtain results for the companies from respective countries. For this purpose, first we will conduct a descriptive, and comparative analysis to summarize the main characteristics of NFR in the companies for period from 2019 to 2021. Then we will conduct Multivariate Kruskal-Wallis to see the dependence and relationship between the defined dependent variables (response) and EU membership as an independent variable (factor). In the analysis to test the impact of EU membership on the extent and length of the non-financial reporting report, 120 observations will be included, i.e. data for 40 companies over a period of 3 years. To test the impact of EU membership on the title and type of the report, 12 observations will be used because the variables will be grouped according to the frequency of the titles used by the companies from the respective country and the frequency of publication method during the year (4 countries x 3 years). EU membership for statistical testing purposes will be coded with 1 = EU country and 0 = non-EU country.

4. CONCLUSION

Non-financial reporting, which is the disclosure of the activities that companies undertake to contribute to the betterment of the society, is becoming more significant and relevant for the information users and all stakeholders. It is very important to note that non-financial reporting is actually a disclosure of the activities undertaken, and not a fact about how much the companies contribute to the society in which they operate, because in practice there may be companies that contribute significantly, but do not publicly disclose information about the same. However, the EU directive and good European and World practices indicate the importance of disclosing information in order to make it publicly available. Our research refers to previously conducted research and a literature review on the relevant topic, where we aim to compare two EU countries and two non-EU countries from the Balkans, and then expand the research and include many more countries in order to reach results at the level of the entire European Union. The paper will contribute to identify the scope of NFR from the perspective of EU membership and according to our assumptions that there should be a positive impact and correlation, to extract all segments where there are differences and to give suggestions how to standardize and improve NFR according to the detailed EU directive.

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THE ENVIRONMENTAL IMPACT OF THE DIGITAL FINANCIAL INCLUSION: THE CASE OF THE REPUBLIC OF SERBIA

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ABSTRACT
Climate change is one of the most important issues in today's world. To address this matter, countries and companies are trying to become more sustainable. Countries have set the targets for greenhouse gas emissions reduction, which cannot be reached without the joint effort of the retail, small, medium, and corporate sector. Moreover, emissions and pollution reductions can be achieved through the economic and social development. Digitalization proved to be a fast-track for the economic growth and green development. That fast track becomes even faster if the country's financial system has a certain level of development. This study is based on two secondary datasets and focuses on the Republic of Serbia, in the period of 2005-2018. The aim of this research is to determine the state of financial inclusion in the Republic of Serbia, and to test the relation between financial inclusion and carbon emissions. Based on correlation analysis, the results suggest that higher number of bank branches will result in higher CO_2 emissions. Conversely, the introduction of more Automated Teller Machine (ATM) will yield lower carbon emissions. Results show that digitalization of financial transactions is enhanced, and environmental indicators are slightly decreasing. Therefore, findings suggest that digital financial inclusion in the Republic of Serbia can lead to carbon emissions reduction. Such results are important for policy makers since further digitalization can help in completing the goals of the Sustainable Development Agenda 2030.

Keywords: *Digital finance, Carbon emissions, E-banking*

JEL classification: *Q56, G2*

1. INTRODUCTION

The 2030 Agenda for Sustainable Development represents a blueprint for peace and prosperity of the people and our planet (UNSGSA, 2018). Such a welfare can be achieved by reaching targets which are set for the each of the seventeen sustainable development goals. World would be a more sustainable place if there is no poverty and hunger, if people have a good health and if

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http://doi.org/10.47063/EBTSF.2022.0015

quality education is within their reach, if there are gender equalities present, if water and energy are clean, if there is an economic growth, innovation and reduced inequality, if cities are sustainable and if there is a reasonable production and consumption, if climate action is in place, if life on land and below water is preserved, if institutions are strong and if partnerships are established through which goals would be reached.

Financial inclusion is a new proposition of the strategic goals of sustainable development, and it represents an effective way to overcome environmental constraints (Wang and Guo, 2022). But how? Digital financial inclusion represents digitalization of the financial services, making them more cost-effective and more accessible to everyone. The advancement in the financial services industry and more precisely digitalization of the banking system can pave the path to more sustainable reality. Sustainable development goal of no poverty can be reached with the help of the digital financial inclusion. Digital financial services (DFS) enable families to save money, allow them to receive wages, pensions, or government donations. DFS can also help in reducing hunger, since it enables farmers to obtain credit more easily, to use digital micro-insurance or to save their earnings. Furthermore, digital finance can promote good health through micro health insurance. Digital loan products for education can help parents educate their children. In addition, teachers' salaries are more easily and safely transferable by means of digital technologies. Also, gender equality can be sustained since digital financial services offer woman more control over their finances and makes their creditworthiness more manageable. Furthermore, digital finance can help mini grid operators and therefore, enable utilization of clean energy which is much more affordable. Moreover, digitalization of payments of the micro, small and medium enterprises (MSME) can create their credit history and enable credit scoring. If MSME can more easily obtain financing, they can grow and develop more easily and in turn they can create more jobs. Increased economic growth and more income per household will lead to decrease in income inequality. Cities by means of public transportation, can be more sustainable if digital payments for transportation tickets are increased. Digital payments in this instance can decrease time needed for commute, as well as its cost. Digital payment platforms push everyone toward more environmentally friendly products with lower carbon footprint. In addition, savings, credits, and insurance prepare low-income individuals for climate change consequences (UNSGSA, 2018).

However, the impact of digitalization on society can be twofold. On one hand it will enable progress, but on the other hand, increased use of electronic devices will increase energy usage and consequently it will enhance emissions. Economic growth can be enhanced with digital financial inclusion, but such growth comes at the expense of increased emissions and pollution. Still, technological progress with innovative technologies and industrial upgrading can substantially lower harmful emissions. For example, if SME's can more easily have access to credit, that can enable more green innovations which can help decrease the emissions.

Digital payments are faster, more secure and transparent. Therefore, they lower the cost of sending or receiving any kind of payments, making every transaction less time consuming (UNSGSA, 2018). Moreover, fintech improves access to finance. Fintech has introduced new ways of financing for small firms and start-ups and enabled smaller funding amounts. Traditional banks invest in fintech heavily. Banks are especially interested in the lending and crowdfunding platforms, and they are exploring the possibilities of the blockchain technologies through different investment products (Bollaert et al., 2021). Therefore, it is important to know the level of the digital financial inclusion in certain country, to be able to know how easily Sustainable Development Goals can be reached.

In this research, our aim is to assess how well the Republic of Serbia is prepared for achieving SDG. Therefore, we focus on the financial inclusion in the Republic of Serbia and its relation to the carbon emissions and pollution. According to the World Bank report, the highest risk to be financially excluded in the Republic of Serbia have youth (less than 24 years old) and individuals with low level of education (Nenadovic & Golicin, 2015). Do such findings have environmental implications? To address this question, we look at the indicators which are representative of financial inclusion and the environment. The structure of this paper is as it follows: in the second section, we present contemporary research on what constitutes digital finance, how digital financial inclusion is achieved and how it is linked to the environmental considerations. In the third section, we describe the present state of the digital financial inclusion in the Republic of Serbia and investigate whether there is a connection with the environmental quality indicators. Fourth section gives concluding remarks on the findings of the paper.

2. THEORETICAL BACKGROUND ON DIGITAL FINANCIAL INCLUSION AND ITS ENVIRONMENTAL EFFECT

2.1. Digital finance

Financial institutions, both, banks and non-banks are trying to improve existing channels and enable access to financial services to those that did not have access before. Digital financial services, for example include mobile phones and therefore enable cashless transactions. “Digital financial inclusion” can be defined as digital access to formal financial services to those who were excluded before. Such services should be appropriate for customers as well as institutions. Cost should be attainable for clients, but institutions should not experience a loss as well (Lauer and Lyman, 2015).

Digital financial inclusion model consists of three key components: digital transaction platform, retail agents and devices. Digital transaction platform is a medium through which a customer can make and receive payments, and to store value electronically. Transaction details are transmitted to banks and non-banks through digital communication channels. Retail agents through digital devices transmit transaction details. Digital device can be a mobile phone or credit card that connects to the POS terminal (Lauer and Lyman, 2015).

Financial inclusion can be assessed by examining whether an individual is banked, formally included, informally included, or totally excluded from the financial services sector. Individuals who currently use services of deposit money bank, in addition to using some banking product like Automated Teller Machine (ATM) cards can be defined as banked ones. Adults who belong to formal dimension of financial inclusion use other products of financial institutions like insurance or pension schemes. Informal inclusion means that adults do not have access to bank or other formal financial products, rather they use money lenders or saving clubs. Financially excluded do not use or do not have access to any formal or informal channels, yet they might have access to loans or gifts from friends or family, for example (Monye, 2022).

As it is already stressed, fintech improves access to finance. If we look at the fintech lending, we can see algorithms which are used to assess credit scores. In this way, process of loan assessment is less time consuming and consumers and small businesses can get faster access to credit. In addition, those algorithms could improve loan performance since they are based on alternative data, and not just credit report (Bollaert et al., 2021). In the case of the ones that are not “banked”, alternative data might be the only available data, and if there is a chance for quality assessment that could enable lending and lead to economic growth.

Li et al. (2020) findings suggest that digital finance inclusion can promote household consumption. This effect is more pronounced with the poorer and less educated individuals. Their results show that digital finance influence household consumption through digital payments, online credit, purchase of financial products or insurance, or simply by online shopping.

2.2. Impact of digital finance on reaching sustainability goals

Digital financial inclusion cannot be present or enhanced without digital technology development since key components of the model are digital platforms and devices. Digital devices need electricity, which increased consumption can lead to increased carbon emissions and pollution. But what are the empirical facts regarding the influence that digital financial inclusion has on the climate indicators? Is there any spatial implication of such a relationship?

Digital technology development can reduce carbon emissions in local cities, but also it has spillover effect on surrounding cities. However, there are spatial boundaries to the reduction reach (Liu et al., 2022). Digital technology development can have a positive impact on the digital financial inclusion. The more the society is digitalized, the more people will have access to technology and that can enable higher financial inclusion. Zhang and Liu (2022) go one step further and examine the interaction of digital finance and green technology innovation and assess its impact on the carbon emissions efficiency. They find significant effect on carbon emission efficiency on the local level, but not on the neighboring cities. However, Pu and Fei (In Press) find evidence that digital finance increases residential carbon emissions. Raise is a result of the increased electricity consumption and use of transport for employment purposes.

Digital finance has a positive effect on the green technology innovation, since it removes the financing constraints. This effect is larger with the small enterprises, in the regions that are more polluted and where government governance is strong (Feng et al., 2022). Yu et al. (2020) find that digital finance has a positive impact on green control techniques in family farms which safeguard the quality of agricultural products. Digital finance improves credit availability, promotes information acquisition, and leads to increase in social trust. Gu (2022) finds that sharing economy has beneficial effect on carbon emissions reduction. Development of the personal credit information services and digital finance enables emissions reduction. Furthermore, technological innovation has a negative moderating effect on the relationship between economic development and carbon emissions. Sharing economy has a positive spatial spillover effect on the neighboring cities.

Shahbaz et al. (2022) examines whether financial inclusion influences pollutant and carbon emissions. They find that financial inclusion decreases pollutants, and those results are universal, regardless of the geographical area. However, their findings suggest that financial inclusion have asymmetric effect on carbon emissions, and that results are dependent of the geographical location. Wang and Guo (2022) also find evidence that digital inclusive finance help decrease carbon emissions. There is a positive spatial spillover in urban areas, and the results are more pronounced in the cities where traditional finance is developed and there is a high degree of industrialization. However, findings are region dependent. Wang et al. (2022) find positive correlation between digital financial inclusion and carbon emissions. Increase in carbon emissions are due to increased digitalization of financial services and it is high in urban areas. Therefore, rural areas should be more digitalized, and that could improve inclusion but not at the expense of the carbon emissions. Furthermore, digital financial inclusion can improve industrial structure and reduce carbon emissions.

3. RESULTS

3.1. Data and methodology

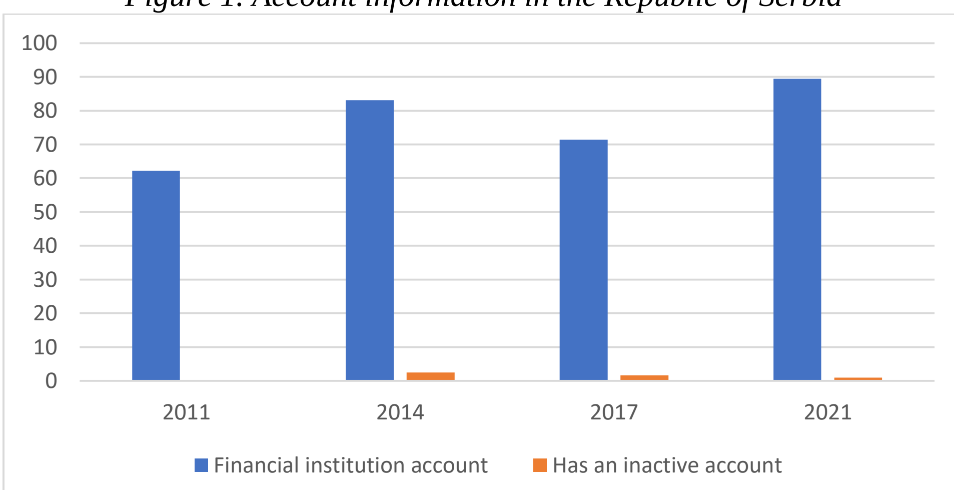
In this study secondary data from two databases, World Bank Indicator Database (Global Findex Database) and the Open data portal of the Government of the Republic of Serbia are used. Based on the World Bank data the state of the digital financial inclusion of a certain country can be assessed. Available data series varies depending on the country in question. In the case of the Republic of Serbia, the longest period is spanning from 2011 till 2021, where periodicity of the data is triennial (2011, 2014, 2017, 2021). Data regarding the number of bank branches, ATM's, CO_2 emissions and PM2.5 and PM10 pollution have different time periods. Depending on the series in question, data range from year 2000 till the year 2021, and series are presented yearly. Sample implemented in this study is derived from the available data, and it covers period from 2005-2018.

The aim of this paper is to assess the relationship between digital financial inclusion and carbon emissions and pollution in the Republic of Serbia. This association is analysed using correlation analysis, namely Spearman rho correlation. Data is ranked and correlation coefficient is computed. In this way, effect of outliers can be eliminated. Correlation analysis is used to determine whether systematic change in one variable is followed with a change in another variable (Cooper and Schindler, 2006). Therefore, it can be determined whether there is a connection between digital financial inclusion and CO_2 emissions.

3.2. Digital financial inclusion in the Republic of Serbia

Firstly, the state of the digital financial inclusion in the Republic of Serbia, based on the World Bank Indicators dataset is going to be assessed. In Figure 1, the percentage of respondents (older than 15 years) that have an active or inactive account with a bank or another type of financial institution is displayed.

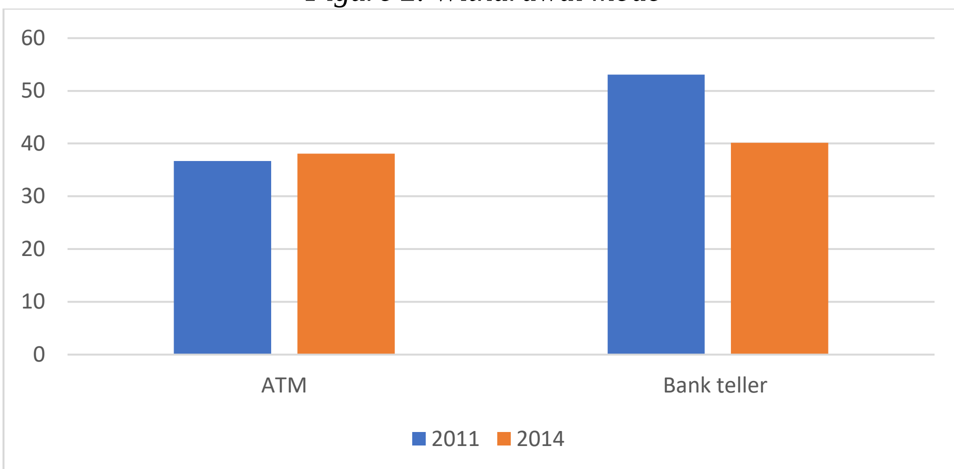
Figure 1. Account information in the Republic of Serbia



(Source: Global Findex Database)

The percentage of the respondents that have an account with financial institution is very high and is increasing in this ten-year period (Figure 1). The percentage of the inactive accounts is negligible, and it is decreasing. Data which can give us an insight into the reasons why a person do not own an account is available only for the year 2021. The most common reason why someone does not own a bank account is because someone in the family has one (51.57%). Moreover, there is a possibility for an increase in the digital financial inclusion in the Republic of Serbia. Respondents who indicated that a reason why they do not own a bank account is that financial institutions are too far (22.45%) or the individuals that find financial services too expensive (24.86%), are the ones that are financially excluded now but digitalization could enable them to be banked. In Figure 2, respondents' preferred mode of the withdrawal is presented. Data are available only for the years 2011 and 2014.

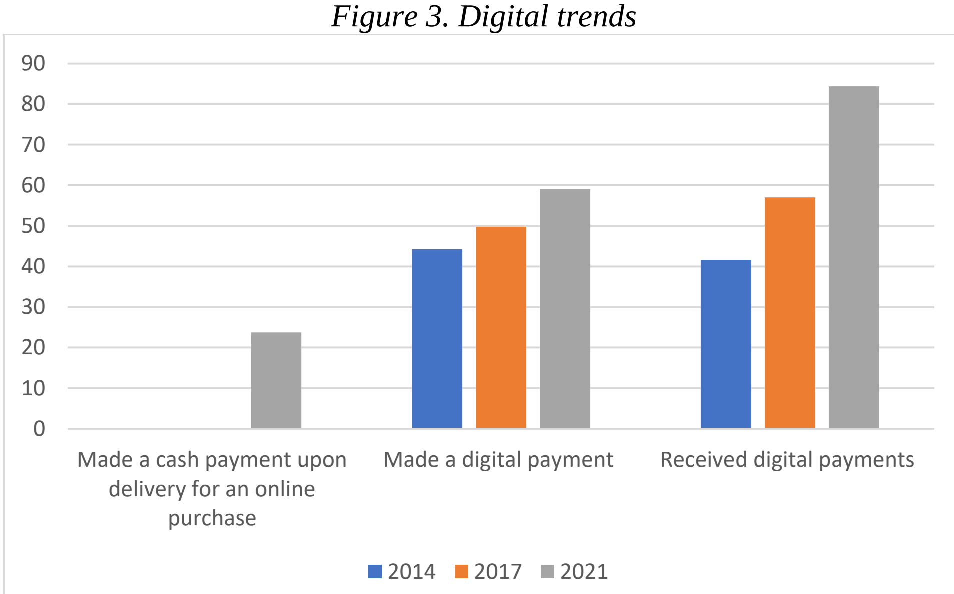
Figure 2. Withdrawal mode



(Source: Global Findex Database)

Figure 2 show that, in this period, the number of ATMs increased slightly. In the same period, there is a substantial decrease in the demand for the bank tellers' services. Therefore, it can be concluded that people are getting more accustomed with the digital transactions.
Figure 3 presents available data for the digital financial trends in the Republic of Serbia.

Figure 3. Digital trends



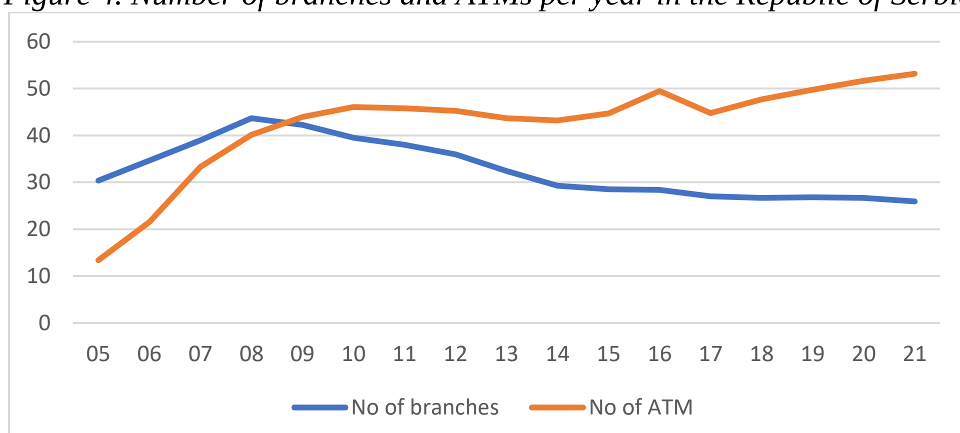
(Source: Global Findex Database)

The only available data point for cash payments upon delivery for an online purchase is the data for the year 2021. It is yet to be seen what the trend in the use of this channel for consumption purposes in combination with cash will be. There is a steady increase in made or received digital payments, and there is a very broad definition of what constitutes a digital payment. By digital payment it is assumed that respondent uses mobile money, a debit or credit card, or a mobile phone to make a payment from an account. In addition, usage of the internet to pay bills or to buy something online or in a store is also considered as digital payment.
Data that depicts the state of the financial inclusion in the Republic of Serbia show that majority of the respondents have an account with a financial institution, such as the bank. There is a decrease in the use of bank tellers' services and increase in the usage of ATM's. When we look at the digital payments made by mobile money or phone, credit, or debit cards, or through internet we can see sharp increase in the past ten-year period. Hence, digital financial inclusion is increasing, but there is a room for its improvement.

3.3. Environmental impact of the digital financial inclusion

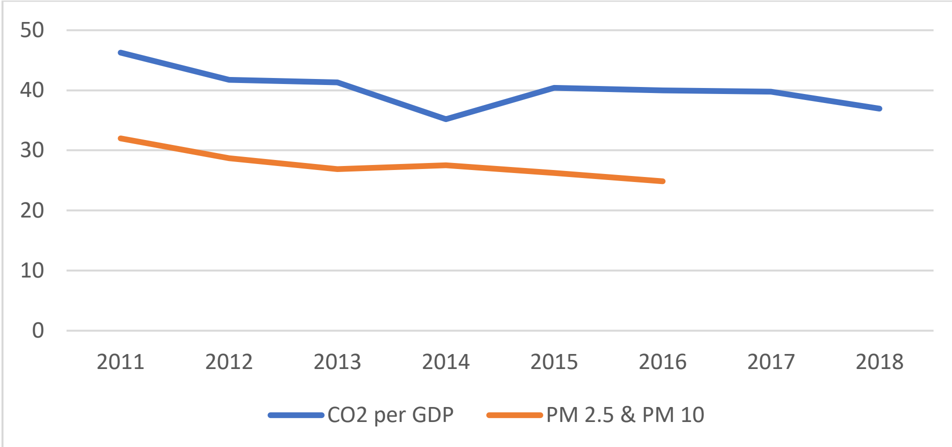
Purpose of this study is to determine whether there is a connection between digital financial inclusion and carbon emissions and pollution in the Republic of Serbia. Therefore, variables that we will use in this analysis are number of bank branches per 100.000 inhabitants, number of the ATMs per 100.000 inhabitants, CO_2 emissions per GDP and pollution with combined measure of PM2.5 and PM10. Data are presented visually in the Figures 4 and 5. We use the number of bank branches and ATMs as indicators of the digital financial inclusion. CO_2 emissions are indicator of green-house gas emissions. Combined measure of PM2.5 and PM10 is an indicator of the pollution. Change in the number of bank's branches and ATMs per 100.000 inhabitants is displayed in Figure 4.

Figure 4. Number of branches and ATMs per year in the Republic of Serbia



(Source: Global Findex Database)

Figure 5. Carbon emissions and pollution in the Republic of Serbia



(Source: Open Data)

Figure 4 show that the number of ATMs is increasing and that there is a decrease in the number of branches. Also, the change in the CO_2 emissions and pollution measured with PM2.5 and PM10 particles is displayed in Figure 5. Therefore, it can be assumed that when the number of branches started decreasing and the number of ATM's started to increase, there is a slight decrease in the carbon emissions and pollution.

To determine the existence of connection between digital financial inclusion and carbon emissions and pollution, we check the correlation between the relevant variables. Available data series are short, which represent limitation of this study. The available time series for the pollution is only 6 years, and therefore this variable is excluded from the correlation analysis. For the rest of the indicators, longer time series are available (2005-2018). In Table 1, results of the Spearman correlation along with their significance levels are presented.

Table 1. Correlation matrix

	No of branches	No of ATM's	CO_2
No of branches	1		
No of ATM's	-0.305	1	
CO_2	0.657***	-0.609**	1

Source: Authors own calculations, Global Findex Database, Open Data. Notes: *p < 0.1; ** p < 0.05; *** p < 0.01

Table 1 present findings that there is no statistically significant relationship between the bank's decision how many branches and ATM's they are going to employ. Conversely, it is observed that there is a very strong statistically significant relationship between digital financial inclusion indicators and carbon emissions. The increase in the number of bank's branches will significantly increase CO_2 emissions. Branches need electricity to operate. Electricity from the renewable sources in the Republic of Serbia are increasing, but their share in the total consumption was only 26% in the year 2020. Therefore, increased electricity consumption would lead to increased electricity production from the traditional sources. Hence, carbon emission will increase. On the other hand, the decrease in the number of the branches, that happened in the previous period led to the decrease in the carbon emission. Furthermore, employees use either public or their own transportation for commute. Transportation increases the emissions. Again, decrease in the number of the branches yield less harmful emissions. When we look at the correlation between number of ATM's and the CO_2 emissions, we can see that there is strong negative correlation. In the period in question there was an increase in the number of the ATM's. That is related to the decrease in the carbon emissions, since less electricity is consumed, and less transportation is used for employment purposes. Hence, we can conclude that there is a relation between digital financial inclusion and decrease in CO_2 emissions.

4. DISCUSSION AND CONCLUSION

Digital technology development can increase digital financial inclusion. Researchers offer mixed results regarding the interaction between digital financial inclusion and environmental indicators. Digital finance improves carbon emission efficiency, but the results are region and city specific. In the urban areas, it can lead to increased electricity and transportation consumption and emissions. On the other hand, digital financial inclusion can improve industrial structure and reduce emissions. The results might be more beneficial in the rural areas.

The aim of this study is to determine whether an environmental impact of digital financial inclusion in the Republic of Serbia. The sample is comprised of the yearly data from 2005-2018. Correlation analysis is implemented to be able to determine if there is a relationship between these two concepts.

In this paper, we analyze the state of the digital financial inclusion in the Republic of Serbia, and its connection to the environmental indicators. Based on the available data, it is observed that there is an increase of the digital financial inclusion in the Republic of Serbia. Individuals who are more than 15 years old are "banked" and they are increasingly using digital channels for payments, remittances, or shopping. Furthermore, results of this study are in accordance with the findings of the Shahbaz et al. (2022) and Wang and Guo (2022), since it is found that an increase in digital financial inclusion can decrease CO_2 emissions.

Consequently, suggestion for policy makers would be to further improve digital financial inclusion in the Republic of Serbia and integrate directions for those improvements into climate change policies. The limitations of this study are a small sample size and examination of only one country. Previous research has found region specific results, and therefore some further research should include much broader geographical area into the analysis. Moreover, different regions of the Republic of Serbia can be explored in this context. Furthermore, some other study should use different indicators related to the fintech which can suggest the scope of the financial inclusion as well.

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CHALLENGES OF FINANCIAL AND ACCOUNTING TREATMENT OF CRYPTO TOKENS

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ABSTRACT
Initial coin offering (ICO) is an entirely new method of raising funds based on blockchain technology. ICO implies the company's decision to issue cryptographic tokens in exchange for fiat currency (legal means of payment) or cryptocurrencies to a network of early adopters or development team members. The leading idea of this concept is to give ICO startups access to the financial resources necessary for funding their projects. What an initial public offering (IPO) is in traditional finance, ICO is in the decentralized finance world. Yet, unlike actions, issued tokens can have multiple uses and features and perform various functions. The situation is further complicated by the lack of a unique globally accepted classification of crypto tokens. However, in practice, they are most often classified according to their fundamental economic functions. According to this categorization, the following basic types of tokens are distinguished: utility, payment (or currency) and security (or asset) tokens. In addition to the three types listed, some tokens, known as hybrid ones, combine several functions of these three basic categories. It is essential for the company of the issuer of the crypto token to carefully compile the White Paper, synonymous with the prospectus for the initial public offering, and to precisely understand what it offers to investors. The financial and accounting treatment of crypto tokens also depends on the rights and obligations arising from the White Paper, i.e. the issued token type. There are certain conditions under which tokens issued by regulators could be deemed securities, with the necessary reminder that there is no single global view on this significant issue. The paper primarily aims to indicate when and under what conditions crypto tokens can be considered securities, i.e. what are the critical challenges of financial and accounting treatment of crypto tokens.

Keywords: *Initial coin offering, Initial public offering, Cryptographic asset, Blockchain, Accounting standard, decentralized finance*

JEL classification: *G32, G24, K22, M41*

1. INTRODUCTION

Via ICO, companies raise financial resources by selling crypto tokens to a large number of both individual and institutional investors around the world. Frequently this token is a cryptocurrency, a digital medium of value exchange based on distributed ledger technology (DLT). The number of ICOs, and therefore the financial resources thus collected, has been continuously increasing since 2017. Thus, there were 59 completed ICOs in 2016, with almost 257 million USD amassed funds. However, in 2017, the number of completed ICOs was tenfold compared to the previous year (the number of completed ICOs was 620), with over 6.5 billion USD collected (CoinSchedule, 2020). The situation climaxed in 2018 when

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1080 ICOs were initiated, and 991 were completed, amassing USD 21.6 billion in funds. It seems that the ICOs phenomenon, its way of use, possibilities and advantages, in general, is still insufficiently discussed and comprehended, especially in the financial and accounting domain of the treatment of crypto tokens despite the tremendous amounts of capital raised and the increasing interest of companies (not only from the crypto field), investors, regulators and policymakers (Golić, 2020).

The US Securities and Exchange Commission (SEC) has unquestioningly acknowledged the innovative potential of ICOs, simultaneously drawing the attention of investors to the high risks and openly addressing the problem of regulatory treatment of tokens (SEC 2017). Regarding the contemporaneity of the issue, this paper aims to point out the challenges in the financial accounting treatment of tokens without dealing with the risks for investors. The paper somewhat focuses on the token types because there is a regulatory difference between security, utility and payment tokens. Security and payment tokens fall under securities or property laws, while utility ones still operate in a legal grey zone. The central emphasis of the work is on providing recommendations and guidelines for the accounting treatment of tokens by their issuer.

The paper is organized as follows: various definitions and clarification of ICOs functioning through several essential phases are given in the following part. The types of tokens and their treatment are considered afterwards. That part of the paper aims to draw attention to the fact that only security tokens are considered securities and are subject to national regulations that apply to them. In the ensuing part of the paper, we carefully and gradually point out the problems in financial reporting on this type of asset, considering that crypto-assets (crypto-currencies and crypto-tokens) represent a relatively new property type, complex in nature, even abstract to many market participants. It also has a bad reputation and prejudices among regulators, banks and users of financial reports. Finally, we conclude the paper with recommendations for the accounting treatment of crypto tokens by their issuer (the initiator of the ICO), which are offered instead of conclusion.

2. INITIAL COIN OFFERING (ICO) AS A FORM OF BUSINESS FINANCING

In many recent scientific works by Fisch (2019), Momtaz (2018), Fitzgerald and Arslanian (2017), etc., we encounter rather broad definitions of ICOs that focus on their role as a means of financing companies. Thus Fisch (2019, p. 6) defines an ICO as a mechanism that new ventures use to raise capital by selling tokens to a large number of investors. However, Momtaz (2018, p. 6) provides a slightly different definition according to which ICOs are smart contracts based on DLT or blockchains designed to provide external financing by issuing tokens. Fitzgerald and Arslanian (2017, p. 2) state that an ICO is a public, time-limited sale of a predefined number of crypto-tokens, usually in exchange for major cryptocurrencies (BTC, ETH) to raise capital.

Under ICOs, OECD and the European Securities and Markets Authority (ESMA) imply creating digital tokens by micro-small and medium-sized enterprises (MSMEs), i.e. start-ups, and their distribution to investors in exchange for fiat currency or, in most cases, the most famous cryptocurrencies Bitcoin (BTC) or Ether (ETH). It is made possible by the use of DLT, such as blockchain, which facilitates the exchange of value without the need for a trusted central authority or intermediary (e.g. bank, government) and enables increased efficiency due to disintermediation (OECD 2019, p. 9; ESMA 2019, p. 11).

The works of Blaseg (2018) and Adhami et al. (2018) offer more precise and complete definitions of ICOs. Thus Blaseg (2018, p. 5-6) defines ICO as a new fundraising mechanism in which projects appearing in the blockchain sell their basic protocols or application tokens that can become a functional medium of exchange for potential trading on the secondary market and can provide a potential financial return or other forms of reward if the project is launched. We find a rather similar definition of ICO in the work of Adhami et al (2018, p. 65) who define ICO as open calls for funding promoted by businesses, entrepreneurs and organizations to raise money through cryptocurrencies, in exchange for a token that can be sold on the Internet or used in the future to obtain products or services and sometimes profits. As for the functioning of the ICO, unlike other forms of fundraising, the ICO procedure is not standardized but still follows an established pattern that can be presented in several steps/phases.

The procedure begins when the development team of the company, start-up, or still undeveloped project, announces to the public its intention to conduct an ICO, i.e. informs the public about the project and the terms of the offer through the publication of a non-standard document known as a white paper.

A white paper is usually between 10 and 30 pages long, similar to a business plan. It mainly includes information on the project, guidelines for the project development, a description of the team (education, references, etc.) that is to implement it, and specific details about the token offering. The white paper also presents the total amount to be raised, the currencies accepted for purchasing tokens (i.e. fiat, cryptocurrency), the token price, the percentage of the token that the founder keeps, the date of the campaign, the way the tokens will be produced and used, as well as necessary technical information (Cointelegraph, n.d.).

One of the probably most crucial steps in the ICO (Lipusch, 2018) follows the publication of the white paper, which is establishing a communication channel that the company, start-up, the project will use to communicate with potential investors. Therefore, it is essential that the company, start-up, or project that opts for an ICO design a professional website to inform potential investors about the goals of their projects, the problem they are endeavouring to solve, and the team behind these efforts, thus using them for building the confidence necessary to attract potential investors. However, they can also decide to use official communication channels (OECD, 2019, p. 7), i.e. the services of digital platforms that have specialized in ICOs promotion (ESMA, 2019).

After the white paper has been presented and communication has been established, the ICO begins. When the ICO starts, investors can send funds in the form of cryptocurrencies (usually BTC or ETH) or fiat money to designated addresses or money accounts to purchase tokens at a specific price (Blaseg, 2018). The ICO is considered successful if a pre-determined amount of funding is raised within the deadline. In this case, the company creates new tokens on the blockchain, which investors receive in exchange for the principal crypto-currencies or, less often, for the fiat currencies they have invested. A part of the tokens is given to the team as an incentive. Depending on the utility of the tokens, investors can keep them or use them to partake in the project or trade them on a cryptocurrency exchange market. A way for a business to sell its token to a broader audience is to list it on a cryptocurrency exchange. Cryptocurrency exchanges allow token trading on the open market, which lets ICO investors flexibly enter and participate in existing projects by buying or selling tokens. Of course, this is possible if there is enough supply and demand for such a token, i.e. if there are interested parties who are willing to buy or sell the issued token (Lipusch, 2018).

Based on the above definitions and clarification of how ICOs work, it is evident that all ICOs are not equal, and therefore neither are the tokens they issue. Depending on the ICO, tokens can have several characteristics and a wide range of roles. Unfortunately, there is no single, globally accepted classification of tokens. However, in practice, there are two dimensions for token classification: the first, depending on the decentralized business model of the project (Warren, 2017) and the second, based on the fundamental economic functions of tokens

(FINMA, 2018; ESMA, 2018, 2019). Other classifications can be made according to the way tokens generate returns or the way they are allocated to investors (Benoliel, 2017; Fisch, 2019). In the continuation of the paper, we will consider the categorization of tokens based on the primary economic functions they perform for two simple reasons. The first reason is we hold this classification more suitable, considering this paper's research subject. The second reason is this categorization is used by the most important institutions and agencies of the European Union (EU) under whose jurisdiction this area falls.

3. WHEN ARE TOKENS TREATED AS SECURITIES?

The SEC's recent decision to fine actor Steven Seagal $314,000 for unlawfully promoting an ICO held in 2018 has not only attracted the attention of all the world's leading media (Crane, 2020; Field, 2020; Gibson, 2020; Jacobs, 2020; Mangan, 2020; Manskar, 2020; McCoy, 2020; Merle, 2020), it has also proved that not all ICO tokens have the same legal treatment. Let us start from the beginning and consider what the actor Steven Seagal actually "did wrong"?

3.1. SEC vs. Steven Seagal

American actor and martial artist Steven Seagal recently settled with the SEC to pay $314,000 concerning an ICO launched by Bitcoiin2Gen (B2G) in 2018. According to the SEC, the actor's guilt is in the fact that he did not publicly disclose the fees received for the promotion of the token (Avan-Nomayo, 2020; Crane, 2020; Mangan, 2020; Manskar, 2020; Merle, 2020).

The fact is that there have been cases of crypto-trading platforms using celebrities to promote their ICO tokens to attract as many investors as possible (Crane, 2020; Field, 2020; Gibson, 2020). All this is done because the support (promotion) of celebrities gives certain "credibility" to tokens and thus attracts investors (Gibson, 2020; Jacobs, 2020; Mangan, 2020). However, these famous people sometimes promote fraudulent schemes that lead to the loss of client funds and subsequent lawsuits (Avan-Nomayo, 2020).

In a statement released on Thursday, February 27, 2020, the Commission (SEC) alleged that Seagal had acted contrary to the Federal securities law concerning anti-advertising (Avan-Nomayo, 2020). According to this law, any individual or celebrity who advertises crypto tokens that are categorized as security tokens (a type of token that is treated as securities - see more in the following subtitle of this paper) must disclose how they were compensated, i.e. paid for promotion (Bambrough, 2020).

Additionally, Seagal's illegal advertising occurred soon after the SEC released its 2017 SEC DAO Report, which warned that ICO tokens could be securities (Crane, 2020; Jacobs, 2020).

In an effort to clarify the issue with Seagal, the head of one of the SEC's divisions responsible for these matters, Kristina Littman, explained the situation as follows: investors were entitled to know about payments Seagal received or was promised to endorse this investment so they could decide whether he may be biased (Bambrough, 2020). Besides, Littman stated that celebrities should not use their social media influence to advertise securities without proper disclosure of the compensation they have received or will receive (Avan-Nomayo, 2020; Bambrough, 2020).

According to the SEC's investigation, the virtual cryptocurrency trading platform, Bitcoiin2Gen, agreed to pay the actor a total of $1 million, including $250,000 in cash and $750,000 in Bitcoiin2Gen tokens for referrals, i.e. promotion, which Seagal did not disclose. In addition, promotion included Seagal's social media posts inviting his numerous fans "not to miss" this ICO (Avan-Nomayo, 2020). Also, the actor released a press release titled "Zen Master Steven Seagal Has Become the Brand Ambassador of Bitcoiin2Gen" (Seagal, 2018), and in its press release, Bitcoiin2Gen quoted Seagal as saying that he "wholeheartedly" supports the ICO.

Consequently, Seagal was fined $314,000, an amount the actor agreed to pay without denying or admitting any wrongdoing. In addition to the fine, the actor consented to hold back from promoting any type of securities for three years (Avan-Nomayo, 2020; Crane, 2020; McCoy, 2020; Merle, 2020).

After carefully considering the case, we concluded how important it is to distinguish different types of tokens, i.e. when and under what conditions tokens are considered securities. In the remainder of this chapter we will pay attention to token types and apostrophize conditions a token should meet to be considered a security.

3.2. Token types and their treatment

The Swiss Financial Market Supervisory Authority (FINMA) categorizes tokens based on their basic economic functions (FINMA, 2018), and ESMA uses the same categorization in its reports (ESMA, 2018, 2019). According to this categorization, the following types of tokens are distinguished (FINMA, 2018):

Utility tokens are intended to provide access to specific applications (products) or services of enterprises through a blockchain infrastructure. They are a way to finance shared infrastructure projects that could not be financed before. In simpler terms, utility tokens are a means of payment used on certain applications. However, these tokens are not accepted as a means of payment for other applications, and the value of the product or service depends solely on the investor's perception. Utility tokens issued by a business to finance purchases by prospective customers are not treated as securities if their sole purpose is to grant digital access rights to a product or service and if they can be used in this way at the point of issue. In those cases, its primary function is to grant the right of access, i.e. to facilitate the purchase (Benoliel, 2017). There is no connection with the capital markets which is a typical characteristic of securities. Therefore, they are not treated as securities, nor are they subject to the regulations concerning securities.

Payment (or currency) tokens (synonymous with cryptocurrencies) are tokens that are to be used, now or in the future, as a means of payment for goods or services, as money or as a value transfer. These are, in fact, cryptocurrencies, with BTC undoubtedly being the most famous one. It is the first cryptocurrency, conceptually created in 2008 (Nakamoto, 2008) and first "mined" in January 2009 by Satoshi Nakamoto. Payment tokens are designed to function as a means of payment and are not analogous to traditional securities in their function. Therefore they are not even treated as securities, meaning that Seagal could promote them without dread of being fined.

Security (or Asset) tokens represent assets such as debt or equity securities, meaning they are basically investments. In terms of raising capital, security tokens can be issued in the context of an ICO that allows businesses to raise capital for their projects by issuing digital tokens in exchange for fiat money or other crypto assets, i.e. cryptocurrencies. These tokens work by sharing the project's profits in the form of interest and dividend payments to their owners. Profit sharing is usually done by issuing new additional tokens when the company makes a profit. It means that security tokens are analogous to shares, bonds or derivatives. In addition, security token owners take ownership of the company by purchasing it, and blockchain technology enables a voting system that provides investors with the opportunity to exercise their rights in the company's decision-making process. Therefore, security tokens are most similar to digital assets from which value is derived by trading in external funds. As a logical

consequence, this type of token is subject to the laws concerning securities. The ability of security tokens to effortlessly provide liquidity to their investors while subject to greater regulation makes them a preferred choice for institutional investors.
In addition to the three types of tokens listed, there are some other possibilities and variations as follows:
Tokens combining several functions of the above three basic token categories are called hybrid tokens. Essentially, this would mean those individual token classifications are not mutually exclusive, so utility and security tokens can also be classified as payment tokens, also hybrid ones. So in these cases, the claims are cumulative. In other words, these tokens are considered securities and means of payment.
Reward and reputation tokens are given as a token of reward or reputation, most often to members of the development team or famous people. Both types indicate on the blockchain that a user or wallet (E_Wallet) is someone special or has done something remarkable. They symbolise something like the Nobel or Oscars of the crypto world (Hill, 2017). According to Fisch (2019), these two subtypes of tokens belong to utility tokens, meaning they are treated as securities.
In some ICOs tokens are already released at the fundraising point on a pre-existing blockchain. However, in other types of ICOs, investors only have the opportunity to acquire tokens at some future point, and the tokens or the underlying blockchain have yet to be developed. This situation is called pre-financing. Another possible permutation is the token pre-sale when investors receive tokens that grant them the right to obtain some other tokens later. In cases of pre-financing and pre-sale that give the right to claims for acquiring tokens in the future, these claims are also treated as securities, i.e. in the same way as security tokens, if they are standardized and suitable for standardized mass trading.
Finally, a practice confirmed that due to the lack of a formal framework for token classification, many ICOs initiators tend to classify their tokens as utility ones to avoid meeting the financial requirements and obligations associated with the securities offering. On January 9, 2019, the European Banking Authority (EBA) and ESMA published two reports (EBA, 2019; ESMA, 2019), which provide advice on crypto-assets to the EC and ESMA to the EU Parliament and Council. They respond to the European Commission's (EC) FinTech Action Plan 2018 (EC, 2018) request for European Supervisory Authorities (ESAs) to assess the suitability of the current EU regulatory framework. The EBA and ESMA (EBA, 2019; ESMA, 2019) definition of crypto-assets encloses cryptocurrencies and tokens, which implies they regard them as crypto-assets. However, according to ESMA Reports (ESMA, 2018, 2019), not all crypto-assets are treated as financial instruments - securities. Where crypto-assets qualify as transferable securities, the legal framework for regulating and supervising financial instruments applies to crypto-assets. When certain crypto-assets do not qualify as securities, financial or supervisory regulations will not apply, leaving investors exposed to significant risks. However, according to ESMA (ESMA, 2018, 2019), all crypto-assets and related activities should be subject to Anti Money Laundering – AML (Smithers et al., 2019). But, according to the SEC, neither the definition of a token nor its regulatory treatment depends on its "labelling". They depend on a careful assessment of the economic realities on which the transaction is based (SEC, 2017).
Finally, we can conclude that the dividing line between different types of tokens is somewhat blurred despite everything. However, for a token to be treated as solely a utility token (intended to perform a function within the network and facilitate the use of the platform), it must have zero value outside the platform on which it is used (OECD, 2019). Nevertheless, this is currently not the case with most ICO-issued tokens, which tend to be offered on crypto exchanges after the initial offering and are freely traded on secondary markets with the profit

expectation. Even without its practical use on the platform, the token gains value through trading and is considered a security in such cases.

4. PROBLEMS IN FINANCIAL REPORTING ON CRYPTO ASSETS

Current international financial reporting standards do not include clear instructions and provisions on how crypto assets should be accounted for. An overview of the current financial reporting standards, which could conceivably be applied in the accounting treatment of specific categories of crypto assets of entities, as well as particular dilemmas and guidelines for their resolution, are listed below:

Cash and cash equivalents (according to IAS 7);

Financial assets (according to IAS 32);

Other investments and real estate investments (IAS 16 and IAS 40);

Intangible assets (according to IAS 38);

Inventories (IAS 2, IAS 2) i

Payments for future goods and/or services (prepayment).

According to IAS 7, money includes cash on hand and demand deposits. Cash equivalents are short-term, highly liquid investments that can be quickly converted into known amounts of capital and are not subject to a significant risk of value changes. The International Accounting Standards Board states that particular cryptocurrencies can indeed be used for the goods and services exchange or as a monetary unit in expressing the price of goods or services, which is not enough to measure and recognize all transactions in financial statements. When speaking of crypto tokens, they provide certain rights to goods or services, even though neither they nor cryptocurrencies are used as an official means of exchange. Therefore, the mentioned standard's provisions cannot be applied to them.

Based on the above, it can be concluded that crypto assets currently do not meet the IAS 7 prerequisites. They are not present significantly as a medium of exchange, are characterized by volatility, and even banks in many countries do not have a clear position on their use and are often associated with illegal activities (Božić et al., 2022).

According to IAS 32, a financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity. Cryptocurrencies do not meet the requirements for the recognition of financial assets because they do not lead to the creation of contractual rights or obligations for payments in money or other financial means. Also, crypto tokens do not meet the provisions of this standard unless they provide rights to capital or other financial assets. However, if the conditions defined by IAS 32 are met, the International Financial Reporting Standard 9 (IFRS 9) is used to classify and measure the value of crypto tokens. This standard specifies three valuation models, financial assets at fair value through profit or loss, financial assets at fair value through other comprehensive income and amortized cost. Fair value measurement is necessary for different situations (crypto assets are recognized as intangible assets, and a revaluation model is implemented, held in the name of a third party, etc.), and the provisions of IFRS 13 are applied. There are three levels of fair value measurement and the corresponding inputs for fair value determination techniques (first, second and third level inputs). Level 1 inputs are quoted prices from active markets for identical assets or liabilities that the reporting entity can access on the valuation date (Popović, 2018, p. 54). Level 2 inputs are all inputs, except quoted prices included in the first level of fair value measurement, available for a specific asset or liability directly or indirectly (Popović, 2018, p. 55). Level 3 inputs are inputs for specific asset positions not based on available market data, usually when there is decreased market activity on the valuation date or the market is inactive. In these circumstances, it is crucial that inputs are developed based on the best information available in the conditions of illiquid markets, whereby business entities can also use their data (Popović, 2018, p. 55).

The International Accounting Standards Board defines real estate investment as an investment in the property to generate income through a change in its value or rental. This requirement is also met by crypto assets, as they are often held to make a profit by changing value. Nevertheless, it is not an asset with physical properties (tangible asset), so it cannot be classified as an investment property, according to IAS 40, and valued at fair value through profit/loss. Also, the intangible form of this asset does not meet the provisions of IAS 16, so following the above, it cannot be classified as an accounting position of real estate, plant and equipment.

There are some proposals to treat cryptographic assets as non-financial investments even though they do not meet the requirements defined by international accounting standards to be recognised as financial assets (Božić et al., 2022). Since the provisions of current international accounting standards do not specify their treatment, business entities are suggested to develop their accounting policy and apply two valuation models - the historical cost model and fair value through another comprehensive income model (Procházka, 2018).

According to IAS 38, intangible assets are defined as identifiable non-monetary assets without physical substance. It is clearly different from goodwill, and it can yield flows of future economic benefits. Assets meet the identification criteria in the definition of intangible assets when:

They are separate, i.e. they can be separated from the entity, sold, transferred, licensed, rented or exchanged separately or along with the associated contract, asset or obligation or

They arise from contractual or other legal rights, regardless of whether these rights can be transferred or separated from the subject or other rights and obligations.

Therefore, both crypto tokens and cryptocurrencies meet the requirements prescribed by IAS 38, so they should be treated according to it, i.e. valued according to acquisition costs or the revaluation model. According to the first model, crypto-assets are recognized in acquisition costs amount, and an impairment test is carried out according to the IAS 36 requirements. Crypto assets usually have a known value that can be cashed out on the reporting date, so the impairment test application is rather facilitated. The revaluation model implies that after the initial recognition of crypto-assets, it is measured at the revalued value (fair value on the day of the revaluation) reduced by accumulated depreciation (which does not exist with crypto-assets) and accumulated impairment losses. However, applying this model requires the existence of an active market, which is not always the case for all types of crypto assets.

IAS 2 defines inventories as assets intended for sale as part of ordinary operations or in the production process, sold as such or in the form of raw or auxiliary materials used in the production process or provision of services. Crypto tokens are predominantly held for further trading (to be sold later), which meets the requirements prescribed by IAS 2, so this form of property is measured according to the purchase cost or net realizable value (depending on which is lower). Therefore, business entities can own crypto assets intended for further sale (as part of a regular business). Assets are then treated as inventory according to the IAS 2 provisions. If business entities are in the role of intermediaries with crypto assets, the inventory is reported at fair value minus the cost of sales. If crypto tokens are held for investment purposes (for a more extended period), they do not meet the provisions of IAS 2 and cannot be recognized as inventories.

Crypto tokens can also provide rights to future goods or services and are then reported as prepayment, i.e. the definition and accounting treatment of intangible assets can be applied to them.

Hence, according to the provisions of the current accounting standards, the only solution at the moment is to record crypto-assets (crypto-currencies and crypto-tokens) as intangible assets and inventories (IAS 38 and IAS 2). Regarding the two accounting standards' requirements, the classification and measurement of crypto assets could be done as shown in the following table:

Table 1: Classification and measurement of crypto assets

A standard applicable to a specific category of crypto assets	Initial measurement	Subsequent measurement	Movement in carrying amount
Inventories (IAS 2)	Cost	The lower value between the cost and the net realizable value is taken.	Movement above cost – not applicable (N/A) Movement below cost – Profit and loss
In the event that crypto assets are held for sale in the near future and profit from price fluctuations, the provisions of IAS 2 also apply– Commodity-broker – trader exception	Cost	Fair value less cost	Profit and loss
Intangible asset (IAS 38) The revaluation model that is chosen when there is an active market	Cost	Fair value less accumulated depreciation and impairment	Movement above cost – Other comprehensive income Movement below cost – Profit and loss
Intangible asset (IAS 38) Cost model	Cost	Cost less accumulated depreciation and impairment	Movement above cost – not applicable (N/A) Movement below cost – Profit and loss

Source: Adapted by PWC (2017)

Crypto assets represent a relatively new type of asset. It is complex and still abstract to many, accompanied by mistrust or prejudices of regulators, banks or financial statements users. Nonetheless, we witness numerous and often significant changes that transform the traditional way of doing business and financing companies, and thus also certain aspects of its accounting coverage. Consequently, there is a need for new solutions in the financial reporting domain, which would eliminate the detected problems accountants face in practice.

5. INSTEAD OF A CONCLUSION – RECOMMENDATIONS FOR THE ACCOUNTING TREATMENT OF CRYPTO TOKENS BY THE ICO INITIATORS (TOKEN ISSUERS)

When it comes to the accounting treatment of the ICO by the initiator - the token issuer (the demanding party in the accounting recording), it represents a significant challenge for these companies. It means that the issuer of ICO tokens should determine whether the tokens meet

the definition of financial obligations following IAS 32 because, according to the above standard, a financial obligation is any obligation that is:
- contractual right (to deliver cash or another financial asset to another entity or to exchange financial assets or financial obligations with another entity under conditions potentially unfavourable to the entity) or
- a contract that will be or can be settled with instruments of the entity's capital and which is non-derivative (for which the entity is or may be obliged to deliver a variable number of instruments of the entity's own capital) or derivative (which will be or can be settled otherwise than by exchanging a fixed amount of cash or another financial instrument for a set number of instruments of the entity's own capital).
According to IAS 32 (paragraph 11), an equity instrument is any contract that proves a residual interest in the asset of an entity in the entity's assets after deducting all its liabilities. Typically the ICOs do not provide those with whom they are located, the holders, with residual participation, such as participation in realized profits, dividends, etc. Therefore, it can be deduced that the ICO does not have all the characteristics of an equity instrument. It is essential to carefully assess whether the right to cash flows refers to individual cases (projects) or they essentially provide rights to residual cash flows of ICO entity.
If it is determined that the initial offer of tokens is a financial obligation, the provisions of IFRS 9 apply to it.
The issuer should determine whether the ICO meets the provisions of IFRS 15, i.e. the standard concerning revenue from contracts with customers. The stated standard of financial reporting will be applied: if the receiver of the ICO token is a customer, if there is a "contract" for accounting purposes and if the fulfilment of performance obligations associated with ICO tokens that are not within another standard.
IFRS 15 defines a customer as a party contracting with an entity to obtain goods or services that are the output of the entity's regular activities in exchange for consideration.
The entity should consider whether the Whitepaper, purchase agreement and/or other accompanying documents create "enforceable rights or obligations" to determine whether a contract with customer exists. The fulfilment of the conditions defined in paragraph 9 of IFRS 15 is assessed to determine whether a contract with customers truly exists.
If none of the aforementioned standards is relevant, IAS 8, which deals with accounting policies, should be considered to decide the appropriate accounting treatment in the given circumstances.

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THE INTRODUCTION OF A SIMPLIFIED LIMITED LIABILITY COMPANY IN THE MACEDONIAN LEGISLATION – A VALID ATTEMPT FOR FOSTERING ENTREPRENEURSHIP OR JUST ANOTHER INSIGNIFICANT REASON FOR THE AMENDMENT OF THE COMPANY LAW ACT?

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ABSTRACT
In the past decade, there has been an ongoing trend, primarily among the EU member states, to decrease the legally required minimum capital for the establishment of limited liability companies. This was the effect of the introduction of the "1 GBP company" in the UK which resulted in the outflow of companies from other member states. Shareholders decided to set up companies in the UK instead of their home jurisdictions to take advantage of the lesser capital requirements. This was also possible due to the principle of freedom of establishment within the EU. However, with Brexit in full force, it remains to be seen whether some member states would reiterate from this practice.
In the Republic of North Macedonia, the initiative for such amendment of the Company law act by the Government was launched in 2020. In September 2021 the proposal was finally adopted, resulting in the introduction of a new variant of the limited liability company – the so-called "simplified limited liability company" – a limited liability company with a minimum paid-in capital of 1 EUR. From its adoption in 2004 to this date, the Company law act has been amended more than 30 times, making it one of the most often changed legislative texts. A number of these amendments were controversial and even resulted in initiatives in front of the constitutional court for their abolishment.
The paper aims to analyze the effect of the introduction of the simplified limited liability company in Macedonian legislation from a legal point of view. The analysis is focused primarily on the necessity, legal status, and effect of these forms of companies in comparison to the other forms of trade companies provided within the Macedonian Company law act. The analysis is conducted primarily through the use of the normative and comparative approach.

Keywords: *simplified limited liability company; limited liability company; Macedonian Company law act; minimum paid-in capital; 1 EUR company.*

JEL classification: *K20; K22; K29*

1. INTRODUCTION

The aim of the paper is to analyze the latest amendments within the Macedonian legislation which led to the introduction of the simplified limited liability company. The analysis is conducted through the utilization of the positive and normative approach. The recent amendments are also analyzed through the use of the comparative method by examining the existence, legal status and requirements for similar forms of companies in other jurisdictions within the EU. Finally, the conclusions and predictions which are made in this paper are on the basis of meta – analysis from the existing available data.

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The creation of the company as a separate legal entity for the purpose of conducting larger business undertakings has been one of the major catalysts in history, propelling tremendous changes in society - from the discovery of new lands and goods to the development of new technology, exploration, and exploitation of new resources to enabling individuals to accumulate immense wealth. Today, the company is widely accepted as the primary method for conducting commercial and business activities throughout the world, regardless of a country's social, economic, and political order. While there are modalities in the way companies are established or how they conduct their business activities, in principle all existing legal systems accept and recognize and grant companies the status of legal entities, separating them from their members.

In the Republic of North Macedonia, the status of companies is regulated in the Company law act *(Закон за трговски друштва*, hereafter CLA). The latest version of the act was adopted in 2004. Unlike many other countries which regulate various types of companies and partnerships throughout various and separate legal acts, North Macedonia adopts a unified approach to regulating all forms of entities that can conduct commercial activities in a single act. The CLA recognizes 5 forms of companies – general partnership (hereafter GP), limited partnership (hereafter LP), limited liability company (hereafter LLC), stock corporation (hereafter SC), and limited partnership by shares (hereafter LPS) (CLA, Article 20). Aside from these forms, the CLA recognizes additional modalities within some of the forms such as stock company by a single member (CLA, Article 416), single member limited liability company (CLA, Article 243), and with the most recent amendments – simplified limited liability company (CLA, Article 172 - a).

It is important to point out a particularity within the Macedonian legislation related to the forms and status of the companies. In general, and throughout various legal systems, it is recognized that commercial activities can be conducted either through partnerships or through companies. The main difference between a partnership and a company is the legal status – only companies have the capacities of a legal person, whereas partnerships are not considered separate legal entities from the business owners (partners). This means that, unlike companies, in partnerships, there is no separation between the owners and the business itself. Consequently, and by default, partnerships cannot be companies. However, the Macedonian CLA makes no such distinction, and grants partnerships the same legal status as companies. Firstly, it recognizes partnerships as types of companies (CLA, Article 20), and secondly, it gives all companies the status of *"legal person wherein one or more persons invest cash, contributions in kind and/or rights in assets"* (CLA, Article 19).

While the country faced changes in the social, economic, and political order, and the transition from socialism to capitalism required the introduction of private companies which would compete in the market, from today's perspective it is questionable whether the wide variety of forms leads to fostering entrepreneurship or to overregulation and complication. To this day, the CLA has been amended 33 times. The constitutionality of its provisions has been successfully challenged in front of the Constitutional court 6 times (Dejure. mk, 2022). This makes the CLA one of the most often amended legal acts, with changes of 41% in its provisions (Dejure.mk, 2022.).

The last two of these amendments were conducted to promote entrepreneurship through a decrease in the capital requirements and through enabling easier access to finances:

- The amendment in 2021 introduced the simplified limited liability company as a company with minimal paid-in capital of only 1 EUR.

- The last amendment in 2022, introduced the possibility of converting a loan into a share in limited liability companies.

While these amendments of the CLA were undertaken with the same goal, and both deserve due attention and analysis, in this paper, we only focus on the introduction of the simplified limited liability company (hereafter SLLC).

To analyze this change in the national legislation, and to give context to this decision of the national lawmakers, we first have to examine the existence, importance, and historical developments of the LLC in the broader context, primarily within the EU legislation, and selected national jurisdictions of member states of the EU. While the LLC is recognized in many countries throughout the world, we analyze the EU for the following reasons:

- The debate for the minimum paid-in capital for the establishment of an LLC was primarily kickstarted in the EU which prompted many changes in the national legislation of its member states;
- The occurrences in the EU are of importance for North Macedonia since the country is aspiring to become a member state within the near future; and
- The modality for a decrease in the paid-in capital adopted in the national legislation originates from Germany (which is an EU member state).

2. THE LLC IN THE EUROPEAN CONTEXT

As already indicated in the text, the majority of countries in the world recognize and adopt a form of a company with limited liability. While there are some variations in the naming, and the denominating throughout various legislations, the characteristics of the LLC are identical. The purpose of the LLC is to accumulate the advantages of the partnership (*i.e.,* close and personal relationship between its members, lower level of transparency, lower amount of minimum paid-in capital required in comparison to stock corporations) and the advantages of the stock corporation (*i.e.,* a separation between the business and its owners, shielding the owner's capital from the company's liabilities). While primarily it was intended for smaller business operations, today it is recognized as a type of company suitable for most businesses regardless of scale, capital, or sector.

According to statistical data, there are around 24 million companies in the EU, of which approximately 80% are limited liability companies (Europarl.europa.eu. 2022). Of this 80% of limited liability companies, 98-99% are small and medium-sized enterprises (SMEs) (Europarl.europa.eu. 2022). The European Commission is continuously indicating that SMEs are the backbone of the EU's economy (European Commission, 2020). Consequently, it becomes important that member states, among other factors which promote entrepreneurship, also provide a favorable legal environment concerning the LLC.

While the *EU acquis* harmonizes 35 chapters (including company law in chapter 8), the level of harmonization varies from one chapter to another. Although there are continuous efforts toward harmonization of company law, to this date there is no codified European company law. While some minimum standards have been placed, many aspects remain within the exclusive domain of the national jurisdiction of member states. In line with this, member states continue to operate separate company acts which regulate the types of companies and the requirements for their establishment. One exception is the European Company (*Societas Europea* - S.E.) which can be set up within the territory of the EU and in a way that allows easier transfer to or merging with companies in other member states (Council Regulation (EC) No 2157/2001. 2001).

In 2017 the Directive (EU) 2017/1132 relating to certain aspects of company law was adopted which partially codified some aspects of European company law. However, while the Directive sets some minimum standards concerning limited liability companies, minimum standards concerning paid-in capital are set only for public limited liability companies (*i.e.*, stock companies, or stock corporations).

Regardless, the turning point within the EU concerning the minimum required paid-in capital for limited liability companies (or private limited liability companies, as often referred to throughout various legislative texts) was the adoption of the UK Company Act in 2006. Article 542 of the act provides that a share in a limited company must have a fixed nominal value (UK Company Act, Article 542(1)), which effectively enabled private limited liability companies (Ltd.) to be registered with a paid-in capital of only 1 GBP.

Additionally, the well-recognized and adopted principle of freedom of establishment incorporated in the Treaty on the Functioning of the European Union (TFEU, Articles 49 to 55) allows companies to be registered in any of the member states. In addition, this right is granted not only to EU nationals, but also to companies formed in accordance with the legislation of a member state and having their registered office, central administration, or principal place of business within the EU (European Commission, n.d.) In light of this principle, it is not prohibited for a company to be formally registered in accordance with the law of one member state (even though it does not conduct any business there), but to conduct its business through the establishment of a branch in another member state. This principle has been acknowledged, adopted, and broadly interpreted by the CJEU in several cases (*Centros Ltd*, 1999; *Überseering BV*, 2002; *Kamer van Koophandel en Fabrieken voor Amsterdam*, 2003).

The principle of the freedom of establishment, coupled with the minimal requirements of paid-in capital of 1 GBP for the establishment of an LLC, created a situation in which many businesses decided either to move their seat to the UK, or register completely new companies to take advantage of the minimum requirements for paid-in capital, and subsequently open branches in their home jurisdictions through which they would conduct the complete business operation, thereby effectively avoiding stricter regulations. This led to an outflow of many companies from Germany, Belgium, France, the Netherlands, and others, to the UK.

To prevent the outflow many countries undertook measures within their national legislation. Some countries decided to follow the UK's example and started decreasing or completely abolishing the minimum amount of paid-in capital required for the establishment of an LLC:

- In 2003, France decreased the capital requirement for LLC (*Société à responsabilité limitée*, S.à.r.l.) from 7,500 EUR to 1 EUR (Dlapiperrealworld.com. 2022).
- In 2009, Bulgaria decreased the minimum share capital of a limited liability company (*Дружество с ограничена отговорност*, ООД) from 5,000 BGN (2,500 EUR) to 2 BGN (1 EUR) (Bulgarian Commercial Act, Article 117).
- In 2012, the Netherlands decreased the capital requirement for LLC (*Besloten Vennootschap*, B.V.) from 18,000 EUR to 0,01 EUR (Lawyers Netherlands. n.d.).
- In 2019, Belgium completely abolished the capital requirement for LLC (S.à.r.l./B.V.) which in the past was 18,550 EUR and 12,400 EUR for an LLC with a single shareholder (Company law code. n.d.).

Other countries took a different route and decided not to decrease the required capital, but rather to introduce a new form of “simplified LLC”, existing alongside the traditional LLC.

- In 2008, Germany amended the Act on Limited Liability Companies and introduced a so-called “Entrepreneurial company” (*Unternehmergesellschaft*) which can be established with a minimum of paid-in capital of 1 EUR, and which must bear the abbreviation "UG" (German Limited Liability Companies Act, Section 5a). Germany chose the path of creating a modality which coexists alongside the LLC (*Gesellschaft mit beschränkter Haftung*, GmbH). The minimum of paid-in capital for the LLC is 25,000 EUR (German Limited Liability Companies Act, Section 5(1)). The UG is not a separate form of a company but is merely designed as a transitory form that over time should become a GmbH. To achieve this, every year, 25% of its profits must be deposited into revenue reserves, and as soon as the revenue reserves, along with the original share capital reach the amount of 25,000EUR, the UG can be converted into a GmbH. If, however, the UG is not converted into a GmbH, the UG must continue to deposit 25% of its profits into revenue reserves every year, and these revenue reserves would not be able to be distributed as profits (Allwira-Angel. n.d.).

- Austria, which has a close legal tradition with Germany follows a similar approach, albeit, with some differences. Before 2013, an LLC (*Gesellschaft mit beschränkter Haftung*, GmbH) could have only been established with a capital of no less than 35,000 EUR. In July 2013, the capital requirements were reduced to 10,000 EUR. However, as of March 2014, Austria introduced another amendment to the company law which reverted the capital requirements for an LLC to 35,000 EUR but also introduced another form of privileged LLC (*Privilegierte Stammeinlage*) which has capital requirements of 10.000 EUR. The privilege is limited to 10 years in which the shareholders would effectively have to raise the capital to 35.000 EUR (Roadmap15.schoenherr. n.d.)
- Finally, Croatia, which also follows the German legal tradition, adopted a similar approach in its national legislation. Under Croatian law, the minimum required capital for an LLC (*Društvo s Ograničenom Odgovornošću*, DOO) is 20,000 HRK, or 2,500 EUR (Croatian Company Act, Article 389). In 2019, Croatia introduced the simplified LLC (*Jednostavno Društvo s Ograničenom Odgovornošću*), which can be established with a capital of only 10 HRK, or 1.33 EUR (Croatian Company Act, Article 390-a (3)). Similar to Germany, the simplified LLC is a sort of transitory form which should eventually be transformed into a regular limited liability company. Each year, a quarter of the profits should be deposited into revenue reserves, which can only be used to increase capital or to cover losses (Croatian Company Act, Article 390-a (5)). As soon as the simplified LLC reaches the minimum capital requirement of 20,000 HRK, it receives the status of an LLC.

While because of Brexit companies that are registered under UK law would no longer benefit from the principles established within the EU legislation, as evident, the trend for a decrease in the minimum amount of capital continued to spread throughout many countries.

As evident, in principle, there are two modalities through which countries have introduced the possibility of lower capital requirements. The first is where countries simply decide to lower the capital requirements for an LLC to an insignificant amount such as 1 EUR or less, or simply abolish them altogether. The second is where countries retain the capital requirements of the LLC, but also decide to introduce a so-called "simplified LLC" where the conditions for the establishment of the company, including the capital requirements, are significantly eased. In these instances, the capital requirements are also lowered to 1 EUR or less. The latter approach has also been adopted in North Macedonia with the latest amendments in the CLA.

3. THE LLC IN THE REPUBLIC OF NORTH MACEDONIA

The LLC is one of the five types of companies recognized in the Macedonian CLA, which can also be established by a single member (CLA, Article 423). Regardless of the number of shareholders, there are no significant distinctions in the legal requirements. However, the maximum number of shareholders is limited to 50 (CLA, Article 167(2)). The minimum capital requirement for LLC is 5,000 EUR (CLA. Article 172(2)), irrespective of the number of shareholders. The LLC was introduced with the country's first Company law act from 1996. The capital requirement under the CLA from 1996 is similar to the CLA from 2004. The only difference is that the CLA from 1996 sets the minimum requirement to 10,000 DEM (CLA from 1996, Article 112(3)) since the EUR did not have the prominence, it has today. Regardless, the common understanding when the Euro was introduced was that 1 EUR = 2 DEM, and consequently it can be deduced that at a nominal value the capital requirements remain the same today.

The LLC is the most popular type of company in the country. Statistical data from the statistical portal of the Central Registry point out that within the last 6 years, the vast majority of registered companies are either limited liability companies (LLCs) or single-member LLCs (SMLLC).

Table 1: Total number of registered companies in the Central registry by type from 2015-2022

Year	General partnerships	Limited partnerships	Limited partnerships by shares	Limited liability company	Single member LLC	Stock corporation	Total
2015	850	7	1	15,868	78,182	680	95,588
2016	496	7	1	11,917	60,657	640	73,718
2017	470	7	1	11,345	57,707	628	70,158
2018	439	8	1	11,369	57,729	612	70,158
2019	408	8	1	11,485	57,705	604	70,211
2020	380	8	1	11,732	58,179	582	70,882
2021	354	9	1	12,198	59,122	568	72,252

(Source: Crm.com.mk)

From the table, it is evident that there are almost no registered limited partnerships and partnerships limited by shares, and there is an insignificant number of general partnerships and stock corporations when compared to LLCs and single-member LLCs. Additionally, there is a constant decrease in the number of general partnerships and stock corporations from 2015 onwards. At the same time, there is a constant increase in the number of LLCs and SMLLCs from 2017 onwards – totaling 71,320 out of 72,252 registered companies in 2021.

If we take into consideration the fact that not an insignificant number of companies are registered as stock corporations due to legal requirements (for example banks and insurance companies), and that an even larger number of companies are registered as stock corporations due to the method for privatization of the state-owned companies under the previous system, the significance of the number of LLC and SMLLC becomes even more considerable.

Table 2: Percentage of registered companies in the Central registry from 2015-2022

Year	General partnerships	Limited partnerships	Limited partnerships by shares	Limited liability company	Single member LLC	Stock corporation	Total

2015	0.89%	0.01%	0.00%	16.60%	81.79%	0.71%	95588
2016	0.67%	0.01%	0.00%	16.17%	82.28%	0.87%	73718
2017	0.67%	0.01%	0.00%	16.17%	82.25%	0.90%	70158
2018	0.63%	0.01%	0.00%	16.20%	82.28%	0.87%	70158
2019	0.58%	0.01%	0.00%	16.36%	82.19%	0.86%	70211
2020	0.54%	0.01%	0.00%	16.55%	82.08%	0.82%	70882
2021	0.49%	0.01%	0.00%	16.88%	81.83%	0.79%	72252
Avarage	0.64%	0.01%	0.00%	16.42%	82.10%	0.83%	100%

(Source: Crm.com.mk)

In percentages, it becomes even more obvious that the LLC and the SMLLC are the most dominant types of companies on the market. On average, in the last 7 years, they account for 98.6% of all registered companies in the Central Registry, while all other forms are below the threshold of 1%.

From this, it can be easily deduced that the LLC is considered the do-it-all form of company in the country. This is further confirmed by the last reports on the most profitable companies in the country. Of the first 20 most profitable companies for 2021, 3 are registered as LLCs, and 6 are registered as SMLLCs (Pari.com.mk. 2022). Two of the top 3 most profitable companies are SMLLC. In 2020, these numbers were even higher – from the first 20 most profitable companies in the country, 4 were registered as LLC and 7 as SMLLC (Pari.com.mk. 2021).

While all companies which are registered as LLC and SMLLC must have a minimum capital of 5,000 EUR, it is undisputed that many have significantly more, and have chosen this form over stock corporations not because of capital requirements, but primarily due to larger flexibility and lesser transparency requirements. These features are particularly attractive to foreign investors.

Despite the prominence of the LLC, in 2020, the Government launched the initiative for amendment of the Company law act. The Government's proposal for this amendment of the CLA was with the aim of "supporting domestic enterprises." (Government of the Republic of North Macedonia. 2022) Similar initiatives were also supported by other national institutions, such as the National Start-up Council which listed the need for a simplified LLC as a necessary measure for the promotion of entrepreneurship (National Start-up Council. 2021).

In September 2021 the proposal was finally adopted, resulting in the introduction of the "simplified limited liability company." The newly introduced modality of the LLC can be established with a minimum paid-in capital of 1 EUR (CLA, Article 172-a(1)). However, there are some limitations. Firstly, the maximum number of shareholders is limited to three (CLA, Article 170(2)). Secondly, the company must retain 1/4 of its profits in the capital reserve which cannot be distributed as profit. It can only be used to increase capital, and for covering losses that cannot be covered with the rest of the profits from that year (CLA, Article 172-a(3)).

The amendment in the CLA is a carbon copy of the adopted approach in the Croatian Company Act. Article 172-a of the Macedonian CLA is a verbatim adoption of Article 390-a of the Croatian Company Act. Consequently, we can consider the simplified LLC in North Macedonia also as a transitional form, until the company reaches the threshold of a minimum required capital for transformation into an LLC.

So far, from the latest statistical data available from the Central registry for 2021, from its introduction, there are 9 simplified LLCs registered (Crm.com.mk. 2022). Given the fact that the adoption of the amendments occurred late in 2021, it is conceivable that by now this number is larger, and it will continue to increase in the future. In any case, it remains to be seen in the next couple of years how these changes will affect the structure of the registered companies.

4. CONCLUSION

While on paper, and theoretically, the adopted amendments seem like a logical step that would promote entrepreneurship and support the establishment of domestic companies, there are several major red flags and potential problems with these approaches, both on a global and national level.

On a global level the major concerns are:

- In theory, all countries which decrease the capital requirements do it under the pretext of encouraging and promoting entrepreneurship. In reality, and especially in developing countries, it appears to be more of a race to the bottom for which country will provide the most favorable conditions for the establishment of a company in the process of attracting foreign investments. Many reputable institutions measure the index of the business environments of countries throughout the world. Most notably, under the support of the World Bank, the Doing Business report (which has now been discontinued) was considered the most prominent publication that measures the business climate in the countries. One of the indicators of the report is related to starting a business, which encompasses the procedures, time, cost, and paid-in minimum capital to start a limited liability company within a country (Doingbusiness.org. n.d.) The lesser the requirements and the lesser the minimum paid-in capital for the establishment of an LLC is, the higher the index of that country will be. However, it must be borne in mind that this is just a single aspect of one of the 11 indexes that define the business climate in the country. Consequently, while simply lowering the paid-in capital for the establishment of an LLC is an easy adoption that would enable countries to improve their index, it would not make a real change or attract foreign investment if there is no satisfactory level achieved in the other aspects of the business environment.
- Further, the drastic decrease in the capital requirements or their complete abolishment can potentially create an environment in which so-called “shell companies” thrive. These companies are often used as special purpose vehicles for creating complex company structures to shield from liability, protect assets, and in some instances avoid legal obligations (tax evasion and money laundering). Countries with weak institutional control or lack effective and efficient control are especially susceptible to these occurrences.
- Additionally, while today the function of the minimum capital for the protection of creditors becomes less relevant, very often minimum capital requirements are used to compel the founders of the company to truly evaluate the viability of their idea when deciding whether to go forward. It’s a test of the seriousness of the business idea, and it indicates whether it is even ripe to pass the first threshold – formal registration of a company. Abolishment or complete decrease in the capital requirements opens the possibility for registration of unviable businesses which would only be a burden on the system.
- Finally, in countries that have introduced a simplified modality of an LLC, it is important to evaluate whether it makes sense to conduct all institutional and legislative changes to accommodate another type of company concerning the already existing form of an LLC. While its introduction might make sense in jurisdictions in which the costs for setting up an LLC (including the capital requirements) are significantly high, it makes less sense to

do so in jurisdictions in which the initial capital requirements are lower. For example, in Croatia, an LLC can be established with 20,000 HRK, which is roughly 2,500 EUR. It is undisputed that 10 HRK, which is the capital required for a simplified LLC is much lower. However, it can be argued that in fact, 2,500 EUR is also not a significant amount for starting a business, regardless of its scale. For example, the average pay in Croatia in May 2022 was recorded at 7,690 HRK (Take-Profit.org. 2022), which is slightly above 1,000 EUR. If we take into consideration firstly, that very often only a percentage of the amount has to be deposited at the moment of registration, while the rest can be paid in up to a year or more, and secondly, that not every contribution has to be in cash, the gap between LLC and the simplified LLC closes even further. On top of that, if the simplified LLC is only envisaged as a transitory form and over time it has fulfilled the capital requirements of an LLC, this move makes even less sense.

On a national level, in addition to the concerns on the global level, the biggest considerations are:

- Firstly, as already noted at the beginning, the CLA grants the status of legal persons both to companies and partnerships, thereby removing the largest difference which exists between these forms of enterprises. This lack of distinction which exists within the national legislation, to some extent hinders the introduction of the modalities of some of the forms of companies or renders some of the already existing forms pointless. While under the CPA general partnership is granted the status of a legal person, still each partner shall be jointly and severally liable to the creditors for the obligations of the general partnership (CPA, Article 137(1). The general partnership, however, does not have capital requirements. As already noted, the LLC has capital requirements of 5,000 EUR, but its members do not bear responsibilities towards the creditors of the company for its obligations. In essence, the tradeoff between an LLC and a GP is 5,000 EUR in capital for shielding liability. However, with the introduction of a simplified LLC, members are effectively shielded from liability, and still only pay 1 EUR as capital in the company, thereby effectively receiving the benefits of both forms of company. In essence, this renders the form of general partnership obsolete.
- Furthermore, the difference between 5,000 EUR and 1 EUR for starting a business is not significant to impede a viable idea. While at face value there is a significant difference between the sums, in the objective terms of commencing a business activity the difference between one and the other becomes smaller. As already noted, the capital requirement of 5,000 EUR was introduced with the CLA from 1996 (then 10,000 DEM). Throughout the years, and through all company law amendments in the country, the nominal value for establishing an LLC remained unchanged. It is undisputed that the value of 5,000 EUR in 1996 was much more than it is today. A simple calculation, only taking into consideration inflation, shows that 5,000 EUR in 1996, is worth 8,269 EUR today (Inflationtool.com. 2022). Consequently, the nominal value of the capital requirements remained the same for almost 30 years, whereas the real value decreased by over 60%. In addition, contribution in the capital need not be only in cash, but can also be in kind, excluding only labor and services (CLA, Article 174). Finally, there is no obligation to members to contribute immediately at the moment of the registration of the company. The contribution payment is according to the articles of association, but in any case, not later than a year from the date of publication of the founding of the company (CLA, Article 174(5)). Consequently, and bearing in mind that any business, regardless

of size and scale needs initial capital to start operations, the legislative amendments should not make a significant difference in the commencement of commercial activity.

- Finally, the LLC and the single member LLC are already established as the most often used forms of company in the country. The fact that more than 98% of the companies are registered in these two forms indicates that they are by far the most preferred methods by market participants. Should the simplified LLC be considered an improvement? That seems unlikely, especially since it is envisaged as a transitional form of company that over time should become an LLC.

Currently, it is too early to measure the effects that the introduction of the simplified LLC will have on the structure of companies, nevertheless, some predictions can be made. Firstly, it is conceivable that the introduction of a simplified limited LLC would lead to a further decrease in the number of general partnerships, and probably even at a faster rate. Since the simplified LLC offers the advantages of the general partnership, with the limitation of the member's liability, people will likely favor it over the general partnership.

Secondly, it should be expected that the total number of companies registered in the Central Registry would also increase. However, this increase can be for better or for worse. The introduction of the simplified LLC was to promote entrepreneurship and start-up culture. So, if this goal is to be achieved, the total number of registered simplified LLCs, and by extent, the total number of companies should increase. New innovative start-up companies should appear on the market, making a positive shift in the economy. On the other hand, the total increase in the number of companies may be the result of the establishment of shell companies, used for illicit activities.

Finally, this policy can be considered successfully implemented if in the long term the numbers of LLCs, SMLLCs, and even stock corporations increase in the future, while the number of simplified LLCs remains constant, or even decreases. This would mean that simplified LLCs after the initial years of operation, take off successfully, and transform into another corporate form. On the contrary, if the number of LLCs, SMLLCs, or stock corporations stagnates or even decreases in long term, while the number of simplified LLCs increases it would show that the newly established simplified LLCs are struggling and are unable to meet the capital requirements and to transform into another corporate form. Alternatively, and in another bad case scenario, it could also mean that due to the easier requirements many simplified LLCs are registered but they remain inactive. In the past, the country was already struggling with inactive companies, and in 2014 adopted an unpopular solution of striking them off from the central registry without a procedure for their liquidation or insolvency proceedings. This solution has been widely criticized (Gelev. n.d.) and was finally abolished in 2021, in the same package for the amendment of the CLA, along with the introduction of the simplified LLC.

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Research-in-progress

THE CENTRAL AND EASTERN EUROPEAN ECONOMIES IN THE ERA OF INDUSTRY 4.0 AND CHINESE DIGITAL SILK ROAD

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EXTENDED ABSTRACT OF RESEARCH IN PROGRESS

Over the recent decades, the changes in the paradigm of international trade have been observed. As the result of decreasing of trade barriers as well as the reduction in trade costs allowed companies to divide their production into stages and to locate it in different countries according to their competitive advantage. Eventually, the production process has become more fragmented, both geographically and vertically. It means that intermediate products are shipped across boarders many times and every exporting economy provides some value added according to its competitive advantage. As a result, global value chains have become one of the most important feature of international trade. Following (Gereffi & Fernandez-Stark, 2011), in this study global value chains are defined as “the full range of activities that firms and workers do to bring a product from its conception to its end use”. Humphrey and Schmitz (2002) pointed out four types of upgrading in global value chains: product, process, functional and chain. Product and process upgrading involve companies retaining their positions in global value chains by enhancing productivity gains through adopting new product processes or “new configurations of product mix”. Thus, functional upgrading involves a slicing up the global value chains into new activity which generates higher value added, e.g. own brand manufacturing. In turn, chain upgrading involves a going up to new activity, which needs higher skills and capital and value added. Milberg and Winkler (2013) offered similar classifications of upgrading.

Production fragmentation has caused a rapid increase in trade in intermediate goods as often companies offshore an intermediate stage of production process. Offshoring production has been typical to manufacturing (Timmer, et al., 2012), however, services have been often overlooked, but play a major role, especially in supporting global value chains (Kommerskollegium 2013).

In turn, Digital Silk Road, announced in 2015, has become a significant part of Chinese Belt and Road Initiative strategy. China has implemented this strategy as a part of its long-term technological plan, under which China provides support to its exporters, including many well-known technology companies and builds a network of cooperation with selected countries in the field of technology, including ICT infrastructure, services, 5G networks, e-commerce, etc. China's rapid technological changes must not go unnoticed by trading partners, including analysed European countries, which, to maintain international competitiveness, are increasing the technological advancement and enhancing market protection against Chinese technology. Until recently, the value added from China to European countries was concentrated mainly on medium technology industries and value added from Europe to China focused more on advanced goods and services. Nowadays, there is a redirection of Chinese value added to high-tech activities (including service activities), which reflects China's ambition to build an economy that leads to innovation and industry 4.0.

The transition of the CEE states’ economic and political systems initiated in the early 1990s, earned them the EU membership in 2004. The accession to the EU’s structures meant that these countries achieved the free-market economy status and they should be treated as the full

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member of the global business networks. Moreover, the decline in trade costs (transport and transaction), greater openness of their market and the removal of trade barriers have all helped the CEE states to join global value chains.

Hence, the CEE economies are going to be more heavily involved in global production linkages. Many empirical studies have presented the close and dynamic integration of these countries with the EU market (especially the EU-15) and in a more limited scope with the whole global economy as well (Behar and Freund 2011). Generally, democratisation, the strengthening of political and economic relations (particularly with the EU), and the modernisation of many sectors (including financial sector, more advanced industries), were common elements of the CEE countries long-term development policies. One of their priorities was the redirection of foreign trade towards the EU and joining the global production linkages where China has become the core producer.

Recently, the role of the economy in global value chains is more determined by the advancement of value added that it offers. Companies move toward services and innovations in the business model (Nenenen & Storbacka, 2010) and introduce industry 4.0 (Bundesministerium fur Bildung und Forschung, 2016). A symptom of these novelty is a concept of servicification of manufacturing (Neely et al. 2011) and cross-sectoral connections, which have reconstructed traditional global value chains (Naude et al. 2019) and, together with Industry 4.0, is expected to change the landscape of global manufacturing. As a result of facilitation of manufacturing, economies placed in the downstream market can improve their role in global value chains. In Europe, this can be an opportunity for most Central and Eastern European countries.

Analyzing changes in CEE’s role in technological global value chains, we should take into account its two most important value-added suppliers: China and Germany, as well as their most important value-added buyer - Germany. These three economies established a sort of value added flows triangle. The regional supply chains built by Germany in the CEE allowed it to maintain a comparative advantage in sectors important for the economy, while helping the CEE countries join global value chains, positively influencing economic growth, but also reducing them to entities operating in less advanced stages of production (Jacoby, 2010; Fortwengel, 2011). Today, Germany also cooperates strongly with China (as a result of Digital Silk Road), and the CEE economies (especially the Visegrad Group) are increasingly dependent on Chinese value added, still linked to German value added. The most visible connections can be found in automotive and electronics.

Hence, the question is: how strong are these links in servicification of manufacturing and whether there are visible trends in value-added flows in between this triangle in the era of industry 4.0 and Chinese Digital Silk Road. The research question seems to be relevant, thus in the subject literature, little is known about the mentioned relations (Roland Berger, 2021).

The research method based on the analysis of data from the OECD Trade in Value Added databases, containing the world input-output tables for the period 2005–2018. The system of balance equations in the input-output model for one economy has been adopted to a multi-economy model. The model is described in more detail in (Koopman et al. 2013 or Hummels et al, 2001) and is based on the decomposition of gross exports. The method includes not only estimates of total value added in global value chains, but also calculations at both the mezoeconomic level and cross-sectoral flows of value added (including servicification of manufacturing).

The results of analysis showed that most relations between economies continued to deepen the imbalance in flows of value added. The CEE economies are making their manufacturing increasingly dependent on advanced services (both from Germany and China). On the other hand, the share of CEE services to Chinese and German manufacturing is decreasing or remains steady. However, some trends could be observed in the last years, especially between

Germany and China. German manufacturing is starting to rely more on Chinese value added (information and communication technologies services and the subgroup computer programming, consultancy and information services activities in manufacturing, information and communication technologies services' value added in transport equipment), although previously Germany provided more of these services to China. In telecommunications in manufacturing between CEE and Germany, the trend has turned against CEE. However, there was no direct compensation between pairs of economies, but the decrease in German value-added flows to China resulted in a much larger increase in value-added from China in German manufacturing.
If the presented changes in flows were to reflect the effectiveness of Chinese industry 4.0 and Digital Silk Road. These strategies serve their purposes and increases not only the advancement of Chinese value-added exports, but also makes important economies dependent on this added value. On the contrary, the industry 4.0 strategy in CEE has not improved its position in the triad. Germany has still a strong position as a provider of value added, but its dependence on foreign value added is high, which derives from the links with CEE.

Keywords: information and communication technologies, servicification of manufacturing, China, Germany, CEE

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NON-TARIFF MEASURES IN CEFTA 2006: PERSPECTIVES OF NORTH MACEDONIA AND SERBIA

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ABSTRACT
This article addresses non-tariff measures applied in CEFTA 2006, analysed specifically from the perspective of two Parties – North Macedonia and Serbia. It provides insight into the business community's views in each country with regard to the non-tariff measures noted in their trade within CEFTA, as well as comparison of the Macedonian and Serbian case of imposing, addressing and overcoming the non-tariff measures. The article derives on the findings of the empirical research conducted in parallel in both countries in June-August 2021 within the framework of the EU Funded GIZ Project: Support to the Regional Economic Integration. It also reflects relevant legislation, such as CEFTA 2006 Protocols.
In terms of content, the article includes overview of the trade within CEFTA 2006 and focuses on the non-tariff measures relevant to North Macedonia and Serbia, in particular - sanitary and phytosanitary measures; technical barriers to trade; price control measures and trade facilitation measures, such as formalities connected with import, export and transit, along with the procedures of release and clearance of the goods. The analysis of the empirical information indicates that sanitary and phytosanitary measures and trade facilitation have been reported as most common problems by both parties, despite the CEFTA Protocols regulating some of the issues. The article's conclusions mirror the findings of the research and provide recommendations about possibilities for overcoming the non-tariff measures in CEFTA 2006.

Keywords*: CEFTA 2006; Non-Tariff Measures; Trade Facilitation*

JEL classification: *F1*

1. INTRODUCTION

The importance of the non-tariff measures (NTMs) grew significantly in the last three decades, reflecting the decline of the tariffs' role in trade protection (United Nations, World Bank, 2018). As noted by UNCTAD: "Non-tariff measures (NTMs) are policy measures other than tariffs that can potentially have an economic effect on international trade in goods. They are increasingly shaping trade, influencing who trades what and how much. For exporters, importers and policymakers, NTMs represent a major challenge. Though many NTMs aim primarily at protecting public health or the environment, they also substantially affect trade through information, compliance and procedural costs." (UNCTAD, 2019).

NTMs can take the form of "technical measures, such as sanitary or environmental protection measures, as well as others traditionally used as instruments of commercial policy, e.g. quotas, price control, exports restrictions, or contingent trade protective measures, and also

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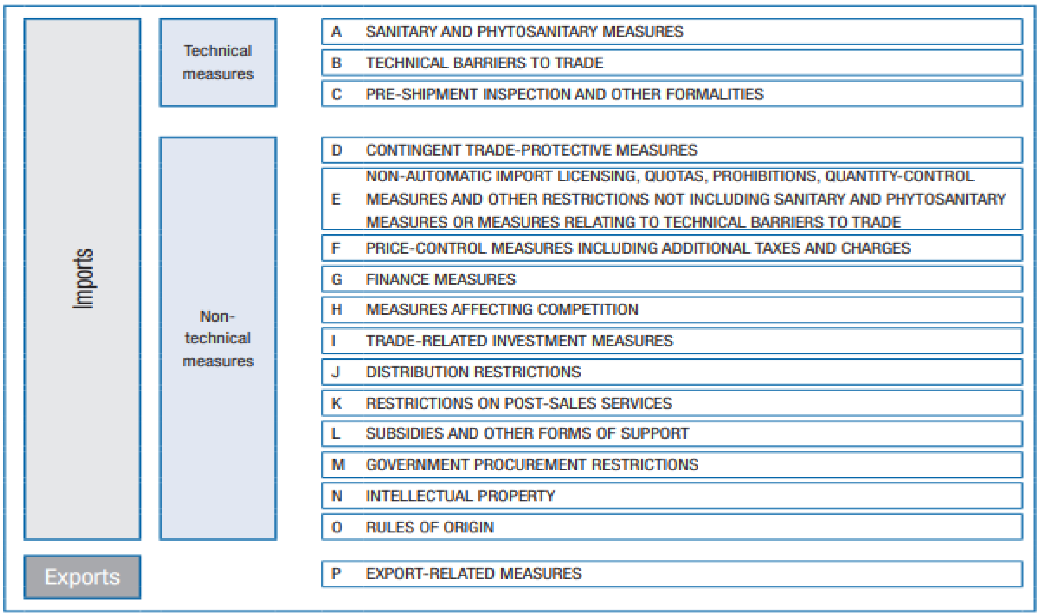
other measures, such as competition, trade-related investment measures, public procurement or distribution restrictions”(UNCTAD 2019).
NTMs have been an issue into the regional trade, including CEFTA2006 trade. CEFTA 2006 is a regional trade agreement of the Western Balkan countries (Albania, Bosnia and Herzegovina, Kosovo*, Montenegro, North Macedonia and Serbia) and Moldova. Bjelić, Dragutinović-Mitrović and Popović-Petrović (2013) have researched the application of two types of NTB in CEFTA 2006 trade: Administrative and Technical NTBs. They concluded that after trade liberalisation period (through ATM and CEFTA2006), non-tariff barriers (NTB) have become one of the most important impediments in the Western Balkan`s trade with the EU. Similarly, Tosevska-Trpcevska and Tevdovski (2014) explored the effects of Customs and Administrative Procedures on South-Eastern European Trade, using the gravity model in the period 2008-2012 and found that number of days spent at the border and costs paid in both importer and exporter countries had significant negative influence on the volume of trade in the period 2008-2012.
OECD and CEFTA Secretariat Report on Elimination of Non-Tariff Barriers in CEFTA (OECD, CEFTA, 2012) assesses progress made by CEFTA Parties in reducing NTBs. The assessment, based on the Multilateral Monitoring Framework (MMF) developed by the OECD, was carried out with the support of governments, independent experts and private sector representatives in each CEFTA Party. The MMF measures the level of harmonisation of technical regulations, standards, sanitary and phytosanitary (SPS) measures and administrative procedures in each CEFTA Party against EU and international requirements and focuses on priority sectors and products. Monitoring is structured around three policy dimensions: i) technical barriers to trade; ii) sanitary and phytosanitary measures; and iii) administrative barriers to trade. According to the study CEFTA Parties have made the best progress in dimensions related to reducing 16 “technical barriers to trade” and “administrative barriers to trade”. Scores in the dimension related to “sanitary and phytosanitary measures” are comparatively lower.
Great effect can be gained from the elimination of non-tariff barriers. Mulabdic and Ruta (2018) study the economic effects of “deepening” the Central European Free Trade Agreement (CEFTA). It combines new information on the content of trade agreements with gravity model estimates of the impact of deep trade agreements—agreements that go beyond the elimination of tariffs and other border restrictions. The analysis suggests that CEFTA is a relatively shallow trade agreement as it covers mostly policy areas under the current WTO mandate. The estimated trade impact of CEFTA on member countries is relatively modest, varying between 0.02 and 7.4 percent. CEFTA’s members would gain from simultaneously deepening their integration reciprocally and vis-à-vis the EU.
The aim of this paper is to compare NTMs reported by the business community in two CEFTA Parties – North Macedonia and Serbia. The article derives on the findings of the empirical research conducted over June-August 2021 within the framework of the EU Funded Project: Support to the Regional Economic Integration, implemented by Deutsche Gesellschaft fur Internationale Zusammenarbeit – GIZ (GIZ, 2021). The project had regional dimension and included other CEFTA Parties, apart of Moldova, enabling comparison of the NTMs across the Western Balkan region.
The methodological approach of the empirical research was based on the UNCTAD Guidelines with regards to the categories of NTMs (Figure 1). The research was undertaken by conducting extensive interviews with companies from the relevant sectors. The interviews were done online and encompassed questions related to all measures noted in Figure 1. The companies for interviews were selected from the most relevant trade sectors in each CEFTA Party.

The trade sectors were identified individually for each CEFTA Party following two criteria – to represent at least 75% of the intra-CEFTA trade in goods of that country and to cover two thirds of the Party's total trade (excluding mineral exports and arms). The companies were selected based on their size, volume and frequency of their intra-CEFTA trade. In the case of North Macedonia and Serbia, each sector was covered with three companies at least, ensuring sufficient data for NTMs analysis. Along with the interviews, analysis of the CEFTA 2006 legal basis was done, as well consultations of the relevant national institutions with regards to clarification/verification of specific issues.

Figure 1. Categories of NTMs



Source: UNCTAD (2019). Guidelines to collect data on official non-tariff measures, UNCTAD/DITC/TAB/2019/8

The paper has been structured to provide an overview of the trade within CEFTA and comparison of the non-tariff measures relevant to North Macedonia and Serbia. The focus of the NTMs has been on sanitary and phytosanitary measures; technical barriers to trade; price control measures and trade facilitation measures, such as formalities connected with import, export and transit, along with the procedures of release and clearance of the goods. The article concludes with the findings of the research and recommendations for the trade policy-makers in both countries.

2. CEFTA 2006

CEFTA 2006 is a free trade agreement concluded on 19 December 2006, consisting of seven Parties: Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, Republic of Moldova, Kosovo* and Serbia (CEFTA Agreement, 2006). Up till 2007, CEFTA 2006 included Romania and Bulgaria, as well as Croatia till 2013. CEFTA membership of these three countries ceased as they have joined the European Union.

CEFTA 2006 have replaced 32 bilateral Free Trade Agreements (FTAs) signed between the Parties, following the Memorandum of Understanding on Trade Liberalization and Facilitation concluded on 27 June 2001 in Brussels by the Foreign Trade Ministers of the South East European (SEE) countries (Memorandum, 2001). All concessions from these 32 FTAs have been incorporated into CEFTA 2006 framework. The liberalisation of

intraregional CEFTA 2006 trade have started with goods leading to prompt creation of free trade area. Next step in intraregional trade liberalisation was focused on agricultural products with the adoption of Additional Protocol – Annex 10 in 2011 (CEFTA, 2011). Service trade liberalisation was enabled with Additional Protocol 6 on Trade in Services (CEFTA, 2019), adopted in 2019 and entered into force on 11 January 2021. Further intraregional liberalisation included Protocol 5 for Trade Facilitation (CEFTA, 2017), adopted in 2017. CEFTA 2006 has also established a Subcommittee on Non-Tariff Measures.
Further development of CEFTA 2006 proceeded towards creation of a Common Regional Market (CRM), with ambitious Action Plan 2021-2024 that included numerous areas of cooperation. However, the action plan is seriously lagging behind in its implementation.
In April 2020, CEFTA 2006 Parties started the implementation of "Green Corridors/Lanes Initiative" that enabled swift crossing of intraregional borders for the products considered essential for the Parties to cope with the COVID-19 pandemic. It was later expanded to other products, too, and provided great effects (CEFTA statistics, 2022). The Green Corridors/Lanes Initiative is also aiming to cover the borders between CEFTA 2006 and EU Members States. First such lane was established on a Macedonian-Greek border in 2022. In addition, the Green Lanes Initiative was complemented with CEFTA-Transport Community Blue Lanes for facilitation of the sea traffic between CEFTA and EU. The first Blue Line was established between CEFTA 2006 (Albania and Montenegro) and Italy in September 2022. These lanes are considered to be a stepping stone towards better managed borders, decrease of the waiting times for passengers and freight, and launch of one-stop-go approach at all borders. The Green and Blue Lanes are very important with regards to the NTMs in CEFTA 2006, as many of the complaints noted below refer to the issues addressed with the Lanes.
In trade terms, CEFTA 2006 is rather small region, contributing to only 0.23% of the total world's export in 2021 (Table 1). In absolute values, the combined export of the CEFTA Parties to the world has been around EUR 43bn in 2021. Although the export has a tendency of increase, compared to EUR 30bn in 2017, the region's trade potential is considerably limited due to its size. There are differences within CEFTA 2006, too, as Serbia is a largest exporter from the region with share of around 50%, followed by North Macedonia and B&H, each contributing to around 17% of the total export of the CEFTA 2006 region.

Table 1: Export of goods of CEFTA 2006 Parties, 2017-2021 (in million EUR)

Exporters/Period	2017	2018	2019	2020	2021
Serbia	15022	16235	17466	17000	21621
North Macedonia	5037	5853	6425	5817	7757
Bosnia and Herzegovina	5644	6086	5875	5392	7285
Albania	2040	2437	2428	2118	2776
Moldova	2149	2294	2482	2163	2659
Kosovo*	380	375	392	478	751
Montenegro	329	339	371	320	369
CEFTA 2006	30604	33621	35442	33291	43223
World	15568550	16378756	16748114	15335684	18567933

Sources: Calculations based on UN COMTRADE and ITC statistics https://www.trademap.org, except for Kosovo which is World Bank data (https://data.worldbank.org/indicator/BX.GSR.MRCH.CD?locations=X). Average EUR/USD exchange rate of the respective years is used for value calculation.

The intra-regional export data of CEFTA Parties from the Western Balkans (Table 2) indicate that only 13.8% of the total export of the region in 2021 was done within its borders. CEFTA 2006 relative importance as export destination for its Parties declines over the period, owing to the fact that all Parties have favorable access to the EU market, while intra-regional trade has been overburdened with non-tariff measures as pointed out in empirical studies on this subject (GIZ, 2021).

Table 2. Intra-regional trade in Western Balkans (2021) – exports (in million EUR)

Exporter/Destination	ALB	B&H	ME	MK	SRB	KOS	CEFTA
Albania (ALB)	/	22	49	102	81	308	562
Bosnia and Herzegovina (B&H)	27	/	202	68	881	51	1229
Montenegro (ME)	20	33	/	5	107	24	189
North Macedonia (MK)	96	95	31	/	292	303	817
Serbia (SRB)	156	1350	688	698	/	/	2892
Kosovo* (KOS)	111	11	24	87	44	/	277

Source: Eurostat (online data code DS-056697)

Table 2 shows that Serbia, B&H and North Macedonia have predominant role in the intra-regional export. Around 48% of the intra-CEFTA export in 2021 was done by Serbian companies, followed by B&H and MK with share of 20% and 13.7%, respectively. Such data indicate that there is potential for intra-regional trade creation, as the overall export of the Parties register noteworthy upward trend over the period 2017-2021 (Table 1). In that context, identification of non-tariff measures and their addressing by the trade policy makers in CEFTA Parties is crucial. The section below outlines the major NTMs in intraregional trade reported by the companies in North Macedonia and Serbia, aiming to provide ground for policy recommendations focused on trade advancement in the region.

3. BUSINESS PERSPECTIVES ON NTMs IN INTRA-CEFTA TRADE

There have been eight trade sectors in North Macedonia and twelve sectors in Serbia identified as relevant for the empirical research, as shown in the Table 3. Serbia's number of sectors is relative to its size as largest economy in CEFTA 2006, as well as largest exporter in the region (Table2). On the other side, the Macedonian foreign trade has been rather dense and few sectors dominate the trade structure - Chemicals & Allied Industries; Metals; Machinery and mechanical appliances. Apart of the manufacturing sectors, few agricultural sectors were included in the empirical research, given their relevance for the intra-regional trade.

The interviewed companies were carefully selected in purpose to provide adequate representation of the sectors - frequent traders were included, as well as mix of large and smaller companies. On the side of North Macedonia 45 companies were approached, out of which 24 reported NTMs and trade facilitation (TF) issues, while Serbian sample encompassed 59 companies, out of which 48 reported NTMs and TF issues.

Summarized results of the interviews of the Macedonian companies have shown 44 reported incidents of NTMs and 25 TF issues, while Serbian companies have reported 37 NTMs and 36 TF issues. The reported NTMs and TF issues of both countries refer to their international trade in general, but most of them apply to the intra-regional CEFTA 2006 trade. NTMs and TF issues were noted in both - manufacturing and agricultural sectors.

Table 3 Most relevant trade sectors in intra-CEFTA 2006 trade

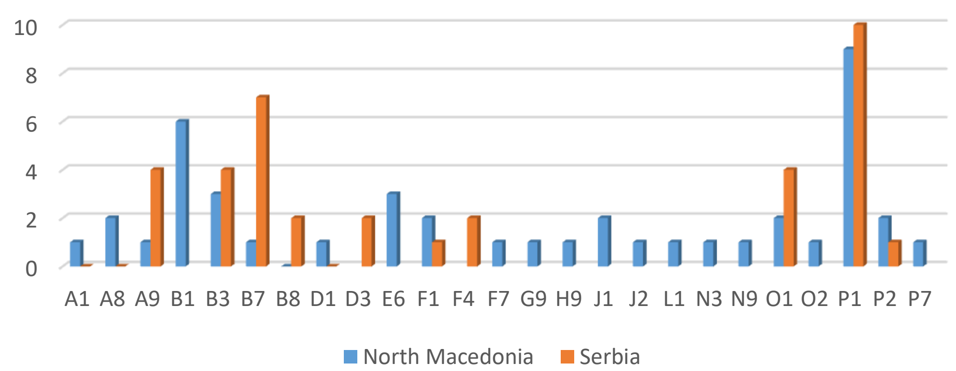
Sectors	HS Code	North Macedonia	Serbia
Animals and Animal Products	HS 01-05	X	X
Fresh fruits and Vegetables	HS 06-15	X	X
Processed foods	HS 16-24	X	X
Mineral Products	HS 25-27	X	X
Chemicals and Allied Industries	HS 28-38	X	X
Plastics / Rubbers	HS 39-40	X	X
Wood & Wood Products	HS 44-49		X
Footwear / Headgear	HS 64-67		X
Metals	HS 72-83	X	X
Machinery and mechanical appliances (boilers, turbines, washing machines, agricultural machinery, etc.)	HS 84	X	X
Electrical machinery (shavers, lamps, telephones, televisions, electronic integrated circuits, etc.)	HS 85		X
Transportation	HS 86-89		X

Source: Data obtained in company interviews in Serbia on EU Funded Project "Support to the Regional Economic Integration", implemented by GIZ, July-August 2021

3.1. Non-technical measures (NTMs)

According to the categories of NTMs (Figure 1), the technical NTMs refer to three groups of measures – sanitary and phytosanitary measures (A); technical barriers to trade (B) and pre-shipment inspection and other formalities (C). Besides them, there are various non-technical measures (D-O) that occur in the international trade, as well as export related measures (P). The reported NTMs on import/export reported by Macedonian and Serbian companies during the interviews are presented on the Graph 1. The data are given in absolute numbers. Detailed list of the NTMs included in the Graph 1 is attached in Annex 1.

Graph 1. NTMs reported by Macedonian and Serbian companies in 2021



Source: Data obtained in company interviews in Serbia on EU Funded Project "Support to the Regional Economic Integration", implemented by GIZ, July-August 2021

As presented on the Graph 1, the most common NTMs reported in both countries are related to technical specifics of labelling, marking and packaging requirements on the import side (B3) with total of 7 (3 MK + 4 SRB) incidents and issues related to preferential rules of origin (O1) with total of 6 (2 MK + 4 SRB) incidents, while sanitary and phytosanitary (SPS) measures and technical barriers of trade (TBT) dominate on the export side (P1) with total od 19 (9 MK + 10 SRB) incidents. The latest NTM mostly relates to the lack of recognition of the sanitary and phytosanitary certificates by the authorities in the exporting destination, as well as other conformity assessments related to SPS. These incidents were mostly reported with regards to the intra-regional trade in CEFTA 2006, in particular affecting the mutual trade among both countries. SPS occur despite the bilateral agreement between North Macedonia and Serbia for phytosanitary cooperation which stipulates mutual recognition of the phytosanitary certificates. Also, there are bilateral agreements on this subject among most of the CEFTA Parties (Agreement on Phytosanitary cooperation between Serbia-Macedonia, 2016), as well as Subcommittee on Non-Tariff Measures within CEFTA 2006. However, no progress has been made with regards to the implementation of the agreements, based on the doubts of the authorities in the exporting destinations about the credibility of the laboratories issuing the certificates. This NTMs reflect into higher costs and prolonged time of export for the companies, and discourage them to trade within CEFTA. This is a serious and long-lasting problem in North Macedonia and Serbia, as well as other CEFTA 2006 Parties, and therefore, its addressing by the relevant institutions must be put as a priority.

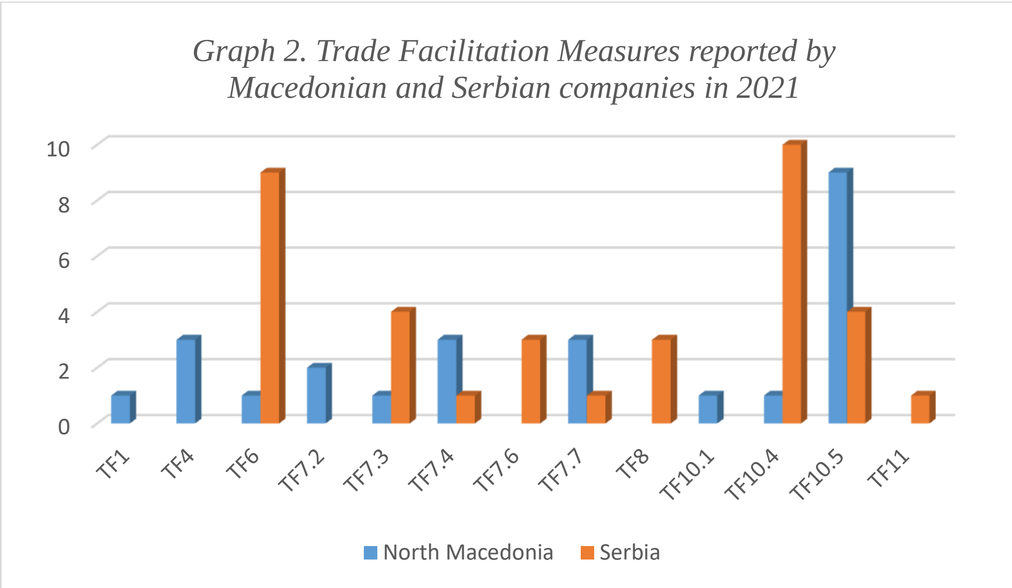
In addition to the common NTMs reported by both sides, the Macedonian companies reported problems with regards to import authorization/licensing related to technical barriers to trade (B1) with total of 6 incidents, while Serbian companies reported cases with regards to product quality, safety or performance requirements on import (B7) with total of 7 incidents. Macedonian NTMs refer to the documents and procedure needed for import authorization/licensing, as well as time consumption, while Serbian complaints are mostly related to the validation of certificates for various specifics of the products.

The perspectives that should be considered most by the Macedonian authorities with regards to import licenses are related to the documentation that is not commonly issued in the countries of origin of the products, including EU Member States, implying that the requested documents by the Macedonian side could not be easily provided. Similar to P1 reported incidents mentioned above, B7 reports tackle the credibility of the institutions in the CEFTA Parties. Several interviewed economic operators reported the need to comply with additional documentary and marking requirements, including for CE-marked products when entering the market in Bosnia and Herzegovina, North Macedonia and Serbia. The companies do not have particular issues complying with the assessments, but rather are wary about the lack of recognition of certifications and the costs and time associated with re-doing the necessary tests. The most frequently reported measures open the room for (re)consideration of the existing legislation and its implementation in North Macedonia and Serbia, as well as other CEFTA Parties, in the light of genuine assessment on its impact on the business community and correspondence of the practice to the undertaken obligations of the CEFTA Protocols and bilateral trade agreements.

3.2. Trade facilitation (TF) measures

Another set of trade issues that were explored during the empirical research refer to the Trade Facilitation (TF) measures. The reported measures by Macedonian and Serbian companies are presented on Graph 2. The data are given in absolute numbers. Detailed list of the TF measures included in the Graph 2 is attached in Annex 1.

North Macedonia has wider range of reported measures in this group, ranging from measures referring to the information about the import/export (TF1), appeal procedures (TF4) and authorized economic operators (TF7.4) to the most common measure dealing with other formalities connected with importation/exportation and transit (TF10.5). In the case of North Macedonia, other formalities were related to trade processes, such as customs bureaucracy, working hours of the customs offices, differences in the implementation of the legislations by the customs officers, etc. Few companies reported that the customs documentation required in MK and CEFTA Parties is a big burden compared to the requirements in the EU. Specific example was provided with regards to EUR-1 document (enables preferential treatment of the goods), which must be filled according to the rules of macedonian customs office, without any flexibility regarding the form, even if the document contains all requested information.



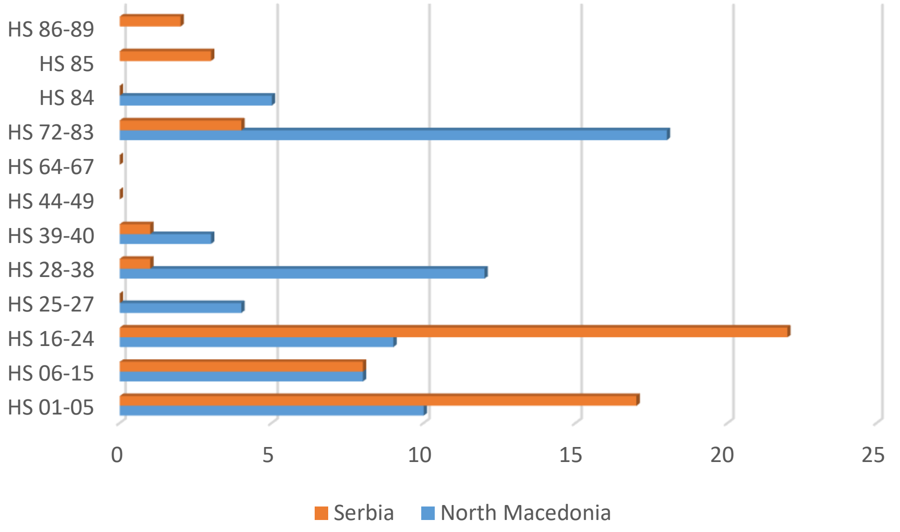
Source: Data obtained in company interviews in Serbia on EU Funded Project "Support to the Regional Economic Integration", implemented by GIZ, July-August 2021

As presented on Graph 2, the most common trade facilitation issues for Serbian companies were Fees and Charges Imposed on Importation and Exportation, and Penalties (TF6) and Common Border Procedures (TF10.4), i.e. lack of these procedures. Achieving common clearance procedures can lead to the simplification of document preparation (lower compliance costs for the declarant); faster crossing resulting from harmonisation of physical inspections of crossing cargo, vehicles, and drivers and better flow management; reduced pressure on the infrastructure; cost savings in administration and streamlined procedures; improved working conditions for officials due to the use of shared information, common premises, and services; and reduced staff needs owing to task sharing among different agencies, thus liberating skilled human resources for other activities (Freund, C. & Rocha, N. (2010). The Green Lanes Initiative mentioned above is expected to provide some of these effects. Furthermore, Serbian companies have also reported issues relative to TF10.5 or other formalities connected with importation/exportation and transit which mostly refer to export/import documentation.

3.3. Sectoral and geographical dispersion of NTMs and TF measures

The sectors with most reported NTMs and TF measures in North Macedonia and Serbia are presented on Chart 3. Macedonian companies have reported high number of measures in the Metals (HS 72-83) and Chemicals and Allied Industries (HS 28-38), implicit to the highest dynamic of these sectors in the international trade. Most of the companies in these sectors have reported issues relative to the export/import/transit formalities. Also, the agricultural sectors (HS 01-05 and HS06-15) and companies dealing with processed foods (HS16-24) have reported NTMs and TF measures, which greatly reflect to the SPS certificates and conformity assessments requirements. These three sectors have also been the leading ones in terms of reported NTMs and TF measures in Serbia.

Graph 3. Most affected sectors by NTMs and TF measures in North Macedonia and Serbia



Source: Data obtained in company interviews in Serbia on EU Funded Project "Support to the Regional Economic Integration", implemented by GIZ, July-August 2021

Summarized, in the case of North Macedonia and Serbia, various formalities related to trade processes, together with sampling, testing and inspection procedures linked to SPS measures, are the most repeated challenges. With regards to the formalities, part of NTMs and TF measures, in particular those related to import and transit, are imposed by the national institutions in each country. Given that the findings of the empirical research were verified by the national authorities dealing with CEFTA 2006 (GIZ, 2021), it could be argued that there is an awareness about the imposed NTMs and TF issues. However, serious policy-actions are needed to address the most burning issues in a coordinated manner.

Apart of the measures imposed at import in North Macedonia and Serbia, there are NTMs imposed by other CEFTA Parties. Most of the NTMs affecting Serbia were introduced by Bosnia and Herzegovina, North Macedonia and Kosovo* that imposed 26%, 18% and 16% of all measures, respectively. This largely corresponds to the Serbian trade pattern by partners (Table 2), while Kosovo* measures derive from the trade relations between both countries. As for North Macedonia, most NTMs affecting the country were introduced by Serbia and Kosovo, although other CEFTA Parties have their contribution to the NTMs, too.

The discussion above provides cross-cutting of different perspectives of the NTMs and TF measures reported in North Macedonia and Serbia, ensuring consistency of the findings. Some of the issues analysed above were already addressed with the Green Lanes Initiative, which still needs to be upgraded to deliver immense effects. Meanwhile, the national authorities in CEFTA Parties that deal with trade should safeguard implementation of the CEFTA 2006 Protocols and bilateral agreements on SPS and TBT, as that would immediately provide better trade climate in the region. In addition, CEFTA 2006 as a concept should receive larger policy attention by the Parties, aiming towards achieving obstacles-free intraregional trade.

5. CONCLUSION

Non-tariff measures (NTMs) are considered to be a major challenge in the global trade that undermines the benefits of largely liberalized trade under the auspices of WTO. Although the NTMs are usually justified with health, environmental and other causes, their introduction often lacks a stable ground. The business community involved in international trade suffers from serious backlogs when coping with NTMs and trade facilitation (TF) issues, and their perspectives should be taken into consideration by the trade policy-makers.

NTMs are very common in the intraregional trade, despite the primary aim of FTAs to ease the trade flows. The findings of the empirical research of NTMs, undertaken in 2021 within the framework of the EU Funded Project: Support to the Regional Economic Integration, implemented by GIZ, indicate that the intraregional trade of CEFTA 2006 have been hindered by various NTMs and TF measures. The insight into the reported issues by the Macedonian and Serbian companies shows that the most common NTMs on the import side stated in both countries are related to technical specifics of labelling, marking and packaging requirements and issues related to preferential rules of origin, while sanitary and phytosanitary (SPS) measures and technical barriers of trade (TBT) dominate on the export side.

Out of the mentioned NTMs, the most serious obstacle refers to the lack of recognition of the sanitary and phytosanitary certificates by the authorities in the exporting destination, as well as other conformity assessments related to SPS. This problem occurs despite bilateral and regional agreements regulating mutual recognition of the certificates in CEFTA 2006. The reasoning of the authorities imposing the measures relates to the insufficient capacity and credibility of the laboratories in the region, which is opposite to their declared positions by signing the legal acts stipulating the recognition of the certificates. There is a need for sound coordination of the policy-makers in all CEFTA 2006 Parties to address this issue and enable better trade climate for the business community.

The Macedonian companies also reported problems with regards to import authorization/licensing related to technical barriers to trade, while Serbian companies reported cases with regards to product quality, safety or performance requirements on import. The latter NTM resembles to the SPSs issue and should be approached in a similar manner. On the other hand, the aspects that Macedonian authorities should consider with regards to import licenses are related to harmonization of the requested documentation on import with the legal patterns of the trading partners.

In addition to the common NTMs, the business community of both countries reported struggle in dealing with various formalities connected with importation/exportation and transit. These formalities are related to trade processes, such as customs bureaucracy, working hours of the customs offices and implementation of the trade and customs legislation. The Serbian companies have also referred to the fees and charges imposed on importation and exportation, and penalties, as well as common border procedures, i.e. lack of these procedures. The Green Lanes Initiative is a right step towards resolving some of these TF issues. However, its effectiveness depends on the commitment of the policy-makers, which has to be enhanced with regards to the policy consistency in all CEFTA 2006 Parties.

Some of the NTMs and TF measures are imposed by the national institutions in each country, while others are obstacles introduced by the authorities in the exporting destination. National trade policy-makers have crucial role in addressing both categories of obstacles, attributable to their responsibility to ensure favorable trade climate for domestic companies when they undertake import and export activities. In this context, is it necessary for the national policy-makers in North Macedonia and Serbia, as well as other CEFTA Parties, to safeguard implementation of the legislation that is in favor of intraregional trade and to promote business friendly trade approach.

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ANNEX 1

List of NTMs reported by Macedonian and Serbian companies

TECHNICAL MEASURES
A. Sanitary and phytosanitary measures (import)
A1. Prohibitions/restrictions of imports for sanitary and phytosanitary reasons
A8. Conformity assessment related to sanitary and phytosanitary conditions
A9. Sanitary and phytosanitary measures not elsewhere specified
B. Technical barriers to trade (import)
B1. Import authorization/licensing related to technical barriers to trade
B3. Labelling, marking and packaging requirements
B7. Product quality, safety or performance requirements
B8. Conformity assessment related to technical barriers to trade
C. Pre-shipment inspection and other formalities (import)
NON-TECHNICAL MEASURES (import)
D1. Anti-dumping measures
D3. Safeguard measures
E6. Tariff quotas
F1. Administrative measures affecting customs value
F4. Customs surcharges
F7. Internal taxes and charges levied on imports
G9. Regulations concerning terms of payment for imports
H9. Measures affecting competition not elsewhere specified
J1. Restrictions on the sale of goods
J2. Restrictions on distribution channels
L1. Transfers of funds (monetary transfers) by the Government (to an enterprise)
N3. Enforcement
N9. Intellectual property not elsewhere specified
O1. Preferential rules of origin
O2. Non-Preferential rules of origin
P. EXPORT-RELATED MEASURES
P1. Export measures related to SPS and TBT
P2. Export formalities
P7. Measures on re-export

List of trade facilitation measures reported by Macedonian and Serbian companies

TF1. Publication and Availability of Information
TF4. Procedures for Appeal or Review
TF6. Fees and Charges Imposed On Importation and Exportation, and Penalties
TF7.2. Electronic Payment
TF7.3. Risk management related to release and clearence of goods
TF7.4. AEO
TF7.6. Perishable Goods
TF7.7. Other measures related to release and clearence of goods
TF8. Border Agency Cooperation
TF10.1 Acceptance of Copies
TF10.4 Common Border Procedures
TF10.5 Other formalities connected with importation/exportation and transit
TF11. Freedom of Transit

Research-in-progress

INTERNATIONAL BUSINESS AS UNUSUAL: NONMARKET STRATEGIES IN THE AGE OF EXTREME UNCERTAINTY

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ABSTRACT
In recent years, IB has seen significant advances in the field of nonmarket research and in the development of nonmarket strategies (NMS) aimed at improving the performance of firms by adequately tackling nonmarket challenges. By the 2020s, companies have also adopted a pro-active posture in nonmarket domains, i.e. by pursuing corporate social responsibility as well as corporate political activity. However, this shift had accounted only for what from the vantage point of today seems limited instability in and risks stemming from the nonmarket domain. Events of the early 2020s - the COVID-19 crisis, Ukraine War, and the seething US-China tensions, have heralded an era of extreme uncertainty for IB. This research note is a prelude to a conceptual paper that grapples with the ongoing global challenges for MNEs, and contemplates a new approach to formulating NMS that corresponds to the gravity of the risks posed by the changing nonmarket environment.

Keywords: *nonmarket strategy; extreme uncertainty; multinational enterprises; risk*

JEL classification: *F23; F50*

1. INTRODUCTION

This research note is part of a larger paper, whose goal is to rethink nonmarket strategies in the context of contemporary global developments, which herald an era of extreme uncertainty. The paper therefore has a three-fold research goal: 1) to provide an overview of the set of emerging challenges for MNEs originating in the nonmarket domains; 2) to take stock of existing approaches to nonmarket strategy; and 3) to propose ways to upgrade nonmarket strategies in the future. This research note provides insight into the first goal of the paper (overview of the challenges), while the other two goals are to be tackled later on.

Recognizing the significant impact of contexts that are noneconomic and social, IB scholars and corporate practitioners over the last decades made significant advances in the field of nonmarket research (Boddewyn, 2003; Mellahi *et al.*, 2016). This in turn has provided the grounds for the formulation of corporate nonmarket strategies (NMS) aimed at improving the firm's performance by adequately tackling challenges arising from the nonmarket domains. By the 2020s, companies, when operating internationally, not only factored in the dynamic nonmarket context of operation, but also adopted a pro-active posture in nonmarket domains, i.e. by pursuing corporate social responsibility as well as corporate political activity (Frynas *et al.*, 2017; Sun *et al.*, 2021).

This shift in perspective and behavior was not only framed in transactional terms, and was not only seen as driven by exogenous factors, but was rather intrinsically linked to a changing understanding of the social purpose of the modern business corporation (Buckley, 2021), a process that feeds into the existing debates on the stakeholder vs. shareholder perspective on the firm's purpose (Hillman and Keim, 2001). In sum, the mainstream view in IB today is that corporations, while adhering to their core business imperatives, are much more

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sensitized to a shareholder perspective and in particular the comprehensive sustainability imperative, e.g. something that is exemplified by the synthesis of the triple bottom line: people, planet, profit (Slaper and Hall, 2011). In that sense, by the 2020s, businesses and in particular MNEs have been well aware that having robust NMS is a prerequisite not only for improving their own competitiveness, but also achieving a positive social and planetary impact.

The change in posture among IB actors has been an outcome of a deeper process of soul-searching within IB. The long-term discontents with globalization and the pressures towards MNEs, the global financial crisis of 2008-09, and the complex geopolitical and social changes of the 2010s have propelled the relevance of the nonmarket domain for IB. In that sense, MNEs have accounted for what has been termed a volatile/ uncertain/ complex and ambiguous (VUCA) world (Burgartz *et al.*, 2016) in which there have been ever more "wicked" challenges (Rašković, 2022).

However, this shift had accounted only for what from the vantage point of today seems a limited instability in and risks stemming from the nonmarket domain. In other words, IB was ready for a crisis, but not for a catastrophe. The early 2020s have heralded an era of unprecedented uncertainty, in particular the COVID-19 pandemic, accelerating de-globalization stemming from US-China big power rivalry, and the palpable threat of nuclear apocalypse born out of the Ukraine War. Against the new backdrop, the traditional way of thinking about nonmarket challenges seems inadequate and inefficient. To borrow an analogy from the philosophy of freedom, in the pre-2020s world MNEs had largely seen the nonmarket domain through the lens of "positive freedom" – e.g. for the most part, the struggle for their survival was seen as rooted in the market; whereas in the nonmarket domain, they explored ways to further add value, improve competitiveness and make the world a better place. In the 2020s, however, the nonmarket specter has overshadowed markets, shaping a "negative freedom" agenda, and increasingly, conditioning the mere survival of businesses.

Companies in the 2020s thus face a daunting task of yet another reconsideration of their position in the social world, this time by also factoring in amplified risks and a nonmarket environment that is not only volatile, but also often hostile. In the next section of this paper, I overview some of these developments in the nonmarket domains.

2. OVERVIEW OF EMERGING CHALLENGES

2.1. Overarching theme: extreme uncertainty

The VUCA and 'wicked' descriptors come off as euphemisms when discussing contemporary developments and the emerging nonmarket environments. The magnitude of recent events has radically transformed not only social realities and contexts in which businesses operate, but also the way they think about their survival and existence in the world.

2.1.1. COVID pandemic and anti-COVID measures

The COVID pandemic has demonstrated that fat-tailed events can have an earth-shattering impact. While global risk consultancies have always considered the possibility of a worldwide spread of an airborne infectious disease, the common sense approach has been that this is only a distant possibility. However, almost three years into the pandemic, its devastating consequences are still being felt worldwide. At the same time, the swiftness with which anti-COVID measures (regardless of the evaluation of their justification or efficiency) have been implemented bringing about an unprecedented global "state of exception" have demonstrated that governments have greater ability to suspend common laws and regulations than previously assumed. While the anti-COVID measures diffused via a wave-like pattern, they also significantly varied across countries, posing an unprecedented challenge for doing business across borders, but also within national borders, removing any sense of predictability and stability in global value chains.

2.1.2. Possibility of thermonuclear war

The Ukraine War, on the other hand, has had a disillusioning effect for the believers in democratic peace. The pattern of escalation of the conflict has also ‘destibilized’ theories of mutual deterrence which has accounted on a certain form of rational approach of weapons of mass destruction, including nuclear weapons (Rost Rublee, 2022). The situation we live in today, according to security experts is comparable, if not more serious than past nuclear weapons’ crises. Events linked to the war, such as the sabotage of the NordStream 2 pipeline, which has happened inside the territorial waters of the EU, have also demonstrated that critical infrastructure is at a risk not only in faraway conflict states, but also in relatively secure and stable countries. The Ukraine War has also caused a severe energy crisis, which has added onto the economic crisis building up since the onset of the COVID-19 pandemic.

2.1.3. US-China rivalry

These new major global events have taken place against the backdrop of seething US-China relations, which have reframed business as part of a global power struggle, adding new layer to business decision-making, as acts that are otherwise expression of business rationality are increasingly seen as expressions of political allegiance or ideology.

2.2. Securitization of business

2.2.1. Protectionism

Even before the pandemic and the Ukraine war, business was conducted less and less ‘as usual.’ An important factor in the process has been the rise of China and the rise of protectionism in the West as a response to it (Vangeli, 2021). In the post-GFC era, and in particular since 2012, the US government, some European governments, as well as the EU itself, have been gradually shifting towards strategic competition (as called in the US) and systemic rivalry (as called in the EU) with China. By connecting business to security, Americans and Europeans have been increasingly tapping into the protectionist playbook, often justifying the policy change as an act of transcending the perceived naive and permissive engagement-oriented idealism of the past (Rosen, 2018). US policymakers tried to boost comprehensive national competitiveness by erecting trade barriers that have spiraled into a trade and technological war, and have supported national industries to compete with China. Europeans also revamped their trade and investment regulations to be able to curb Chinese economic advent in Europe, albeit in a less antagonistic fashion then the US. However, in both of these instances we see not only a mere change in the policy repertoires, but first and foremost changes in the ideational structures that shape international business policy. The most intriguing aspect of the normative justification of the change in the attitude in the US and the EU is that the policy change is not necessarily framed as a reaction to the perceived shifts in China's behavior (as despite its growing global pro-activity, China sticks largely to the same policy model since 1978), but rather that they are framed as a reaction to the emerging belief that previous theories and policies centered on engagement and cooperation had failed (Johnston, 2019). As a consequence, companies in industries deemed to be of critical security relevance (a pool that is expanded by the day) need to adhere to political and security considerations, even if this is contrary to their commercial ones, while companies in non-sensitive sectors are also increasingly challenged by ongoing developments and tensions between China and the West.

2.2.2. Divestment

A new impetus to the links between business and security was given by the Ukraine War, which pushed IB into uncharted territories. Already in late February, during the first days of the Russian invasion (called 'special military operation' by Moscow), dozens of MNEs announced the cessation of their activities or even completely withdrawing from the Russian market (Glambosky and Peterburgsky, 2022). The pace and contagion of the divestment was unprecedented. While the fear of sanctions and the sense of endangerment played a role, the moral imperative was central in how the process unveiled. The rationale behind the decision to divest was unequivocally framed in nonmarket terms, as an act of solidarity with the Ukrainian people. This was a significant change in posture compared to the Ukraine crisis of 2014: MNEs back then adopted a posture of victims of geopolitics (Deresky, 2016, pp. 23–25); in contrast, in 2022 they have embraced their actorness.

2.3. Nonmarket logic of operating across borders

In light of COVID-19, US-China rivalry and the Ukraine war, the decision to internationalize has been never more complex than before. For MNEs, the development of global value chains has been a key to their growth. However, as a consequence of all of these developments, the functioning of the links in the GVCs has been brought into question. US-China trade war posed regulatory and policy challenges (van der Veen and van Mechelen, 2020). COVID-19 and the lockdowns disrupted physical logistical operations (Pujawan and Bah, 2022). And the Ukraine War amplified these challenges, while at the same time also shutting down important overland Eurasian routes. In the wake of these events, supply chain management has seen the shift from just-in-time to just-in-case philosophy behind supply chain development (Masters and Edgecliffe-Johnson, 2021), while also witnessing rise of ideas such as re-shoring, near-shoring and in particular ally-shoring (Dezenski and Austin, 2021), meaning that the decision to invest and internationalize is not only to be done upon considering nonmarket factors that affect the market calculus, but also by incorporating nonmarket principles that may override the market ones (e.g. political allegiances over lower costs).

2.4. New state interventionism

Aside from boosting economic protectionism, governments in the West have been also adopting an ever more pro-active role in their own economies. A big reason for this has been the sense of lagging behind in higher-end innovation behind China, and in general, the sense that key industries are 'stuck' and need a strong push from the state. Thus, we see a drive to support and create national, or in the case of EU, supranational champions in cutting-edge technologies, e.g. semiconductors or EV batteries (*The Economist*, 2019). This is a radical departure from the hands-off approach that has shaped the business environment in the decades prior. The emerging context then prompts MNEs to be much more closely following the economic agenda of national governments, interact and cooperate with them. Aside from innovation and industrial policies, Western governments also try to reinvigorate development finance, investment in connectivity and infrastructure, and economic cooperation overseas (again, partially in response to China's Belt and Road Initiative). The proliferation of initiatives such as the US-led, G7-backed Partnership for Global Investment in Infrastructure (PGII) or EU's Global Gateway aim to mobilize MNEs to this end.

2.5. New generation of mass politics and activism

Aside from all these macro-shifts on the global stage, there have been important micro-shifts in the nonmarket domains. A profound change in political culture due to a combination of technological factors as well as the effects of the multiple intertwined crisis have led to the emergence of an unprecedently activist and vocal political participatory culture, that has a major impact on IB. There has been rise in a new generation radical mass politics, which has had several camps in terms of their ideological diversity. One is the nationalist-populist camp, which has greatly disrupted politics in a number of countries, including in the US, as well as in the EU, and presents a myriad of nonmarket challenges for MNEs (Blake *et al.*, n.d.). On the opposite side of the spectrum has been the rise of social justice movements and identity politics activism criticising MNEs for contributing to social injustice, discrimination, and exclusion, putting IB in a crossfire between those who blame companies for doing too much and those who think they do not enough (Warren, 2022). The sharp edges of these movements in the relations with companies, are captured by the term 'cancel culture,' a new, potent iteration of the practice of boycotting and pressuring companies to change their behaviors. There has also been a rise in green movements, that have reshaped international business policy, while also trying to hold companies accountable for their commitments to sustainability.

3. NEXT STEPS

In sum, this research note summarized the preliminary research on the trends that have reshaped the nonmarket context of IB, and call for a new approach to nonmarket strategy, that go well beyond the established repertoires. In the remainder of the paper, I will take stock of existing approaches to NMS and propose actionable recommendations for upgrading them and attuning them to the contemporary challenges MNEs face.

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LABOR PRODUCTIVITY AND LABOR COMPENSATION IN NORTH MACEDONIA: SECTORIAL APPROACH

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ABSTRACT
Starting from the mid-1970s, there has been a significant disbalance in labor markets in almost all world economies. The postulates of classical economics that the causality between labor productivity and workers' compensation is positive, and that the increase in marginal labor productivity is followed by a directly proportional increase in workers' compensation, no longer stand on solid foundations. In the last few decades, there has been a significant distortion of the functional distribution of income, especially between labor and capital. The widely held thesis that "a rising tide will lift all boats," implying that increased labor productivity will be equally distributed among workers, is becoming less relevant. The world, especially EU economies notice a significant disruption in the relationship between productivity growth and labor compensation.
In the paper, an attempt is made to analyze the state of the labor market in the Republic of North Macedonia, through the prism of productivity and labor compensation. Given the fact that there are significant differences in the degree of efficiency and productivity in individual sectors, this analysis focuses on the relationship between the distribution of productivity and labor compensation in different industries. Based on the results of the study, the Republic of North Macedonia exhibits the phenomenon of Reverse Decoupling, where the trend of labor

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productivity lags behind the trend of workers' compensation. In contrast, productivity and workers' compensation show significant differences by different sectors.

KEY WORDS: *LABOR PRODUCTIVITY, COMPENSATION, GREAT DECOUPLING.*

JEL classification: J08, J24, J31.

1. INTRODUCTION

Labor productivity is one of the most important indicators of an economy's capacity to improve production with a given amount of factors of production. Hence, economic policymakers, as well as economists from the academic community, analyze the sustainability of production factors in the direction of future economic growth. However, productivity is one of the factors that determine the economic growth of an economy, it should be analyzed in a wider context in which the rest of the socio-economic factors that have a significant impact on its formation will be included.

Developing countries require additional, skilled labor, whereas developed countries have an abundance of labor but a chronic shortage of capital. Most often, employees in developing countries are dominated by workers with primary and secondary education, who have limited skills. Hence, when a combination of inadequate investments and a low level of capital accumulation, accompanied by increased pressure on labor supply, results in a lack of productive employment. In other words, unlike developed countries, developing countries face an increase in unproductive employment, that is, an increase in employment with a simultaneous downward trend in the movement of labor productivity. However, it should be emphasized that until the beginning of the COVID-19 pandemic, interest rates on the international capital market were at a fairly low level, so developing countries had available additional capital at attractive interest rates. In addition, developed countries, international institutions through aid programs, and FDI from private investors in the previous period injected significant financial resources into developing countries.

The subject of analysis in this paper is the trend of movement of labor productivity, workers' compensation, and the level of employment, in the case of the Republic of North Macedonia. Although the increase in the labor productivity of workers is the only way for long-term sustainable growth of wages, this mechanism of the increase in labor productivity and wages is far from its optimum, that is, from its equilibrium state, especially in developing countries, mostly because of excess labor supply. Hence, a significant number of developing countries fall into the trap of an imbalance in the relationship between productivity and labor compensation. Already in 1954, Nobel laureate Arthur Lewis stated that a significant part of the labor market functions within the framework of informal economic flows, while also a significant part of the workers works in the unpaid sectors, i.e. they are self-employed on their farms, activities in which the marginal productivity is usually too small, if not equal to zero (Patrick Belser, ILO, 2013). In other words, they receive less compensation than their labor productivity in the form of compensation.

In the case of the Republic of North Macedonia, unlike the rest of the developing countries, in the previous period, low rates of increase in labor productivity were observed, while in the last few years, they also observed a negative value. On the other hand, in most of the countries in Europe, labor productivity has seen a positive trend in the past years, it has seen far more intensive growth rates compared to labor compensation. Such tendencies caused the emergence of the so-called phenomenon of the "Great Decoupling" between the growth of labor productivity and the growth of workers' compensation in most countries in Europe, the United States, and Japan (Pasimeni, 2018; Theodoropoulou, 2019; Bivens & Mishel, 2015; Dean, 2007).

This analysis focuses on trends, as well as the causal relationship between productivity and labor compensation, and the level of employment in the case of the Republic of North Macedonia. The economy of North Macedonia is constantly characterized by low levels of labor productivity, as well as a lack of additional capital. Labor productivity is the basic component on which the degree of growth of a national economy depends. Intensification of labor productivity growth is one of the main goals of economic policy makers, while the analysis of the effectiveness of measures is the task of economists in the academic community.

Thus, for the first time, a sector-by-sector analysis of productivity, labor compensation, and employment levels is provided. Hence, the analysis of trends, as well as the causal relationship, with the application of econometric models, enables a detailed analysis of the type and degree of the gap, that is, the so-called Great Decoupling between productivity and workers' compensation. There was a synchronized increase in North Macedonia's labor productivity and labor compensation until 2017, along with a steady increase in the number of employees. However, after 2017, there is a significant increase in workers' compensation. At the same time, in the period after 2017, there is a significant decrease in labor productivity. Compared to 2010, in 2020, labor compensation grew by 34 index points, while labor productivity by 10 index points. In light of the gap in the trend, it is considered quite reasonable to conclude that North Macedonia has reverse decoupling between workers' compensation and labor productivity. Unlike the countries in Europe, which are characterized by significant rates of increase in labor productivity, that is, rates that are far higher than the rates of increase in workers' compensation, in North Macedonia this is not a case. Hence, the increase in workers' compensation cannot "keep up" with the increase in labor productivity in European countries, in the case of North Macedonia, the most intensive increase in workers' compensation is followed by a parallel decrease in labor productivity. This tendency is observed in almost all sectors of the economy.

The paper is structured as follows: Following the introduction, the paper analyses the trend of labor productivity and workers' compensation at both the national and sectoral levels. Furthermore, the article provides an overview of empirical literature that analyses the phenomenon of the so-called "Great Decoupling" on the example of Europe, the USA, and Japan over the last few years. In addition, the methodological basis for using the econometric regression method is explained. The final part of the paper discusses and analyzes the results, and concludes.

2. LITERATURE REVIEW

Some of the research in the field of labors productivity and labor compensation dates back to 1970. Since the beginning of the 1970s is the period when the trend of separating labor productivity from workers' compensation begins, some economists begin to analyze the causes, main determinants and repercussions resulting from the unsynchronized growth of productivity and compensation of labor. In the research, a sectoral analysis was carried out in order to examine the impact of demographic trends, especially migrations from rural to urban areas, on the growth of labor productivity and workers' wages. The main conclusion of the research is that there is a further widening of the wage gap between rural and urban areas caused by the influx of population from rural areas to urban areas (Harris & Todaro, 1970).

Prior to the Great Recession of 2008, some research suggests that the relationship between labor productivity and workers' compensation is less intense. Furthermore, whenever labor productivity is above the wage level, firms increase their demand for labor by raising wages and reducing productivity. Wages that rise faster than productivity, that is, wages that rise faster than efficiency wages, slow down the demand for labor, putting downward pressure on wages. The dynamics of the relationship between the three variables, income-productivity-employment, determines the behavior of firms because firms operating in industries characterized by rising wages above the level of productivity cannot keep up with the current level of output and employment. The only way to break this vicious cycle is to invest in technological improvement followed by increasing domestic investment and restoring the labor productivity (Škare & Škare, 2017).

The United States has been the subject of most of the empirical research conducted on the so-called Decoupling Phenomenom. Mishel and Bernstein (1994) conducted a descriptive analysis of workers' wages and income distribution. Through the research, we come to the conclusion that there is a trend of deterioration of workers' wages, which in turn is the reason for the increase in the unequal distribution of income (Mishel and Bernstein, 1994). Brynjolfsson and McAfee's 2014 book on labour productivity, workers' compensation and unemployment is among the more recent studies examining the Great Decoupling (Brynjolfsson and McAfee, 2014). The authors state that the synchronized growth of labor productivity and workers' compensation after the 70s shows significant distortions. Namely, after these years, a significant growth of GDP and labor productivity is observed, which increases the possibilities for a higher level of well-being of workers and their families. The authors describe this phenomenon as "jaws of the snake," as employment in the private sector stagnated after the 1970s, widening the gap between GDP growth and employment growth. This phenomenon also results in a certain drop in workers' wages, which shows a higher degree of distortion compared to the increase in employment. Adjusted for inflation, household income is lower in 2010 than it was in 1997. Wages are at their lowest level historically as a share of the GDP. Although the authors state several reasons that influence such tendencies, they still believe that the high level of technical-technological progress has a decisive influence on the "Great Decoupling" between labor productivity, workers' wages and employment (Brynjolfsson & McAfee, 2014). On the other hand, the results of the research carried out by Feldstein indicate the fact that labor compensation on average records the same annual growth rates, if the same deflator is used in the calculation of the real values of labor productivity and workers' compensation. If the analysis of trends covers the period 2000-2007, in that case labor productivity records an average annual growth rate of 2.9% while compensation records an average annual growth of 2.5%, which does not represent a significant difference between the analyzed indicators (Feldstein, 2008).

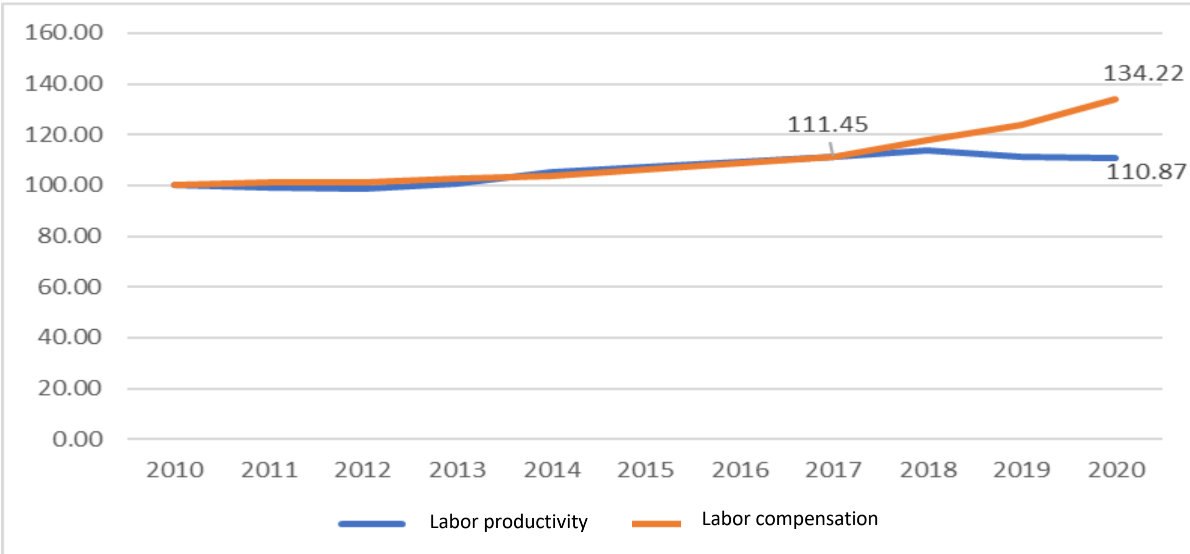
Despite Walrasian theory of labor market equilibrium's prediction that workers earn their marginal wages in the absence of market friction in OECD economies, authors found otherwise.

Results suggest that unemployment rate shocks and unionization shocks both lead to a robust and significant increase in the wage-productivity gap (Elgin & Kuzubas, 2013). Also in the case of the OECD countries, other studies come to the conclusion that in the period after the financial crisis of 2009, the increase in workers' compensation cannot catch up with the increase in labor productivity. The authors confirm that in some OECD countries there is a significant loss of correlation between the increase in labor productivity and the increase in workers' compensation (Meager & Speckesser, 2011).

3. LABOR PRODUCTIVITY AND COMPENSATION ON SECTOR LEVEL

In the period from 2010-2017, on average, labor productivity and workers' compensation observed a synchronized trend, they grew by about 12 index points. Hence, until 2017, it can be observed that the increase in labor productivity is reflected on workers in the form of higher labor compensation. However, after 2017, a certain divergence of trends in productivity and labor compensation begins. Namely, labor productivity initially began to stagnate, so after 2018 a slight downward trend begins. At the same time, workers' compensation begins to show an upward trend. Comparing 2017 to 2012, labor compensation increased by an average of 12 index points, but by 22 points for the period 2017-2020. Here, it is considered necessary to point out the increase in the statutory minimum wage in 2017, when the minimum wage was set at the level of 12,000 MKD in net amount (Minimum Wage Law, 2017). Hence, according to the scope of the workers who are included in the contingent of workers who receive the statutory minimum wage, as well as the impact of the minimum wage on wages above the minimum, it affects the increase of the average compensation of the workers. This situation of the so-called Reverse Decoupling of trends in the of productivity and labor compensation is considered unsustainable in the long run, that is, it has a significant impact on the operating costs of companies, which will have to react to this situation in two ways: First, companies will have to increase labor productivity, by replacing less productive workers with a higher level of education, qualifications, and skills. Second, reducing the number of workers. Those with the lowest productivity levels are most likely to become unemployed. Thus, at higher levels of compensation, the increase in unemployment among this category of workers will make reintegration into the labor market difficult. Elgin and Kuzubas (2013) found that wages are determined as a result of the negotiation process between companies and workers. The bargaining power of one of the parties will depend first of all on the current situation of the labor market, with a focus on the level of unemployment. Hence, if one of the negotiating parties has significant influence over the decision on the level of workers' compensation, then the gap between productivity and compensation would be more pronounced. The level of unemployment also has a significant impact on workers' wages, a higher level of unemployment is associated with a significantly lower probability of finding a job, i.e., workers would accept to work for lower compensation. Regarding the power of the unions, it can be concluded that the increase in the bargaining power of the unions, especially in some of the industries where a significant part of the workers are members of the union organizations, affects the improvement of the bargaining power of the same. Hence, unemployment and bargaining power have a significant impact on the productivity gap and labor compensation (Elgin and Kuzubas, 2013). Hence, it can be confirmed that in countries where most workers are part of trade unions, or their labor rights are under the protection of trade unions, the relationship between labor productivity and compensation is more likely to be pronounced (Meager and Speckesser, 2011).

Figure 1. Index of labor productivity and labor compensation in North Macedonia for the period 2010-2020 (2010=100)



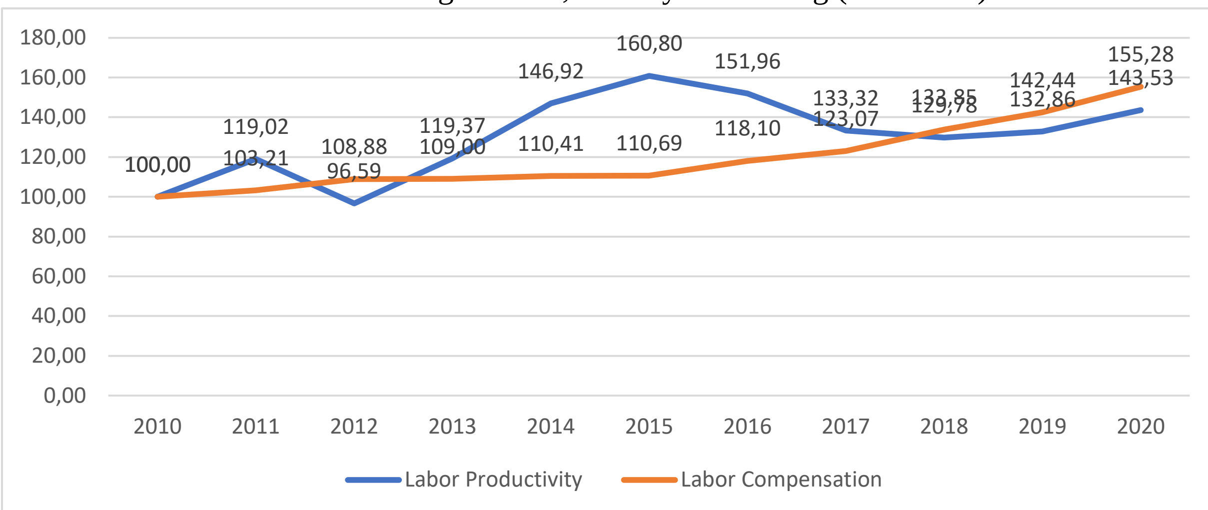
Source: Author's calculations

It is necessary to expand this analysis to the level of individual sectors due to the significant differences in labor productivity and compensation between industries. Hence, the analysis of labor productivity and compensation focuses on individual sectors, which according to the National Classification of Activities (NKD), and according to the available data, are grouped into several groups. Hence, the analysis of labor productivity and compensation focuses on individual activities, which according to the National Classification of Activities (NKD), but also according to the available data, are grouped into several groups. The annual gross salary of the workers is taken as an indicator of the compensation of the labor. Hence, workers' compensation includes contributions for pension, disability and health insurance, which employers set aside on behalf of workers and pay into the respective funds. This indicator of workers' compensation, among others, is characterized by one major drawback. It does not include the various bonuses, financial rewards and compensations, as well as the material benefits received by some of the workers. However, it should be emphasized here that in the Republic of North Macedonia only a small part of the workers enjoy such benefits, that is, they are not the case for the average worker. Hence, it is considered that the gross salary as an indicator of workers' compensation is the closest to their real financial compensation that they receive based on the employment relationship. According to the trend of labor productivity and workers' compensation in individual activities, they can be grouped into two groups: First, activities in which a significant increase in labor compensation is corelated to labor productivity. Second, activities in which the increase in compensation cannot "catch up" with the increase in labor productivity. During this period, workers compensation increases are followed by stagnant and downward labor productivity growth, at the level of individual activities, a certain degree of heterogeneity is observed in the trend of movement. Activities where a more intense increase in compensation is observed in relation to labor productivity, that is, where there is an appearance of the phenomenon of the so-called "Reverse Decoupling" are the following: Construction, Wholesale and retail trade, motor vehicle repair, Transportation, Accommodation facilities and food service activities, Information and communications, Real estate activities, Professional scientific and technical activities, Administrative and service activities, Public administration and defense, Education, Activities for social and health care, Art entertainment and recreation; Other service activities.

The trend of labor productivity and labor compensation in the Agriculture, Forestry, Fisheries sector can be divided into two time periods, 2013-2018, and 2018-2020. In the period 2013-2018, there is an intense increase in labor productivity, which reaches 160 index points in 2015, while after 2015 the trend of decreasing labor productivity begins. In the same period, workers' compensation has started to grow since 2015, while starting from 2017 it has seen a more intense upward trend. During this period, labor productivity growth is significantly higher compared to worker compensation growth. In the period after 2018, there is a higher index of increase in labor compensation, compared to the increase in productivity, that is, there is a Reverse Decoupling. If we consider the fact that Agriculture, Forestry and Fisheries is the third largest sector after services and industry, thus its participation in GDP is on average stable and covers around 7-8% of GDP. Hence, the increase in labor productivity in the agricultural sector not only affects the increase in efficiency in the production of primary products, but also has a significant impact on GDP growth and on the improvement of foreign trade with focus on export of agricultural products. The increase in labor productivity in agriculture is primarily the result of structural adjustments and technical-technological changes that were made in this sector in the previous period. The importance of agriculture can also be analyzed through the fact that agriculture is a sector that absorbs a significant number of employees. In 2020, from the total number of employed persons, 10,575 workers worked in agriculture, of which 41.4% received a monthly net salary in the amount of up to 18,000 MKD. The workers who received a monthly net salary in the amount of 18,000 to 22,000 denars were 27.7% of the total employees in this sector. Only 30.9% of employees in the Agriculture, Forestry and Fisheries sector receive a monthly net salary in an amount higher than 22,000 MKD. Such data on agricultural employees further confirm the importance of this sector for ensuring the livelihood of many employees and their families. However, the Great Decoupling in the trend of productivity and labor compensation in the period 2013-2018 confirms that the increase in productivity is not transferred in an appropriate proportion to the workers. As a result, while the Agriculture, Forestry, and Fisheries sector, which provides primary goods, differs from other sectors in its specialization, policies to assist workers, as well as boosting the level of education, skills, and qualifications of agricultural employees, are required in order for increases in workers' compensation to be in optimal proportion with increases in labor productivity.

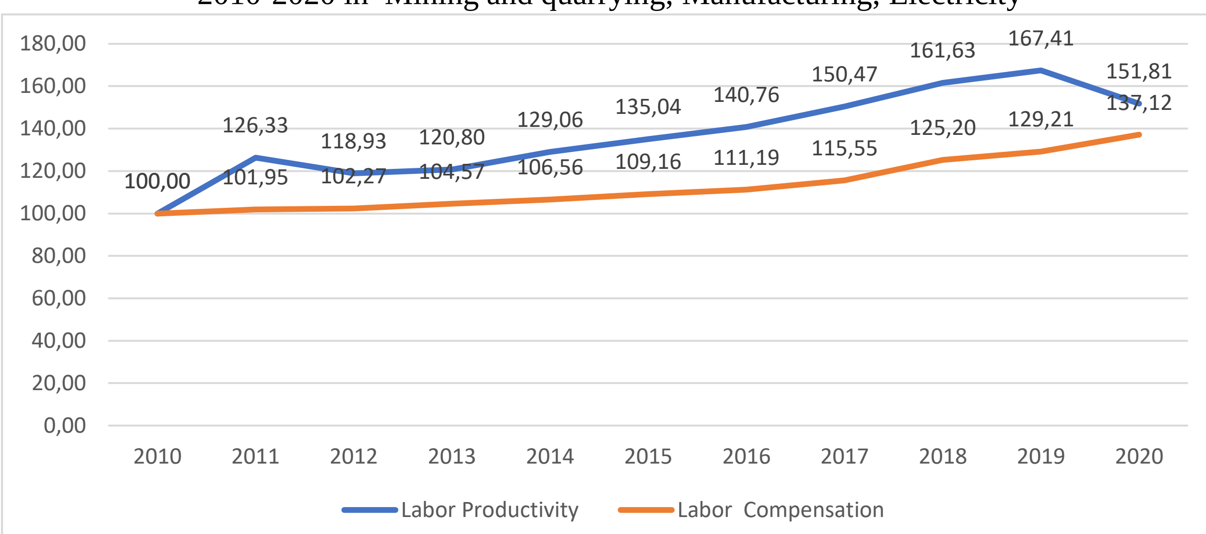
In the sectors Mining, Manufacturing, Electricity Supply, labor productivity growth compared to labor compensation growth show significant differences throughout the period. In the period 2010-2017, the workers' compensation growth index grew by 15.55 index points, which in 2017 amounted to 115 index points. At the same time, the increase in labor productivity in 2017 was 150 index points, thus compared to 2010 it increased by 50 index points. A certain drop in labor productivity, or a convergence in the patterns of productivity and workers' compensation, is shown in the year after 2018. The policies that lead to the rise in labor productivity are of utmost importance when the industrial sector's significance, that is, its relationship to economic development, investments, exports, and employment, is taken into account. Therefore, in the future, it is objectively necessary to implement measures and regulations that boost labor productivity while also solidifying the link with workers' compensation.

Figure 2. Index of labor productivity and labor compensation in North Macedonia for the period 2010-2020 in Agriculture, forestry and fishing (2010=100)



Source: Author's calculations

Figure 3. Index of labor productivity and labor compensation in North Macedonia for the period 2010-2020 in Mining and quarrying; Manufacturing; Electricity

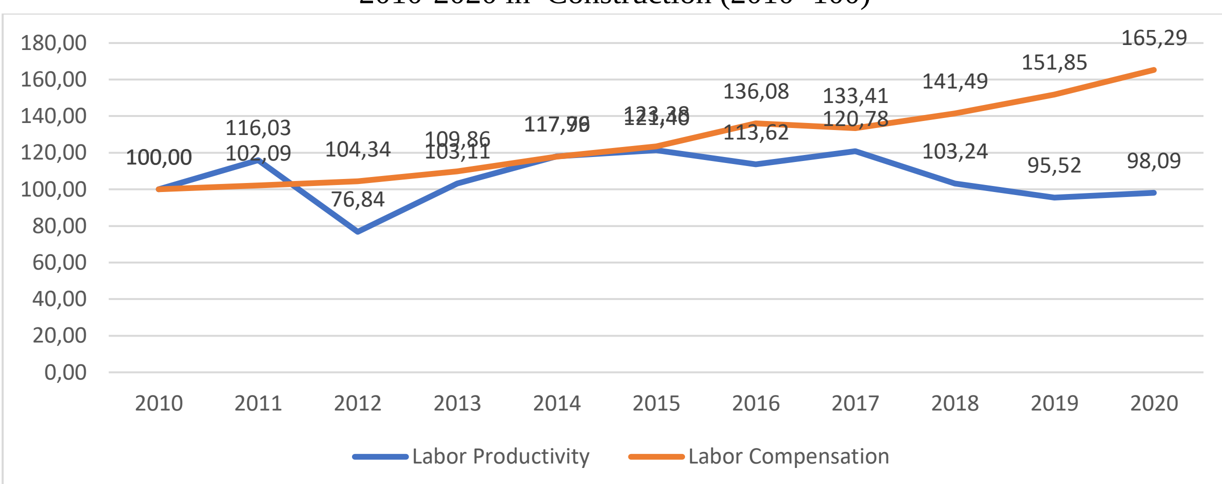


Source: Author's calculations

The strongly pronounced decoupling in the trends between productivity and labor compensation is also observed in the Construction sector. Workers' compensation, on average, records a continuous upward trend throughout the entire period. However, starting from 2015, more intensive increase compared to 2010 are observed. On the other hand, the labor productivity growth in 2012, compared to 2010, took 76.84 index points, that is, a drop of about 23 index points. After a certain stabilization in 2013 and 2014, in the period after 2015 the trend of labor productivity is characterized by a pronounced downward trend. The phenomenon of the so-called "Reverse decoupling" is most pronounced in the Construction sector, where after 2017 there is a significant increase in workers' compensation, followed by a simultaneous downward trend of labor productivity. In 2020, workers' compensation records 165 index points, while labor productivity records 98 index points. Hence, relative to 2010, workers' compensation grew by 65 index points, while labor productivity fell by 2 index points, which implies that it is below the 2010 level.

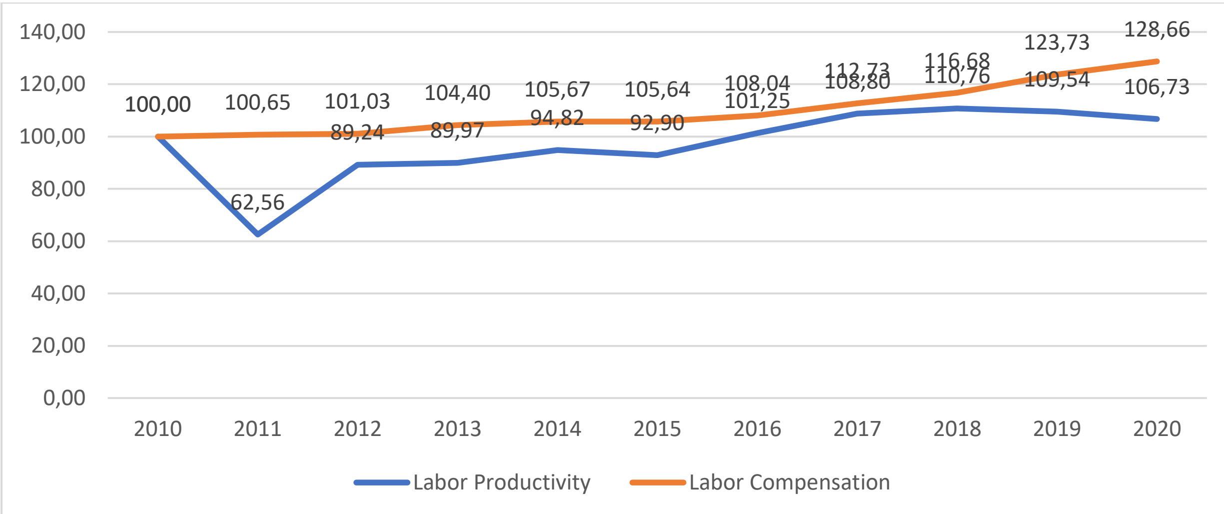
The trend in labor productivity and workers' compensation in the Wholesale and Retail Trade, Motor Vehicle Repair, Transportation and Warehousing sectors, have a more intensive increase in workers' compensation, compared to the increase in labor productivity. In the period 2015-2017, there is a certain convergence of trend of productivity and compensation of labor, but after this period the increase of labor compensation is followed by a downward trend of labor productivity.

Figure 4. Index of labor productivity and labor compensation in North Macedonia for the period 2010-2020 in Construction (2010=100)



Source: Author’s calculations

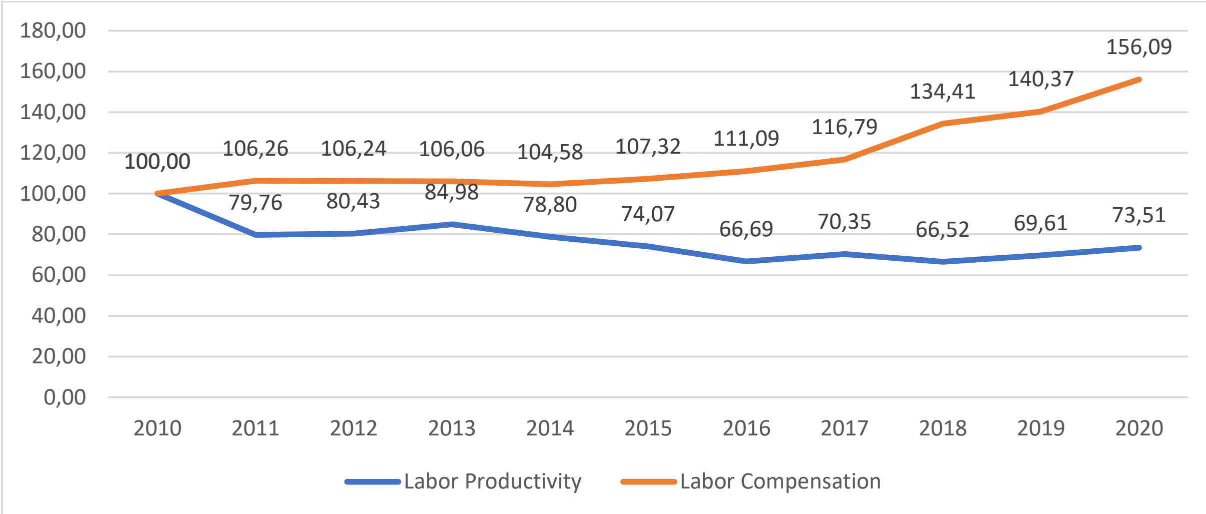
Figure 5. Index of labor productivity and labor compensation in North Macedonia for the period 2010-2020 in Wholesale and retail trade; repair of motor vehicles and motorcycles; Transportation and storage; Accommodation and food service activities (2010=100)



Source: Author's calculations

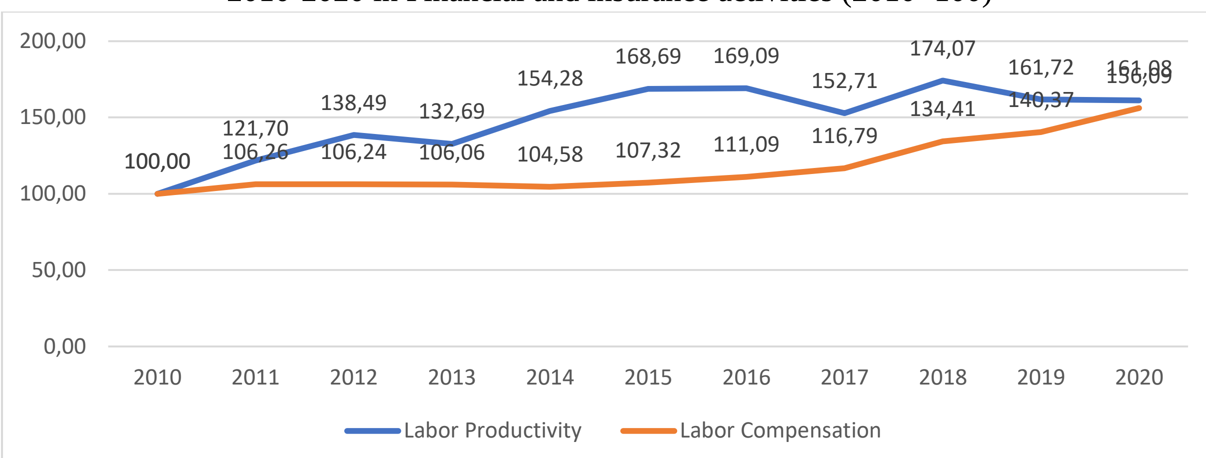
Similar to the Construction sector, a significant decoupling in information and communications trends represents some specifics of the Macedonian economy. The increase in labor compensation in 2020 compared to 2010 is 56 index points, while on the other hand, labor productivity has decreased by about 27 index points, compared to 2010. Which implies that the downward trend of labor productivity in this sector, throughout the analyzed period, indicates the conclusion that labor productivity has not yet reached the level of 2010. In contrast to this sector, in the Financial and Insurance sector, labor productivity in the period 2010-2017 recorded significantly higher growth indices compared to workers' compensation. However, after this period, with the exception of 2018, a certain stagnation of labor productivity is observed. On the other hand, in the period after 2017, a more significant increase in workers' compensation is evident, which contributes to a certain leveling in 2020 between the indices of productivity growth and labor compensation.

Figure 6. Index of labor productivity and labor compensation in North Macedonia for the period 2010-2020 in Information and communication (2010=100)



Source: Author's calculations

Figure 7. Index of labor productivity and labor compensation in North Macedonia for the period 2010-2020 in Financial and insurance activities (2010=100)



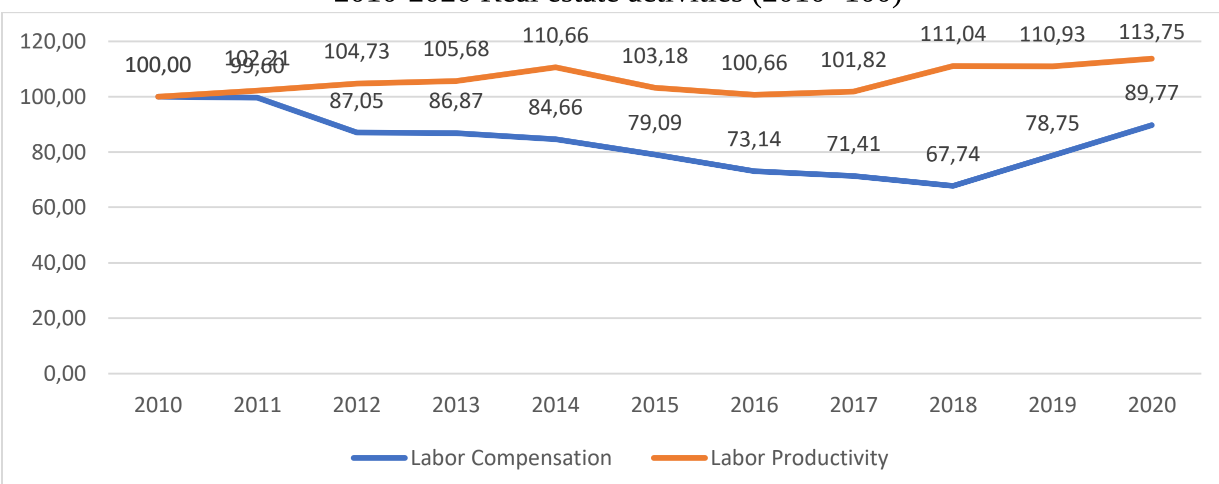
Source: Author's calculations

The Great Decoupling phenomenon is observed in the case of the sectors related to Real Estate, Administrative and auxiliary service activities. The trend of workers' compensation in real estate related activities can be divided into three periods. First, in the period 2010-2014, when a certain upward trend is observed, so that in 2014 a value of 110 index points is observed. Second, in the period 2014-2017, when workers' compensation recorded a downward trend to reach 102 index points in 2017, that is, only 2 index points more than in 2010. Third, the period 2018-2020, a period in which workers' compensation records the most intensive growth rates, with which in 2020 it reaches 113 index points. At the same time, the trend of labor productivity takes a pronounced downward movement, which reaches its lowest value in 2018, when compared to 2010 it is 68 index points, i.e. it decreased by 32 index points. In the period after 2008, labor productivity recorded a positive trend, to reach 90 index points in 2020, which has not yet reached the productivity level of 2010.

Professional, scientific, and technical activities as well as administrative and auxiliary service activities are defined by a trend of labor productivity that is characterized by a bigger increase in workers' pay than the increase in labor productivity. The workers' compensation, specifically, saw a linear trend of rise from 2010 to 2017, and after this time there was a more significant increase in the workers' compensation. When it hits 85 index points in 2012, the labor productivity trend also indicates a considerable decline. Up until 2018, when it reaches 102 index points, worker productivity is below the level of 2010. However, it also shows a declining tendency in the subsequent time, and in 2020 it hits 90 index points. Hence, decoupling workers' compensation from labor productivity sees a decoupling of 42 index points.

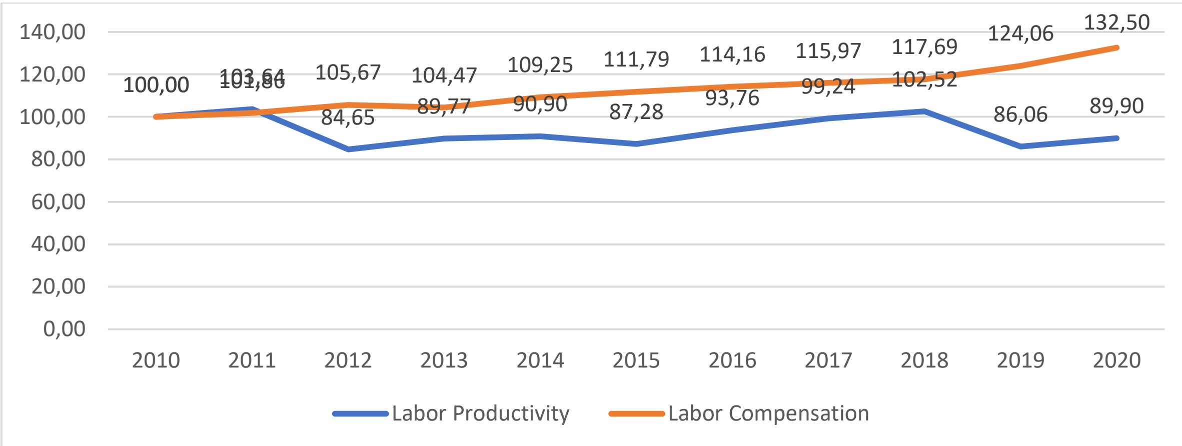
There is a more pronounced gap between the trend of labor productivity and the trend of workers' compensation in the sectors of professional, scientific, and technological activities, administrative, and auxiliary service activities, especially after 2017. It should be noted that the labor productivity growth indices for the period of 2011–2017, when compared to 2010, have a value below 100 index points, indicating that labor productivity in this era does not approach the level of 2010. After seeing a definite increase in 2018, labor productivity began to decline in the months that followed, and in 2019 it reached 86 index points. Workers' compensation and productivity will diverge by 42 index points in 2020.

Figure 8. Index of labor productivity and labor compensation in North Macedonia for the period 2010-2020 Real estate activities (2010=100)



Source: Author’s calculations

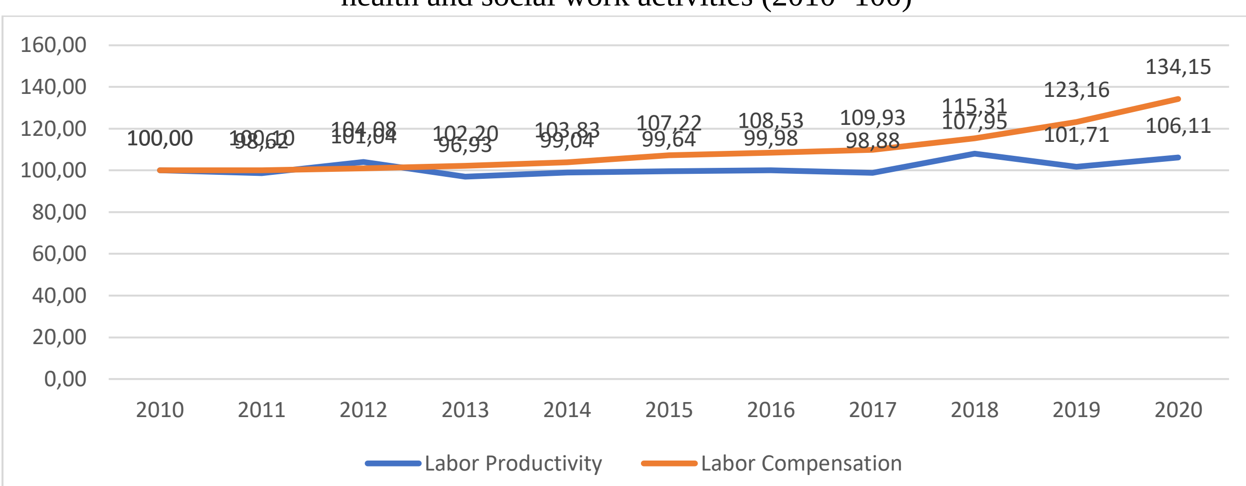
Figure 9. Index of labor productivity and labor compensation in North Macedonia for the period 2010-2020 Professional, scientific and technical activities; Administrative and support service activities (2010=100)



Source: Author’s calculations

A pronounced trend of increase in workers' compensation compared to labor productivity is also observed in the sectors of Public Administration and Defense. As for the trend of labor productivity in the Public Administration and Defense, it does not notice certain changes in the period 2010-2017, that is, it moves around the level of 2010. In the period after 2017, a certain increase in the trend can be observed, in 2020 it reaches 106 index points. Hence, in contrast to workers' compensation, which throughout the entire period recorded a positive trend, especially intensified after 2017, in 2020 it reaches 134 index points. It can be concluded that in 2020, the difference between productivity and labor compensation amounts to 28 index points.

Figure 10. Index of labor productivity and labor compensation in North Macedonia for the period 2010-2020 Public administration and defence; compulsory social security; Education; Human health and social work activities (2010=100)



Source: Author’s calculations

4. DATA AND METHODOLOGY

The empirical analysis used data on labor productivity, workers' compensation, and the number of employed persons by individual activities. The data are taken from the database of the State Statistics Office, for the period of 2010-2020. The selection of the variables in the model (the indicators for the compensation and productivity of the workers) was made after consulting the relevant empirical literature (Feldstein, 2008; Pasimeni, 2018; Bivens and Lawrence, 2015). The selecting of the average monthly gross salary, as an indicator of the compensation of workers in separate activities in the case of the Republic of North Macedonia, was made based on the fact that the gross salary includes the benefits for health, pension and disability insurance, that is, the amount of the gross compensation is the closest to the actual amount that the workers receive. It should be clarified here that this amount is the closest to the actual amount that the average worker in North Macedonia receives based on employment. Namely, the gross salary does not include the various financial and material compensations, bonuses, or other benefits that some of the workers receive. However, considering the fact that only a small part of the workers receives this type of financial-material benefits, that is, on average, the average Macedonian worker is excluded from this type of compensation, it is considered that the gross salary is an optimal indicator for the workers' compensation.

Regarding the econometric model, it was applied using the least squares model (OLS). Although simple, the regression model applied in this way leads to significant results that describe the systematic relationship between the increase in labor productivity and the increase in workers' compensation. A double-logarithmic regression model is used in the model to obtain mutually comparable coefficients regarding the influence of workers' compensation and the level of employment on the movement of labor productivity, as well as to arrive at mutually comparable values for the gap between productivity and compensation of the labor. The regression model applied in this analysis has the following form (Chris Brooks, 2016):

$$Log(Productivity\ of\ Labor)_{ti} = \beta_0 + \beta_1 Log(Labor\ Compensation)_{ti} + \beta_2 Log(Unemployment)_{ti} + \varepsilon_{ti}$$

5. RESULTS DISCUSSION

Results from the econometric model shows that there is a statistically significant causal relationship between labor compensation and labor productivity in most of the analyzed sectors. However, the results of labor compensation coefficients show that workers' compensation has a different impact on the determination of labor productivity, in different sectors. Namely, it can be noted that on the example of the Agriculture, Forestry, Fisheries sector, there is a statistically significant positive relationship between the trend of compensation and labor productivity. An increase in workers' compensation of 1% contributes to a proportional increase in labor productivity. In this direction, it can be concluded that the increase in compensation and labor productivity have an optimal ratio, that is, they are close to the optimal relationship, which implies that the increase in labor productivity is transferred entirely to the workers, in the form of higher compensation. However, as stated above in the analysis, the trend of labor productivity in the last period shows a downward trend. The results of the coefficient of employment provide part of the answer for the downward trend of labor productivity in this sector. Namely, the statistically significant negative relationship between the increase in employment and the decrease in labor productivity is an indicator of the trend of increasing unproductive employment in developing countries. According to the obtained results, it can be concluded that the increase in employment in the Agriculture, Forestry, Fisheries sector by 1% contributes to the reduction of labor productivity by an average of 2%. This trend confirms the previously mentioned tendency to increase the number of non-productive employment in developing countries, especially in sectors with low added value.

Regarding the results of the analysis of the relationship between workers' compensation, employment and labor productivity in the Construction sector, it can be noted that the increase in workers' compensation in construction leads to a half increase in labor productivity. Hence, the coefficient value of 0.5 indicates that an increase in workers' compensation of 1% lead to statistically insignificant increase in labor productivity of up to 0.5%. The trend of compensation and labor productivity analyzed above corresponds to the obtained results of the regression analysis. Also, the negative relationship between the increase in employment and the labor productivity is noticed. Namely, an increase in employment of 1% in the Construction sector contributes to a decrease in the productivity of workers in this sector by 0.6%, however this relationship is statistically insignificant.

There is a statistically significant, positive, over-proportional relationship between an increase in workers' compensation and a rise in labor productivity in the Wholesale and Retail Trade, Transport and Storage, Accommodation and Service Services sectors, in contrast to the previously analyzed relationships in Agriculture, Forestry, Fisheries and Construction. Namely, at a significance level of 95%, it can be concluded that an increase in workers' compensation of 1% will contribute to an increase in labor productivity of about 1.2%. Here, it should be noted that the synthesized data for several sectors, which are analyzed in one regression estimation, can be cited as a drawback. However, due to data limitations, there are no available data on the share of individual sectors in the gross domestic product. Regarding the relationship between labor productivity and workers' compensation, it can be stated that there is also a positive but statistically insignificant relationship between the increase in employment and the increase in labor productivity in the sectors. Also, the analysis of productivity and labor compensation in the Financial and Insurance sector shows the existence of a statistically significant positive relationship. Namely, an increase in labor compensation of 1% will contribute to an increase in labor productivity by an average of 1.9%. On the other hand, within this sector, a positive but statistically insignificant relationship is observed between the increase in employment and labor productivity.

The trend of productivity and compensation of workers in the Information and Communications sector shows the existence of a positive and statistically significant relationship between these two variables. Namely, the increase in the compensation of workers who work in this sector contributes to the increase in labor productivity by an average of 0.8%, which indicates the existence of a positive relationship, but also according to the intensity and the existence of prerequisites for a certain decoupling between the mentioned variables. The employment coefficient within this regression estimation shows that an increase in employment of 1%, on average, contributes to a decrease in labor productivity by 0.8%. As a result, employment in this sector is also increasing, but labor productivity is decreasing at the same time.

It is also observed that there is a positive, statistically insignificant relationship between the movement of compensation and labor productivity in the sectors Professional, scientific and technical activities and Administrative and auxiliary services. On the other hand, within this sector, there is a tendency of a negative relationship between employment and labor productivity. The coefficients of the two variables in this regression estimation show a statistically insignificant causal relationship. However, in addition to the statistically insignificant coefficients, a certain degree of decoupling of compensation and labor productivity can be observed within this sector, as well as the evident negative relationship between employment and labor productivity.

In the sectors Public Administration and Defense, Mandatory Social Insurance, Education, Health and Social Protection Activities, there is a statistically significant positive relationship between the increase in compensation and labor productivity. However, it must be noted that in these sectors, an increase in workers' compensation of 1% leads to an increase in labor productivity of 0.5%, which implies an increase in labor productivity in a lower intensity. Also, the relationship between employment movements and labor productivity in these sectors is negative. Namely, the increase in employment in these sectors leads to a statistically significant decrease in worker productivity. An increase in employment of 1% contributes to a decrease in labor productivity by 0.47%.

In the Real Estate, the results show the existence of an inverse relationship between the increase in employment and labor productivity. Namely, the increase in the employment of workers from 1 affects the decrease of labor productivity by 0.82%. At the same time, the increase in labor compensation in this sector by 1% affects the increase in labor productivity by 0.9%, which indicates an optimal ratio, a relationship that does not deviate significantly compared to other sectors. In the Arts, Entertainment and Recreation and Other Service Activities sector, the results show a statistically insignificant but positive relationship between the increase in labor compensation and worker productivity. Also within this sector there is a statistically insignificant, negative relationship between employment and labor productivity.

Table. Results of a regression analysis between labor productivity, labor compensation, and employment

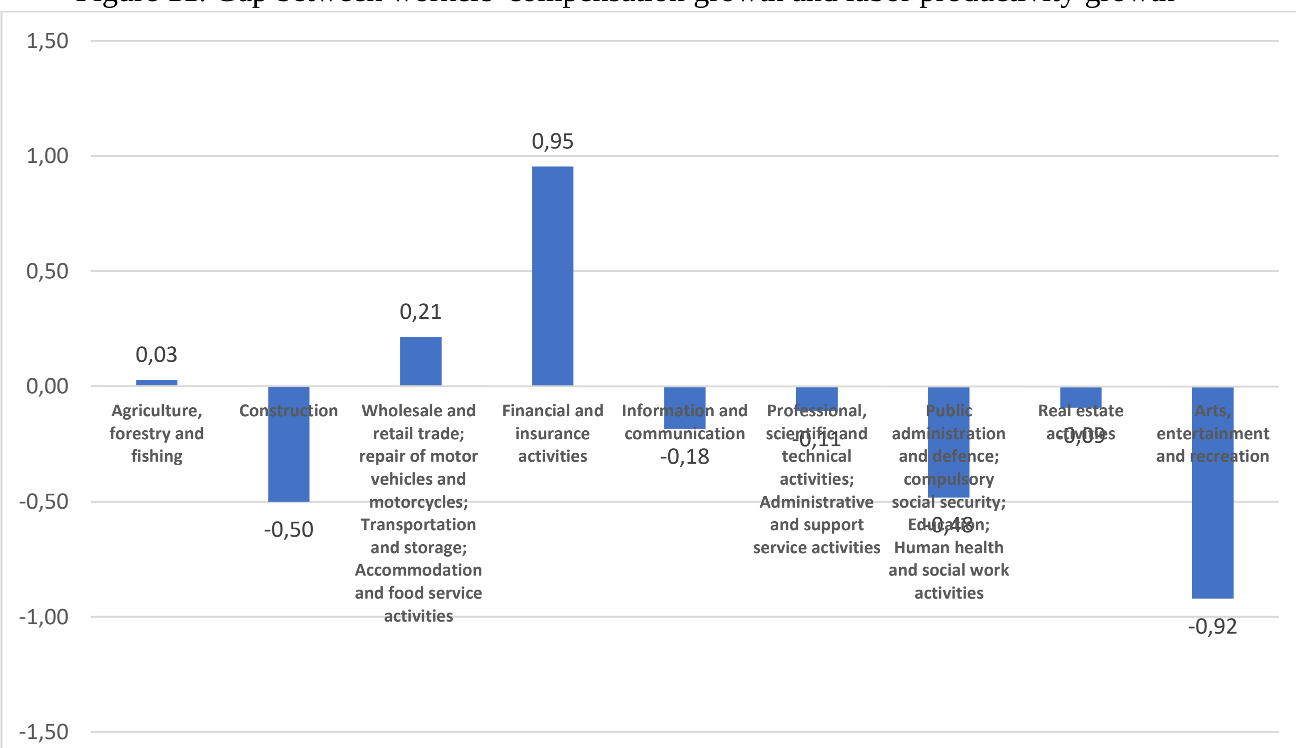
Sector	Labor Compensation Coefficient	Employment Coefficient	Labor Productivity and Labor Compensation Gap
Agriculture, forestry and fishing	1.027918*	-2.092690*	0,03
Construction	0.500382	-0.658409	-0,50
Wholesale and retail trade; repair of motor vehicles and motorcycles; Transportation and storage; Accommodation and food service activities	1.214254**	0.221102	0,21
Financial and insurance activities	1.953761*	0.166723	0,95
Information and communication	0.815563**	-0.821491*	-0,18
Professional, scientific and technical activities; Administrative and support service activities	0.892498	-0.426039	-0,11
Public administration and defence;	0.518119**	-	-0,48

compulsory social security; Education; Human health and social work activities		0.473387***	
Real estate activities	0.907799**	-0.815486*	-0,09
Arts, entertainment and recreation	0.079325	-0.424031	-0,92

Note: * ** *** significance levels of 1%, 5% and 10%, respectively.

Analysis of the gap between compensation and labor productivity shows that in sectors such as Agriculture, Forestry, Fisheries, Real Estate Activities there is almost no decoupling between compensation growth and labor productivity growth. Hence, it can be concluded that in these two sectors the increase in labor productivity corresponds to the increase in workers' compensation. On the other hand, in the sectors of Construction, Art, Entertainment and Recreation and other service activities, Public Administration and Defense, Mandatory Social Insurance, Education, Health and Social Protection Activities, there are significant disproportions between workers' compensation and their contribution, i.e. labor productivity. In these sectors, the increase in workers' compensation contributes to a disproportionate increase in labor productivity. On the other hand, the increase in workers' compensation in the Wholesale and Retail Trade, Financial and Insurance sectors contributes to a disproportionate increase in the productivity of workers in these sectors.

Figure 11. Gap between workers' compensation growth and labor productivity growth



Source: Author’s calculations

6. CONCLUSION

The increase in labor productivity provides a solid basis for further increases in workers' compensation. Labor productivity growth will have different positive effects on workers' compensation depending on the type and stage of development at the national level, as well as within individual sectors.

In this research, the subject of analysis was the trend of labor productivity, workers' compensation and the number of employees, as well as their causal relationship by individual sectors-activities. The sector analysis of the so-called phenomenon of the "Great Decoupling" between productivity and labor compensation aimed to provide detailed results, at the sectoral level, on the movement of productivity and labor compensation, as well as the relationship between employment and labor productivity. Such an analysis for the first time makes it possible to analyze the degree of the so-called "Great Decoupling" between productivity, labor compensation and the number of employees in individual sectors in North Macedonia.

In North Macedonia until 2017, at the national level, there is a synchronized trend in productivity and labor compensation, with a simultaneous constant increase in the number of employees. However, after 2017, there is a significant increase in workers' compensation. At the same time, in the period after 2017, there is a significant decrease in labor productivity. Compared to 2010, in 2020, labor compensation grew by 34 index points, while labor productivity by 10 index points. Hence, it is considered quite justified to draw the conclusion that the gap in the trend of "Reverse Decoupling" between workers' compensation and labor productivity is the case in the Republic of North Macedonia. The emergence of the concept of the so-called Reverse Decoupling of trends of labor productivity and workers' compensation, following world trends, also shows a significant change in the distribution of income in almost all sectors in North Macedonia. The widespread thesis that "a rising tide will lift all boats" for several years now does not correspond to practice, that is, there is an ever-lower increase (in some sectors and stagnation) of labor productivity in relation to the growth of workers' compensation. Hence, it can be concluded that the pronounced increase in workers' compensation in the period after 2017 is the case in almost all sectors. It is the result of the increase in the legal level of the minimum wage, a level below which the employee must not be paid. This conclusion is based on the fact that during this period there is a significant decline (and in some sectors stagnation) of labor productivity, which is followed by an increase in the number of employees in individual sectors. At the same time, the increase in employment in almost all sectors in the Republic of North Macedonia, which is followed by a simultaneous decrease in labor productivity, is considered unsustainable in the medium and long term. Hence, companies in the direction of improving labor productivity will be forced to reduce the number of employees or to improve capital performance. There are several factors that go into dealing with this situation, including the material-financial, personnel, and capital resources available to the enterprises, as well as the availability of additional technology and capital. But one thing is certain: the trend of increasing non-productive employment cannot be sustained indefinitely.

In most of the activities of the Republic of North Macedonia, an increase in employment follows a parallel decrease in labor productivity, as shown by the movement of labor productivity and by the regression analysis. Hence, it is considered completely justified to state the thesis to what extent the increase in employment contributes to the increase in labor productivity. An econometric analysis indicates that North Macedonia has a significant share of unproductive jobs. The strongly expressed low labor productivity is the result of the shortcomings of the domestic economy, in particular in terms of the level of education of the workforce. One of the factors contributing to the low productivity of Macedonian workers is their lack of education, their lack of skills, their lack of capital, as well as their technical-technological level.

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DERIVING THE IMPOSSIBLE TRINITY OF DEVELOPING COUNTRIES AND ITS CONNECTION WITH THE OTHER TWOIMPOSSIBLE TRINITIES

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ABSTRACT
The experience of Eastern European countries indicates that a country cannot simultaneously give up autonomy of monetary and fiscal policy and control of labour mobility without all three causing a reduction in potential GDP at the same time. Namely, if a country opts to peg its currency to the currency of a larger (more developed) country and pursues a restrictive fiscal policy, it will probably [2] lead the workforce to emigrate. This universal rule applies to both developing and developed countries. Nevertheless, the specificity of the developing countries' position is that once the labour force leaves the country, it will almost certainly never return. Therefore, labour mobility should be regarded as entirely different when it takes place between countries at distinct levels of development and when it serves as a mechanism for achieving an external balance between countries at similar income levels. As far as we understand, the just described experience of Eastern European developing countries has not yet been formalized anywhere as economic legality, i.e. trilemma. Thus, this paper can be an introduction to the theory of the impossible trinity of developing countries, explaining the basic concepts, connections between them and open questions.

Keywords: *monetary policy, fiscal policy, labour migration, impossible trinity*

JEL classification: J01, E60, F45

1. INTRODUCTION

In the last few years, the issue of labour emigration from developing countries, especially from Eastern European countries, captured our attention. We believe that this is the most consequential social and economic phenomenon that will significantly, positively or negatively, influence the development of these countries in the medium and long term. Analysing this phenomenon, we (Đogo, 2019), identified something we called "Chang's curve[3]". However, this being a microeconomic regularity, we still lack an adequate macroeconomic framework for examining the impact of macroeconomic policies on the labour migration process.

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[2] Only a significant inflow of foreign investment could be a factor that could neutralize this "inevitability".

[3] It is a rule founded on the practical experience of some Eastern European countries, according to which income growth in developing countries leads to an increase in emigration foremost (compared to the prevailing assumption that it slows it down) until the growth is sufficient to justify staying in a country.

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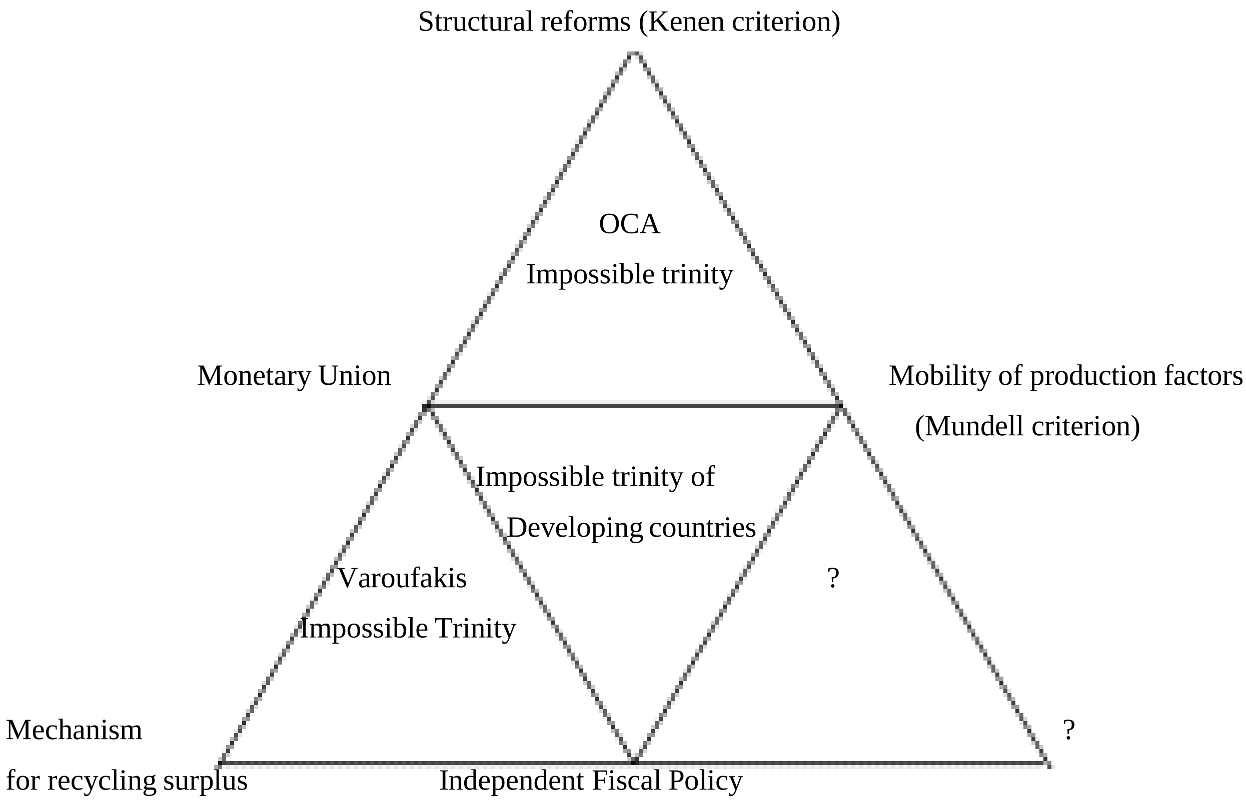
It may sound peculiar, but even though the Mundell-Fleming Impossible Trinity and the Mundell-Fleming (IS-LM-BP) model are the most well-known theoretical frameworks for analysing the effects of monetary, fiscal and exchange rate policy, they are not able to provide a complete picture of the situation in developing countries. The reason for such an admittedly bold statement is that these models do not take into account the impact of emigration on macroeconomic balance in the short or long term, despite the fact that in the last few decades, labour mobility has become the fundamental mechanism for achieving the general balance of Eastern European countries. Therefore, we have been thinking about a macroeconomic framework that would include this variable. After some time, at the instant of inspiration, we noticed a potential connection between the "old" (Mundell-Fleming) impossible trinity, the "new" (Varoufakis) impossible trinity and the third impossible trinity of developing countries. Those well acquainted with this domain will understand this potential connection even without a detailed explanation through the following graph:

Graph 1 – The connection between impossible trinities



Nevertheless, for those who are not so acquainted, we deliver a detailed explanation below as the essence of this paper. Before doing so, we have to stress that our research on this topic runs beyond the scope of the paper itself. In fact, two papers have arisen from it by far. Those include this paper, in which the emphasis is on deriving the impossible trinity of developing countries from the other two impossible trinities, and another one entitled The Impossible Trinity of Developing Countries in which we endeavoured to prove the existence of this new impossible trinity by usual econometric methods.

Those papers should be viewed as a whole, with this being the beginning (introduction) of the research, while a review of the relevant literature and explanations are part of the other paper. It also explains why this paper does not follow the usual structure of scientific work in economics. However, in our opinion, that does not diminish its significance. In fact, without this work it is hard to fully (or at all) understand the other paper.

2. LITERATURE REVIEW

In the Introduction, we have pointed out that this new impossible trinity is closely related, more precisely that it arose from the integration of two Mundell theories (the theory of OCA and the Impossible trinity theory) so that all the literature on these two Mundell theories (especially the theory of the impossible trinity) is actually relevant to this paper of ours.

It is probably impossible to list all the works dealing with the Mundell-Fleming trilemma. Since Mundell's work Capital Mobility and Stabilization Policy under the Fixed and Flexible Exchange Rates appeared in 1963, thousands of papers have emerged that deal with the empirical verification of this theorem. However, we will try to deliver a brief overview of recent works by well-known authors. To make it easier to follow the scientific contribution of the authors through various papers, we have categorised them all into five subsets:

- the papers directly dealing with the Mundell-Fleming trilemma, i.e. paying equal attention to each of the three variables that operate this trilemma (monetary policy, exchange rate, capital flow control),
- the papers primarily dealing with exchange rate regimes, but due to the connection of the three phenomena, they also consider monetary policy and international capital movements,
- the papers primarily dealing with capital flows, but due to the relationship with the other two phenomena and monetary policy and exchange rate regimes,
- the papers primarily dealing with monetary policy, but due to the connection between the three phenomena, they also consider exchange rate regimes and inter-capital depletion of capital,
- the papers primarily dealing with Mundell's former theory - of the optimal currency area. These works are usually empirically "tied" with the topic of EMU, and from this emerged the theory of "alternative" or "new" impossible trinity.

Those papers that try to point out the existence of a new, third impossible trinity (as we try) make a unique category. There is no lack of such papers either, especially in the last couple of years, and we save them for the literature review closing.

As for the works that pay equal attention to all three variables of the impossible trinity in the last 10-15 years, probably the most famous and most productive authors are Joshua Aizenman, Hiro Ito and Menzie Chinn. The beginning of their collaboration on this topic is likely the paper, Assessing the emerging global financial architecture: measuring the trilemma's configurations over time (Aizenman, Ito and Chinn, 2008). In this paper, the authors constructed a "trilemma index", proving that the progress (growth) of the index of one of the three variables leads to a decline in the index of the other two variables. Their following paper, entitled Surfing the Waves of Globalization: Asia and Financial Globalization in the Context of the Trilemma (Aizenman, Chinn and Ito, 2011), points to the fact that the possession of significant international reserves (IR) allows a certain "loosening" of the trilemma law. In the

ensuing paper (Trilemma Policy Convergence Patterns and Output Volatility), Aizenman and Ito (2012) found that emerging market economies are moving towards the "middle ground", i.e. managed exchange rate flexibility, intermediate levels of monetary independence and controlled financial integration. In the paper Living with Trilemma Constraint: Relative Trilemma Policy Divergence, Crises, and Output Losses for Developing Countries, Aizenman and Ito (2013) wondered whether countries derogated from open macroeconomic policies are more or less affected by currency or banking crises. They conclude that these countries are more often affected by such crises, but there are fewer output losses in these cases compared to countries with more open economies. The paper Monetary Policy Spillovers and the Trilemma in the New Normal: Periphery Country Sensitivity to Core Country Conditions, Aizenman, Chinn and Ito (2016) question "how the financial conditions of peripheral countries can be affected by movements in the centre economics / the US, Japan, The Eurozone, and China". The results are not surprising since "the arrangement of open macro policies ... is also found to have a direct influence on the sensitivity to centre economics".
Even more famous economists Maurice Obstfeld, Jay Shambaugh and Alan Taylor make the second group of authors actively involved in the trilemma for the last 20 years. Even though they published several outstanding papers on the subject, the fact they are not as focused on Mundell's trilemma as Aizenman, Ito, and Chinn is the reason we list them as the second. Such works include The Trilemma in History: Tradeoffs among Exchange Rates, Monetary Policies, and Capital Mobility, and the work Monetary Sovereignty, Exchange Rates and Capital Controls: The Trilemma in the Interwar Period. In their first paper, Obstfeld, Shambaug, and Taylor (2005), analyse the movement of short-term interest rates for 16 countries (in the gold standard, and later for many more countries) from 1870 to the beginning of the 21st century. Of course, the idea is that the correlation of interest rates in conditions of fixed exchange rate and free capital flows (two requirements met in the gold standard) can confirm the validity of the Mundell-Fleming trilemma. In another paper, Obstfeld, Shambaugh, and Taylor (2004), find evidence of the validity of the impossible trinity theory even in an interwar period filled with instability, protectionism, and inflation. The third work of these three authors is Financial stability, The Trilemma, and International Reserve (Obstfeld, Shambaugh, and Taylor, 2010). In it, the authors present their financial-stability model, which in the context of the trilemma explains the dramatic increase in the international reserves of the countries of Southeast Asia.
The second group of papers includes those who deal with the impossible trinity primarily from the pointof interest in finding the optimal exchange rate regime for a country. The author who stands out in this field in the last few decades is Jeffrey Frankel, the author of the famous theory of Endogeneity of the Optimum Currency Area. By the way, Frenkel was Mundell's student, and with this theory, he tried to oppose Mundell's critics (primarily Paul Krugman) who claimed that EMU did not meet the requirements of the OCA (Krugman, 1993). Frenkel's work that has drawn the most attention is the one entitled No Single Currency Regime is Right for All Countries or at All Times (Frenkel, 1998). In this paper, Frankel points out countries must consider the limitations imposed by the impossible trinity when choosing the optimal regime. A couple of years later, Frankel repeated his analysis in the paper Experience of and Lessons from Exchange Rate Regimes in Emerging Economies this time focusing only on emerging economics (Frenkel, 2003). The most significant in this paper is Frenkel's invention of PEP (Peg the Export Price) as a particular variant of crawling peg. All the while, Frankel implicitly points to the validity of the theory of the impossible trinity.

The third group of papers deals with Mundell's trilemma, primarily from the point of view of interest in international capital flows. Most of these papers have the process of globalization as their central point, even though there are also those devoted to studying "excesses" in the form of remaining capital control measures that are still constantly or occasionally applied by different countries. The papers of the group of authors we have already mentioned (Obstfeld, Shambaugh and Taylor) also stand out in this field. Theylook at globalization from a historical perspective, believing that theories of the impossible trinity can bea good guide for looking at past (and future) events. They clearly express such an attitude in Globalization and Capital Markets. In International Monetary Relations: Taking Finance Seriously, Obstfeld and Taylor (2017), go even further and, starting from the Mundell-Fleming trilemma, conclude that there is a "financial trilemma" according to which countries can choose a maximum of two of the three positions (financial stability, open capital market or autonomy over domestic monetary policy). In Globalization, Macroeconomic Performance and Exchange Rate of Emerging Economies, Obstfeld (2004) points out that instability of capital flows often threatens the stability of the developing countries' exchange rate. Helena Rey's work has been in the spotlight in the last few years. She claims that "the global financial cycle transforms the trilemma into a dilemma ... independent monetary policies are possible if and only if the capital account is managed." (Rey, 2016:2). She presented this conclusion first in the Dilemma, not Trilemma; The Global Financial Cycle and Monetary Policy Independence (Rey, 2013), and then in International Channels of Transmission of Monetary Policy and the Mundellian Trilemma (Rey, 2016).
From the papers that deal with the control of capital flows rather than globalization, we would like to single out the following: Capital Controls: An Evaluation Capital Controls: Myth and reality - Portfolio Balance Approach (Magud and Reinhart, 2018). The reason for highlighting these papers is that their authors (Nicolas Magud and Carmen Reinhart) suggest how to solve some methodological problems faced by all trying to perform an empirical analysis of capital flow controls. Specifically, these authors propose the use of two indices - the Capital Controls Effectiveness Index (CCE Index) and the Weighted Capital Controls Effectiveness Index (WCCE Index), which they used for “standardization" when measuring the level of control over capital flows. In the second paper, also based on the two mentioned indices, the third author is Kenneth Rogoff (Magud, Reinhard and Rogoff, 2018). In the context of the subject of our research, it is necessary to note that both papers conclude that the existence of capital flow control actually raises the possibility of dealing with independent monetary policy. However, the country suffers a reduction in the inflow of foreign capital, which means giving up the positive effects of that inflow. Gurnain Pasricha, Matteo Falagiarda, Martin Bijsterbosch and (again) Joshua Aizenman (2018), came to the same conclusion in Domestic and Multilateral Effects of Capital Controls in Emerging Markets. The paper that left a deep impression on us is Dealing with the Trilemma: Optimal Capital Controls with Fixed Exchange Rates, by Emmanuel Farhi and Ivan Werning (2012). In this paper, the authors do not start from any ideological position. By mastering modern econometrics, they discover the conditions under which capital flow controls can benefit the country or do more harm than good. In the paper Capital Controls, Global Liquidity Traps and the International Policy Trilemma, Michael Devereux and James Yetman (2014) claim that the use of capital flow controls can be helpful in restoring the possibility of pursuing an independent monetary policy in conditions where there is already a "liquidity trap" in the country - economic partner.
The fourth group of papers primarily deals with OCA, i.e. EMU. These papers are somewhat

more indirectly concerned with the theory of the impossible trinity, but they exist in the field in which a new impossible trinity theory emerged. Undoubtedly the most important of the more recent papers is The Trilemma of a Monetary Union: Another Impossible Trinity by Hanno Beck and Aloys Prinz (2012). It is the first time a "new" or "alternative" Trinity was formalized. We will discuss it in more detail in the next part of this paper, so we will not present its conclusions here. An engaging paper is The European Crises in the Context of the History of Previous Financial Crises, by Michael Bordo and Harold James (2015). This work does not formalize the "new" impossible trinity, but it does deal with it. In Insulation Impossibile: Fiscal Spillovers in a Monetary Union, Russell Cooper, Hubert Kempf and Dan Peled (2009) pointed out that something is "going on", i.e. that there will be problems when there is a monetary union, free capital flows and the autonomy of fiscal policy. Interestingly, even the already mentioned Aizenman could not resist engaging in the validity of Mundell's older idea (not OCA) besides the theory of the impossible trinity, so he wrote the paper Optimal Currency Area: A 20th Century Idea For the 21st Century. In the paper, Aizenman (2016:2), highlights the empirically established wisdom: "debt countries that rely on financial inflows to fund structural imbalances may be exposed to devastating sudden-stop crises, subsequently reducing the correlation of business cycles between currency area members, possible ceasing the gains from membership in a currency union".

3. DERIVATION OF THE IMPOSSIBLE TRINITY OF DEVELOPING COUNTRIES - METHODOLOGY

The specificity of this paper - to present the basic concepts and connections between them - is, in a way, problematic since modern economics ceased to be a logical discipline, as it has been for most of its existence, and has become a discipline that depends heavily on mathematics. We essentially agree with such an approach but consider that there are cases when it is absolutely necessary to make an exception. If there had been no exceptions to the rule, the Laffer curve would have never emerged. More precisely, the deduction has not yet completely lost its importance in economics. We learned this by studying the literature and noticed that even today, some works employ the same methodology (albeit quite rarely) that we use in the rest the paper. Thus, e.g. the American NBER has included the paper entitled *Capital Flows and Domestic and International Order: Trilemmas from Macroeconomics to Political Economy and International Relations*, by Michael Bordo and Harold James, in its prestigious papers list. In this paper, using only the deduction method, the authors also present their view of the three trilemmas (the macro- economic trilemma, the financial stability trilemma and the political economy trilemma), which has a lot in common with our opinion, including one noteworthy difference. In that paper, three trilemmas are enumerated and explained exhaustively (we consider two of those trilemmas), while our paper also tries to establish relations between them.

3.1. Derivation of the first trinity: from Mundell-Fleming to Mundell-Kenen trilemma

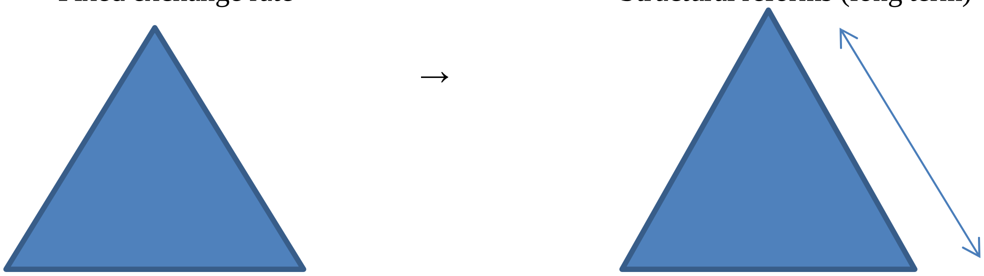
People who are not experts in this field and are not familiar with the works of Robert Mundell may find strange the transformation presented in Graph 1, which transforms the classic (Mundell-Fleming) impossible trinity into the impossible trinity of the optimal currency area (OCA). However, Robert Mundell is the creator of both of these theories closely related to each other. In particular, Mundell first presented the optimal currency area theory in 1961 in *A Theory of Optimum Currency Area*. Two years later, in his paper *Capital Mobility and*

Stabilization Policy under Fixed and Flexible Exchange Rates, he also put forward the theory of the impossible trinity. For these two achievements, he received the Nobel Prize in Economics in 1999 (The Sveriges Riksbank, 1999). This trilemma is theoretically proven by analyses conducted in Mundell-Fleming's model, which Mundell, and independently of him Marcus Fleming, also presented in 1963. That is why the theory of the impossible trinity is often called the Mundell-Fleming trilemma.

The transformation from the Mundell-Fleming trilemma to The Impossible Trinity of the Optimal Currency Area would be impossible without accepting the hypothesis that the observed countries opted for some exchange rate regime that implies passive monetary policy. Such regimes are currency board, unilateral euroization or monetary union. We accepted the hypothesis, as we pointed out at the beginning, having in mind the position of the Western Balkan countries such as Bosnia and Herzegovina (currency board), Montenegro (official euroization), Bulgaria (currency board, started the process of joining EMU) and Croatia (started the process of joining EMU). In this way, two prerequisites from the impossible trinity theory (fixed exchange rate and passive monetary policy) can be summed up in one requirement simply termed "monetary union". We invite readers to consider that "monetary union" does not actually imply a *de jure* monetary union but a *de facto* monetary union.

Since we had previously reduced the trinity to duality, we had to add another condition (variable) to obtain the OCA trinity. OCA theory has instructed us to use structural reforms as the third variable. To be more precise, when we mention structural reforms, we actually imply Kennen's criterion of optimality of the currency area (harmonization of economic structures). To some people, this might seem like "inserting" an alien entity into Mundell's theory, but even that would not be accurate. Namely, it should be considered that Mundell belonged to a branch of monetarists who, unlike the majority led by Milton Friedman, opposed leaving the Bretton Woods system and generally preferred fixed exchange rate regimes to the fluctuating ones (New York Times, 2021). In fact, Mundell was one of the two fathers of the new school of economic thought known as "supply economics" (the other was Arthur Laffer) - which shifted the focus of pro-market economists from monetary policy to other critical aspects of economic policy - primarily structural reforms. Thus Mundell's 1971 paper *The Dollar and the Policy Mix* is regarded as the start of this school of economics (Wanniski, 1975). In the context of our work, it is essential to note that Mundell was indisputably aware that the mechanisms of neutralizing balance of payments imbalance (which is also a condition for preserving monetary union), which he defined in the form of Mundell's criteria of currency area optimality were effective only in short/medium run while structural reforms lead to the harmonization of economic structures (and economic cycles) in the long run. Hence we have marked this short to long term transition in the right corner of Graph 2.

Graph 2 – The transformation from the Mundell-Fleming to the Mundell-Kenen trilemma



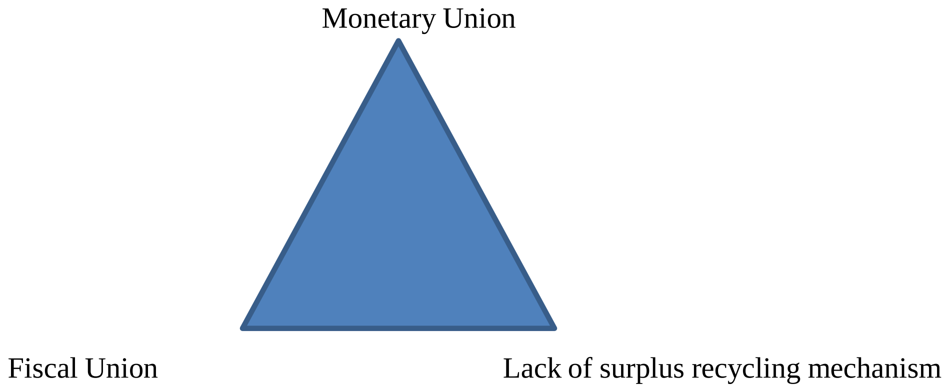
In addition to the previous graph, we must mention that we assumed that the third (McKinnon) condition for the optimum currency area was met (reference to mutual trade), as actually confirmed for all Western Balkan countries. For example, according to the Central Bank of Bosnia and Herzegovina (2021), for more than a decade, three of Bosnia and Herzegovina's five most important trading partners are EMU members (Germany, Italy and Slovenia), and one is on the path to EMU membership (Croatia). However, the fifth largest trading partner (Serbia) endeavours to prevent excessive oscillations of the national currency against euro.

3.2. The second (EMU) impossible trinity

In a 2012 paper, *The Trilemma of a Monetary Union: Another Impossible Trinity*, authors Hanno Beck and Aloys Prinz defined a fresh trilemma that was then the most pressing issue for the EU. Regardless, it is difficult not to notice that although this trilemma was formalized in 2012, it is not indeed an entirely new trilemma. Namely, if we refer to the book *And the weak suffer what they must* by Yanis Varoufakis, we will notice that other Bretton Woods Conference participants, especially John Maynard Keynes and Harry Dexter White, were aware of this trilemma. Namely, the Bretton Woods system itself can be deemed a kind of monetary union, which had built-in specific "shock absorbers" such as an adjustable-peg exchange rate regime. For this monetary union to survive, White managed to impose a system of recycling surpluses in the form of the IMF and IBRD, which de facto controlled the United States, arguing that the surpluses that these two institutions recycle are American indeed. Recall that the United States generated almost 50% of world GDP (Bžežinski, 2001: 17) then and was the country with the largest trade surplus in the world. So, American surplus implied American rules for their recycling. It was a fundamental argument for accepting White's and rejecting Keynes's undeniably intellectually superior plan. The alternative was to form a world government to run world fiscal policy de facto. Although some prominent politicians of that time advocated this solution, bearing in mind the devastating consequences of the Second World War, the prevailing opinion was that it was too early for the world government, i.e. that the sovereignist resistance was too strong. Therefore, all IMF member countries ultimately had to accept the American surplus recycling mechanism. What caused the Bretton Woods system, designed to last forever, to fail after only 25 years of existence was a change in the political and economic situation in the world. Namely, the USSR and other Eastern European countries under its influence did not intend to remain part of the international division of labour system in which then (and mostly today) underdeveloped countries were merely exporters of raw materials. In the case of abandoning the relatively free international trade system, they could have neither trade surpluses nor deficits in relations with the United States. The IMF and the World Bank would have had nothing to recycle without the surpluses and deficits, so the USSR and its satellites leaving the Bretton Woods system was a logical consequence of the previously chosen industrialization strategy (industrialization based on import substitution). On the other hand, Yugoslavia could remain in this system because it severed ties with the USSR in 1949, which enabled a tremendous inflow of capital, which funded the armament with American military equipment. However, the capital did not flow into Yugoslavia so much via the IMF and the IBRD but via a prominent American government program led by Raymond Vernon, who had previously devised the Marshall Plan. Anyway, Marshall's plan and program to support Yugoslavia were merely different ways to recycle US trade surpluses. However, in the early 1960s, these surpluses dried up as the US began to record a trade deficit due to a much faster recovery of European economies (primarily Germany and Italy) and Japan than the founders of the Bretton Woods system expected. Without American surpluses, the American system of recycling could not prevail. IMF member countries were also aware of this. Using the first amendment to the IMF statute (adopted in 1967), explained by the "Triffin paradox", they practically adopted a portion of what the late Keynes had proposed 20 years earlier.

Nevertheless, we first came across the "alternative" impossible trinity in the works of Varoufakis,which is why we renamed it - Varoufakis' impossible trinity.

Graph 3 – Varoufakis' impossible trinity



3.3. The impossible trinity of developing countries

The existence of an impossible trinity of developing countries became apparent to all or almost all economists in the Western Balkans only when these countries faced fiscal constraints and foreign capital inflows were drastically reduced[4]. Seemingly, 2008 was a turning point that prompted a series of events leading to that. Namely, until 2008, the inflow of foreign investments and/or foreign loans to the countries of the Western Balkans was relatively extensive and enabled a constant boost in living standards. Nevertheless, after 2010, Basel III drastically reduced the inflow of borrowed capital coming from developed countries through the banking sector[5], while foreign financial markets began to question the actual creditworthiness of the Western Balkans. At that moment, international multilateral institutions (primarily the IMF) *stepped in* as new creditors of the Western Balkans. However, these loans were not for supporting living standards (whose face was a large and growing extraneous imbalance embodied in a growing trade deficit On the contrary, the goal was to force countries to pursue "fit" public finance policies. After the repeated crisis of 2012, all the Western Balkans countries adopted restrictive fiscal policies, incorporated in the reduction of wages in the public sector, reduction of pensions, and the public sector hiring freeze. At the same time, all these countries have managed to maintain the existing exchange rate regimes, including those ones that have pegged their currencies to the Euro. With the decline in foreign investment in most countries, the plunge in living standards was the "trigger" for the mass emigration of the labour force. In short, this would be an overview of how the countries of the Western Balkans that have accepted the "monetary union" have reached the position of the Impossible Trinity of developing countries.

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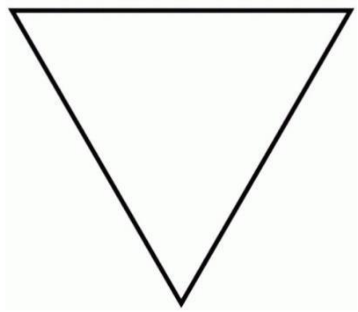
[4] For example, according to the World Bank, Foreign Direct Investment in Bosnia and Herzegovina amounted to 11.7% of GDP in 2007, falling to 0.8% in 2009, and remaining below 3% of GDP since. (available at https://data.worldbank.org/indicator/BX.KLT.DINV.WD.GD.ZS?locations=BA&view=chart)

[5] One of the recommendations of Basel III was that parent banks from developed countries reduce their exposure to subsidiary banks from developing countries (especially Eastern European banks). This exposure was due to the fact that the parent banks kept large amounts of deposits in their subsidiary banks, thus enabling the latter to expand credit at low borrowing costs. In this way the parent banks placed funds at higher interest rates than was possible in the market of developed countries.

Graph 4 – the Impossible Trinity of developing countries

Monetary Union Mobility of production factors



Autonomous fiscal policy

It is important to note another paradox, which seems to be misunderstood or simply ignored by the IMF and other multilateral institutions. Namely, the testimonies of prominent economists[6] from countries that turned to the IMF for help indicate that austerity measures lead to a decline in living standards and mass emigration of the labour force. Nevertheless, IMF staff did not hesitate and generally believed that wages in these impoverished countries were too high, at least when compared to labour productivity. Therefore, they considered there must be a wage reduction because they regarded it as a reduction in the cost of labour productivity factors, which was supposed to increase the competitiveness of countries. Yet, the paradox is that in the conditions of free movement of the workforce, this drop in wages triggered a wave of mass emigration, which led to the countries losing their essential export of comparative advantages - the labour force. With the reduction in the volume of available workforce, there has been an increase in the price of labour (wages) in accordance with market law because what is scarcer becomes more expensive. In this way, the IMF's programs had effect only in a very short period of wage cuts (a couple of years), but in the following decades, they had lasting damaging effects on the long-term economic growth rates of the countries.

[6] The complete book by Janis Varoufakis *And the weak suffer what they have,* is a testimony of it. The testimony of a respected professor from Bosnia and Herzegovina (the Republic of Srpska), Rajko Tomaš, then the chief economic adviser to the President of the Republic of Srpska, also supports this claim. Namely, he clearly emphasized to the IMF representatives that the measures they propose will push a significant part of the population below the poverty line. However, he did not find their understanding for not insisting on those measures.

3.4. The unknown (fourth) impossible trinity

From the initial graph, it is clear that we believe that there is a fourth, and potentially a fifth, impossible trinity, which we have not yet been able to spot. Namely, in the lower right corner, there should be an impossible trinity whose two variables are known - independent fiscal policy and the mobility of factors of production. We believe that the third variable of the fourth impossible trinity will reveal itself when the time is right and when circumstances indicating it are favourable. For our Sierpian equilateral triangle[7], composed of four smaller equilateral triangles, to make sense, the third variable of the fourth impossible trinity must be meaningful in the case of the fifth (collective, i.e. great) impossible trinity - the one whose two sides represent structural reform and surplus recycling mechanism. These two variables are clearly two primary mechanisms for achieving the sustainability of any framework of the international monetary system, so we assume that the third variable of the fourth and fifth impossible trinity should be something important - i.e. a mechanism that helps the international monetary system pass tests of flexibility, liquidity and reliability. Nonetheless, as we said, we have not yet come up with an idea of what it could be, so we will leave that question unanswered for now.

4. CONCLUSION

The specificity of developing countries also requires a "specific" impossible trinity that more clearly reflects the dilemma those in power in these countries face. In the paper we proposed a trilemma of monetary policy autonomy - fiscal policy autonomy - control of labour mobility. However, the paper itself does not prove the reality of this trinity but only suggests that the experience of developing countries indicates its existence. So, the matter of confirming it remained open. We intend to dedicate ourselves to proving the same in the following works.
However, even if we prove that such an impossible trinity of developing countries exists, we are still not much closer to developing a model that would help analyse the effects of migration policy on other macroeconomic variables. Thus, we have not devised an extended IS-LM-BP model, nor do we currently have a clear idea of how to insert a variable (labour mobility policy) into this classic Mundell-Fleming model. We are confident that the first to develop such a model will significantly contribute to economics, at least from the point of view of economists from developing countries.

[7] An equilateral triangle composed of smaller equilateral triangles is commonly called the Sierpin Triangle after the Polish mathematician Wacław Franciszek Sierpiński.

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THE INFLUENCE OF ECOLOGICAL TRENDS ON THE SHAPING OF LIFE IN THE XXI CENTURY

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ABSTRACT
Man, as a natural being, modifies the ecosystems of which he is an integral part, but this does not diminish his obligation to leave the environment to his descendants, at least in the state in which he "got it for use" from his ancestors. The growth trend observed in the field of extraction of natural resources, global population, gross domestic product and waste disposal is the basis for the development of the global environmental crisis, which is caused by unreasonable and irresponsible human behavior towards nature and its resources. The ecological crisis, as a disturbance and threat to the balance of the natural and social components of the environment and consequently human existence, is a trend that is intensively influencing the shaping of life in the 21st century. Unsustainable use of natural resources in combination with continuous increase in waste causes concern for human survival and requires immediate transformation and transition from dominant economic models based on linear patterns of production, consumption and disposal, to closed-loop models - circular models. The process of harmonization of technological progress and economic growth and development, with the goals of preserving the quality of the environment, has developed the need to build the innovative potential of the economy and apply the principles of sustainable development, as a strategic commitment of almost all countries in the 21st century. In this regard, a change in worldview - the development of environmental knowledge is necessary and is the primary goal in establishing the optimal, interaction of man and nature. The aim of the work is to point out the negative consequences of irresponsible behavior towards the environment and natural resources.

Keywords: environmental problems, environment, ecological culture, 21st century, circular economy

JEL classification: Q20, I15, P18, Q01, 051

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1. INTRODUCTION

The world in which modern man lives is full of challenges and changes that are constantly happening, and in this regard, we are forced to adapt to them in a timely manner. Life in the XXI century is characterized by increasingly intensive processes of globalization, industrialization and technical revolution, which leave strong consequences for the environment and, therefore, the quality of life. The aforementioned consequences for the ecosystem are dominantly negative and it is fully justified why there is a global awareness of the threat of every form of life on Earth today (Bekavac and Podgorelec, 2014).

The degradation of the quality of the human environment and the quality of life is becoming a visible part of the global crisis marked as the ecological crisis, which marks the modern era. In general, an ecological crisis indicates the presence of a disturbance and/or imbalance of one or more types of organisms in relation to their living environment or in relation to mutual interaction (Franić, 2020). The dominant presence of the above-mentioned crisis at the world level is confirmed by: global warming, reduction of the ozone layer, increased greenhouse effect, irrational use of non-renewable natural resources, conversion of fertile land into deserts, occurrence of acid rain, extinction of plant and animal species, increase in the amount of waste that at the end of life century ends up in landfills, as does the dominantly linear economy in most countries around the world. Although the main cause of the global environmental crisis is the rapid and strong development of industry, technique and technology, neither social nor individual influences - the influence of "ordinary" people on the fate of all humanity - must be ignored. Namely, it is necessary to recognize the fact that man is a natural being and as such, a part of the ecosystem that changes through his actions. As living beings, people have taken upon themselves the responsibility of preserving the environment for their successors, at least in the state in which they "received" it for use from their ancestors. However, the danger of the consequences of the global ecological crisis, which is evident, indicates that modern man treats nature in such a way that, not only endangers the survival of future generations, but also calls into question the existence of life in general. There are authors, such as Leakey Richard, who believe that environmental uncertainty is greater than even the biggest pessimists imagine and that we have already passed the "point of no return" - the point where we can no longer prevent ecological degradation, we can slow it down, but we can't stop it anymore (Pečjak , 2009). That is why in the 21st century, a qualitative change in the relationship between society and nature is necessary, which will cause the emergence of a completely new social context in which man will get closer to nature, from which he has obviously been separated. Circular economy appears as a concept of exceptional importance for reducing the risk of damaging the environment, the implementation of which is a way to achieve the goals of sustainable development, primarily aimed at preserving the environment.

The paper uses the method of descriptive research, which is in line with its basic goals to indicate the actuality of environmental problems and the negative consequences of irresponsible behavior towards the environment and natural resources.

„ *We need to renew our contract with nature. Ecology is a unifying force that can reduce intolerance and expand our empathy for others – both human and animal.*" –
Gregory Colbert

2. THE EMERGENCE OF THE ENVIRONMENTAL CRISIS AS A CONSEQUENCE OF THE DISRUPTED RELATIONSHIP BETWEEN SOCIETY AND NATURE

The environment, as the starting point of the life of all living beings, is subject to changes that occur as a result of human action. Given that modern society is often labeled as a "civilization of risk" (Marković, 2002), it is high time to ask ourselves what kind of relationship we have with nature? From the Stone Age, when only stone tools were used for work, until the latest scientific and technical achievements, man conquered nature and influenced it with his actions, however, it seems that today's influence is primarily negative and that the big problem is how we deal with the consequences arising from that influence. Instead of man, as a conscious being, measuring his progress by the diversity and richness of nature, he impoverishes it more and more, thus making himself poorer for many goods that once seemed unlimited and free, but today, because of such a relationship, have become rare and received a relatively high price , like clean air, forest, water (Damnjanović et. al., 2020). Man is now in such a situation that what he took from nature for free for centuries, he is now paying with his health (Tasić, 2018). That is why it is completely justified why the causes of the disturbance of the ecological balance and thus the occurrence of the ecological crisis are found in human action. However, it is worrisome that today the average educated person has little knowledge of environmental problems, tendencies and consequences of environmental crises (Stajić, 2013).

Due to the complexity and seriousness of the problems it causes, the ecological crisis is the subject of analysis by experts of various profiles, economists, sociologists, biologists, doctors, psychologists, and it is written and talked about more than ever. Marković et al. (2012), state that man, appropriating nature with his work, did not, or did not sufficiently, take into account the need to respect the laws that rule in the biosphere, and with his activity ordered the balance of conditions and influences in the natural environment and thus caused the emergence of an ecological crisis . An "official" definition of an ecological crisis does not exist, but is based on ecological laws and a common cultural approach to the word "crisis" (Hume and Barry, 2015). In the simplest way, an ecological crisis can be defined as a violation of the balance of conditions and influences in the human environment, in the unity of its natural and social components, and is expressed in the threat to the stable functioning of both the biosphere and society, calling into question human existence (Marković et al., 2012). It manifests itself in the intense depletion of natural resources, which threatens the survival of future generations, but also in environmental pollution that leads to the extinction of plant and animal species, water and air pollution, the appearance of deadly radiation, and a decrease in soil fertility. That is why the appropriation of nature by man, which is done contrary to the basic laws of nature, is extremely worrying and not at all encouraging.

Although there are still disagreements about how the crisis arose, what its true dimensions are, what causes led to it and how to overcome it, there is no doubt that man, as a part of nature, influenced its destruction and thus called into question the survival of its species (Pizzi, et. al., 2020). Environmental problems are issues of an older date, however, the analysis of the causes that led to their occurrence began relatively late. Namely, after the industrial revolution, man increasingly satisfied his needs through scientific and industrial mastery of nature. Therefore, in the analysis of the causes of the ecological crisis, special attention is paid to industrialization. Stanojević (2018) states that the pollution of the natural environment is closely related to the industrial way of production, a production system whose main motive is profit, which encouraged man to have a hostile attitude towards nature. This led to the "collision" of man and nature - through his productive activity, man "reworked" the ecosystem, thereby disrupting its balance and, through the accumulation of capital, led to the accumulation of ecological problems. So today, two centuries later, we have a polluted environment, a disturbed natural balance, a large number of extinct plant and animal species and the appearance of various diseases.

The development of science, technique and technology is also on the side of the cause of the ecological crisis. At the end of the 19th and the beginning of the 20th century, no one asked what the technology was for, although with it man rose above nature as its "ruler" and thus gained the power to significantly change the nature he encountered and thereby destroy himself and threaten life on earth (Đorđević, 2002).). However, the development of techniques and technology takes place faster than man can adapt to them, control them and learn to use them wisely, that is why technology is often used to satisfy human needs in an unsustainable and irrational way. The use of technology requires the consumption of raw materials, which affects the quality of the environment in the long term.

In addition to the above, in the research and consideration of the causes of environmental degradation, the following are also mentioned:

1. accelerated economic growth;
2. world population growth;
3. irrational use of non-renewable resources;
4. pollution of the environment (water, air, soil) as a consequence of human action on nature (Marković et al., 2012).

All the listed causes of the emergence of the ecological crisis are basically the irresponsible behavior of man towards nature. Although he is not the only one, man is certainly the biggest polluter of his environment and thus becomes a "time bomb" - his own enemy. It's high time for man to realize that the tools that have been perfected over time for the most comprehensive mastery of nature have reached the end point and that if he continues to use them and thereby prolong his "conflict" with nature, it will lead to the self-extermination of humanity. "Man can save himself on this planet only if he takes care of everything other than his life and all living things, respecting his life as much as the life around him" (Đorđević, 2002, pp. 236).

3. ENVIRONMENTAL PROTECTION AS AN INDISPENSABLE PART OF THE STRATEGIES AND POLICY OF SUSTAINABLE DEVELOPMENT OF THE EUROPEAN UNION

Due to the concern at the world level for environmental problems whose impacts are becoming more intense, the goals of sustainable development are high on the list of goals of most countries around the world. Sustainable development represents a complex and continuous social process of harmonizing and searching for adequate ecological, economic, technological and political solutions for the improvement of environmental protection standards (Todorović et. al., 2021). By defining the normative - legal and institutional framework for environmental policies, the European Union has become a leader in the field of environmental protection. The adoption and adoption of the European Green Deal strategy in 2019 continues the European Union's commitment to environmental protection, placing a healthy natural environment, climate change control and the use of clean energy at the center of all economic activities of the member states

(Vasilkov et. al., 2021). The general goal of the Green Deal is the transformation of the European Union into a just and prosperous society with a modern, resource-efficient and competitive economy in which there will be no net emissions of greenhouse gases in 2050 and in which economic growth will not be linked to and conditioned by the use of environmental resources. (Vasilkov et al., 2021). It is the latest strategy that was adopted and in which environmental protection takes a significant place, but it is not the only one, the issue of preserving the ecosystem was also represented in the previously adopted strategies for the sustainable development of this community. The following shows the most important action plans and directives of sustainable development at the EU level.

Table 1. More important action plans and Directives of sustainable development at the level of the European Union

Year of adoption	***Document title***	***Description***
1958.	*Roman Treaty*	Each member state of the European Economic Community regulated the area of environmental policy at the national level.
1972.	*The first environmental protection action program*	The goals of improving the quality of life, environment and living conditions necessary for the population of the community were defined.
1992.	*Treaty of Maastricht*	Strengthening the role of environmental policy.
2001.	*The sixth action plan of the European Union*	Four areas of European environmental policy have been identified: climate change, protection of nature and biodiversity, health and quality of life, disposal of natural resources and the issue of waste.
2003.	*Directive 2002/95EC Restriction of Hazardous Substances Directive – RoHS 1*	Directive on the restriction of the use of hazardous substances in electrical and electronic equipment, with the aim of harmonizing regulations on the use of hazardous substances in the territory of the European Union.
2005.	*Directive 2005/32/EC on the Eco-Design of Energy-using Products – EuP*	Directive providing pan-European coherent rules regarding the application of eco-design principles.
2009.	*Directive 2009/125/EC Energyrelated Products Directive*	The most significant modification compared to the previous Directive was made by the inclusion of "products related to energy consumption".
2009.	*Directive 2009/28/EC*	The goal of increasing the share of renewable energy sources to 20% by 2020 has been set.
2013.	*Direcktive 2011/65/EU (RoHS 2)*	This Directive prescribes periodic re-evaluations that facilitate the gradual inclusion of additional electronic equipment, cables and spare parts.
2015.	*Directive (EU) 2015/863*	The directive defines substances that can have a negative impact on recycling, human health and the environment during the treatment of electronic waste.
2019.	*Zeleni dogovor Evropske*	Defined five pillars related to the areas of

	unije	environmental protection.

(Source: Dinić et. al., 2021, pp. 17-18; Glišović, 2016, pp. 129-132 – Illustration by the author).

New security challenges that affect the environment in the member states of the European Union, but also in other countries around the world, require the need for continuous monitoring and analysis of the results achieved in several areas: air pollution, resource utilization, soil protection, waste recycling, environmental protection of water, soil, share of energy from renewable sources. In this regard, Table 2 shows the indicators of the realization of the goals of sustainable development at the level of the European Union in the period from 2016 to 2020.

Table 2. Indicators of the level of realization of sustainable development goals at the level of the European Union (2016-2020)

	2016.	2017.	2018.	2019.	2020.
Domestic material consumption per capita (t)	*13.59*	*13.94*	*14.18*	*14.18*	*13.58*
Amount of municipal waste generated per capita (kg)	*490*	*496*	*496*	*501*	*505*
Amount of municipal waste treated per capita (kg)	*481*	*487*	*487*	*494*	*495*
Emission of greenhouse gases (million tons)	*3 935 280*	*3 969 529*	*3 890 132*	*3 734 541*	*3 354 115*
Share of energy from renewable sources (%)	*17.98*	*18.41*	*19.10*	*19.88*	*22.09*

(Sorce: Eurostat, 2022, available at: https://ec.europa.eu/eurostat, accessed on: 07/25/2022 - Illustration by the author)

The indicators presented in Table 2 show that the European Union is moving in the direction of realizing the goals in the field of environmental protection. It is an encouraging fact that the greenhouse gas emission indicator recorded a downward trend in the past five-year period, so that in 2020 a decrease of 581,165 tons was recorded compared to 2016. In accordance with the new energy policy, the European Union in its Action Plan for Energy Efficiency (2007-2012) set itself the goal of increasing the share of renewable energy sources to 20% by 2020 (Đorđević and Veselinović, 2015). In this regard, the European Union, having achieved the share of energy from renewable sources in the total energy consumption in the amount of 22.09%, realized its goals (22.00%) set in the mentioned area for the year 2020. On the other hand, the increase in the amount of municipal waste generated per capita, at the same time follows the trend of growth in the amount of treated municipal waste per capita, which is encouraging because it indicates that most of the waste that is disposed of is recycled, thereby avoiding its disposal in landfills and, therefore, environmental pollution. In support of the statement that the European Union is realizing its goals in the field of environmental protection, it is stated that in 2020 there was a decrease in the domestic consumption of materials per capita by 0.6 tons. When it comes to the domestic consumption of certain categories of materials per capita, expressed in tons in 2020, the structure is as follows: in first place are non-metals (7.13), followed by biomass (3.27), fossil fuels (2.45) and metal ores (0.71). (Eurostat, 2022).
The commitment of the European Union to the protection of the environment has led to the environmental awareness of the member states, on the one hand, and the expansion of its field of

action, on the other hand. The achieved results in the field of achieving goals in the field of environmental protection fully justify the epithet of leader attributed to the European Union in the mentioned field and make it an example of good practice for businesses in the world.

4. ECOLOGICAL EDUCATION AND EDUCATION AS A DETERMINANT OF THE (NEW) CULTURE OF THE XXI CENTURY

Given that environmental problems have acquired a global character, it is completely justified why the issue of environmental protection permeates all areas, both production and service, profit and non-profit, political and non-political. The gap that exists between civilization and the natural environment, as a contemporary reality, has led to the redefinition of existing and the emergence of new cultural patterns. Culture represents value-based behaviors of individuals who live within the community - communicate, learn, work and create, accept and change norms, rituals and laws (Kundačina and Visković, 2016). People influence the environment through their activities, which consequently requires a review of existing patterns of behavior and their adaptation to ecological laws. As a result of the aforementioned adjustment, as well as living and working in the conditions of the ecological crisis, a new culture emerged - ecological culture. The most important intentions of the culture of the XXI century are ecological upbringing and education.

Although the starting point of the upbringing and education of young people for the protection of the environment is in the family, the school today represents an irreplaceable link of upbringing and eco-education, which with its program content provides wide opportunities for building environmental awareness among young people (Minić and Jovanović, 2019). The question arises whether school and education can respond to the requirements of preservation and care for the environment? The idea of environmental education is not new and has gone through several stages: the first line of development (from 1960 to 1980), the second line of development (until the nineties of the last century), the third period (from the mid-nineties of the last century to the present) (Andevski , 2016).

The first phase of the development of environmental education included dealing with environmental issues in school and non-school education institutions and had to meet several criteria: to be relevant for the future, to be an expression of new science, to be oriented towards the attitudes and behavior of the individual (Andevski, 2016). The second phase of development was marked by progress and the aspiration to acquire new knowledge about the environment, with special reference to the development of desirable attitudes, abilities and skills of the individual. However, the goals set by the first and second development lines were not fully realized, which caused criticism of environmental education. Namely, the criticism was aimed at the fact that ecological topics found an entrance, but the teaching was still insufficiently focused on the project, the development of ecological principles was aimed at as an extended subject teaching and nothing more than that, the contents of environmental education were often implemented without a clear defined plan and structure, in random situations of teaching and learning, without organization, the ecological topics that were studied were not complete and there were very few of them - knowledge of nature and society, water, air, flora, fauna (Andevski, 2016). In the mid-nineties of the last century, the first two stages of development were replaced by a new stage of development designated as the third, which replaced environmental education with a new dimension - education for sustainable development. On the foundations of the responsibility that man has towards the Earth and the need to establish a dialogue between nature and society, the task of environmental education rests as a process of transformation in several directions: from a one-way communication relationship and poor interaction to cooperative relationships, rich social interaction and two-way communication; from a uniform formal system to diverse educational institutions, alternative programs and models (Marić - Jurišin, 2018).

Overcoming the ecological crisis cannot be achieved only by familiarizing society and individuals with ecological problems, but exclusively by behaving in accordance with ecological principles and laws. That is why programs to raise awareness and responsibility of the individual and, in general, society are extremely important. Namely, ecological upbringing and education, which are needed by modern society, do not only imply the study of natural and social sciences, but also assume the construction of moral principles and the formation of such a value system that will lead to ecologically desirable behavior (Stanišić, 2021).

Protecting the environment of modern man must be a priority, that is why the goal of environmental education and education is aimed at preserving and improving the environment, as well as raising critical awareness of the necessity of preserving a healthy, i.e. ecologically clean environment, which is worthy of man (Minić and Jovanović, 2019). However, although the basis of environmental education and environmental education is the protection of the environment, it is necessary to distinguish between the essence of these two processes. In this regard, environmental education is reduced to acquiring knowledge and creating a critical attitude towards environmental degradation, while environmental education refers to changing behavior and developing a proper attitude towards the environment. The mentioned processes complement each other and together represent an "instrument" of education for sustainable development.

The issue of environmental education and ecological views of the world has been the subject of research by many authors in recent years. The findings of the authors Petrović and Škrbić (2016) confirm earlier research that young people in Serbia have a moderately positive attitude towards environmental protection. Namely, the research examined the ecological value orientations of students of three groups of faculties: mining-geology, geography and the faculty of social orientations. The results of the mentioned research show that the respondents have solidly developed ecological values, which are a prerequisite for pro-ecological behaviors and involvement in environmental protection (Petrović and Škrbić, 2016). Also, the research found that students least agree with the statement: The natural balance is strong enough to cope with the influences of modern industrial countries. In a survey conducted in 2020, in which 402 high school students participated, the following results were obtained:

1. respondents show a slight tendency towards a pro-ecological view of the world;
2. three factors were obtained by factor analysis: ecological crisis, man is not above nature and man's (un)exceptionality from nature. The difference between boys and girls was shown on the third factor;
3. girls are more inclined to believe that man, regardless of his ability and the development of science and technology, cannot be excluded from the natural environment and cannot influence natural processes (Stanišić, 2021).

The results of previous research undoubtedly prove that a lot has been done in the educational system in the field of environmental education and upbringing and that it is extremely important in modern life conditions. However, what keeps man still in this world is not scientific theories and abstract knowledge, but the feelings that arise in us when we encounter elementary natural forces and life laws (Bonnet, 2016). That is why the task of the school is to develop a healthy, complete and responsible relationship between man and nature.

5. CIRCULAR ECONOMY AS THE ONLY ACCEPTABLE CONCEPT UNDER THE GLOBAL ENVIRONMENTAL CRISIS

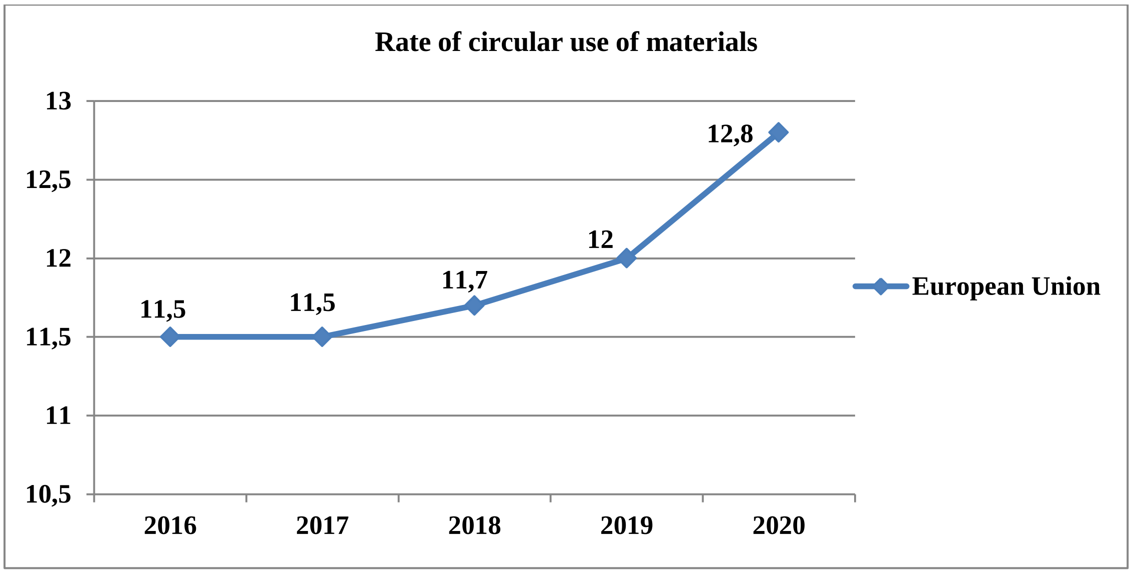
The production process, which is based on the transformation of resources into finished products that are (discarded) at the end of their life, is environmentally unacceptable (Radivojević, 2018). The mentioned model, which is natively called linear and still dominates in most countries around the world, is based on the paradigm: take-produce-sell-consume-throw away (Mitrović and Manić, 2020). This practically means that resources are taken from nature and together with energy are transformed into a certain product, which is then traded on the market, used and then thrown away - disposed of in a landfill. Such a model in the conditions of the global ecological crisis leads to a decrease in the availability of natural resources, pollution of the planet, an increase in the amount of waste and the endangerment of plant and animal species, therefore the transformation of the linear into a circular model is no longer a question of our will but a question of human survival.

Although the concept of circular economy existed in the last century, since the 70s of the 20th century special attention has been paid to its implementation through concrete solutions, as well as to the positive effects achieved by it. The basic paradigm on which the circular economy rests is production that supports sustainable economic development without harming the environment (Krysovatyy et. al., 2018). The essence of the newly promoted model boils down to the process of taking resources from nature, turning them into products, which are then traded on the market, after which they are used and at the end of the life cycle they are not thrown away but processed - recycled and thus transformed into raw materials that serve as inputs for the production process of the same or another product. For this reason, its greatest connection with the concept of sustainable development stands out, because it promotes the responsible use of material and other resources (Marković et. al., 2020).

Although there is still no single definition of the circular economy, there is an opinion that a comprehensive definition must contain certain components, namely: minimization of the use of resources, recycling - returning the value of waste, a multidimensional approach, the importance of achieving sustainable development and a close connection with the way society accepts innovations (Prieta-Sandoval et. al., 2017). The goals to be achieved through the implementation of the circular economy concept are grouped into five main areas of application of the concept: goals related to resource efficiency (water, energy, materials), recycling goals, goals to reduce waste and harmful gas emissions, recovery goals - reuse of waste , water and energy and the goals of ecodesign (Morseletto, 2020). All of the stated goals come down to environmental protection, that's why the concept of circular economy is the only sustainable solution to environmental problems.

Reduction of carbon dioxide emissions into the atmosphere, use of renewable energy sources, rational use of natural resources and recycling are the "guiding stars" of the circular economy implementation process. In this regard, the mentioned areas represent highly positioned goals in the strategies and plans of many governments. The European Commission established a framework consisting of ten indicators classified into four thematic areas: production and consumption, waste management, secondary raw materials and innovation competitiveness (Eurostat, 2022). However, there is still no single collective indicator of circularity at the macroeconomic level, but Eurostat has developed an indicator, the rate of circular - circular use of materials, on the basis of which the level of circularity of the economy is monitored and which is shown in Chart 1.

Chart 1. Rate of circular - circular use of materials in the European Union (2016-2020)



(Source: Eurostat, 2020, available at: https://ec.europa.eu/eurostat, accessed on: 07/27/2022 – Illustration by the author).

Compared to the first year (2004) when data is available, the rate of circular use of materials in the European Union increased by 4.5% in 2020. The fact that the growth of the mentioned rate was recorded in the past five-year period is extremely encouraging because it shows that the European Union is well on its way to greening the European economy, which fully justifies the epithet of a leader in the field of environmental protection attributed to it.

The world today in the 21st century faces the need for global responsibility for development in accordance with the needs of people and nature, which can only be met by sustainable behavior. The circular economy has been identified at the world level as a mechanism of key importance for separating economic growth and increasing people's well-being from irresponsible behavior towards nature. Bressanelli et. al. (2018), believe that this concept represents a great business opportunity that can lead to the realization of benefits worth 1.8 trillion euros by the year 030 in Europe.

5. CONCLUSION

It is evident that the world today is facing serious environmental problems and that living conditions in the 21st century are characterized by: global warming, reduction of the ozone layer, extinction of plant and animal species, reduction of soil fertility, environmental pollution, occurrence of acid rain, increase in the amount of generated waste, depletion of natural resources and unsustainable behavior towards nature. The threat to the ecosystem has reached a level that requires an urgent solution to the aforementioned problems and poses the question to each of us: what kind of environment are we leaving for our descendants to use?

As shown in this paper, environmental problems are far-reaching and there is almost no sector and/or aspect of life that they do not reach and leave consequences. That is why countries around the world, realizing the seriousness of the situation, have implemented the goal of environmental protection in their development strategies and action plans. Sustainable behavior towards the environment, i.e. environmental protection as an indispensable part of strategies is no longer a matter of choice but a condition for the survival of humanity. Also, the paper presents two sectors that are still intensively affected by the environmental crisis: education and production. In this case, the mentioned sectors are two sides of the same coin and seem to play a crucial role in overcoming the environmental crisis:

1. education - the potential is in the development of awareness and responsibility of the individual towards nature at the very beginning of his educational journey (primary and secondary school). Environmental upbringing and education of individuals through educational content can prevent negative actions towards nature, which is certainly more effective than "treatment" of the consequences that will be created if such actions occur;
2. production - the potential is in the implementation of the circular concept - a model that basically has a sustainable behavior. The most promising tool for ecological production, which achieves the protection and preservation of natural resources, the valuation of ecosystems, products and services, the creation of new jobs and the reduction of poverty, is the circular economy.

Today, humanity is in the fourth scientific and technical revolution and there is no more time to think. It is high time to take a step forward and bring society and nature into balance, because otherwise, our survival is put into question.

“*Wasting and destroying our natural assets, stripping and depleting the earth instead of increasing its use - this will already significantly reduce the possibilities of progress that we enjoy for our children, which we owe to them - greater and more developed”* –
Theodore Roosevelt

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THE IMPACT OF INNOVATION ON THE GROWTH OF REAL WAGES IN THE WESTERN BALKAN COUNTRIES

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ABSTRACT
The high degree of innovation of a country's economy has a stimulating effect on the growth of its productivity levels, which are vital for the profitability of its companies. In this way, ampler innovation backs the organic growth of companies and outlines their long-term competitiveness, including competitiveness at the macro level. Furthermore, having a higher profit level, companies could pay higher net salaries to their employees. It plainly indicates the connection between the innovative processes in the companies themselves and their employees' income levels. This paper aims to test whether this relationship has a proper stronghold in the business practice of The Western Balkans countries: Bosnia and Herzegovina, Serbia, Montenegro, North Macedonia and Albania. Various benchmarks taken from relevant international reports are used as analysis tools.
The obtained results will serve as a starting point for considering and conceiving a future efficient platform of public policies supporting the expansion of innovation and technological capacities of companies in the economies of the countries included in this analysis.

Keywords:*Innovation, Productivity, Profit, Earnings, Western Balkans*

JEL classification: *C33,D24,E60*

1. INTRODUCTION

In a dynamic business environment of an open and globalized market, where the imperative of competitiveness of the economy and its companies is in the foreground, innovations are becoming an increasingly important tool for achieving economic growth and competitiveness, both in developed and developing countries. Many authors emphasize a particular evolution in the innovation concept in the last two decades, emphasizing that it can be viewed multi-dimensionally. It can be creating an entirely new or significant improvement of an existing product, a new technological process, a new approach to marketing and a new organizational method in daily business. In basic economic theory, as one of the most crucial

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principles, it is stated that the standard of living of a society depends on its ability to produce goods and services (Mankiw, 1997). That ability is directly dependent on factor productivity. It is necessary to fulfil a whole series of prerequisites, such as infrastructure, legal order, the efficiency of administration, organization of goods and factor markets, etc., to raise the productivity of labour, capital and other factors of production to a high level. From a company's point of view, the two most important factors that contribute to productivity, and competitiveness at the micro level, are a sophisticated way of doing business and innovation, where both factors interact with each other.

Considering the potentially powerful role innovation has on every economy, it is essential to examine whether this theoretical point of view has its foothold in the practice of the countries included in this analysis. In other words, it is necessary to consider whether changes in innovation potential in the analysed countries have a significant statistical effect on the income growth of their population. The leading motivation for this research is the belief that the Western Balkans countries will significantly boost the productivity and competitiveness of their economies by improving their innovation inputs with a stimulating business environment and stable macroeconomic conditions. It will ultimately result in more excellent added value in production and the growth of employees' incomes.The results of such research not only support theoretical considerations but also have a powerful, pragmatic purpose aimed at the well-being of the economy of Bosnia and Herzegovina and other countries that are the subject of analysis.This paper consists of five sections. After the introduction, section 2 presents the theoretical background on innovation, which includes the Literature review and the theoretical consideration of Indicators of Innovation. A summary of the methodology used in preparing this paper is given in section 3, while the research results are presented in section 4. The conclusion and References are given at the end.

2. THEORETICAL BACKGROUND ON INNOVATION

Before starting the analysis itself, it is necessary to look into the results of previous research and consider the basic theoretical postulates of the innovation issue.

2.1. Literature Review

Research that attempted to determine the interdependence and the direction of influence between innovation and the income level movement are grouped according to several dominant research directions. The largest group is research on the implications of decisions on the level of minimum wages on the rate of innovation itself. In one of the more comprehensive research efforts, Dutch authors Fase and Tieman investigated the relationship between earnings growth and the level of innovation in the Netherlands. Namely, as a country with an agreement on moderate wage growth reached between the trade unions and the employers' union in 1982, the Netherlands tried to reduce unemployment as a critical problem burdening the Dutch macro-economy by controlling wage growth. The research showed that in the period that ensued, the Netherlands was more successful in reducing the unemployment rate than other EU countries. However, the growth rates it achieved in the same period were lower than in other countries of the European Union. The reasons for such macroeconomic movements were diverse. Lower wages influenced the structure of activities, which shifted from capital-intensive to labour-intensive. This structure of factor costs discouraged the abandonment of old technologies because a cheap workforce compensated for the loss of income due to their lower productivity compared to new technologies. It had the effect of hindering Schumpeterian "creative destruction". The absence of innovation was also a consequence of the structure of demand, which was not the driving force behind the demand for products of a higher technological level and prices due to lower average income.

Finally, they concluded that the considerable presence of multinational companies does not guarantee significant innovation growth. (Fase, Tieman, 2000) Chu and his associates examined the impact of minimum wages on the Schumpeterian model in economies with an endogenous market structure.Their quantitative analyses established that minimum wage growth initially generates benefits for low-skilled workers but that they may suffer slower wage growth in the future. The increase in minimum wages leads to a decline in the employment of lower-skilled workers with a corresponding decrease in the economic growth rate. (Chu et al., 2020) Chu and another group of authors analysed the implications of union power on the level of innovation in the context of the minimum wage setting mechanism. Their research revealed that the more significant influence of trade unions, which manifests itself in an increase in minimum wages, affects the reduction of the innovation rate. It also causes further directing of innovation towards the foreign economy, which in turn hurts domestic wages in regard to foreign wages in the long run. (Chu et al., 2016)

A few papers have studied the direct relationship between the type of innovation and the level of wages. Cirillo examined the influence of the innovation pattern on the distribution of earnings. He found a positive impact of product innovation on wages for all occupational groups except for unskilled manual workers. He also concluded that only innovations in marketing still provide a salary premium earned by highly qualified workers. (Cirillo, 2014)

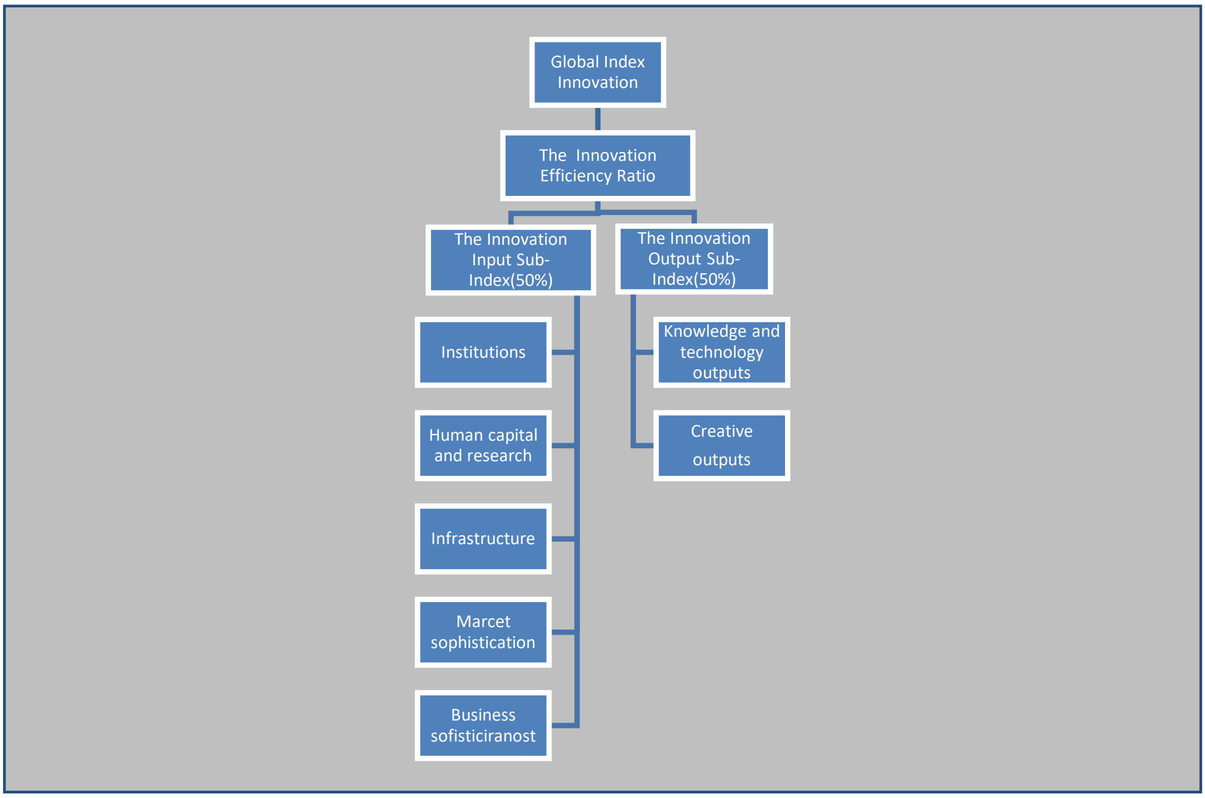
A significant number of papers focused on wage polarization induced by innovations. Angelini and other authors examined the impact of innovation on the distribution of earnings in Europe (Angelini et al., 2009), while Aghion et al. tried to determine the relationship between income inequality and the level of innovation at the firm level. (Aghion et al., 2017)

The issue of the connection between innovation and earnings dynamics in the Western Balkan region has not been dealt with by domestic and foreign authors so far, so this research represents an academic and scientific basis for further research.

2.2. Indicators of Innovation

It was necessary to create a unique global indicator to observe and measure the innovation potential of a country objectively and systematically. So, in 2007, in cooperation with Cornell University (Cornell SC Johnson College of Business) from the USA, the international business school INSEAD (InstitutEuropéend'Administration des Affaires), the World Intellectual Property Organization (WIPO) and global consulting firm A. T. Kearney created a global innovation index. From then until today, based on regular annual reports, we find out in which direction the world, Europe, and each country included in this report is moving in the innovation field. At the same time, critical shortcomings are identified, which should serve as a reference point for the necessary interventions and reforms for economic policymakers in each country. The Global Innovation Index (GII) is a kind of system for evaluating the innovation of society through a set of various criteria such as institutions (political environment, regulatory environment - legislation and business environment), human capital and research (education, tertiary education and research and development), infrastructure (ICT, general infrastructure, environmental sustainability), market sophistication (lending, investment, competition and market size), business sophistication (employee knowledge and skills, innovation networking, knowledge absorption), knowledge and technology output (creation, influence and diffusion of knowledge), as well as creative output (intangible assets, inventive goods and services, online creativity).Each of the seven pillars consists of three sub-pillars, which include more sub-pillars themselves, so, in the end the Index consists of a total of 81 indicators. The country is evaluated separately for each criterion, and a global Index is formed based on 81 indicators. It serves as a cross-section of the country's performance in the mentioned areas and a precise innovation performance indicator in each of the 127 world countries. The *figure 1* illustrates the structure and content of this Index.

Figure 1: Structure of Global Index Innovation



(Source: Wipo.int)

The Global Innovation Index is the overall rating of innovation, obtained as the average value of two equally weighted values - innovation of input and output. The so-called innovation efficiency ratio is obtained when output and input innovation ratings are compared. It shows how much innovative output a particular country gets for its available innovative inputs. A higher value of raids indicates a higher innovation efficiency and vice versa. The input innovation sub-index includes five elements (pillars) of the national economy that enable innovative activities. Those are:
Institutions (1)This indicator refers to the country's institutional framework, viewed and evaluated from the political, regulatory and business environment point of view. The political environment includes two indicators, one reflecting the perception that the government could be destabilized and the other reflecting the quality of public and state services, i.e. formulated and implemented public policies. The regulatory environment is based on three indicators: the ability of the government to draft and implement a coherent policy, which supports the development of the private sector, the rule of law (in aspects such as contract enforcement, property rights, police and judiciary) and redundancy costs. The business environment evaluation is based on the following aspects: ease of starting a business, resolving insolvency and paying taxes.
As an indicator, human capital and research (2) starts from the fact that the education level and standard and the quality of research activities in a country are essential determinants of the innovative capacity of that nation, which should contribute to increasing the value chain beyond the simple product production sphere. This pillar consists of three sub-pillars:

primary and secondary education, tertiary (higher) education and research and development (R&D).
As an indicator, infrastructure (3) is based on the initial idea that adequate communication and quality and ecologically advanced infrastructure contribute to the creation and exchange of ideas, services and goods, promoting higher productivity, greater efficiency, lower transaction costs, better access to markets and sustainable growth. This indicator is evaluated based on three sub-pillars: information and communication technology (ICT), general infrastructure and environmental sustainability.
Market sophistication (4). The loan availability, an environment that supports investments, access to the international market, and competition and the market size are essential factors for the advancement of companies, which at the same time support the development of innovations. The first sub-pillar examines and evaluates lending from the ease of taking loans point of view, the share of domestic loans in the total lending of the private sector, and the total share of microfinance institutions' loans. The second sub-pillar evaluates investments based on assessing the level of protection of minority investors and market capitalization. The third sub-pillar, competition and market size, is reviewed and evaluated based on three indicators: average customs rate, the intensity of local competition and domestic market size.
Business sophistication (5). Business sophistication measures how suitable companies are for innovative activities based on workers' knowledge and skills, innovation linkages and knowledge absorption. The first sub-pillar of knowledge workers evaluates the frequency of employment in knowledge-intensive activities based on the percentage representation of companies in which training and development of employees are carried out, the companies' expenditures on research and development, and the participation of the female labour force. As the second sub-pillar, innovation linkages measure and value the presence of public-private networks and partnerships that are essential for innovation and are most often reflected through industrial or technological clusters. Knowledge absorption includes indicators such as expenditure on intellectual property, net import of high-tech products (% of total import), net import of ICT services and products, net inflow of foreign direct investments and percentage representation of research talents in the business.
The Innovation Output Sub-Index has two pillars representing the measure of the achieved results of innovative activities within an economy. Those are:
Knowledge and technological output (6). This pillar includes three sub-pillars - knowledge creation, impact and diffusion. Knowledge creation has a set of indicators resulting from inventive and innovative activity: patents registered in national and international patent offices, useful applications and programs, and scientific and professional articles in peer-reviewed journals, including the number of cited articles. The second sub-pillar, the knowledge impact, includes statistical measurements of the innovative activities impact, at the micro and macro level, on labour productivity, as well as on the start-up of new companies, the spending on software programs, the number of certificates confirming the quality management system - ISO 9001, the participation of high - and medium-tech industrial outputs in total production. Diffusion of knowledge is the "mirror reflection" of knowledge absorption from the fifth pillar.It includes the following indicators: intellectual property receipts, net high-tech exports (% of total export), ICT services and products exports, and a net outflow of foreign direct investments.
Creative output (7). The final seventh pillar, the creative output, includes three sub-pillars: intangible assets, creative goods and services and online creativity. Intangible assets are evaluated based on the number of registered trademarks, protected industrial designs, and business and organizational models based on the use of ICT. Creative goods and services are the common denominators for all creative industry products (creative services, culture, films, publishing, entertainment, information services, advertising, market research, etc.), including

their percentage in total exports. The third sub-pillar is online creativity, which evaluates creativity using various internet platforms and social networks.
According to the 2021 report, the Western Balkans countries are in the middle of the global list but also at the bottom of the European countries list, with Montenegro being the best rated in position 50 and the worst rated Albania in position 84.

Table 1: Global Index Innovation 2021

COUNTRY	GII RANK	SCORE
Montenegro	50	35,4
Serbia	54	35
North Macedonia	59	34,1
Bosnia and Herzegovina	75	29,6
Albania	84	28

(Source: Wipo.int)

3. METHODOLOGY

3.1. Sample and Data

Considering their similar business and broader political environment, including the similar historical background, this research sample includes data on five Western Balkans countries: Bosnia and Herzegovina, Serbia, Montenegro, North Macedonia and Albania. The data used in the analysis refer to the indicators taken from the report on global innovation: Global Index Innovation, Innovation Input Sub-Index and Innovation Output Sub-Index, which are also available on their official website. Data on gross earnings downloaded from the World Bank website will be used as a dependent variable in the paper.
Considering the limited data on real earnings in the countries included in the analysis, the time span of the research stretches from 2011 to 2020. Therefore, these panel data enclose observations about the analysed countries over a decade.

3.2. Statistical methodology

Since the data, i.e. panel data, have been collected, the methodology of econometric analysis of panel data is briefly explained below. To find a model that can represent the influence of the mentioned independent variables on the dependent variable, it is necessary to determine which of the panel models is adequate for further use.Econometric modelling predicts that the model evaluation starts with the simplest one to examine the validity for further analysis. The first model, the POLS, was used to evaluate the parameters of the panel model, which aggregately observes all data on time and space units. This analysis method represents the easiest way of estimating the parameters of the panel model. It simply combines the data of all units throughout the entire examined period to estimate the parameters. It functions on the principle of the classic ONK model. If there are no individual effects in the collected panel data, it is considered that the parameter estimates obtained by the method of least squares are precise and accurate. The characteristic of the parameters obtained by this method is that they have a constant value, i.e. that the random error includes all variations in the analysed units over time. The basic form of this model can be represented by the following equation:
The model with fixed individual effects implies that the regression parameters along with the independent variables (β) are constant, i.e. the slope of the regression line is constant for all units during the observed period, while we have differences in the free members by

observation units. Respectively the fixed-effects model includes individual effects as fixed parameters through the unknown, variable, and free members. According to this model, individual effects are correlated with independent variables, all observation units have the same slope parameter and different values of the free term, and there is no correlation between random error and independent variables. If certain assumptions are met, the model of individual effects can be evaluated using ONK methods, and the evaluations will be neutral.(Đalović, 2020.)

The random effects model presumes that the individual effect α_i is a random (stochastic) variable, i.e. part of the random error. Unlike the fixed-effects model, the random effects one does not allow individual effects to be correlated with the independent variables, $Cov\ (\alpha_i\ ,\ X_{K,it}) = 0$, so the errors contain a time-invariant component α_i so that the OLS estimator is not efficient. The solution is the generalized least squares (GLS) method that eliminates the correlation between the errors of the same observation unit.

4.THE RESEARCH RESULTS

This research started from three hypotheses:

(1) the growth of the overall innovativeness rating of the Western Balkans countries has a statistically significant positive impact on the real growth of gross wages in those countries.

(2) the increase in the assessment of the innovativeness of the inputs of the Western Balkans countries has a statistically significant positive impact on the real growth of gross wages in those countries.

(3) the increase in the innovation rating of the output of the Western Balkans countries has a statistically significant positive impact on the real growth of gross earnings in those countries.

The following tables display the evaluation results of all three models. Two cases were considered: the first where the independent variable is GII and the second with two independent Input and Output variables. Namely, the aim was to agree on how the total innovation index affects the movement of average earnings and its components related to input and output innovation. The coefficient values are given in the tables, while the standard error is in parentheses.

Table 2: The influence of the total innovation index on the average wages movement

	Pooled model	**Fixed**	**Random**
GII	1,839547***	-10,5254***	-9,626719***
	(5,250371)	(2,972535)	(3,035323)
Constant	-60,71804	926,5164***	900,1969***
	(180,2054)	(101,6235)	(121,1814)

*** significant at 1% risk level

(Source: authors)

All three models indicate statistical significance of the parameter with the independent variable GII. Further tests were conducted to select an acceptable panel model. The Hausman test was performed, and the value obtained was 3.84 (p value is 0.0494). Based on the p value, the test's null hypothesis is rejected, i.e. there is a correlation between the error term and the independent variables in the panel data model, and the fixed effect model would be preferred over the random effect one. The F test (0.8356, p value 0.5618) was also conducted, and the conclusion was that the model with fixed effects was the most suitable for the observed data.

Table3: The influence of the innovation input and output index on the wages movement

	Pooled model	Fixed	Random
Input	35,14834 (7,362703)***	7,361927*** (2,878587)	7,884527*** (2,908523)
Output	2,066062 (3,014841)	-6,62036*** (1,238477)	-6,40894*** (1,250738)
Constant	-982,4702*** (295,0569)	423,835*** (1,327947)	399,8939*** (148,6489)

*** significant at 1% risk level

(Source: authors)

Even in this case, the chosen independent variables are statistically significant and indicate a considerable impact of input and output innovation on wages (except for the variable Output in the pooled model, which only has a different sign in that model). The Hausman test was conducted, and the obtained value was 3.32 (p value is 0.1905), based on which we deduce that the model with random individual effects is more suitable. Also, the Breusch and Pagan Lagrangian multiplier test for random effect was conducted, which compares the random individual effects model with the POLS model. The test value is 111.48, and the p value is 0.0000, which still justifies employing a model with random individual effects.

5. CONCLUSION

Considering the obtained results of the conducted research and using the sample of five Western Balkans countries and the 10-year time series of data, the following can be stated:
Hypothesis 1, claiming that the growth of the overall innovation rating of the Western Balkans countries has a statistically significant positive impact on the real growth of gross earnings in those countries, **IS REJECTED** and replaced by an opposite-meaning hypothesis. Namely, the wages growth in the observed period for the analysed group of countries was not induced by their economies' innovativeness growth but was the result of other factors.
Hypothesis 2, claiming that the increase in the innovativeness rating of the inputs of the Western Balkans countries has a statistically significant positive effect on the real growth of gross wages in those countries, **IS ACCEPTED**. Namely, the wage growth in the observed period for the analysed countries was statistically significantly induced by the inputs innovation growth. Considering that innovation input is viewed as the aggregate value of 5 components, we can conclude that the institutions' quality (political environment, regulatory environment - legislation and business environment), human capital and research (education, tertiary education and research and development), infrastructure (ICT, general infrastructure, environmental sustainability), market sophistication (lending, investments, competition and market size), and business sophistication (workers' knowledge and skills, innovative networking, knowledge absorption) can play a pivotal role in raising the real wages level even in the Western Balkans countries practice.
Hypothesis 3, claiming that the increase in the rating of innovativeness of the output of the Western Balkans countries has a statistically significant positive effect on the real growth of gross earnings in those countries, **IS REJECTED** and replaced by an opposite hypothesis. Namely, the wage growth in the observed period for the included countries was not induced by the growth of innovativeness of their outputs but was the result of other factors' effects. It

is backed by the fact that stagnation of all innovation indicators was recorded in all the Western Balkans countries in the observed period. Therefore, the growth of employees' incomes is not the result of a transition towards more significant production of products with greater participation of knowledge and sophisticated technologies, or a grander representation of creative goods and services in the overall structure of the supply of these economies.
This research has limitations related to the relatively small time series or the small number of countries included in the analysis. Also, the methodology of the Global Innovation Report itself may have shortcomings that may affect the final evaluation of the parameters of any country. This type of research would certainly gain in quality if it were "enhanced" with additional empirical research. Thus, a clearer idea of their innovation potential, business practices and the way in which all this affects the levels of real income of their employees would be formed by using a survey of companies in all five countries. The innovation capacities of the observed countries are at the very bottom of the European scale, and there is a lot of room for improvement. Despite the stagnation of innovation indicators in the observed period in the observed countries, there was an increase in real wages, which we can attribute to the effect of other factors. The analysis results show that the wage growth would have been even higher if, in the observed period, there had been an improvement in all those inputs that encourage the development of innovations, both at the level of the entire economy and at the level of the companies themselves.

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PhD Colloquium

ESTIMATING MANUFACTURING COSTS FOR KOSOVOS'S SME THROUGH COMPARATIVE ANALYSIS

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ABSTRACT
In this research, production costs were analyzed using data from accounting as a starting point. The objective was to demonstrate the calculation, estimation, and cost analysis based on the data from financial accounting in three distinct methods (accounting analysis, high-low and regression analysis) and to see the differences between those three methods.
Each approach has benefits and drawbacks, and the best one to use will depend on the circumstances.
The three techniques have produced a range of outcomes. We believe that the regression method is the most accurate of these three techniques. As we previously indicated, the majority of businesses in Kosovo, particularly small and medium-sized ones that struggle with personnel, lack the high knowledge and expertise in the division of Kosovo that is necessary for the technique of accounting analysis.
Managers of small and medium-sized firms can benefit from this analysis by using it to identify the number of items that can be produced at the lowest cost and tailor it to the market's economic circumstances. In order to establish or alter their production volume and, indirectly, the sales price in terms of profitability, they must take into consideration the production costs, changes in the cost level of both the material component and the salary component, and other relevant factors.
The high-low technique can be suitable if a rapid estimation is required. Although it is an examination of the past, it signifies the levels of activity that have been seen and the impacts that have been identified at each cost level
The advantage of the Regression analysis is that this analysis can still be done without knowing the values of the fixed and total fixed costs. Creating the connection between fixed cost, variable cost, and quantity will aid managers in making decisions and enable cost planning and management.
This investigation is constrained because we had trouble obtaining data from more manufacturing companies for a longer period of time.

Keywords: *Costs, Regression analysis, Accounting analysis, High-low method*

***JEL Classification**:* M41

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PhD Colloquium

MAINTAINING ORGANIZATIONAL CULTURE IN VIRTUAL TEAMS

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ABSTRACT
The wave of the tendency to work from home and take virtual participation in the work of companies and organizations, through the web tools that the progress of technology makes available, is gaining more and more momentum and is becoming represented in the everyday life of both smaller enterprises and firms, and giant companies. Whether it is an unintended effect of globalization or its natural developing product, however, what cannot be avoided is the fact that video conferencing, web meetings, and working over the Internet is everyday in business and society. Naturally and additionally, the pandemic with the virus COVID-19 has only strengthened this tendency to work from home, from an isolated environment or through the tools and platforms offered by the Internet and the recent successes of web communication.
From the aspect of organizational culture, if the beginning of the 2000s marked a period in which knowledge about organizational culture was placed on a solid foundation, but was still followed by the need to test, delineate and develop them, twenty years later, the phenomenon manifested itself which potentially means a threat to the organizational culture of companies and organizations. The challenge that is set before the organizational sciences is the need to investigate what will be the methods for forming and maintaining the organizational culture among the teams that function in the virtual world. To achieve this, the paper analyzes the characteristics and challenges of the virtual context and virtual teams, perceives proven best practices for strengthening the social element in the virtual world, and connecting these elements with the elements of organizational culture, points to certain conclusions regarding the research problem.

Keywords: *organization, culture, teams, leadership, globalization.*

JEL Classification:

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PhD Colloquium

EMPIRICAL RESEARCH ON THE INFORMATION EFFICIENCY OF THE MACEDONIAN STOCK EXCHANGE

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ABSTRACT
One of the basic hypotheses in modern finance that defines financial markets is the Efficient Market Hypothesis. The existence of information efficient markets, where all information is incorporated in the price of financial instruments is the basis of rational economic theory. There may be an upward or downward trend in the financial markets, but after the inclusion of new information in the financial instruments, they would stabilize until the next new information. In addition to the definition of efficient markets, the hypothesis of random walk has a significant application, which explains that the market cannot be beaten and that prices and returns move in a random upward or downward direction. The paper includes two methodologies to confirm the efficiency of the financial markets. The first research was conducted in order to confirm the hypothesis of a random walk implementing a coefficient of variance test. The test was conducted using a large series of data of the returns' movement of stock exchange indices on the Macedonian, Belgrade, Zagreb, Sofia and Ljubljana Stock Exchange, as well as the American S&P500 index. The second research which is including the model of market multipliers was conducted for the most liquid stocks on the Macedonian Stock Exchange and selected stocks from the US Stock Exchange Markets, in order to show the underestimation or overestimation in relation to the market value of stocks, thus to show the sentiment that investors have when trading a certain type of stock. The results of the research show that the regional financial markets, as well as the domestic ones, do not follow the random walk, giving an opportunity to the possibility of using alternative behavioral approaches to explain the reasons for the deviation. For the second survey, where significant differences in the fundamental and market value of the stocks appear, the reason for the deviation is the expectations of investors.

Keywords: *Efficient Market Hypothesis, Random Walk, Stock Exchange, Behavioral Finance*

JEL classification: *G4, G11, G14*

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UNDERSTANDING STUDENTS' ONLINE LEARNING BEHAVIOR USING UTAUT MODEL – THE CASE OF NORTH MACEDONIA

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ABSTRACT
For most of the universities worldwide, online learning was one of the efforts to minimize the spread of Covid-19. However, today, almost two years after this dramatic experience in all aspects of living, working and learning/studying, as the global trend in online learning remains upward. Although some higher education institutions worldwide were shifting in the direction of online content delivery and online learning and before Covid-19, the pandemic both accelerated and forced a more universal move in this direction especially in developing countries. In the country, the online learning was implemented without planned prior preparation. Our educational system faced a state of emergency caused by the pandemic. As such, the experience and lessons learned from this forced adoption of online learning in the country is exceptionally valuable as basis for further improvement and leveraging the potential of online learning. The goal of this paper is to investigate the determinants of students' behavior in relation to the use of online learning in higher education in the country, on the sample of the Faculty of Economics, Ss. Cyril and Methodius University in Skopje. The basis for the research model in this study is the original Unified Theory of Acceptance and Use of Technology - UTAUT model. This fundamental model examines the crucial predictors/factors of technology adoption like: performance expectancy, effort expectancy, social influence, facilitating conditions, behavioral intention and usage behavior (acceptance). For the purpose of this research, the basic UTAUT model is extended by additional construct - perceived enjoyment recognized as important factor regarding young population technology adoption. Data were collected from more than 120 undergraduates during April and May 2022, while online learning was still undergoing. This research provides relevant theoretical and practical implications by elaborating that the analyzed factors are critical in students' behavior in relation to the use of online learning in our country context.

Key words: *Online Learning, UTAUT, University Students, North Macedonia*

JEL classification: *D83, O33, I2*

1. INTRODUCTION

The Covid-19 pandemic has caused widespread disruption, affecting virtually every aspect of human life. The temporary closure of educational institutions worldwide in that period, is a

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telling example of the disruption caused by Covid-19. Students' educational continuity was moved online, ushering in a new era of online education. Lectures and all other learning activities have been carried out remotely. The Covid-19 crises did nothing more than speed up the inevitable. The widespread acceptance of the WHO's social distancing policy, which was proposed as a strategy to combat the spread of Covid-19, has caused universities to close their doors, disrupting traditional teaching and learning methods in order to achieve their goals. UNESCO (2020) reported that 91 % of students worldwide suffered because of the closure of educational institutions. Some universities engaged in digital transformation experienced a smooth transformation process, while others experienced a crisis-response migration process as a result of the pandemic.

In order to support the importance of e-learning and its growth, especially in the last 2-3 years we will mention some statistics. The worldwide e-learning market is projected to be worth $325 Billion in 2025 (Chernev, 2021). Stats from Skill Scouter show that the USA and Europe make up most of the global e-learning industry. Statistics show that the USA and Europe collectively account for 70 % of the world's e-learning market; a trend that shows that most e-learning activity is heavily focused in the US and Europe (Keegan, 2021). Since 2020, 98% of universities moved classes online, compared to 19.5% of undergraduates that took at least one online course before the pandemic in USA (Think impact, 2022). 20% of American online college students use solely their phones or tablets to complete all their course-related activities, 39% of American undergraduate students consider online college-level education to be superior to classroom learning and 52% of American graduate students considered online college-level education to be better than classroom learning (statista.com). Important fact is that e-learning courses produce 86% fewer greenhouse gases. This statistic reveals the impact that e-learning has on our environment, given that it can be done remotely and that there is no need for students to commute and the reduced travel also reduces the carbon emissions from transportations (Keegan, 2021).

In 2021, 39% of young people reported doing an online course and 49% used online learning material, compared with 23% and 27% among adults aged 25 to 34, and 20% and 23% among adults aged 35 to 44 (Eurostat, 2022). Approximately 18 % of individuals in the European Union did an online course of any subject in 2021. During this year, the Netherlands had the highest share of people doing an online course, at 41%, and Romania has the lowest number of 5% (Statista, 2022).

A distance learning strategy based on online systems is being developed and gradually implemented for decades. The advantages of e-learning include more flexible learning possibilities that are not time-or space-constrained, broader access to education, richer learning resources, improved learning processes, and improved learning experiences. Lessons learned during this period will almost certainly result in more online services, a better understanding of their impact on the student experience, and a greater need to diversify services to meet the needs of a wider range of student demographics. The transition to virtual learning and student services may result in increased engagement of all stakeholders. Educators are the driving force behind the widespread adoption of online learning, but students, on the other hand, should be asked to express their satisfaction with the online learning process.

This research focuses on the factors that influence the adoption of this technology as a new method of teaching/learning using UTAUT (Unified Theory of Acceptance and Use of Technology). The structure of the paper is as follows. Section 2 provides a short overview of the relevant literature concerning online learning concept and terminology. Section 3 elaborates the model specification with detailed constructs description, hypothesis development and data collection. The detailed data analysis and discussion of the results are presented in Section 4. The final remarks and conclusions, as well as limitations of the research are presented in Section 5.

2. LITERATURE REVIEW

Several issues must be addressed in order to implement a technology-based new normal education. Siemens et al. (2015) define distance learning as "teaching and planned learning where the teaching occurs in a different place from learning, requiring communication through technologies and special institutional organization." Distance learning refers to the use of ICT is the broadest term. According to Bersin (2017), all serious learning organizations should provide learning solutions through simulations, collaboration, meeting new people, and learning from experts. Technology learning is referred to by the terms electronic learning (e-learning), mobile learning (m-learning), and digital learning (d-learning). E-learning can be utilized in place of or in addition to conventional education. On the other hand, mobile learning is a complement to both conventional and electronic learning. Even when students are not in their typical study setting, mobile learning enables them to interact with their educational materials. Tech-enhanced courses (TEC), minimum face-to-face courses (MNF2F), fully online courses (ONLINE), and hybrid or blended courses are the four basic categories under which online learning is divided. Classes that use technology, such as learning management systems (LMS), to support both teaching and learning are referred to as TEC classes. A syllabus and certain content are typically made available online so that students have constant access to them. MNF2F classes are virtually entirely conducted online, with little to no face-to-face interaction. The sporadic few things that do happen are introductions, reviewing work, and exams. ONLINE classes are entirely online. When it comes to student-professor contact, they are known to frequently use synchronous and asynchronous tools that are given through an LMS. A class is referred to as HYBR if at least 30% of the required in-person meetings are replaced by online course activities. A hybrid course is typically what happens when some classroom time is augmented by technologies used for teaching and communication outside of the classroom, reducing the amount of time spent in a classroom. Known also as hybrid learning or mixed technique, blended learning incorporates both in-person instruction in a classroom setting and online use (Singh et al., 2021). In order to deliver online education in a blended learning academic environment, many higher education institutions in the world have begun to construct web-based learning environments. The consensus among researchers is that hybrid learning educational institutions can adopt a more learner-centered method of teaching in which students are given the freedom and flexibility to engage in productive learning activities. In order to apply blended learning, a web-based application or learning management system (LMS) is frequently used, often using a specific course in an asynchronous mode. Compared with other forms of online learning hybrid, blended learning provides students with more fruitful channels of getting connected with their peers and instructors (Park and Shea, 2020). Blended learning is the most probable type of learning in the aftermath of the health crises provoked by the Corona virus.

A recent study of Adedoyin and Soykan (2020), points out several concrete challenges caused by the abrupt digital transformation of instructional operations during the period of the Covid-19 pandemic. Key challenges are related to technological infrastructure and digital competences, socio-economic factors (educational inequality), assessment and supervision, heavy workload, and compatibility. Universities' crisis-response migration methods can be divided into two categories: external-aided migration and external-integrated migration (Adedoyin and Soykan, 2020). External-assisted migration is a situation in which colleges use Web 2.0 platforms developed by third-party corporations or organizations. As part of the external-assisted migration, some of these institutions provided data on students and faculty members for easy migration and implementation of various Web 2.0 platforms. External-Integrated Migration, on the other hand, refers to the integration of Web 2.0 platforms created by external corporate bodies or organizations into universities' own personal online learning platforms (ex. Google Classroom) (Ulanday et al., 2021). It's also worth noting that both External-Assisted Migration and External-Integrated Migration support video conferencing for instructional delivery and evaluation via video conferencing, assignment submission, forum discussion, and assessment, among other things.

Online education offers advantages and drawbacks. The obstacles will mostly be reduced by using technological advancements and improving the learners' overall experience in the decades to come. Benefits can be perceived from both the universities' and the students' perspectives. Due to their many benefits, which include new markets, financial gains, international collaborations, expansion in education, decreased time to market, and faculty education, most colleges have started to significantly engage in online instruction. Universities' (and other educational institutions') push to offer online courses fuels demand for them. Techers and students can interact both asynchronously and synchronously, which has proven to be extremely beneficial when online courses are offered. Furthermore, online learning is a useful strategy for removing barriers that prevent students from approaching their professors with questions. Students who find it difficult to speak in front of others may want to participate more in online discussions. Still, some findings show that students preferred the traditional mode over the online mode, which provides a potential for disruptive innovation by taking into account a live audience in university online courses (Yee et al., 2022). Students benefit from teachers being more accessible in online learning because, unlike in classroom learning, they can submit questions at any time and instructors can respond at any time without being confined to a desk or office, which is especially useful if a student's schedule conflicts with office hours and a question arise at the last minute. Despite the benefits mentioned above, online learning presents challenges to stakeholders. Students' achievement, experience, access to resources, and interactions are frequently influenced by their geographical distance from the college community (Al-Mawee et al., 2021; Barrot et al., 2021). The location of students and the college community can frequently have an impact on students' academic performance, life experiences, access to resources, and social connections. Because they don't interact with the professor, other students, and group members, students who take online courses may have less opportunities to improve socially and academically. Online connections lack nonverbal clues, which are crucial components of face-to-face communication. This may reduce the amount of asynchronous dialogue that occurs with noticeable delays in response. The assessment of student learning, which includes how instructors evaluate students' progress and distribute graded tasks throughout the course, is another issue that demands specific consideration. Online learning may therefore demotivate students who are unfamiliar with the assessment procedure. Other, more complex barriers exist, such as those related to computer access, broadband, and user skills.

The correlations between the participants' self-regulated learning capacity, online interactions, attitudes, and intention to learn online were also examined by the researchers, as well as changes in the participants' attitudes about online learning. It was discovered that (a) the participants' attitudes toward online learning were generally positive and improved after completing the course, and (b) four self-regulatory factors and attitudes, through perceived online social interactions, significantly predicted the participants' continued intention to learn online (Zhu et al., 2020).

3. RESEARCH BACKGROUND

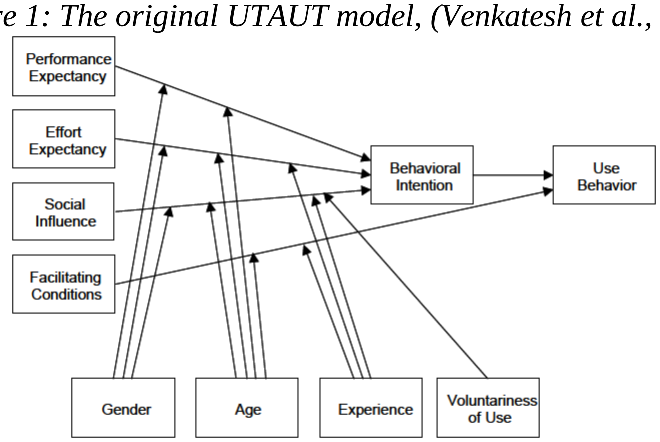
3.1. Research model and hypothesis development

The phenomenon of acceptance of new technologies is relatively widely elaborated especially in the last two decades. In the literature, there are number of theories, frameworks and models that are in broad use to provide an understanding of the determinants of users' acceptance of a new technology. The Unified Theory of Acceptance and Use of Technology – UTAUT (Venkatesh et al., 2003) is a technology acceptance model and one of the most influential approaches used to explain and predict user acceptance of information systems.

The UTAUT model integrates determinants/constructs examined across eight models that earlier research had used to explain information systems usage behavior like: Theory of Reasoned Action, Technology Acceptance Model, Motivational Model, Theory of Planned Behavior, A Combined Theory of Planned Behavior and Technology Acceptance Model, Model of Personal Computer Use, Diffusion of Innovations Theory and Social Cognitive Theory. Formed in order to integrate these different theories and models, it represents an integrated theory of technology acceptance and therefore called unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003).

The goal of UTAUT is "to explain user intentions to use an information system and subsequent usage behavior" (Venkatesh et al., 2003). This theory defines four key constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions. In the model performance expectancy, effort expectancy, and social influence are directly assoiated with behavioural intentions while facilitating conditions are associated with actual usage. Gender, age, experience, and voluntariness of use are assumed to moderate the impact of the four key constructs on usage intention and behavior. The basic UTAUT model is presented in Figure 1.

Figure 1: The original UTAUT model, (Venkatesh et al., 2003)



(Source: Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D. (2003), "User Acceptance of Information Technology: Towards a Unified View". MIS Quarterly, 27, 425-478)

In the context of online learning, UTAUT and its extended versions have been extensively used as theoretical frameworks in different studies to explain user acceptance of online learning (Chao, 2019; Chen and Hwang, 2019; Persada et al., 2019; Aliano et.al., 2019; Alyoussef, 2021; Ahmed et al., 2022; Batucan et al, 2022; and others).

The research model developed in this study aiming to understand students' online learning behavior is based on UTAUT (Venkatesh et al., 2003) extended by the construct perceived enjoyment. Venkatesh et al. (2003) consider performance expectancy as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" and in the context of online learning it is the users' perception when using an online learning system to enhance their performance. Effort expectancy refers to "the degree of ease associated with the use of the system". Similarly in the context to online learning system this construct signifies the comfort of using online learning system among the students in the educational institutions while learning online. The construct social influence refers to "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003). In the context of online learning, the social influence represents the acumen of the significance, which others associate with the user for using the online learning system. According to Venkatesh et al., (2003), facilitating conditions refer to "the degree to which an individual believes that an organisational and technical infrastructure exists to support the use of the system". In this sense, the online learning facilitating conditions are perceived as the accessibility of well-functioning technical inevitabilities to permit the users' handling of the system.

Perceived enjoyment is recognized as significant determinant of technology acceptance (Davis et al., 1992). It represents an essential motivation that indicates how much fun information technology, or an information system, can bring to the one, especially for young consumers (tech adopters). It means the extent that, in addition to any performance effect caused by system use, the activity of utilizing a particular system is evaluated as pleasurable by itself or as "the extent to which the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use" (Persada et al., 2019).

In the literature, perceived enjoyment is confirmed as a key external factor that significantly influences individuals' perceived usefulness, perceived ease of use, and usage intentions toward an information system as basic TAM model constructs (Batucan et al, 2022). Therefore, the challenge of this research is to test the importance and influence of this construct in the context of UTAUT. By including this factor in the model, this study will contribute to fulfilling the literature gap and giving answers whether it (perceived enjoyment) is as a key external factor that significantly influences individuals' performance expectancy, effort expectancy and behavioral (usage) intentions toward an information system as basic UTAUT model constructs that correspond to TAMs basic constructs (individuals' perceived usefulness, perceived ease of use, and usage intentions toward an information system).

The perceived enjoyment is usually used as an external TAM element (Law and Fong, 2020). However, few studies have examined whether perceived enjoyment is an influential external factor in the UTAUT model. With this research we contribute to fulfill this gap. In the UTAUT model, performance expectancy and effort expectancy are the two most relevant predictors derived from the original TAM model constructs - perceived usefulness and perceived ease of use (Cimperman et al., 2016). Davis et al. (1992) found that usefulness and enjoyment are significant determinants of behavioral intention and Venkatesh (2000) found that perceived usefulness is influenced by enjoyment via ease of use. Perceived enjoyment regarding use of online learning has significantly positive effects on performance expectancy and effort expectancy (Law and Fong, 2020; Persada et al., 2019). In the literature, it is also confirmed the significant and positive impact of perceived enjoyment with a behavioral intention, i.e. in the research of Chen and Hwang (2019), the perceived enjoyment is a vital construct, which positively impacts the perceived usefulness, perceived ease of use and behavioral intention as well. In this research, the perceived enjoyment is being used as an external construct of the UTAUT model to investigate the behavioral intention of online learning systems.

Based on the discussion above, in this empirical study, the proposed research model which is based on UTAUT as basic theoretical model is adjusted/extended with perceived enjoyment in order to understand students' online learning behavior. The theoretical framework used in this research is a combination of the existing information available in the literature on online learning behavior and new insights regarding the emergent use of online learning systems as response to the Covid-19 pandemic restrictions. In this study, we contribute literature by testing the basic UTAUT constructs extending the research on the positive and negative effects of perceived enjoyment on online learning with three hypothetical relationships on performance expectancy, effort expectancy and impacts behavioral intention in developing country context. The expanded UTAUT model is presented in Figure 2. The model derives eight hypotheses (five from the basic model, and an additional three from the extended model with the construct of perceived enjoyment).

3.2. Data

For the analysis in this study, authors designed the research in two segments: the first step was to create a structured questionnaire entailing the extended UTAUT model, in order to create reliable constructs that can be used in the second segment, the regression analysis.

This study employs a quantitative research design and questionnaire was distributed by using electronic survey or e-survey via Google Form. A questionnaire was developed to be the instrument for data collection, adopted from basic UTAUT and extended by additional construct. The population of interest in this research are university students engaged in online learning (mostly students aged 18-25). Facing the pandemic restrictions and lock-downs, the data was collected by distributing online questionnaire on Google platform (April and May 2022).

All basic UTAUT factors were measured by the original items developed by the authors of the UTAUT model (Venkatesh et al., 2003). Regarding the new construct in the model in this research – perceived enjoyment, it is measured by five items, developed based on the well-established studies that have applied UTAUT to online learning and measured the impact of this construct on technology adoption and user behavior (Teo et al., 2011; Chen and Hwang, 2019; Persada et al., 2019; Alyoussef, 2021; Ahmed et al., 2022). Five-point Likert scale was included with level of agreement from 1-Strongly disagree, 2- Disagree, 3-Neither agree nor disagree, 4-Agree, and 5-Strongly agree.

4. DATA ANALYSIS AND RESULTS

This research uses data collected from 124 undergraduate students attending online learning, for the period April – May 2022, when the online teaching process was active at the Faculty of Economics in Skopje, Ss. Cyril and Methodius University. Basic demographic statistics provide the following information: respondents were predominantly female (67.5%), most of the respondents did not use online learning before the pandemic (68.1%), standard access for online learning is from home (99.1%), more than half of the respondents reside in the capital Skopje (55.8%), and the most preferred device for online learning is a laptop (80.7%), followed by desktop (8.8%), smartphone (8.8%) and tablet (1.8%).

As mentioned, the basic UTAUT model uses six constructs for analysis of the determinants of the technology adoption: performance expectancy, effort expectancy, social influence, facilitating conditions, behavioral intention and use behavior. In addition to these constructs, one more construct is introduced - perceived enjoyment. Thus, the basic model is extended by one more important factor.

All constructs are tested for their reliability using the most common measure Cronbach's alpha. The reliability analysis should confirm that the questions from the questionnaire consistently reflect the construct they are supposed to be measuring (Field, 2009). The results from the reliability analysis for all seven constructs are presented in Table 1.

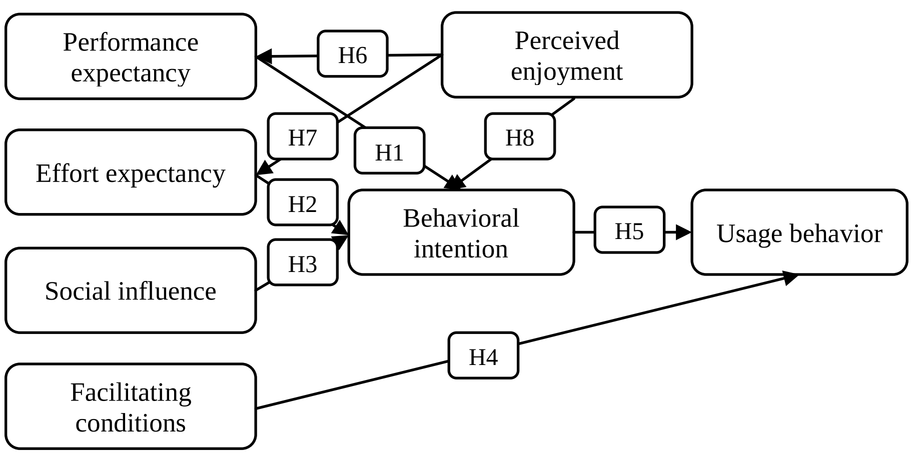
Table 1. Reliability statistics

Construct	Cronbach's Alpha
Performance expectancy	0.931
Effort expectancy	0.844
Social influence	0.854
Facilitating conditions	0.705
Behavioral intention	0.965
Usage behavior	0.866
Perceived enjoyment	0.963

(Source: Authors' calculation)

Calculated coefficients of reliability confirm that all constructs have high reliabilities. Facilitating conditions is a construct with the lowest reliability, with Cronbach's alpha = 0.705, which is acceptable. Kline (1999) says that when dealing with psychological constructs values below 0.7 can be expected due to the diversity of the constructs being measured. With the construct's reliability confirmed, the next step is to examine the hypotheses (relationships) from the UTAUT model. The expanded UTAUT model is presented in Figure 2.

Figure 2. Proposed theoretical/research model (Expanded UTAUT model)



(Source: Authors' presentation)

The model derives the following eight hypotheses (five from the basic model, and an additional three from the expanded model with the construct of perceived enjoyment):
H1: Performance expectancy affects the behavioral intention;
H2: Effort expectancy affects the behavioral intention;
H3: Social influence affects the behavioral intention;
H4: Facilitating condition affects the usage behavior;
H5: Behavioral intention affects the usage behavior;
H6: Perceived enjoyment directly impacts performance expectancy;
H7: Perceived enjoyment directly impacts effort expectancy;
H8: Perceived enjoyment directly impacts behavioral intention.

The results from the estimated linear regressions that test the previous eight hypotheses are presented in Table 2.

Table 2. Estimated coefficients from the simple regression analysis

Hypothesis	Estimated β coefficient	Standard error	t-statistics	R^2	Durbin-Watson
H1: Performance expectancy affects the behavioral intention	0.899	0.070	12.797*	0.594	1.665
H2: Effort expectancy affects the behavioral intention	1.023	0.155	6.607*	0.280	1.716
H3: Social influence affects the behavioral intention	1.001	0.082	12.255*	0.573	1.739
H4: Facilitating condition affects the usage behavior	0.903	0.115	7.821*	0.353	1.863
H5: Behavioral intention affects the usage behavior	0.622	0.044	14.156*	0.644	2.205
H6: Perceived enjoyment directly impacts performance expectancy	0.678	0.058	11.750*	0.552	1.729
H7: Perceived enjoyment directly impacts effort expectancy	0.225	0.048	4.738*	0.167	1.869
H8: Perceived enjoyment directly impacts behavioral intention	0.818	0.065	12.616*	0.589	1.832

*Coefficient is significant at 0.01 level

(Source: Authors' calculation)

The presented results support the hypotheses from the extended UTAUT model. Performance expectancy has a positive and statistically significant effect on the behavioral intention(H1). Students expect online learning to improve their performance and productivity and to achieve their learning goals which lead to their intentions to further use online learning in future, and to recommend it to their colleagues.

Effort expectancy also positively affects the behavioral intention (H2). Easy use of online learning platforms leads to student intentions to use and recommend online learning in the future.

When people close to the respondents, whose opinions they value, encourage online learning, respondents are more likely to continue and recommend online learning in the future. This is statistically confirmed in the regression model testing the third hypothesis (H3).

Facilitating condition is an important factor that determines the use behavior of a respondent (H4). Having the necessary resources and knowledge for online learning, especially via university campus, provides the respondent with the confidence that they are regular online users with tendencies towards online learning whenever possible.

Behavioral intention has a positive and statistically significant effect on usage behavior (H5). Accepting and integrating online learning and planning to use it in future learning activities contributes to the perception of a regular user of online learning platforms with preferences for online learning.

Perceived enjoyment, as a newly added construct to the UTAUT model, has a positive and statistically significant impact on performance expectancy, effort expectancy and behavioral intention. When the online learning process is experienced as pleasant, enjoyable, fun, and

entertaining it leads to increased performance expectancy (H6), meaning the online process is perceived as useful and can improve both students' performance and productivity.
Interesting online learning has a statistically significant and positive impact on effort expectancy (H7). When the process is perceived as enjoyable and fun it is also experienced as easy to use and operate, with clear and understandable interaction.
Perceived enjoyment positively influences behavioral intention (H8). The entertaining and fun perception of online learning contributes to the intention to further use online learning in future educational activities.

5. CONCLUSION

During the pandemic, the higher education in the country faced the challenge of online learning as emergent response strategy to the Covid-19 restrictions in order to provide continuity of higher education process. This study is among the first of its kind in providing empirical evidence regarding the effects of UTAUT based constructs and perceived enjoyment on online learning behavior of university students in the country. Perceived enjoyment as relevant predictor should be important incentive for the content creators of online courses. Perceived enjoyment depends on the instructor's skills as well as on the design, clarity and many aspects of the well-prepared lecture/course. The industry of content creation for online learning is booming, but courses on Macedonian language are scares, and although the market for such courses is limited, all stakeholders including the state should be aware and helping in the support of online learning by all means. This research employed an extended UTAUT model to examine the online learning behavior of the higher education students in North Macedonia. Since the use of online learning in the country occurred during Covid-19 pandemic as emergent case in order to keep the educational process ongoing, some disadvantages of the use of UTAUT model can be discussed for instance, this model did not take into consideration the fear, anxiety (not regarding technology which is generally lower in the case of younger users in the country, but regarding the pandemic overall pressure), self-efficacy, motivation, trust etc., which are the natural elements of intention, and attitude concerning employing technology.
This research provides relevant theoretical and practical implications. From a theoretical point of view, our study contributes to enrich the literature on the online learning system adoption among university students in developing country context, confirming the importance of defined determinants and their relationships. As well, the results of the research has confirmed that perceived enjoyment is as a key external factor that significantly influences individuals' performance expectancy, effort expectancy and behavioral (usage) intentions toward an information system as basic UTAUT model constructs and hence enrich current literature with its findings. The results of this study will serve as a solid base and after pandemic, in order to explore this phenomenon and give insights whether online learning can be used in order to improve the quality of higher education. There is no doubt, that Covid-19 pandemic has forced higher education institutions to use and rely on online learning systems/platforms more than before. Although some higher educations institutions have adopted online learning before pandemics, this was not a case for most universities in developing countries. For example, North Macedonia faced this challenge in this extent and time duration for the first time and hence lessons learned from this experience are valuable for all: students, teachers, higher education institutions authorities and higher education policy makers. The practical implications of this research provide relevant insights into this experience by revealing the characteristics affecting the behavior of university students to use online learning. The digital transformation in higher education is complex but inevitable. Still, the challenges especially for developing countries are

high. The results of this study are adding practical value to this challenge. Regarding the results, the authors underline the limitation of generalization of the results of this research since it uses a smaller sample. In future studies, it would be advisable to try to improve the representativeness of the sample and achieve generalization of the results from a larger sample nationwide. For future studies, when achieving larger samples, it is possible to analyze the moderating effect of demographic factors. Variables related to gender, age, social status, prior experience or user involvement with online learning systems, cultural differences of the respondents could be some of the options. The essence and nature of consumers' behavior is dynamic and complex phenomenon, and therefore further research can be focused on longitudinal studies to compare changes in consumers' behaviors and explain different predictors.

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MAPPING THE STRUCTURE OF CUSTOMER ENGAGEMENT: FIFTEEN YEARS OF RESEARCH

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ABSTRACT
The purpose of this study is to provide a bibliometric analysis of customer engagement (CE) research in the period 2006-2021 by using the PRISMA protocol for systematic reviews and by relying on a set of CE-related keywords. Bibliometric analysis refers to the quantitative study of bibliographic material that provides a general picture of a research field. By using a bibliometric analysis, the most relevant research in a particular field can be provided and the newest research trends can be identified. This study will provide a detailed overview of the evolution of relevant literature and the status of CE research over the past 15 years by using VOSviewer software for creating, visualizing, and exploring bibliometric maps of science. The concept of CE emerged in the marketing literature around 2005 followed by an increased number of research conducted in various contexts and fields, from customer and firm perspectives, etc., linking customer engagement to different marketing concepts such as customer satisfaction. Additionally, some of the researchers conceptualized customer engagement as a behavioral concept whereas others conceptualized it as a psychological concept. Based on the need for further clarification of this concept, a systematic review through bibliometric analysis was conducted and the results of descriptive analysis (distribution of articles by year, top five journals based on the number of published articles, top ten most cited articles, and country co-authorship network visualization) are presented. Additionally, the results from keywords co-occurrence analysis based on text mining in the abstracts are shown. Moreover, a machine learning algorithm for logistic regression in Power BI Desktop was performed to identify independent variables associated with greater citations of CE research. The results of the performed bibliometric analysis can be used by marketing scholars as a basis for future CE research.

Keywords: *bibliometric analysis, customer engagement, keyword co-occurrence analysis, mapping*

JEL classification: *M30*

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1. INTRODUCTION

In contemporary marketing thought, the role of customers is becoming continuously more important due to their participation and collaboration in companies' marketing activities, such as brand communication (Hamilton et al., 2016), product referrals (Van Doorn et al., 2010), product development (Hoyer et al., 2010), and mutual support, in general. In fact, various customer behaviors beyond transactions (Van Doorn et al., 2010; Brodie et al., 2011) refer to customer engagement (CE) which is emerging as an important determinant of firm performance as both tangible and intangible outcomes (Pansari and Kumar, 2017).

The concept of customer engagement emerged in the marketing literature around 2005 (Sawhney et al., 2005) and since then its academic prominence is continuously rising along with its practical proliferation. Since 2010 the Marketing Science Institute has indicated CE as a key research priority (MSI, 2010, 2020) and during the last decade, the academic interest in this concept has been escalating (Hollebeek et al., 2022). In spite of the extensive scholarly debate, there is a lack of agreement on how to conceptualize and operationalize this concept (Lim et al., 2022; Syrdal and Briggs, 2018). Defined broadly, CE is understood as a psychological state (Brodie et al., 2011) or sequential psychological process (Bowden, 2009) related to customer-brand interactions (Hollebeek, 2011) which refers to "specific levels of cognitive, emotional, and behavioral activity" (Hollebeek, 2011, p. 790). On the other hand, Van Doorn et al. (2010) applied a behavioral perspective in comprehending and defining CE, and a vast majority of studies have analyzed various forms of behavioral manifestations (Jaakkola and Alexander, 2014; Piehler et al., 2019).

Having in mind the theoretical fragmentation of this concept (Hollebeek et al., 2019; Hollebeek et al., 2022) and the reached maturity for a review to be conducted (Brodie et al., 2011; Hollebeek et al., 2019; Hollebeek et al., 2022; Lim et al., 2022), this paper strives to provide a systematic mapping of CE by conducting a bibliometric analysis and keywords co-occurrence analysis followed by an analysis of independent variables associated with greater citations of CE research. More precisely, relying on a set of CE-related keywords and based on the PRISMA protocol, the CE research in the period 2006-2021 is reviewed by providing a descriptive overview in terms of distribution of articles by year, top five journals based on the number of published articles, top ten most cited articles, and country network visualization, as well as keywords co-occurrence analysis to reveal the most prominent research topics. In this line and based on the developed questions in the previous review studies on CE (Rosado-Pinto and Loureiro, 2020, So et al., 2021; Srivastava and Sivaramakrishnan, 2021; Hollebeek et al., 2022; Lim et al., 2022), the following research questions are proposed:

RQ1: What are the bibliometric trends (performance) of CE research?

RQ3: What are the top researched words and topics in CE research?

RQ3: Which are the independent variables associated with greater citations of CE research?

Although recently some review studies on customer engagement are evident (Rosado-Pinto and Loureiro, 2020, So et al., 2021; Srivastava and Sivaramakrishnan, 2021; Hollebeek et al., 2022; Lim et al., 2022) and they also quantitatively explored the intellectual structure of CE and its trends, the present study is the first that goes further in exploring the independent variables associated with greater citations of CE research by applying machine learning algorithm for logistic regression. In addition, the present paper covers a broader research scope by comprising several related keywords to customer engagement, i.e., consumer engagement, consumer brand engagement, customer brand engagement, customer engagement behavior/behaviour, consumer engagement behavior/behaviour, and brand community engagement. Comprising more than one keyword as well as covering all the

journals (not only ranked ones) resulted in a total number of 2201 reviewed studies which is the most exhaustive number of studies compared to the previous reviews on CE.
The remainder of the paper proceeds as follows. First, the paper provides a theoretical overview of the CE concept. Next, the methodology and data are presented. Finally, the results and analysis are elaborated, and future research is discussed.

2. THEORETICAL BACKGROUND

The concept of engagement has been analyzed from different aspects in different fields such as psychology, sociology, organizational behavior/management, etc. Within the engagement concept, studies have investigated social engagement (Krueger et al., 2009; Bath and Deeg, 2005), student engagement (Trowler, 2010; Carini et al., 2006), civic engagement (Galston, 2007; Youniss et al., 2002), employee engagement (Saks and Gruman, 2014; Anitha, 2014), stakeholder engagement (Greenwood, 2007; Maak, 2007), etc. thus providing valuable insights into the concept beyond the marketing discipline. Marketing scholars have begun to explore the engagement concept by focusing on CE at the beginning of the new millennium, and since then CE has been broadly investigated in the marketing literature which is reflected in the increased number of published CE papers in reputable scientific journals (Bowden, 2009; Van Doorn et al., 2010; Brodie et al., 2011, Hollebeek et al, 2022). This increased academic interest is related to the increased importance of the CE topic among practitioners having in mind the changes in the business environment with regard to digitalization and increased use of the internet and social media by both customers and companies.
However, when analyzing the CE research it can be noticed that the CE articles rely on different theoretical perspectives (Hollebeek et al., 2019; Hollebeek et al., 2022; Ng et al., 2020), they focus on different conceptualizations of CE (Hollebeek, 2011; Van Doorn et al., 2010; Bowden, 2009), analyzed CE from the firm (Kumar et al., 2010; Meire et al., 2019) and customer perspectives (Brodie et al., 2011; Kumar et al., 2019), analyzed CE in different contexts (Srivastava and Sivaramakrishnan, 2022; So et al., 2020; Hao, 2020; Opute et al., 2020; Chen et al., 2021) and provide a variety of definitions (Harmeling et al. 2017). Besides different conceptualizations of CE, the interpretations of the concept of CE differ among the practitioners as well (Sashi, 2012).
Regarding the conceptualizations of CE, CE has been analyzed from the behavioral aspect (Van Doorn et al., 2010), and as a "psychological state" (Brodie et al., 2011; Hollebeek, 2011) whereas Bowden (2009) describes CE as a "psychological process". Consequently, different definitions of CE have been offered. Thus, according to Van Doorn et al. (2010, p. 254) customer engagement is defined as "a customer's behavioral manifestations that have a brand or firm focus, beyond purchase, resulting from motivational drivers". Brodie et al. (2011, p. 260) considered CE as a psychological state that "occurs by virtue of interactive, co-creative customer experiences with a focal agent/object (e.g., a brand) in focal service relationships.". On the other hand, Bowden (2009) defined customer engagement as a sequential psychological process that individuals move through to become loyal to the brand, whereas Hollebeek (2011, p. 790) defined CE as "the level of an individual customer's motivational, brand-related, and context-dependent state of mind characterized by specific levels of cognitive, emotional, and behavioral activity in direct brand interactions."
Moreover, there are differences in the research articles regarding analyzing the CE construct as unidimensional (Verhoef et al., 2010; Shen et al., 2019) or multi-dimensional. However, most of the CE studies analyzed the CE construct as multidimensional and most of them as a three-dimensional (cognitive, emotional, and behavioral) concept (Brodie et al., 2011; Hollebeek, 2011; Vivek et al., 2012; Hollebeek et al., 2014; Dessart et al., 2015).

Furthermore, most of the published CE articles mainly study CE in relation to brands, with customers being the central engagement subject (Hollebeek, 2011; Hollebeek et al., 2014; Brodie et al., 2011) although there are studies that focus on consumers as well (Sharma et al. 2021; Hollebeek et al., 2014; Rather, 2019). In marketing-related research studies, it can be noticed several related terms to customer engagement (Verhoef et al., 2010; Brodie et al., 2013; Bowden, 2009), such as consumer engagement (Brodie et al., 2011; Vivek et al., 2012; Dessart et al., 2015), customer/consumer engagement behavior/s (Van Doorn et al., 2010; Jaakkola and Alexander, 2014; Oh et al., 2017), customer/consumer brand engagement (Van Doorn et al., 2010; Hollebeek, 2011; Hollebeek et al., 2014); brand community engagement (Baldus et al., 2015; Kumar and Kumar, 2020), etc. Given that customer engagement and consumer engagement are mutually related concepts (Hollebeek et al., 2022) and that CE mostly has a brand focus (Van Doorn et al., 2010; Sharma et al., 2021; Kumar and Kumar, 2020) our review study relies on several related terms (customer engagement, consumer engagement, consumer brand engagement, customer brand engagement, customer engagement behavior/behaviour, consumer engagement behavior/behaviour, and brand community engagement), unlike the other studies that analyzed a single or few keywords.
The increased number of CE research studies led to increased research interest in review studies on CE. The first review study on CE in marketing is the study of Islam and Rahman (2016) and since then, the research attention on reviews of customer engagement empirical research has been continually increasing (Rosado-Pinto and Loureiro, 2020; Rasool et al., 2020; Hao, 2020; Hollebeek et al., 2022; So et al., 2021). However, although the recent but limited review studies used quantitative analysis (Rosado-Pinto and Loureiro, 2020, Hollebeek et al., 2022; So et al., 2021; Srivastava and Sivaramakrishnan, 2021; Lim et al., 2022) none of them used regression analysis.

3. METHODOLOGY AND DATA

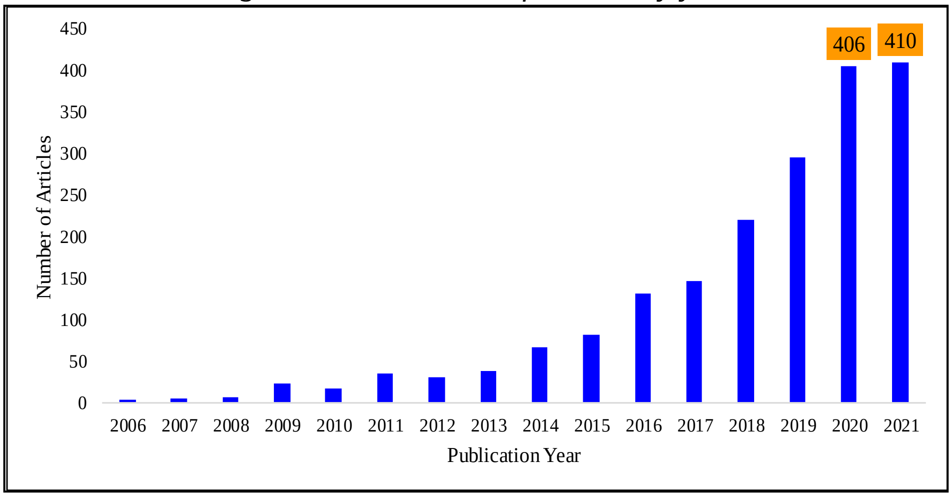
For conducting a transparent systematic literature review we followed all four stages of the PRISMA protocol: identification, screening, eligibility, and inclusion (Moher et al., 2009). First, by searching the SCOPUS database on October 16, 2021, within the article title (TITLE), abstract (ABS), and keywords (KEY): “consumer engagement”, OR “consumer brand engagement”, OR “customer brand engagement”, OR “customer engagement behavior”/ OR behaviour”, OR “consumer engagement behavior”/ OR behaviour”, OR “brand community engagement”, specifying the document type only articles and the time period from the first article in the database until the entire period (except 2022), we have found 2201 articles. We removed 5 duplicates and 18 non-English papers during the screening phase and at the third, eligibility phase we cleared the database from 38 editorials, book reviews, and systematic literature reviews. According to Lim & Rasul (2022), the eligibility phase is necessary so that there is no repetition in the results. Lastly, to decide which articles to include in the further analysis we applied content analysis to the remaining abstracts and thus removed 220 abstracts as inadequate for analysis. The final data set is comprised of 1920 journal articles.
The data descriptive analytics is performed in Excel. The country co-authorship and keywords co-occurrence maps are created in the software VOSviewer version 1.6.18. Details for the software can be found in Van Eck and Waltman (2010). The machine learning algorithm for logistic regression to find the key influencers for citation is performed in the software tool Power BI Desktop.

4. RESULTS AND ANALYSIS

4.1. Descriptive analytics

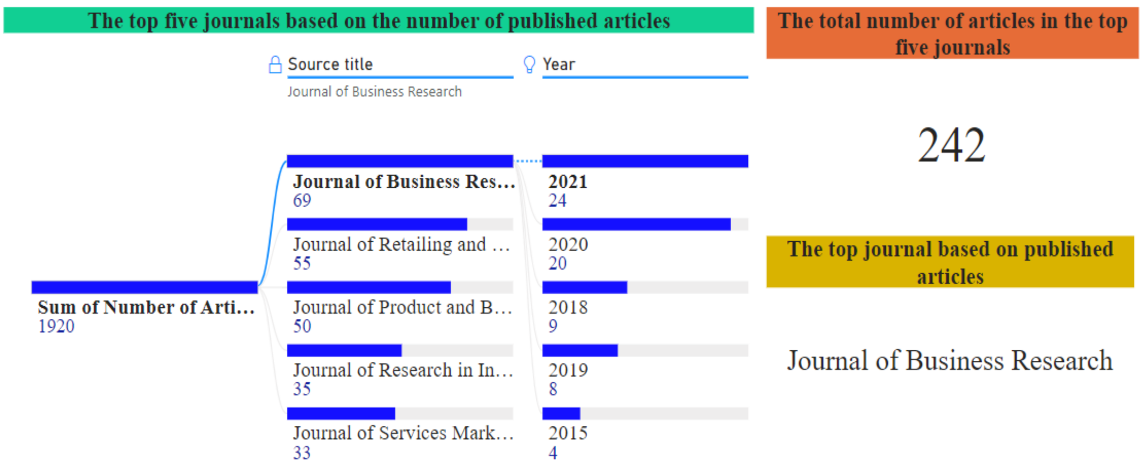
In the analyzed period (2006-2021) 1920 articles were published. The highest number of published articles is in the last year (410 articles). In addition, in the last five years (2017-2021) 77.03% (1479) of the articles are published implying a high research interest in this area.

Figure 1: Distribution of articles by year



We have identified the top five journals based on the number of published articles in the analyzed area (Figure 2). In those journals, 242 articles were published representing 13% of the total number of published articles. Based on the artificial intelligence (AI) driven visual decomposition tree in Figure 2, we can see that the Journal of Business Research is a leader with 69 articles (29% of the total number of articles in the top five journals), followed by the Journal of Retailing and Consumer Services (55 articles, i.e., 22.7%), the Journal of Product and Brand Management (50 articles, i.e., 20.7%), the Journal of Research in Interactive Marketing (35 articles, i.e., 14.5%), and the Journal of Services Marketing (33 articles, i.e., 13.6%). Based on our findings, 2021 is the best year in terms of the number of published articles for the Journal of Business Research, the Journal of Retailing and Consumer Services, and the Journal of Research in Interactive Marketing (61 in total).

Figure 2: Top five journals based on the number of published articles



The ten most cited articles are shown in Table 1. The most cited article (1533 citations) is "Customer engagement behavior: Theoretical foundations and research directions" by Van Doorn et al. (2010) published in the Journal of Service Research. The same journal also published the second most cited article (1449 citations) written by Brodie et al. (2011).

Table 1: The top 10 most cited articles

Title	Source title	Authors	Year	Cited by
Customer engagement behavior: Theoretical foundations and research directions	Journal of Service Research	van Doorn J., Lemon K.N., Mittal V., Nass S., Pick D., Pirner P., Verhoef P.C.	2010	1533
Customer engagement: Conceptual domain, fundamental propositions, and implications for research	Journal of Service Research	Brodie R.J., Hollebeek L.D., Juric B., Ilic A.	2011	1449
Consumer engagement in a virtual brand community: An exploratory analysis	Journal of Business Research	Brodie R.J., Ilic A., Juric B., Hollebeek L.	2013	1384
Consumer brand engagement in social media: Conceptualization, scale development and validation	Journal of Interactive Marketing	Hollebeek L.D., Glynn M.S., Brodie R.J.	2014	1035
Customer engagement: Exploring customer relationships beyond purchase	Journal of Marketing Theory and Practice	Vivek S.D., Beatty S.E., Morgan R.M.	2012	848
We're all connected: The power of the social media ecosystem	Business Horizons	Hanna R., Rohm A., Crittenden V.L.	2011	806
Undervalued or overvalued customers: Capturing total customer engagement value	Journal of Service Research	Kumar V., Aksoy L., Donkers B., Venkatesan R., Wiesel T., Tillmanns S.	2010	631
The process of customer engagement: A conceptual framework	Journal of Marketing Theory and Practice	Bowden J.	2009	601
Customer engagement, buyer-seller relationships, and social media	Management Decision	Sashi C.M.	2012	583
A descriptive model of the consumer co-production process	Journal of the Academy of Marketing Science	Etgar M.	2008	551

We have created a country co-authorship network visualization map by using the bibliographic data, setting the type of analysis to be "co-authorship," the units of analysis to be "countries," the counting method to be "full counting," the maximum number of countries per document to be "5", and the minimum number of documents and citations for a country to be "1". There have been 104 terms identified, but we have focused on the top ten countries based on the number of published articles that comprise the co-authorship network visualization map presented in Figure 3. The countries are grouped into 3 clusters so that the countries with the same color are part of the same cluster. Cluster 1 (the red cluster) includes Australia, Canada, China, Malaysia, and the United States. Three countries belong to cluster 2 (the green cluster): Portugal, Spain, and the United Kingdom, while two countries belong to cluster 3 (the blue cluster): France and India. Additionally, in Table 2, we present the number of articles for each of those 10 countries (blue bars), as well as the top 10 countries with the highest number of citations (orange bars). Based on Figure 3, we can see that the largest item is labeled as "United States" and the weight of the item is linked with the number of articles, i.e., as presented in Table 2, the United States has 514 published articles but also is the leader regarding the citations (20478). Australia, which also belongs in the red cluster, is in second place based on the number of published articles (263) and citations (7056). The United Kingdom, which belongs to the green cluster, is in third place based on the number of documents (227) as well as the number of citations (6669). Regarding the number of documents, the fourth-ranked country belongs in the blue cluster, that is India (198), but it is seventh-ranked based on citations (3291), etc. Also, based on Figure 3, we can see that the United States has the highest link strength with Australia (link strength of 29), while their link strength with Canada is 11. In addition, the link strength between France and India is 13, while that between France and Spain is 2. Based on this, we can state that the short distance between countries is not always crucial for co-authorship.

Figure 3: Country co-authorship network visualization map

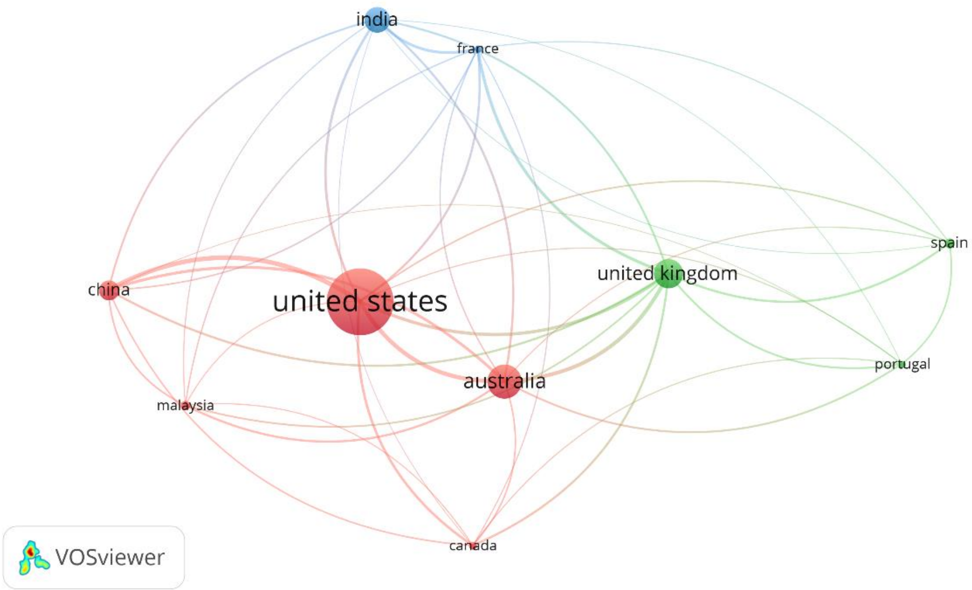


Table 2: Countries with the highest number of articles and citations

Country	Articles	Country	Citations
United States	514	United States	20478
Australia	263	Australia	7056
United Kingdom	227	United Kingdom	6669
India	198	New Zealand	6234
China	156	Germany	5353
Spain	81	Netherlands	4820
Malaysia	73	India	3291
Canada	64	China	3010
France	61	France	2334
Portugal	57	Finland	2228

4.2. Keywords co-occurrence analysis based on text mining in the abstracts

In this section we present two network visualization maps regarding the keyword co-occurrence for the entire analyzed period (2006-2021) and the last three years (2019-2021).

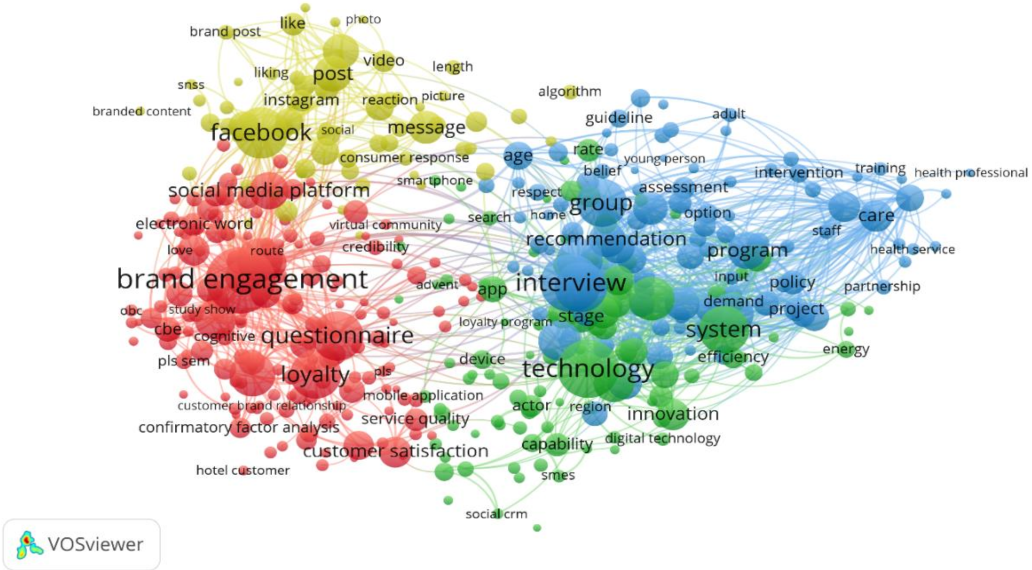
4.2.1. Keywords co-occurrence analysis based on text mining in the abstracts for the whole analyzed period (2006-2021)

The map is created by mining the text data, i.e abstract data, so, the structured abstract labels and copyright statements have been ignored. The counting method is binary. From the 1920 mined abstracts 30563 keywords are extracted, and the minimum number of occurrences of a keyword is set at 10, so that 951 keywords meet the threshold. For each of these 951 keywords a relevance score is calculated, and the software selects the 60% most relevant ones based on the relevance score, so that 571 keywords remain. After a detailed analysis of the 571 keywords, we have excluded 133 which are not relevant for the analysis (the complete list can be provided on request). The keywords co-occurrence network visualization map consists of 438 keywords that are grouped in four clusters.

Each item on the network visualization map is presented with a label and a circle. The size of the labels and circle depends on the weight of the item. The higher the weight (that is linked with the occurrences of the item) the larger the circle and its label. In addition, two items are linked with a line between them, so that the stronger the link the shorter the distance between the items. If the label is not presented, that is to avoid the problem of overlapping labels.

Based on Figure 4, we can see that the item, i.e., the keyword "brand engagement" that is part of the red cluster is the largest one on the whole map, while "Facebook" is the largest one in the yellow cluster, "interview" in the blue cluster and "technology" in the green cluster.

Figure 4: Keyword co-occurrence network visualization map for the period 2006-2021



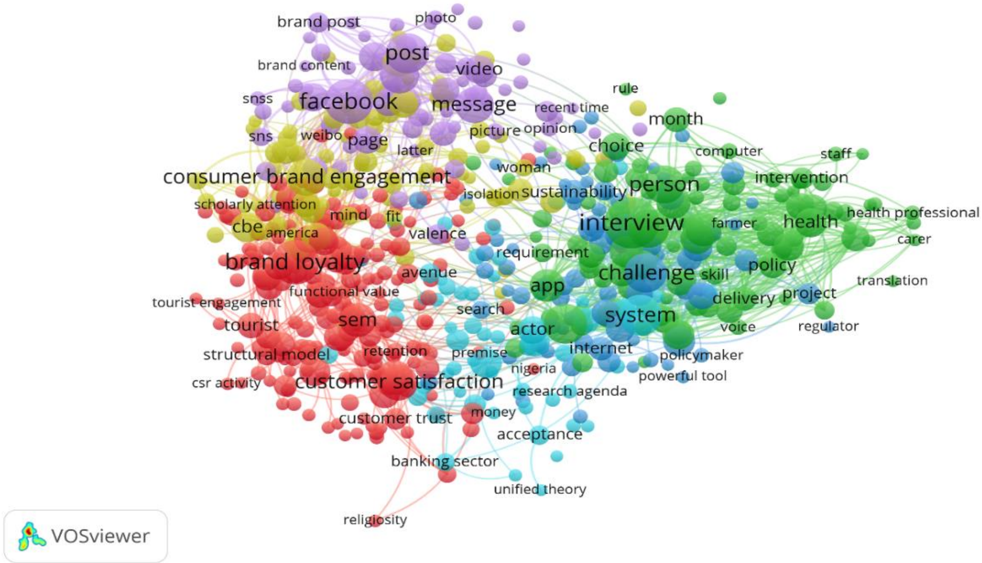
The keyword co-occurrence in the red cluster indicates that CE studies in this cluster examine how "brand engagement" on "social media platforms" can influence "service quality", "customer satisfaction" and "customer loyalty". In this cluster, the "questionnaire" is the most applied data collection form, while "confirmatory factor analysis", "PLS" and "SEM" were mostly used for data analysis. The most analyzed context in this cluster is the "hotel" industry. The studies in the yellow cluster focused on explaining how the "branded content" format ("video", "picture", "photo") is related to "consumer response" and "reaction" on "message"/"post" on "Facebook" and "Instagram". The keyword co-occurrence in the blue cluster indicates that studies in this cluster investigate how "recommendation" influences "group" "assessment" and "belief", focusing on different "age" groups ("young person" and "adults"), mostly collecting data through "interview". Also, it is evident that the main industry analyzed in this cluster is "health service" and "care" where the research focus is on developing "program" for "training" the "staff" and "health professionals" as a "policy" for building "partnership" and thus improving engagement. The green cluster comprises CE studies that are related to "technology" and "innovation" as means of building "capacity" and improving "system" "efficiency". "Energy" is the most analyzed sector in this cluster.

4.2.2. Keywords co-occurrence analysis based on text mining in the last three years (2019-2021)

In the last three years 1111 articles were published, and we have used their abstracts to perform text mining and identify research hotspots in the most recent period. We have used the same procedure as in mining the abstracts for the whole period, except the threshold for occurrences is set at minimum five. So, in total, 19408 items were extracted, and minimum

1187 items occur 5 times. Of these 1187 items, 712 are the 60% most relevant ones based on the relevance score. After a detailed analysis, we have excluded 100 items that are not relevant for the analysis (the complete list can be provided on request). The keywords co-occurrence network visualization map consists of 612 keywords. The keywords are grouped into 6 clusters, with “interview”, “Facebook”, “brand loyalty”, “system”, “customer brand engagement”, and “challenge” being the largest keywords in the green, violet, red, light blue, yellow and blue clusters respectively. In addition, in the last year, the researchers focused mostly on the pandemic, and in 2020 they used artificial intelligence (AI), chatbot and structural equation modeling (SEM).

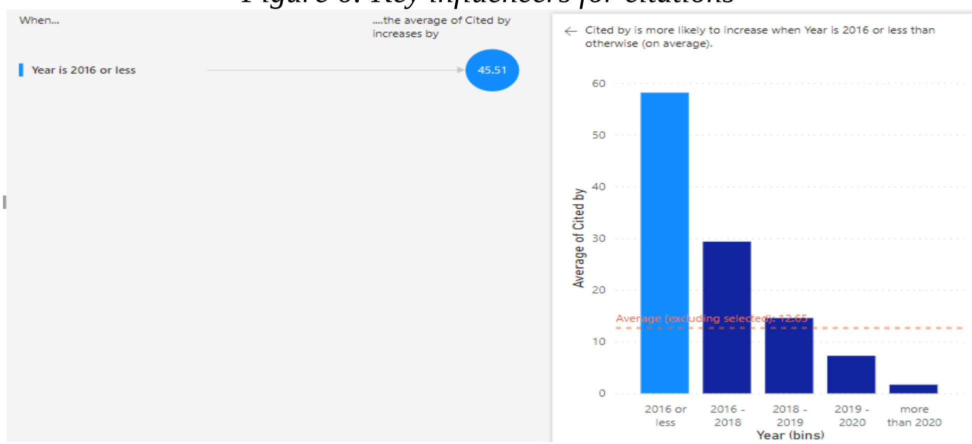
Figure 5: Keyword co-occurrence network visualization map for the last three years



4.2.3. What influence a citation on CE to increase?

We have used the AI driven visual in the Power BI Desktop, known as a decomposition tree to explore the distribution of the data, where we have analyzed the citations regarding the publisher. The publisher with the highest no. of citations is Elsevier Ltd. (6375 citations).

Figure 6: Key influencers for citations



In addition, to answer the third research question in our study, we have performed a machine learning algorithm for logistic regression in Power BI Desktop, where we have used the number of citations of each paper as a dependent variable, and the following variables: number of authors per paper, authors affiliations, publisher, source title and year as independent variables. Our question in the AI driven tool Key influencers was what influences citations to increase? Based on the performed logistic regression (the AI visual Key influencers), we can see that when the year is 2016 or less, the average of citations increases by 45.51x (Figure 6).

5. CONCLUSION

This study provides a bibliometric analysis of CE articles in English by searching for CE-related terms in the SCOPUS database. The analyzed period is 2006–2021, and the sample for analysis after the incorporation of the PRISMA protocol is 1920.

It presents the first CE bibliometric study with the largest sample included, and despite the descriptive analysis, county co-authorship, and keyword co-occurrence maps based on text mining, it uses a machine learning algorithm for logistic regression to analyze what influences the citations in this area to increase.

Our findings show: 1) that the researchers' interest in this area has boomed in the last five years when they published 77.03% of the articles, with 2021 being on the pedestal as a year when 410 articles were published; 2) the top five journals based on the number of published articles, so that the leader is the Journal of Business Research with 69 articles; and 3) the top ten most cited articles so that the first ranked is the article written by Van Doorn et al. (2010) with 1533 citations. Those articles should be used by researchers interested in CE research as a starting point in conducting research. 4) The country with the highest number of CE-related articles (514) is the United States, and it also has the highest number of citations (20478); 5) the keyword co-occurrence network visualization for the entire analyzed period is comprised of four clusters, with the most used term: "brand engagement", which belongs to one cluster, and the three largest terms (each in one cluster) are: "Facebook", "interview" and "technology". 5) The keywords co-occurrence network visualization map for the period 2019–2021 consists of 6 clusters, in 2020 AI, chatbot, and structural equation modeling are used as methods for analysis, and in 2021 the research is mostly about pandemic; 6) the AI-driven visual, decomposition tree shows that Elsevier Ltd. is the publisher with the highest number of citations (6375); 7) the year, i.e., 2016 or less, is identified as a key influencer of the citation increase based on the machine learning algorithm for logistic regression.

In this study, we only focus on articles in English that are published in journals and indexed in the SCOPUS database. Therefore, we might have omitted articles in other languages and indexed in other databases such as Google Scholar, etc., which we provide as a limitation of the conducted study. Also, future studies should focus on identifying the main theories in CE studies, as well as the antecedents and consequences of this concept.

Considering that the era of automation is coming rapidly, future research should consider how AI helps companies increase customer engagement.

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PROCESS OF E-RECRUITMENT FOR ENTRY LEVEL POSITIONS IN NORTH MACEDONIA

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ABSTRACT

The focus of the paper are the different channels for implementation of e-recruitment and their respective efficiency. As the "work from home" model became the default in the pandemic, there was a steady rise in the use of e-recruitment platforms and social media channels. However, businesses report that there is a discrepancy between in the e-recruitment process between varying position levels, based on the industry, type of job and required experience. The paper researches the first step (i.e. attracting candidates) in the e-recruitment process for entry-level positions, as defined being with lower than country average salary, no required experience and faculty education.

Through the process of primary quantitative and qualitative analysis, the results of the paper determine that certain channels may deliver results several times higher than others, in particular social media as a whole. Variable factors such as creative elements, job description and other are outlined in the paper to place the foundation for further research. The reach and efficiency of social media channels in e-recruitment is determined to be a powerful tool if utilized within a proper framework. The paper finalizes the research with the obstacles created with e-recruitment as a whole in the recruitment process, after the first phase of attracting candidates is completed.

Keywords*: e-recruitment, social media recruitment, job ads, attracting candidates*

JEL classification: *O15*

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1. INTRODUCTION

The start of the COVID-19 pandemic has created different problems in the organizational aspects of companies. However, the process of digitalization of workplace activities has also created certain benefits, both from the employee and employers' aspects, such as enabling agility, reduce employee absenteeism, decrease staff turnover, enable more transparent work, enable geographical flexibility and enable environmental gains due to reduction in travel, among many others (Rakovic et al., 2022). The human resource function in an organization was facing difficult pressure to continue business operations without interruption during the pandemic, while also reaping some of these benefits. Regardless of the type of business or organization, its efficiency is determined based on the employees who fulfill the set goals in accordance with the mission and strategic plan of the organization (Dima and Vlăduțescu, 2012). Therefore, every organization tries to recruit staff that strictly fits into its policy. Internal and external changes in the company's environment, influenced by political changes and the internationalization of companies, require reasonable flexibility from both parties, candidates and corporations, who try to meet the demands of the market (Stonehouse, Hamill, Campbell and Purdie, 2000). The pandemic normalized the work-from-home behaviour, where governments basically demanded it with lockdown and movement restrictions. After implementing different strategies to accommodate work-from-home models, companies introduced entire virtual or hybrid positions even after the lockdown restrictions started ending (Binoy M., Walarine M., 2021). This created new possibilities in the recruitment department, where geographical presence was no longer required for positions, thus expanding the positions reach to other cities, regions and even countries. The goal of the research is to examine the effectiveness and efficiency of different e-recruitment strategies that involve social media as a channel, as well as draw relevant conclusions and recommendations of structuring multi-channel e-recruitment funnels.

2. METHODOLOGY

The research for the paper was done on the territory of the Republic of North Macedonia and it includes primary and secondary data. Literature review was utilized to gather relevant secondary data, as well as analyze significant research in the area in books, scientific papers, online publications and other sources. The main method for primary research was a collective case study, with the goal being to gather the necessary quantitative and qualitative data for the research purpose. The case study took place between 10.12.2021 through 10.03.2021 in four different companies on the territory of Republic of Macedonia. To generate more diverse results, each company was from a different industry, however company data (name, industry, size and other details) are not published as per the participants requests. The case study generated extensive data from the research and enabled further analysis of the topic at hand. To analyze the effectiveness of each channel, e-recruitment funnels were defined and data was placed in each step of the funnel accordingly. By utilizing e-recruitment funnels, a much clearer picture is defined in analyzing data, since a larger pool of candidates doesn't always have positive implications on the recruitment process as a whole. The paper also defines conversions rates per funnel as a more complete metric when comparing the effectiveness and efficiency of e-recruitment funnels. The analysis and synthesis method were used to process the results from the case study, i.e. for logical representation of the subject of research and processing of the collected empirical data, to draw relevant conclusions.

3. LITERATURE REVIEW

Research in the field of recruitment focuses on the effects of different recruitment sources (eg, do individuals recommended by their current employers have a lower turnover rate than those individuals recruited through print media advertisements?), on the recruiters (eg, do recruiters who share more job information make a better impression on candidates), as well as realistic job reviews (eg, does sharing accurate job information result in higher job satisfaction among new hires). All these areas and topics can be defined as recruitment activities, and although it is more than clear why a number of researchers have focused precisely on research on the effects of recruitment activities, however, the greatest attention should be paid to the entire process of recruitment, in order to understand whether the company's recruitment activities lead to the fulfillment of its own set goals (Breaugh, 2009).

In defining the recruitment process, Barber (2018) describes three stages:

1. Generating applicants
2. Maintaining the applicant's interest
3. Influence on the decisions on the choice of workplace

Applicant generation refers to recruitment activities aimed at posting and advertising the open position. This stage is very important, as the decisions made on this matter affect the number and type of individuals who would potentially apply. With the pandemic, digital transformation of process was rapidly evolving, which also entailed the digitalization of recruitment. Recent research shows that 39% of candidates find job openings on social media (Jobvite, 2022). E-recruitment can be viewed as utilizing Internet technologies to attract potential employees to the organization and into the recruitment process (Ghazzawi & Akccoumeh, 2014). Some of the noted benefits of digitalization of recruitment can include instant feedback from candidates, larger geographic reach, reduced hiring costs, faster time to employment and many other (Sultana & Sultana, 2017). Wozniak (2014) defines four different generations of e-recruitment channels:

- **Web 1.0 channels** – includes the company website, as well as other employment websites. Offers a one-way communication with the candidates, where interested parties can apply via e-mail or other external form of communication.
- **Web 2.0 channels** – includes search engines, as well as social networking sites. Offers a two-way communication, with the possibility of appraising the candidate without informing him/her about the fact.
- **Web 3.0 channels** – offer multilateral communication between the companies and candidates and in focus in modern times. Social networking sites are again at the forefront; however, they can be expanded with image-building tools, games, blogs etc.
- **Web 4.0 channels** – includes the expansion of e-recruitment activities with all of the above instruments, as well as gamification opportunities.

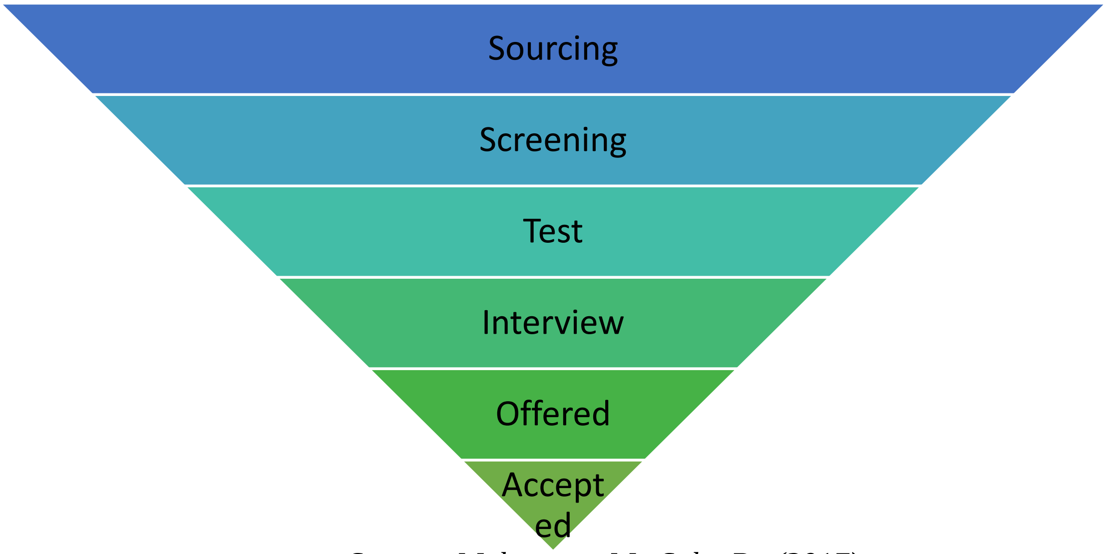
Through recent years, e-recruitment has functioned on different platforms, with significant popularity being given to social network sites. Social network sites (SNW) can be defined as web-based services which can allow individuals several different elements: a. create a public or private (semi-public) profile within its bounded systems, b. articulate a list of other users with whom they share a connection and c. view and traverse their list of connections and create content (Boyd D., Ellison N., 2007). In 2022, are over 4.7 billion social media users, occupying 93.6% of total internet users (WAS, 2022). This demonstrates that the reach of social media is over 90% of all Internet users, which is the main goal of the first step of recruitment, concerned with attracting candidates for the relevant job positions. Further details show us that more than 7 SNW platforms are used per month, with the pandemic creating a 5% rise in social media users on a yearly level. Regarding North Macedonia, data shows that there are 1.75 million Internet users in the country, with social media penetration being higher that the average with 77% (1.35 million active social media users). In terms of e-recruitment, recent statistics demonstrate that companies mostly use Facebook for e-recruitment (68%), followed by LinkedIn (65%), Twitter (48%), Instagram (46%) and

YouTube (35%). Comparing candidate quality, LinkedIn is cited as having the highest levels of quality with 53%, followed by Facebook (33%), YouTube (22%), Twitter (21%) and Instagram (20%).
Beside social media, e-recruitment channels can include the company web-site, online job boards, blogs, wikis, forum and other digital mediums (Miller & Lammas, 2010). E-recruitment through social media channels can be seen as being the channel of choice after the pandemic (Malik & Patel, 2020), offering various benefits over traditional channels for large, as well as small and medium sized companies (Poorangi et al., 2018; Munro, 2018). Research shows that e-recruitment through social media can contribute to reduced cost and time, attract passive job seekers and avoid negligent hiring (Hosain et al., 2020). Additionally, there are instances where social media is utilized in a combined effort, as a primary or secondary source in the candidate pools. Evident from the data, SNWs remain very popular in modern e-recruitment initiatives, since social media penetration on average is between 55-80% depending on the country. Along SNWs, companies also utilize job portals and employer websites (Okolie & Irabor, 2017). These channels generally enable the companies wide reach to advertise the position, which is crucial to the first step of recruitment concerned with attracting candidates. Figure 2 shows that mobile usage in job applications is between 44%-55% for the younger workforce (Millennials and Gen-Z), which can translate in mobile-friendly job applications processes being the requirement in the near future for a successful e-recruitment process[1]. This new generation approach is needed for candidates that have grown up in a digital age, which has implications on their view of the recruitment process (Emanuela, 2018).

3.2 E-recruitment funnel

Recruitment is defined as the process of searching candidates for open job positions and includes all activities up until filling that position with a suitable candidate (Biswas, 2012). The recruitment process can mimic the sales funnel, transforming itself to a recruitment funnel which includes several key activities. As the sales model shows four types of steps - contact; potential customer; prospective customer and customer (D'Haen & Van den Poel, 2013), we can apply the same logic to the recruitment process to visualize a funnel.

Figure 1. E-recruitment funnel



Source: Mohapatra M., Sahu P., (2017)

[1] https://www.entrepreneur.com/article/239400

As show in figure 1, each step of the recruitment funnel has a goal of moving the candidates forward towards the final goal of filling the open job position. The first step of sourcing/attracting candidates is vital to the success of the whole process, as a greater pool of candidates sets-up the selection process and all other process following it. Analytics have been utilized in HR to improve its performance and answer to challenges in implementation of the e-recruitment funnel. Companies that are building their e-recruitment funnels based on data from primary and secondary sources usually improve four core areas (Mondore et al., 2011):

- **Attracting candidates** – more candidates apply for the open job positions
- **Higher quality candidates** – candidates applying for positions having the necessary prerequisite to move along the recruiting process
- **Lower TTE** (time to employment) – refers to the length of the recruitment process, starting with opening the job position up to hiring the candidate
- **Lower costs** – recruiting is done in a more efficient and faster manner, usually resulting reduction of costs

Research shows that in e-recruitment funnels, 24% are active candidates, while a good benchmark on the effectiveness of the funnels if the conversion rate (or offer accepted) is over 1.6% (JobVite, 2022). The conversion rate can be defined as the number of employed candidates versus the number of applications received. Lower conversion rates can have significant implications on the effectiveness of the recruiting process. The research of this paper is focused on these four core areas and how different approaches to step 1 (sourcing/attracting candidates) can improve the e-recruitment funnel, however it can also have a negative correlation on the recruitment process as a whole (longer time to employment, time and cost implication etc.). The research is performed based on quantitative and qualitative analysis on primary data collected from case studies in the Republic of North Macedonia.

4. RESEARCH AND DISCUSSION

Primary research was done on the territory of North Macedonia in the period of 10.12.2021 through 10.03.2022. A case study method was utilized, in which 4 companies opted to participate, where data was collected under certain conditions to ensure the validity of the research. The companies were either small or medium in size, with the underlying industries being retail, construction, service and hospitality industry. By including companies from different industries, the results can be more heterogenous and have greater general implications, making them more suitable as a basis for drawing conclusions and recommendations for e-recruitment funnels as a whole. During the research period, a total of 15 open jobs positions were analyzed as part of the study.

The conditions for data collection and processing in the research had 5 different checkpoints:

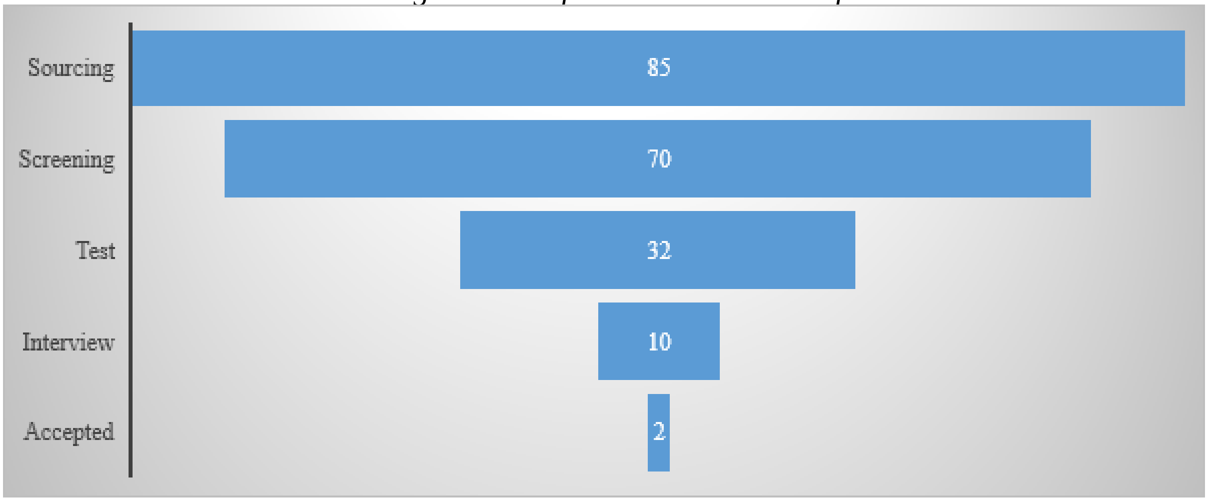
- Data was collected only for job placements that were opened and finalized in the research period. Incomplete placements were not taken into account
- Only entry-level positions were analyzed for open job positions. Other positions were not taken into account due to varying factors and limited potential candidate pool affecting the research
- Data was compared between platforms for a single open job position, to minimize variables taking place
- Data was combined between job positions with cut-off point to ensure budget controls

- Each position taken into account implemented all three e-recruitment sales funnels equally

Three different e-recruitment funnels were analyzed:

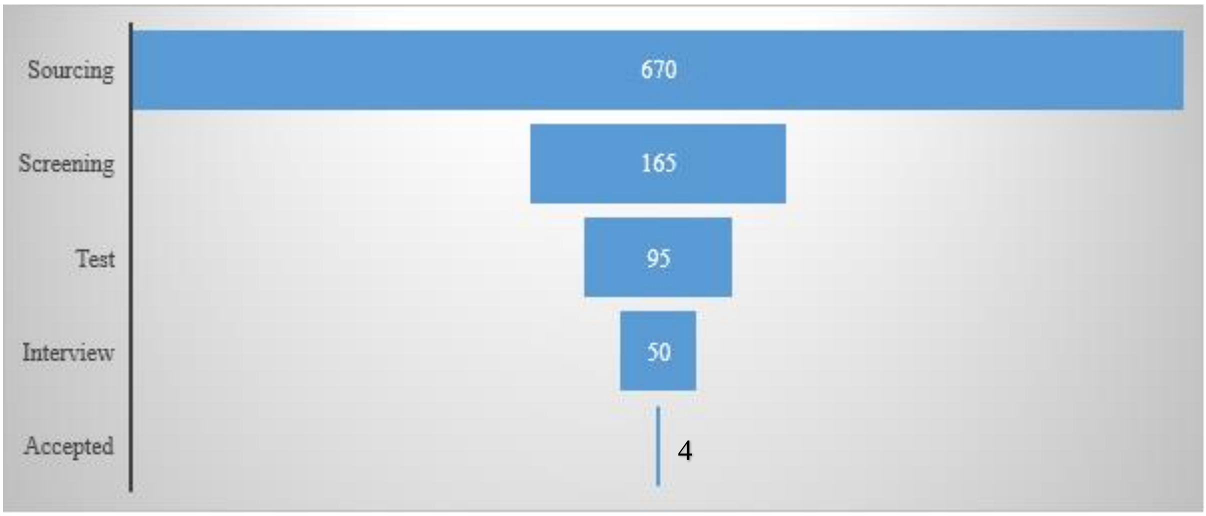
- **Corporate site funnel** – utilizing social media for promotion of open position, leading to the corporate website of the company. Application process can include either a form on-site or e-mail address to send resumes
- **Social media funnel** – utilizing social media for promotion of open position, as well as converting interested candidates directly. Available channels included LinkedIn and Facebook/Instagram as a unified platform. However, this method provided limited results, as the "Facebook Jobs" feature was shutdown completely for Europe in February, 2022[2].
- **Social media combined approach** – utilizing social media for promotion of open positions, while conversion happens through an external form, such as Google Forms or similar tools.

Figure 2. Corporate e-recruitment funnel



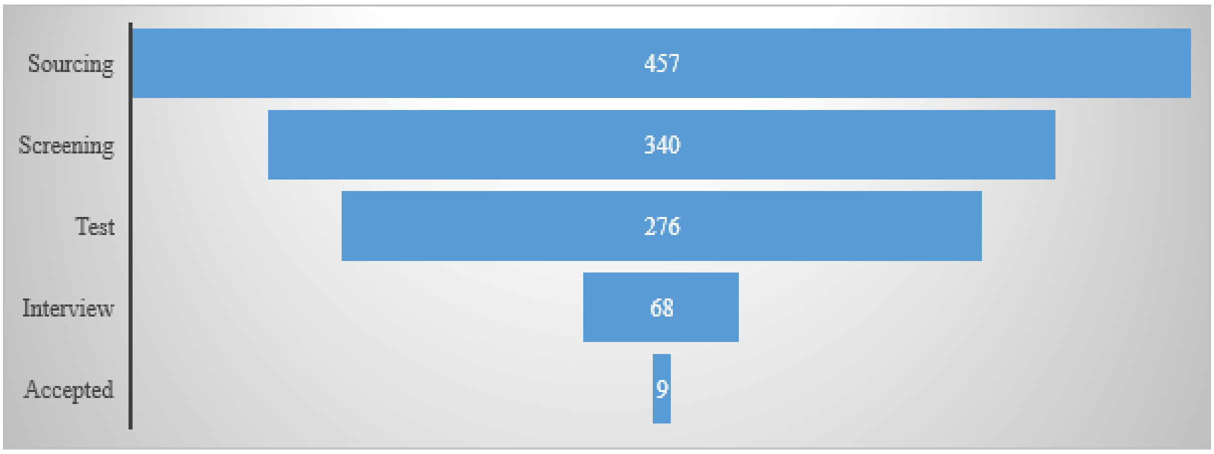
Source: Own research

Figure 3. Social media sales funnel



[2] https://www.facebook.com/business/help/982945655901961

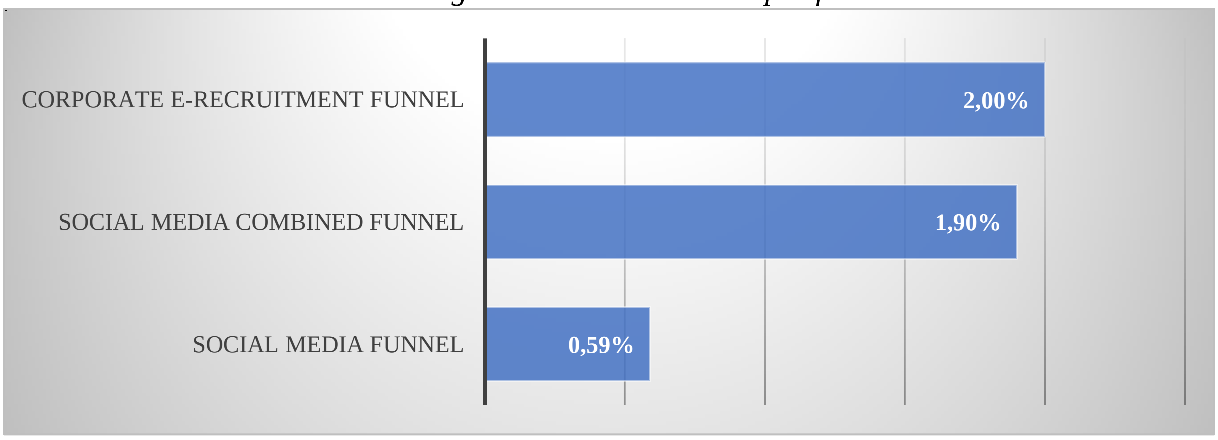
Figure 4. Social media combined funnel



Source: Own research

Figures 2, 3 and 4 illustrate the effectiveness of the three e-recruitment funnels utilized by companies. Comparing data, it can be seen that the number of generated applications is highest through direct social media funnels (670 applications), followed by combined funnels (457 applications) and corporate funnels (85 applications). This number is generally analyzed in both business and academic research as a sole statistic, which implicates that direct social media funnels are the most successful set-up for e-recruitment. However, following the funnel, we can clearly see a very steep drop-off in the second step (selection process/screening), combined funnels have the highest number of applicants proceeding through the funnel (340 applicants), followed by direct social media funnels (165 applicants) and corporate funnels (70 applicants). This constitutes a very steep drop-off rate in direct social media funnels of 65% of applicants, which is significantly higher than combined funnels (25%) and corporate funnels (17%). E-recruitment channels are often evaluated on the first step, which is attracting candidates for open job positions. However, this might not present the complete picture, as it can clearly be seen through the recruiting funnels that more candidates would not correlate into higher employment opportunities, as the percentage of employed candidates has a very steep drop-off during the selection process. It's paramount to view the whole recruiting funnel to assess the effectiveness of recruiting channels, as in certain cases greater candidate pool (with either qualified or non-qualified candidates) can extend the recruiting process, increase costs and cause additional staffing issues.

Figure 5. Conversion rate per funnel



Source: Own research

Figure 5 illustrates the overall effectiveness of e-recruitment funnels. Corporate e-recruitment funnels are the most effective, with 2% hiring rate from the overall pool of applicants, followed by social media combined funnels (1.9%) and social media funnels (0.59%). However, it must be taken into account that a much higher overall number of candidates were higher through combined funnels (9 filled positions) than social media funnels (4 filled positions) and corporate funnels (2 positions). Combining statistics and raw data enables a clearer view of the effectiveness of each e-recruitment channels, as the percentages of candidates employed through these channels often work with a different sizes of candidate pools.

5. CONSLUSIONS

Based on the research data, conclusions can be made regarding the concerned aspects of e-recruitment funnels, summarized in Table 1.

Table 1. Performance of e-recruitment funnels

Aspect	Best performer	Worst performer
Attracting candidates	Social media funnel – generated the most candidates in the given timeframe	Corporate websites – generated the least candidates in the given timeframe
Higher quality candidates	Corporate websites – lowest drop-off rate from step 1 (sourcing) to step 2 (selection) in candidates with 17%	Social media funnels – highest drop-off rate from step 1 (sourcing) to step 2 (selection) in candidates with 65%
Lower TTE	Corporate websites – the lower number of candidates expedites the following steps	Social media funnels – the selection process is elongated due to high number of candidates with limited information on qualifications
Lower costs	Combined funnels – generated the most filled position in the given timeframe	Corporate websites – generated the least amount of candidates and filled positions in the given timeframe

Source: Own research

Table 1 demonstrates that corporate web-sites are the best performers in two aspects (higher quality candidates and lower TTE), which is expected since the pool of candidates was the smallest from the three funnels. The smaller pool of candidates points to a more complex funnel, which would only be completed by the most interested (and possibly qualified) candidates, leading to an easier e-recruitment process overall. Social media funnels are the best performers in attracting candidates, with the overall largest pool of applicants. However, this leads to difficulties in the sourcing process, as the application is very easy and basic, leading to unqualified candidates and a very large drop-off rate in step 2 (sourcing). Combined funnels are the best performers for lowest costs, leading to the highest number of filled positions with the same budget and timeframe. From a company perspective, funnels should be optimized to lead to the ultimate goal, which is fulfillment of the open position in a fast and optimized manner. Comparing e-recruitment conversion rates, social media only funnels fail to achieve the minimal conversion rate of 1.6% to be considered effective (0.59%), compared to combine funnels who are at 1.9%. This indicates that social media only funnels can results in an unoptimized e-recruitment funnel which can bring risks of higher resource spending in terms of cost, staff and time to employment.

Results from the paper indicate several implications for companies:

- Increasing the pool of candidates through e-recruitment doesn't necessarily translate into a more successful e-recruiting process. It can be seen that a larger pool of candidates can cause further complication in the following steps of the recruiting process, especially in the selection and interview phases
- Social media as an e-recruitment channel increases reach to passive candidates, however they don't necessarily appear as qualified candidates compared to active ones – 65% drop off rate between the first and second phases in social-media only funnels
- Combining channels results in the most optimized e-recruitment funnel. Although corporate funnels can bring a higher conversion rate, combined funnels achieve the minimal conversion rate ratio and also result in more employees filling the open job positions
- Consider the number of positions that need to be filled. Depending on the number of open positions, companies can be better equipped to choose between corporate or combined funnels, as corporate funnels are better suited for a single position, while combine funnels are more effective in filling multiple positions

Existing research and literature focuses mostly on separating different channels for attracting candidate. The paper demonstrates that it is important to view e-recruitment as a funnel, since it can provide clearer view on the effectiveness and efficiency of each channel. The paper shows relevant new data correlated to different e-recruitment funnels utilizing social media, which can serve as a basis for future research in the area. Additionally, a novel approach is creating funnels from combined channels and providing raw data in this context, which can have significant implications of a new view of the e-recruitment problem. The data was limited with changing e-recruitment funnels with the disruption of the Facebook job market in February 2022, which resulted in a shorter case study period as to level out results. The research can be expanded in multiple countries to get a better understanding on e-recruitment trends, as well as incorporate results against more traditional recruiting channels which are still utilized by companies.

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