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DEAN'S ADDRESS

Time has always been an indicator whether values we create and efforts we make are of an eternal or temporary nature. In that sense, year 2020 is a year in which 70ieth time in a row it is confirmed that the Faculty of Economics-Skopje at the Ss. Cyril and Methodius University in Skopje with its sustainable decisions, visionary challenges and its continuous hard work represents a genuine creator of true values. These are values that not only shape the environment we work in but our society as well. Each and every entity that had the opportunity to be our close collaborate can witness our great motif to create more and move our own boundaries further, at the same time reflecting back to the past since the past is what makes the present sensible and the future possible. The generations before us left us legacy that we are obliged to preserve and convey to the generations after us. It is this way and in a time continuum of seven decades that we have been performing and proudly facing all the challenges of the new reality.

In that direction and on the occasion of our Jubilee we organized a new International Conference under the title "Economic and Business Trends Shaping the Future" that we intend to make it a traditional event that shall endure over the years and treat actual topics and issues that tackle the ongoing trends and phenomena shaping the society. With regard to this, when we look ahead of us it would not be immodest for us to joyfully say that the Faculty of Economics-Skopje has been developing itself into a recognizable, prominent and respected higher-education institution which is part of European and global academic movements and trends. Namely, on the grounds of the lessons from the past we are aware that only by acting now and here we create opportunities for new future in which the best is yet to come. We keep up working on our personal and institutional development, upgrading and updating ourselves in continuity, at the same time complying with the universal principles of education which mean adapting to technological novelties and changes and remaining focused on the life-long learning and education.

As a conclusion, time as universal value and measure shall continue to witness not only in this 70th jubilee but in the future as well that all the efforts made in the past, each and every engagement and action taken with responsible approach and vision are a driving force and an indicator that our deeds in the past have their echo in the future through our current actions. The Faculty of Economics-Skopje with its renowned staff and its alumni continues to be the creator, the changer and the visionary in the field of its expertise which is education, scientific thought and society. It is only this way that we could prove the fact that we are an "evergreen" brand with genuine value.

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May it last forever.

Professor Predrag Trpeski, PhD
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GOVERNMENT INDEBTEDNESS AND ECONOMIC GROWTH IN THE REPUBLIC OF NORTH MACEDONIA

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ABSTRACT
Government consumption plays an important role for stability of the national economy, especially in periods of economic crisis. However, rapidly growing public debt is a concerning issue nowadays, since it might jeopardize economic growth perspectives. Economic theory suggests that public debt has non-linear impact on economic growth in a form of inverted U-shape. In other words, it is believed that after a certain threshold, public debt will have negative impact on economic growth. Given that such threshold varies significantly across countries, the aim of this paper is to calculate the turning point of the public debt impact in the Republic of North Macedonia. For this purpose, we use non-linear multiple regression model for real GDP growth rate as dependent variable, general government public debt-to-GDP ratio (in nominal and squared terms) as key independent variable, as well as several other controlling variables. Since theory also suggests reverse causality between economic growth and public debt, we use three different estimation techniques (Ordinary Least Squares, Two-Stages Least Squares, and Generalized Method of Moments) to deal with potential endogeneity, as well as to cross-validate the results.
Our results show that general government debt in the Republic of North Macedonia positively affects economic growth until it reaches around 30% of GDP, whereas further indebtedness after that turning point will most likely have negative impact. Given that current debt level is slightly above 40% (10 percentage points higher than the turning point), whereby due to the COVID-19 crisis it is expected to grow even more in the upcoming years, the need of urgent fiscal consolidation inevitably arises. In this regards, deeper and more comprehensive analysis is needed in order to identify adequate channels for its efficient and effective implementation.

Keywords: Public Debt, Economic Growth, Threshold.

JEL classification:C20, E60, H63

1. INTRODUCTION

In 2007, a financial crisis emerged from the U.S. financial system, namely from the banking sector with the bankruptcy of Lehman Brothers. As a result, the fiscal imbalances of several countries grew in such a way that caused a sovereign debt crisis, beginning in Greece and then affecting all Euro-area countries, especially the peripheral countries such as Portugal, Italy, Ireland and Spain (Alfonso and Alves, 2014). The recent global financial crisis triggered a series of orthodox, unconventional monetary and fiscal policies that led to a sharp increase in the sovereign debt of advanced countries. The massive debt build-up reignited the debate about fiscal sustainability and the impact of the accumulation of government liabilities on financial markets and on real economic performance (Calderon and Fuentes, 2013).

Government consumption plays an important role for stability of the national economy, especially in periods of economic crisis. However, rapidly growing public debt is a concerning issue nowadays, since it might jeopardize economic growth perspectives. Economic theory suggests that public debt has non-linear impact on economic growth in a form of inverted U-shape. In other words, it is believed that after a certain threshold, public debt will have negative impact on economic growth.

In the past few decades, North Macedonia records moderate pace of economic growth, whereby several sharp downturns are evident: the first one in 2001, due to the war conflict in that time; the second and the third in 2009 and 2012 respectively, as result of the global economic crisis and its aftershock, the sovereign debt crisis; and the latest in 2017, due to the political instability in the country. In order to deal with all these threats and put the economy on the right track Government needed to react accordingly, often through its fiscal policy. As can be seen from Figure 1, all of those growth threatening events in the past have caused upwards pressure to the general government debtinlong-run, leading to its convergence around 40% of GDP in the recent years.

Figure 1: Public debt and economic growth in North Macedonia
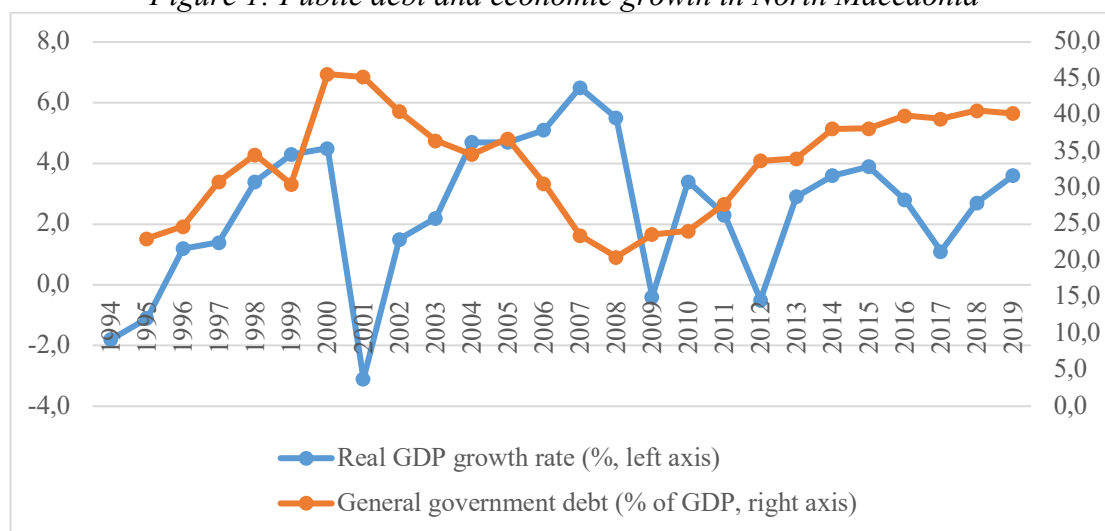
(Source: Authors' illustration)

Unlike the crisis in 2001, which is followed by a debt reduction period, the global economic crisis in 2008 has caused permanent and continuous increase ofgeneral government debt, even in years of economic prosperity. At the same time, real GDP growth rate has barely reached highest 3.9% in 2009. Therefore, we ask the question, is there a possibility thatpublic debt might also be a factor that endangers economic growth in North Macedonia?

European regulation recognizes public debt level of 60% of GDP as acceptable for its member states, which also applies to North Macedonia as candidate country. However, since

emerging markets cannot sustain as high debt levels as the advanced economies (Reinhart *et al*., 2003),North Macedonia cannot in fact rely on this threshold(Gavranlieva Andonova and Nikolov, 2019), at least from the viewpoint of its economic growth perspectives.

Under a baseline scenario, IMF (2020) expects general government debt to continue its upward trajectory, reaching 43% of GDP at the end of 2024. However, macroeconomic and fiscal shocks can significantly increase public debt relative to the baseline. Namely, as a result of the macroeconomic impact of COVID-19 crisis, EC (2020) forecasts increase of general government gross debt by 7 p.p. in 2020, reaching 47.2% of GDP.

Given the above, this paper investigates the impact of government indebtedness on economic growth in North Macedonia, whereby non-linear (quadratic) relationship is expected. In particular, we aim to estimate the threshold level (turning point) above which general government debt adversely affect economic growth.

2. LITERATURE REVIEW

The relationship between public debt expansion and economic growth has attracted interest in recent years, spurred by a sharp increase in government indebtedness in some advanced economies following the global financial crisis. The economic literature examines the impact of public debt on GDP growth and concludes that in the long-run public debt has a negative impact on economic growth. This idea is supported by the results of many empirical studies that have proven the above relationship in advanced and emerging economies.

Economists tend to agree that in the short run, an increase in public debt arising from fiscal expansion stimulates aggregate demand, which should help the economy grow. The longer-term economic impact of public debt accumulation, in contrast, is subject to a more expansive debate. Some argue there is a negative long-term relationship between debt and economic growth, others doubt there is a long-term association between the two for low or moderate levels of public debt. Still others disregard any long-term association.

Substantial attention has been paid to the examination of economic growth—public debt nexus. In theory we can find arguments for positive, negative or neutral effect of government borrowing on economy. From Keynesian point of view, expansionary fiscal policy leads to higher debt level and simultaneously stimulates GDP growth, especially through the mechanism of expenditure multiplier. The neo-classical theory asserts harmful impact of public debt, known as crowding-out effect (Butkus and Seputiene, 2018).

There is currently much cautionary talk in policymaking circles regarding the dangers to the economy's future health posed by crossing a specific threshold in the ratio between government debt and gross domestic product. These fears have been fueled by a recent report "Growth in a time of debt" by researchers Carmen Reinhart and Kenneth Rogoff (2010). They argue that: (1) there is no association between debt and growth at low or moderate levels of debt, but that there exists a well-defined threshold (90%, in their estimation) of government debt relative to gross domestic product (GDP) above which economic growth is hindered; (2) emerging markets face lower thresholds for external debt (public and private)—which is usually denominated in a foreign currency, and (3) there is no apparent contemporaneous link between inflation and public debt levels for the advanced countries as a group.

Most empirical studies confirm the adverse impact of government debt on growth. The growing number of recent works investigates the optimal level of government debt and supports the idea of non-linear, an inverted U-shaped debt-growth relationship. Many authors have analyzed the mutual link between economic growth and public debt and the results, and the methodologies are different in different countries and periods. A growing number of recent works support the idea of debt threshold level (turning point), above which debt starts

reducing economic growth. The point is that there is no single turning point that could be applied to all countries and a proper investigation is needed on factors, which shape the debt impact on growth (Butkus and Seputiene, 2018).

Alfonso and Alves (2014) analyzed the effect of public debt on economic growth for annual and 5-year average growth rates, as well as the existence of non-linearity effects of debt on growth for 14 European countries from 1970 until 2012. Their results show a negative impact of -0.01% for each 1% increment of public debt, and in addition they found average debt ratio thresholds of around 75%. Gómez-Puig and Sosvilla-Rivero (2018) analyze the effects of all sources of nonfinancial debt (household, corporate as well as government) accumulation on economic growth in ten euro-area countries during the 1980–2015 period, using of three models (a baseline, an asymmetric and a threshold model) based on the empirical growth literature augmented by debt. Their findings suggest that while public debt thresholds are higher in peripheral than in central countries, private debt thresholds are higher in core euro-area countries.

Checcherita and Rother (2010) investigated the average impact of government debt on per-capita GDP growth in twelve euro area countries over a period of about 40 years starting in 1970. It finds a non-linear impact of debt on growth with a turning point—beyond which the government debt-to-GDP ratio has a deleterious impact on long-term growth—at about 90-100% of GDP. At the same time, there is evidence that the annual change of the public debt ratio and the budget deficit-to-GDP ratio are negatively and linearly associated with per-capita GDP growth.

Mencinger*et al.* (2014) examine and evaluate the direct effect of higher indebtedness on economic growth for countries in the EU which are in the epicenter of the current sovereign debt crisis. They employ a panel estimation on a generalized economic growth model augmented with a debt variable, while also considering some methodological issues like the problems of heterogeneity and endogeneity. The calculated debt-to-GDP turning point, where the positive effect of accumulated public debt inverts into a negative effect, is roughly between 80% and 94% for the 'old' member states. Yet for the 'new' member states the debt-to-GDP turning point is lower, namely between 53% and 54%. In their other article, Mencinger*et al.* (2015) confirm the general theoretical assumption that at low levels of public debt the impact on growth is positive, whereas beyond a certain debt turning point a negative effect on growth prevails. They calculated that the debt-to-GDP turning point is roughly between 90 % and 94 % for developed economies. Yet, for emerging countries, the debt-to-GDP turning point is lower, namely between 44 % and 45 %.

Bilan and Ihnatov (2015) analyzed the relationship between public debt and economic growth for a panel of 33 European countries (28 European Union Member States and 5 candidate countries to European accession) over the period 1990-2011. The results confirm the existence of a „U inverted" relationship, with a maximum debt threshold of about 94% of GDP. After this threshold public debt is expected to negatively affect the economic growth rate, due to higher interest rates, fear of public debt unsustainability and severe budgetary consolidation measures. However, this threshold is found to be more than twice lower in developing European countries compared to the developed ones, as the former enjoy lower credibility, higher vulnerability to shocks and depend more on external capital transfers.

On the other hand, Gashi (2020) examines the impact of public debt in six countries from South-Eastern Europe over the period 2008 to 2017, by applying three different panel methods: the fixed effects model, the GMM method and the system-GMM method. The results confirm the existence of a „U inverted" relationship, with a maximum debt threshold of about 58% of GDP. After this threshold, public debt is expected to negatively affect the economic growth rate, due to fear of public debt unsustainability, higher interest rates and severe budgetary consolidation measures.

Most studies on the relationship between public debt and economic growth implicitly assume homogeneous debt effects across their samples. However, starting from a different perspective, Ahlborn and Schweickert (2016) challenge this view and state that there likely is a great deal of cross-country heterogeneity in that relationship. They argue that different degrees of fiscal uncertainty at comparable levels of public debt between three clusters of economic systems (liberal, continental and nordic) constitute a major source of heterogeneity in the debt-growth relationship. Continental countries face more growth reducing public debt effects than especially Liberal countries, while for Nordic countries a non-linear relationship is discovered, with negative debt effects kicking in at public debt values of around 60% of GDP.

3. DATA AND METHODOLOGY

For the purposes of our research we use annual data for the period 1995 – 2018(24 observations in total). We use several data sources to compile and cross-check our data set, in order to ensure consistency of the data. Primarily we use data from the National Bank of the Republic of North Macedonia and the Ministry of Finance, but we also make use of the European Commission's AMECO database, World Bank's World development indicators database, as well as IMF's World Economic Outlook and Historical Public Debt databases.

Following commonly employed methodological procedure (Checcherita and Rother (2010); Mencinger*et al*. (2014); Bilan and Ihnatov (2015), etc.), we use multiple regressionmodel expressing economic growth as a function of the public debt (in nominal and squared terms), as well as a vector of controlling variables,in order to account for other factors that might have significant impact.[1] Mathematically, our model can be expressed by the following equation:

$$GDP_g = \beta_0 + \beta_1 DEBT + \beta_2 DEBT^2 + \beta_3 X + u \qquad \text{Eq. (1)}$$

Where:
- GDPg – Real GDP growth rate (%)
- DEBT – Central government debt (% of GDP)
- X – Vector of controlling variables
- u – Error term

Based on the literature review, non-linear relationship in a form of inverted U-shape exists if both β_1 and β_2 coefficients are statistically significant, whereby $\beta_1>0$ and $\beta_2<0$. This means that up to some point public debt will have positive impact on the economic growth, whereas after that point the impact is negative. In this regard, the turning point (TP), as extremum value,is estimated using the following equation proposed by Lind and Mehlum (2007):

$$TP = -\frac{\hat{\beta}_1}{2\hat{\beta}_2} \qquad \text{Eq. (2)}$$

However, since TP is calculated as a ratio of the estimated parameters, where the denominator$\hat{\beta}_2$can take values close to zero, it is likely that the moments of TP are undefined, as in the case of the Cauchy distribution (Hirschberg and Lye, 2005). In such case, theoretical

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[1] The full list of variables used in the analysis is provided at the end of the paper as Annex 1.

literature provides several alternative methods for calculation of the confidence intervals for the extremum value. In particular, we employ two most widely used methods, the Delta method and the Fieller method, as suggested in Hirschberg and Lye (2005):

Delta method

$$CI = TP \mp t_{\alpha/2} \sqrt{\frac{\hat{\sigma}_1^2 \hat{\beta}_2^2 - 2\hat{\beta}_1\hat{\beta}_2\hat{\sigma}_{12} + \hat{\beta}_1^2\hat{\sigma}_2^2}{4\hat{\beta}_2^4}}$$

Eq. (3)

Fieller method

$$CI = \frac{t_{\alpha/2}^2 \hat{\sigma}_{12} - \hat{\beta}_1\hat{\beta}_2 \mp \sqrt{(\hat{\beta}_1\hat{\beta}_2 - t_{\alpha/2}^2\hat{\sigma}_{12})^2 - \hat{\sigma}_1^2\hat{\sigma}_2^2(\hat{t}_2^2 - t_{\alpha/2}^2)(\hat{t}_1^2 - t_{\alpha/2}^2)}}{2\hat{\sigma}_2^2(\hat{t}_2^2 - t_{\alpha/2}^2)}$$

Eq. (4)

Where:

- $t_{\alpha/2}$ is critical value for *n-k* degrees of freedom;
- $\hat{\sigma}_1^2$ and $\hat{\sigma}_2^2$ are variances of $\hat{\beta}_1$ and $\hat{\beta}_2$ respectively;
- $\hat{\sigma}_{12}$ is covariance of $\hat{\beta}_1$ and $\hat{\beta}_2$;
- $\hat{t}_1^2$ and $\hat{t}_2^2$ are t – statistics of $\hat{\beta}_1$ and $\hat{\beta}_2$ respectively.

As for the reliability of our estimates, in order to prevent spurious results caused by using non-stationary variables in the regression, we perform unit root tests to determine theorder of integration of the variables.Given that all variables are either stationary in levels, or integrated of 1st order(results in Annex 1), we use first differences of the non-stationary variables in the models (except for the public debt).However, since differenced variables might cause serial correlation of the residuals (Gujarati and Porter, 2009, p.418), we also include autoregressive term in the model.[2]

Additionally, we also check the correlation coefficients in order to eliminate highly correlated independent variables and therefore avoid multicollinearity, as well as variables unrelated toeconomic growth. In this regard, unlike many empirical papers, we do not include real GDP per capita as a proxy for economic development of the country in our models, since it is integrated of order 1, and its first difference is almost perfectly correlated with the dependent variable.

To ensure robustness of the estimated coefficients, we start by estimation of unrestricted model (as specified in equation 1), including all relevant controlling variables. Afterwards, we gradually exclude statistically insignificant controlling variables, one-by-one, while carefully looking at the stability of $\hat{\beta}_1$ and$\hat{\beta}_2$.Also, in order to capture unexplained factors (shocks) in 1997 and 2012, which become visible after estimation of the unrestricted model, we augment the model with a time specific dummy variable that has value 1 for these particular years and 0 otherwise.

In addition, since the economic theory also suggestspossible reverse causality between economic growth and public debt[3], we employ several different estimation techniques to validate the results: Ordinary Least Squares (OLS); Two-Stages Least Squares (TSLS); and

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[2] This is only applicable for the models estimated with OLS method.
[3] The logic is that higher rates of economic growth might lead to increased debt repayment.

Generalized Method of Moments (GMM). As instruments in TSLS and GMM models we use initially specified controlling variables, as well as GDPg and DEBT variableswith one lag. Furthermore, in order to prevent any consequences of possible heteroskedasticity in the models, we use robust standard errors in our TSLS and GMM estimates. Baum *et al.* (2002) suggest that if heteroskedasticity is present, GMM is preferable since estimators would have better efficiency than a simple IV estimators. However, GMM can have poor small sample properties. Therefore, to ensure reliability of our findings, we calculate TPs for all three estimated models.

Finally, all estimated models are subjected to diagnostic tests.

3.1. Limitations

Regardless of the strict methodology we follow, there are several limiting factors that we need to beware of. First, it's the data quality and consistency. Namely, in spite of the general guidelines on wider scoping of the public debt (Dippelsman*et al.*, 2012), there are numerous examples of methodological inconsistencies for its calculation across countries, as well as misinterpretationsof the term public debt. Consequently, there are many empirical papers with incomparable findings, due to the different data they rely on, mostly referring to different levels of the government. In order to expand our data sample to maximum extent, we use data on general government debt[4], instead of public debt[5], since it has longer time series available.

Another limiting factor might be the methodological approach foreconometric analysis. For example, some authors use different econometric techniques (primarily based on dummy variables) to estimate the threshold level. However, we believe that this approachis not always suitable, especially for small samples, and/or if there is an indication that the threshold has not yet been reached (or it is too close to the data range).

Also, unlike many studies that address this issue using panel data for a group of countries, we aim to make use of the country-specific conditions for a single country, North Macedonia in particular. We believe that heterogeneity between countries, even from same geographical region, might be a source for significant disparities, imposing need for generalization.

Finally, from time perspective, our analysis only focuses on the short-runimplications of the public debt, leavinglong-run macroeconomic impact for further research.

4. RESULTS OF THE ECONOMETRIC ANALYSIS

Following the above methodology, our results show that general government debt in North Macedonia has non-linear impact on economic growth in a form of inverted U-shape. Model parameters $\hat{\beta}_1$ and $\hat{\beta}_2$,estimated as specified in equation 1, are both statistically significant and have proper signs ($\hat{\beta}_1 > 0$ and $\hat{\beta}_2 < 0$), which is sufficient evidence in favor of this claim. Based on our estimated models, we calculatea turning point of around 30% of GDP, above which further increase of the general government debt would negatively affect economic growth. Furthermore, we calculate 95% confidence intervals as stated in equations 3 and 4, which in all cases lie within the data range for the general government public debt (between 20.5 and 45.6).

Table 1 summarizersfinal estimated models for each estimation method used, corresponding TPs and confidence intervals. In addition, confidence intervals for both methods of calculation are illustrated in Figure 1.[6]

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[4] Covering central government, extra budgetary funds and municipalities.
[5] General government debt plus public enterprises' guaranteed debt and non-guaranteed debt.
[6] Closer look in the models is provided in Annex 2. However, in-between model estimates are not presented.

Table 1: Estimated coefficients (final estimated models)

Variable	OLS	TSLS	GMM
C	-7.52 ***	-9.87 *	-9.52 *
DEBT	0.798214 *	0.998437 *	0.95304 *
DEBT^2	-0.013256 *	-0.016239 *	-0.015736 *
BB	0.449918 *	0.497797 *	0.291444 **
M1	0.114319 *	0.094613 *	0.094654 *
D(LIFE)	-7.430684 **	-10.90331 *	-10.13387 *
D(EXCH)		0.077922 **	0.084343 *
D(NETEX)		-0.258473 *	-0.262778 *
D(RIR)			-0.143129 **
AR(1)	-0.68 *		
DUM	-2.6 **	-3.96 *	-3.94 *
Turning Point	30.1	30.7	30.3
95% CI (Fieller method)	26.9 – 31.7	29 – 32.2	28.3 – 31.8
95% CI (Delta method)	28.1 – 32.1	29.3 – 32.2	28.6 – 31.9
Note: *, ** and *** represent statistical significance at 0.01, 0.05 and 0.1 respectively			

(Source: Authors' calculation)

Figure 1: 95% confidence intervals for the calculated turning point
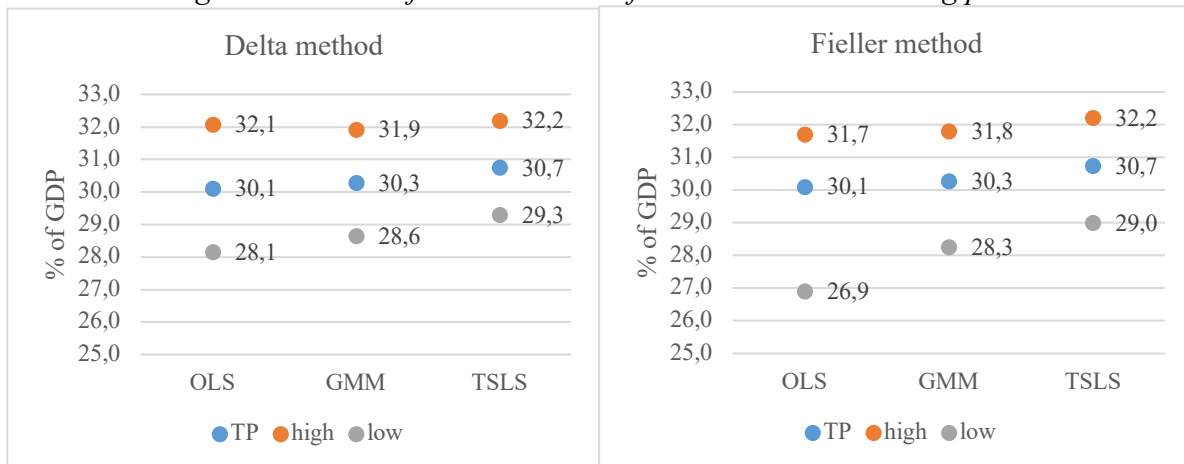
(Source: Authors' calculation)

Our findings are stable and robust to changes in model specification. Based on 14 estimates of the econometric model in total[7] using different specifications for the controlling variables, calculated TPs vary in relatively narrow range (between 29.4 and 30.8). The average TP in this regard is 30 and its standard deviation is 0.45, which gives coefficient of variation equal to 1.5.

Conducted diagnostic tests show that all of theassumptions regarding the reliability of the models are met, although there might be some possible misspecifications in the TSLS final

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[7] 6 using OLS, 4 using TSLS and 4 using GMM

model.[8] In other words, all estimated models are statistically significant and well-fitted, with adjusted R-squared coefficients of around 0.8, meaning that models explain80% of the variations in the dependent variable. Residuals are normally distributed, homoskedastic and no serially correlated. Regarding TSLS and GMM models, J-statistics is low ($p>\alpha$), which confirms the joint validity of the over-identifying restrictions, meaning that instruments are consistent (Roodman, 2009). However, the endogeneity tests fail to reject the null hypothesis that DEBT and DEBT^2 variables areexogenous (low difference in J statistics), thus suggesting that maybe OLS estimation would be better choice. In any case, the results we obtain from all estimated models are unanimous, although OLS model suggests slightly wider confidence intervals for the turning point (Figure 1).

5. CONCLUSION

The question, whether public debt is a means of or a burden on economic growth, is widely discussed in the scientific literature. The theory provides arguments how government borrowing and increasing debt can stimulate, impede or make no influence on economic development. There is quite a lot of empirical research devoted to the analysis of the impact the public debt makes on economic growth, despite this, the results are ambiguous. The growing number of recent research in this field confirms non-linear inverted U-shaped public debt-growth nexus, however estimated public debt threshold level (or turning point) above which relationship turns from positive to negative, varies sharply across studies (Butkus and Seputiene, 2018).

Following this idea, our objective was to examine if such relationship exists in the case of North Macedonia, and if yes, to calculate the corresponding turning point. For this purpose, we use multiple regression model for the period 1995 – 2018, having GDP growth rate as dependent variable, and general government debt-to-GDP ratio (in nominal terms and squared) as independent variables (plus some controlling variables). To ensure robustness of the results, we follow strict predefined methodological procedure, as well as three different model estimation methods.

Our results undoubtedly go in favor of the hypothesis that public debt affects economic growth non-linearly in a form ofinverted U-shape, whereby we calculate the turning point for the case of North Macedoniaat around 30% of GDP.

Given that current debt level is slightly above 40% (10 percentage points higher than the turning point), whereby due to the COVID-19 crisis it is expected to grow even more in the upcoming years, the need of urgent fiscal consolidation inevitably arises. In this regard, IMF (2020)explicitly notes that space for fiscal policy as main countercyclical stabilization tool in North Macedonia is limited. Hence, to help unlocking economy's growth potential and reduce vulnerability to shocks, sound macroeconomic management,along with stronger efforts to improve public debt management,arerecommended.

To conclude, even though general government debt level of 30% of GDP (as calculated) would significantly reduce the debt sustainabilitypressure in North Macedonia, while promoting growth at the same time, it should not be mistaken as optimal level of indebtedness. Namely, as IMF suggests, to ensure resilience to shocks(such as the ongoing COVID-19 crisis) without jeopardizing economic growth perspectives, we need sufficient fiscal buffer to mitigate their impact. Therefore, the optimal debt level for North Macedonia would be somewhere below this point, depending on the fiscal capacity of the country.

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[8] RESET test with one fitted term included rejects the null hypothesis that the model is well-specified. On the other hand, RESET test with two fitted terms included fail to reject the null hypothesis.

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ANNEX 1: List of variables

Variable	Indicator	Source	Factor	Integration
GDP_g	Real GDP growth rate (%)	NBRNM	Economic growth	I(0)
Debt	General government debt (% of GDP)	MoF/AMECO	Indebtedness	I(1)
BB	Budget balance (%)	NBRNM/Mof	Fiscal-budgetary policy	I(0)
UN	Unemployment rate (%)	NBRNM		I(1)
POP_g	Population growth (%)	WDI	Labor and human capital	I(1)
LIFE	Life expectancy at birth	WDI		I(1)
SCHOOL	School enrollment, secondary (%	WDI		I(1)
GFCF_g	Gross fixed capital formation growth	WDI	Capital acumulation	I(0)
INF	Inflation rate (period average)	NBRNM		I(0)
RIR	Real interest rates (%)	WDI	Monetary policy mix	I(1)
M1	Monetary base M1, annual change (%)	NBRNM		I(0)
TRADE	Trade (% of GDP)	WDI	Openness of the economy and external competitiveness	I(1)
NETEX	Net exports (% of GDP)	WDI		I(1)
EXCH	Exchange rate MKD/USD, average	NBRNM		I(1)

ANNEX 2: Overview of estimated models (unrestricted and final)

Variable	OLS_ur	OLS_final	TSLS_ur	TSLS_final	GMM_ur	GMM_final
C	-4.61	-7.52 ***	-8.31	-9.87 *	-7.56	-9.52 *
DEBT	0.606	0.798 *	0.859	0.998 *	0.820	0.953 *
DEBT^2	-0.010	-0.013 *	-0.014	-0.016 *	-0.014	-0.016 *
BB	0.437 **	0.450 *	0.372 ***	0.498 *	0.362 **	0.291 **
M1	0.140 *	0.114 *	0.112 **	0.095 *	0.10 *	0.095 *
D(LIFE)	-10.682 **	-7.431 **	-13.526 **	-10.903 *	-11.727 *	-10.134 *
D(EXCH)	-0.041		-0.013	0.078 **	0.010	0.084 *
D(NETEX)	0.008		-0.214	-0.258 *	-0.200	-0.263 *
D(RIR)	-0.067		-0.178		-0.199 ***	-0.143 **
D(TRADE)	-0.029		-0.030		-0.020	
AR(1)	-0.67 **	-0.68 *				
DUM		-2.61 **		-3.96 *		-3.94 *
Turning Point	29.6	30.1	30.8	30.7	30.3	30.3
R-squared	0.79	0.85	0.74	0.88	0.73	0.90
Adjusted R-squared	0.61	0.78	0.56	0.81	0.54	0.82
F-statistic	4.5 *	12.4 *	4.0 **	11.5 *		
RESET test (1)	0.49	0.25	0.23	3.15 ***		
RESET test (2)	1.12	0.16	0.74	1.74		
White test	8.96	6.80	10.50	6.65		
S.C. LM test (1)	0.29	0.34	0.74	1.13		
S.C. LM test (2)	3.64	0.40	2.81	1.28		
Durbin-Watson stat	1.93	1.85	2.25	2.31	2.07	2.01
Jarque-Bera stat	1.78	0.86	0.23	0.29	1.50	2.25
J-statistic			4.85	8.08	5.79	5.15
d(J-stat.)			0.54	0.29	0.44	0.32
Instrument rank			15	16	15	16
Note: *, ** and *** represent statistical significance at 0.01, 0.05 and 0.1 respectively						

(Source: Authors' compilation)

THE COST OF NEGATIVE INCOME TAX AS A FISCAL MEASURE TO TACKLE POVERTY IN NORTH MACEDONIA

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ABSTRACT:
This paper makes an effort to evaluate the cost of negative income tax as a fiscal measure aiming to tackle the persistent high poverty rate in Macedonia. Poverty, income inequality and unemployment are expected to rise all around the world due to the pandemic corona virus outbreak and the subsequent economic crisis. Governments around the world have already implemented measures similar to universal basic income with the purpose of increasing household consumption and stimulating aggregate demand but also to mitigate the devastating effects that the recent unfavorable economic developments have on the citizens living in poverty or are at the risk of poverty. However, shrinking fiscal spaces of small economies could be an obstacle to implement such policies. Compared to universal basic income, negative income tax is a less costly policy option that targets the population living in poverty instead of providing payments to everyone regardless of their income. The analysis based on the available data is indicating that implementing such policy would cost as much as 9.7 billion MKD per year, which is 4% of the planned state budget revenues for Y2020, 8% of the planned social transfers for Y2020 and 29% of the funds that the state has made available for tackling the COVID 19 crisis so far. In addition, the negative income tax could trigger various positive effects on the economy. Since poor people spend almost all of their income, it could be expected that implementing negative income tax would rise household consumption. According to the empirical analysis in this paper, household consumption is in highest correlation to GDP growth in Macedonia compared to the other explanatory variables (government consumption, investments, import and export).

Keywords: negative income tax, welfare, government expenditures, household consumption

JEL classification: H230, I3, H75, H31

1. INTRODUCTION

The already high number of people living in poverty in Macedonia is expected get even higher with the ongoing corona virus pandemic outbreak. This number could increase as a result of rising unemployment but also due to the rise in the income inequality and the number of the "working-poor" because those who remain in employment could receive lower wages caused by the significant economic contraction. This paper will make an effort to estimate the cost of the negative income tax policy as a potential government measure to tackle the persistent poverty, unemployment and income inequality in the country which is expected to be exacerbated by the pandemic and subsequent economic crisis.

Measures similar to the idea of universal basic income have already been implemented by several countries as a respond to the pandemic and economic crisis, but these policies are not always suitable for small economies with limited fiscal space because they tend to cost a significant amount of budget resources. A less costly solution that could potentially tackle the same problem of elevated poverty is the implementation of a negative income tax as a policy that is more targeted than universal basic income which provides everyone with the same amount of cash payments regardless whether they are rich or poor. The central idea of the negative income tax policy is to provide the poor with the amount they are missing in order to help them reach the poverty threshold level of income that is crucial for living a dignified life, improve standards of living, escape the traps of poverty and contribute to increasing the overall household consumption. Accordingly, this amount would be equal to the difference between the amount of "poverty threshold income" and the income the poor already earn or receive through social transfers or pensions.

Since negative income tax has never been implemented in any country and has been out of policy debates for a long time, it represents an unconventional and to many an unfamiliar policy option. In addition, speculations about the costs of such measure could easily and prematurely label it as expensive and financially unfeasible. However, policymakers should not forget about the costs of poverty, unemployment and income inequality as well. These costs are arising from to the negative effects that they have on the economy and these challenging times call for innovative and brave solutions. It should be taken into consideration that the true cost of the negative income tax would be the net difference between the positive benefits such measure could have on the overall economy through stimulating household consumption and the financial state budget burden the measure would trigger.

This analysis will make an effort to provide an estimation of the costs of this potential fiscal measure based on the available data. It will also try to measure the potential beneficial effects it could have on the economy by measuring how stimulating household consumption could impact the economic output in Macedonia using time series analysis. The second section of the analysis will provide a theoretical background of the negative income tax policy and enclose some relevant data leading us to the third section where the initial calculations of the costs of the negative income tax policy are presented. The fourth section of this paper presents the results of the empirical analysis on the relationship between the economic growth and the household consumption that is expected to increase in case a measure such as the negative income tax is implemented. The last fifth section is presenting the concluding remarks of this analysis.

2. THEORETICAL BACKGROUNG AND SOME STYLIZED DATA

The concept of negative income tax is rarely discussed in both academic circles and policy debates thus remaining relatively unfamiliar to many. However, it is a rather simple concept and an opposite one to the concept of positive income tax when citizens pay taxes to government. Accordingly, the policy of the negative income tax would mean that citizens receive income from the government in a way that is similar to social transfers.

Practically, implementing a negative income tax would mean that those citizens who earn or receive (through social transfers or pensions) an income that is lower than the poverty threshold income (usually defined as 60% of the median equalized income) are going to receive the missing amount to reach the poverty threshold, thus becoming citizens who are able to have an adequate standard of living (which is a basic human right) that is high enough to provide for a dignified life and are able to contribute to the economy through increasing household

consumption and hopefully escape the traps of poverty by using this income to live healthy, to stay in education and out of the gray economy.

High income inequality, poverty and increasing unemployment risks due to the fourth industrial revolution, make the existing social protection systems obsolete and ineffective. Nowadays the countries are facing yet another challenge – the economic crisis caused by the coronavirus pandemic outbreak. The latest global estimates by the ILO, indicate that 'more than four out of five people – 81 percent of the global workforce of 3.3 billion – are currently affected by full or partial workplace closures' (ILO, 2020). These changes in the labour market are expected to rise the levels of income inequality, poverty and unemployment even further and make these issues even more relevant today than they were before. In addition, the decline in aggregate demand is making the importance of the equitable income distribution more evident than ever. Stiglitz argues that 'those at the top of the distribution consume a smaller percentage of their income than those at the bottom causing weak aggregate demand unless the government undertakes offsetting actions' (Stiglitz, 2014). Accordingly, as a response to the economic crisis caused by the pandemic outbreak governments often provide direct payments to citizens in need. Such is the case with the USA, Spain, France, Germany and Denmark, to name a few – although to varying degrees in respect to the amount of the handouts and the policy designs.

The idea behind giving cash to people is the central idea to what is called a "universal basic income". Universal basic income is an unconditional and non-withdrawable income paid to every individual no matter how rich or poor that person is for the purpose of improving income inequality, neutralizing the negative effects of potential rising unemployment, providing safety nets to citizens, stimulating entrepreneurship, eradicating poverty, increasing economic growth through household consumption, etc. There have been calls during the coronavirus crisis for both an emergency basic income (an immediate basic income to protect individuals' incomes), for a recovery basic income (a basic income to be implemented with a view to preventing a recession once the virus outbreak begins to subside), and also for a permanent citizen's basic income schemes (Torry, 2020). The 2019 World Development Report focusing on the changing nature of work is suggesting that the social protection should be strengthened by expanding overall coverage that prioritizes the neediest people in society. A universal basic income is one of the possibilities to achieve this, but it is untested and fiscally prohibitive for emerging economies (World Bank, 2019).

Negative income tax as a policy is a lot less expensive compared to the universal basic income policy and more targeted at citizens in need. It does not provide cash to all citizens regardless of their income, but only to those who have incomes below the poverty threshold and just enough to reach the poverty threshold. Although the negative income tax as a policy is similar to the social protection policy it differs from it due to several crucial characteristics. Firstly, it is administered by the tax authorities instead of a range of social protection institutions lowering administration costs and increasing efficiency. Secondly, it does not impose any requirements on the citizens/receivers other than income related criteria - for example it is not obligatory to seek employment like it is the case with the guaranteed minimum income policy in Macedonia or use social services provided by government and vouchers for predetermined goods and services. Thirdly, it reaches a wider range of population making it more effective than conventional social protection policies while also reducing stigma among receivers.

The literature on negative income tax is extremely limited. To the author's best knowledge at the point of writing this paper it is practically non-existent for Macedonia and the wider geographic

region of the Balkans. It should be noted that negative income tax has never been implemented by any country.

The theoretical background for this policy is pioneered by one of the most influential economists of the twentieth century and a Nobel Prize laureate Milton Friedman. Although famous for his work related to technical questions in economic theory, Friedman has also produced some of the most influential philosophical work on the role of government in a free society. His work is usually labeled as part of the neo-liberal political and economic thought and as such it is often reflected in the agendas of conservative political parties (Reitan, 2003). Friedman made a significant contribution to philosophical debates on freedom, and the link between political and economic freedom. According to Friedman, economic freedom as non-interference best promotes equality, opportunity, non-domination, democratic liberty, effective freedom (Preiss, 2015). In the terms of negative income tax this would mean that it is better for government to give cash handouts directly to citizens in need and leave the spending to their personal preferences than to predetermine what they need through complicated and expensive government programs.

Friedman originally proposed the negative income tax in his 1962 book Capitalism and Freedom, in a brief chapter on the welfare system (Moffitt, 2003). Theoretically, he proposed giving people a percentage of the difference between their income and the poverty threshold. For an example, if the poverty threshold is set at $40,000, and the negative income tax percentage was 50 percent, someone who made $20,000 would receive $10,000 from the government. If they made $35,000, they would receive $2,500 from the government, meaning that people who work will always make more money than those who don't, which would ideally incentivize people to work (Linke, 2018).

The five advantages of negative income tax according to Friedman are: 1) it provides support to the poor solely on the basis of their income, and not on the basis of some other personal characteristic (age, sex, profession); 2) it provides cash which is the best form of support from the point of view of the recipient; 3) it provides a substitute to the multiple programs set up to affect income distribution; 4) it costs less than the existing system by saving administrative costs and by concentrating benefits more easily on the poor; 5) negative income tax does not distort market prices that minimum wages, tariffs, and farm supports do, which are often also argued on the basis of distributional considerations.

It should be noted that the negative income tax policy as proposed in this paper is supplemental to existing social policy programs and does not represent their substitute like it is proposed by Friedman. In addition, the calculation of the negative income tax amount as proposed in this paper is different from Friedman's. Aiming to provide all citizens living in poverty with the poverty threshold income, it is calculated as the difference between the poverty threshold income and the income that the poorest earn or receive in social transfers or pensions. For instance, if the poverty threshold is set at 97,000 MKD for a single person household, someone whose income is 72,000 MKD will receive an additional 25,000 MKD from the government, thus having a negative income tax rate of 25.77%. Someone whose income is 48,000 MKD will receive an additional 49,000 MKD from the government, thus having a negative income tax rate of 50.51%, etc. The calculation of the negative income tax as such is unique to this paper and to the author's best knowledge it has never been proposed in the existing literature so far. The issue of avoiding the problem of disincentivizing employment is not specifically addressed in this paper, having in mind that the disposable income of the individuals under this program would not go higher than

approximately 8,000 MKD per month (monthly poverty threshold) – an amount that is almost half the minimum wage in Macedonia.

As per the World Bank data, the economic inequality in Macedonia measured by the Gini coefficient has declined in the period 2010 to 2018 by 9 percentage points. Despite this decline in the Gini coefficient, approximately 450,000 people in Macedonia still live in poverty (State Statistical Office, 2018). Having in mind that the income inequality decline could be a result of both raising income at the bottom or decreasing income at the top, the underlying causes should be further investigated. Analyzing the average annual income per household of the bottom 20% of the income distribution as a percent of the total average annual income per household it is noticeable that their income has increased for only 2.19 percentage points compared to Y2010 (Velkovska, 2020). In the same time, there is a decrease in the average annual household income of the top 20% of the income distribution by 7.38 percentage points indicating that this change reflects directly in the decrease of the Gini coefficient (Velkovska, 2020). From 2010 to 2018, the average net salary in Macedonia has increased for 20.18%, the average retirement pension has increased for 35.31%, the statutory minimum wage has increased for 51.11% compared to 2012 and the average social transfers have increased by 49,59%. In the same time, the unemployment rate has decreased by 10.7 percentage points. However, in the same time, as stated above – the income of the bottom 20% of the income distribution has stagnated. These data make it evident that the social protection system and the economic system in general leave the poor on the margins of society.

In the next two sections, this analysis will try to provide an estimation of the costs of implementing negative income tax rate based on official, publicly available data. The cost of negative income tax could be calculated by determining the difference between the total income the poor population needs to reach poverty threshold and what this population already earns or receives as social transfers or pensions. The calculation should be simple and straightforward.

However, calculating the benefits of such policy for the overall economy is a complex task. The net costs or net benefits of such policy could not be determined without calculating the effects that negative income tax could have on the economy. The hypothesis of this research (as presented in section 4 of this paper) is that the negative income tax policy could increase economic growth through increasing household consumption. Poor people spend the most (if not all) of their income on goods and services that are part of the basic needs basket. These are usually domestic products and services produced and supplied within the local economy. Household spending is the essential driving force of economic growth – it represents more than half of GDP in most developed economies (Chai, 2018). This phenomenon is even more evident in small emerging markets who often find the consumer spending to be one of the engines of the economy. A study using yearly data series during 2004–2017 for eight CEE countries concluded that the economic growth in the CEE area is mainly based on the private consumption in the short run (Radulescu et al., 2019). Therefore, section four of this paper is an attempt to determine the relationship of household consumption and economic growth in Macedonia in order to better understand the potential benefits from a negative income tax policy.

3. HOW MUCH WOULD NEGATIVE INCOME TAX COST?

Social transfers historically make up for the largest percent of government expenditure in Macedonia and other social democracies. According to the 2020 State Budget in Macedonia, the planned social protection expenditure amounts up to 31% of all budget expenditure (State Budget RNM, 2020). Total planned social transfers are 116 billion MKD which is around 52%

of total planned budget revenues for year 2020. On the other hand, the poverty rate in Macedonia is as high as 22%, counting a population of 455,100 people whose income is below the poverty threshold.

The State Statistical Office, based on the Survey on Income and Living Conditions, which is carried out in accordance with European Union recommendations, calculated Laeken poverty indicators for 2018 (State Statistical Office announcement, 2019). According to this database, the poverty threshold for single person household is 97,000 MKD (yearly income), meaning that the monthly poverty threshold for a single person household is approximately 8,000 MKD.[1]

Table 1: Laeken indicators for 2018 used in calculations of the cost of the NIT

Population Y2018	*2,082,958*	Poverty rate	*22%*
Poverty threshold for single person household (MKD)	*97,000*	Poverty threshold for four person household (MKD)	*203,700*
No. of people living in poverty (total)	*455,100*	No. of people living in poverty (per centile)	*20,686*
No. of single person households (total)	*113,775*	No. of single person households (per centile)	*5,172*
No. of four person households (total)	*85,331*	No. of four person households (per centile)	*3,879*
Amount of minimum income needed per centile (MKD)	*1,291,734,119*	Amount of monthly income needed per single household (MKD)	*8,083*

(Source: Author's calculations using data from the Ministry of Finance and the State Statistical office available at the following links:
http://www.stat.gov.mk/PrikaziSoopstenie.aspx?rbrtxt=115 *and*
https://www.finance.gov.mk/mk/node/6608 *)*

The poverty threshold for four person households (two adults and two children less than 14 years old) amounts up to a yearly income of 203,700 MKD. In absence of precise data, for the purpose of this calculation, it is presumed that 25% of the people living with incomes below the poverty threshold are single person households and the other 75% are four person households. Under this assumption, the total number of single person households is 113,775 – given that the total number of poor people is 445,100. Accordingly, the number of four person households would be 85,331 – it is 75% of the number of people living in poverty divided by four.

Since the poverty rate is 22% of total population, for the purpose of this calculation, the focus is on the bottom 22 centiles of the income distribution. Following the above mentioned assumptions and in absence of data for the number of single person households and four person households per centile – it is necessary to make an additional assumption that all centiles that are subject to our analysis have the equal amount of single person households and four person households. That amounts for up to 5,172 single person households per centile and up to 3,879 four person households per centile.

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[1] Although it is debatable whether this is the appropriate income level for defining the poverty threshold, this dilemma is not the subject of this paper. The official, publicly available and uniform data are being used in order to achieve consistency in the calculations.

Having these assumptions in mind and knowing the poverty threshold yearly income for both single person households and four person households as determined by the State Statistical Office the calculation should be straightforward. This calculation is presented in the Table 2 below. The 22% of the population living in poverty or a total of 455,100 people are divided in the five centile groups as presented in the first column in Table 2. As explained in the previous section of this analysis – the NIT cost would be equal to the difference in the minimum poverty threshold yearly income needed for the 22% of the poorest of the total population and the income that the poorest 22% of the population currently earn or receive in social transfers or pensions.

In 2017, the Ministry of Finance has released data on income distribution per centiles for three years (Y2014, Y2015 and Y2016). Based on those data and the amount of income distributed in each centile, for the purpose of this calculation, the five centile groups have 90%, 45%, 10%, 5% and 1% of yearly income that is below the poverty threshold. In other words, the first five centiles of the income distribution have only 10% of the yearly income needed to reach the poverty threshold. The second five centiles of the income distribution have as much as 45% of the poverty threshold yearly income etc., while the population of the last two centiles have income that almost reaches the poverty threshold yearly income.

Table 2: Calculation of costs for the NIT

Centile groups	No. of people in poverty	Percentage of income below the poverty threshold income	Total net income of the centile group (MKD)	Amount of minimum income needed per centile group (MKD)	Difference (MKD)
1-5	*103,432*	*90%*	*645,867,060*	*6,458,670,597*	*5,812,803,537*
6-10	*103,432*	*45%*	*3,552,268,828*	*6,458,670,597*	*2,906,401,768*
11-15	*103,432*	*10%*	*5,812,803,537*	*6,458,670,597*	*645,867,060*
16-20	*103,432*	*5%*	*6,135,737,067*	*6,458,670,597*	*322,933,530*
21-22	*41,373*	*1%*	*2,557,633,556*	*2,583,468,239*	*25,834,682*
Total	*455,100*		*18,704,310,048*	*28,418,150,625*	***9,713,840,577***

(Source: Author's calculations using data from the Ministry of Finance and the State Statistical office available at the following links:
http://www.stat.gov.mk/PrikaziSoopstenie.aspx?rbrtxt=115 and
https://www.finance.gov.mk/mk/node/6608)

The amount of minimum income needed per centile group is calculated by multiplying the number of single person households and four person households and the respective poverty threshold income. According to these calculations, each centile from the bottom 22% of the income distributions needs approximately a yearly income of 1.3 billion MKD (Table 1). Based on the available data and the above-mentioned assumptions and calculating the NIT cost as the difference between the amounts needed for the 22 centiles to reach the poverty threshold and their current disposable income, it can be concluded that the NIT policy reform would mean additional 9.7 billion MKD budget expenses per year (Table 2), which is 4% of the planned state budget revenues for Y2020, 8% of the planned social transfers for Y2020 and 29% of the funds that the state has already made available for tackling the COVID 19 crisis so far.

4. EMPIRICAL ANALYSIS – HOUSEHOLD CONSUMPTION AND GDP

The empirical analysis testing the hypothesis that household consumption is one of the most important factors for increasing economic growth in Macedonia is presented in this section of the analysis. Proving that this hypothesis can be accepted is crucial in understanding the true cost of the negative income tax as a social policy because this policy should not be perceived as simply an increase in government expenditure but also as an investment in the whole economy through helping those in need.

The quarterly time series used for the purpose of this analysis is available at the Ministry of Finance statistical database and covers the period from 2001 – 2019. In order to test this hypothesis we model the GDP growth rate as a simple linear regression in which the household consumption, government consumption, investments, imports and export are the explanatory variables. This is the common expenditure approach to calculating the GDP based on the different spending groups that participate in the economy. For this purpose the following equation should be estimated:

$$GDP = \alpha + \beta_1 HCons + \beta_2 GCons + \beta_3 Inv + \beta_4 Imp + \beta_5 Exp + \varepsilon$$

where **GDP** is the GDP growth, **HCons** is the growth rate of the household consumption i.e. expenditure incurred by the citizens and households, **GCons** is the growth rate of the government consumption, **Inv** is the growth rate of the companies' investments, **Imp** is the growth rate of imports and **Exp** is the growth rate of exports. The data are on quarterly basis and the number of observations is N=76.

In order to test whether our variables are stationary we used the Augmented Dickey-Fuller unit root test (Table 3). According to the results of the tests, the null hypothesis stating that there is unit root present in the trends of the variables is rejected because the probability values of all variables are less than 0.05. Thus, the alterative hypothesis stating that the variables are stationary cannot be rejected i.e. should be accepted.

Table 3: Augmented Dickey-Fuller unit root tests

Variable	GDP	HCons	GCons	Inv	Imp	Exp
t-statistic	-5.9238	-5.2134	-4.3858	-8.3468	-6.1330	-5.0319
p-value	0.0000	0.0000	0.0007	0.0000	0.0000	0.0001

(Source: Author's calculations using Eviews8 econometric software)

Knowing that all the variables have consistent arithmetic mean and variance throughout the analyzed period, what is left in order to inspect whether all the assumptions for using the ordinary least squares method are fulfilled, is to perform a heteroscedasticity test and a serial correlation test. In order to test for any existence of seasonal heteroscedasticity (Trimbur, 2006) the Breusch-Pagan-Godfrey test can be used. The result of the heteroscedasticity test show a p-value that is larger than 0.05 indicating that the null hypothesis cannot be rejected (Table 4). This means that the error variances are all equal thus suggesting that there is no heteroscedasticity in the sample.

In order to test for serial correlation the Breusch-Godfrey LM test could be used. The results of the serial correlation test show a probability value that is larger than 0.05 indicating that the null hypothesis cannot be rejected (Table 5). This means that each observation is independent of one another thus suggesting that there is no serial correlation in the sample.

Table 4: Breusch-Pagan-Godfrey heteroscedasticity test

F-statistic	1.1538
Prob. F(5,70)	0.3406
Prob. Chi-Square(5)	0.3275

(Source: Author's calculations using Eviews8 econometric software)

Table 5: Breusch-Pagan LM serial correlation tests

F-statistic	0.0660
Prob. F(2,68)	0.9361
Prob. Chi-Square(2)	0.9290

(Source: Author's calculations using Eviews8 econometric software)

After testing the applicability of the assumptions of the ordinary least squares method one can proceed to estimate the regression equation. The estimated regression equation is presented below.

$$GDP = 0.4749 * HCons + 0.1075 * GCons + 0.1061 * Inv - 0.2887 * Imp + 0.2452 * Exp + 0.3870$$

The results of the regression (Table 6) suggest that the model is well suited to explain the changes in the GDP growth showing a sufficiently high coefficient of determination with the value of 67.50%. This means that a high percentage of the changes in the GDP growth can be explained by the changes in the chosen explanatory variables.

Table 6: Regression results of the estimated equation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HCONS	0.4749	0.0662	7.1695	0.0000
GCONS	0.1075	0.0333	3.2291	0.0019
INV	0.1061	0.0110	9.5751	0.0000
IMP	-0.2887	0.0415	-6.9481	0.0000
EXP01	0.2452	0.0340	7.2112	0.0000
C	0.3870	0.4039	0.9582	0.3412

(Source: Author's calculations using Eviews8 econometric software)

The slope coefficient of the variable *HCons* (household consumption) has a positive sign and it takes a value of 0.4749 with a probability value of 0.0000 meaning that this result is statistically significant with a probability of 100%. This means that for the given sample when the household consumption growth rate rises for 1 unit, the GDP growth rate also rises for 0.4749 units (in this case percentage points). The slope coefficient for the variable *GCons* (government consumption) has a positive sign and takes a value of 0.1075 with a probability value of 0.0019 meaning that this result is statistically significant with a 99% probability. This means that for the given sample when the government consumption growth rate increases for 1 percentage point, the GDP growth rate will increase for 0.1075 percentage points. The slope coefficient for the variable *Inv* (companies' investments) has a positive sign and takes a value of 0.1061 with a probability value of 0.0000 meaning that this result is statistically significant with a 100% probability. This means

that for the given sample when the companies' investments growth rate increases for 1 percentage point, the GDP growth rate also increases for 0.1061 percentage points. The slope coefficient for the variable *Imp* (import) has a negative sign and takes a value of 0.2887 with a probability value of 0.0000 meaning that this result is statistically significant with a 100% probability. This means that for the given sample when the imports growth rate increases for 1 percentage point, the GDP growth rate decreases for 0.2887 percentage points. The slope coefficient for the variable *Exp* (exports) has a positive sign and takes a value of 0.2452 with a probability value of 0.0000 meaning that this result is statistically significant with a 100% probability. This means that for the given sample when the exports growth rate increases for 1 percentage point, the GDP growth rate also increases for 0.2452 percentage points.

The results suggest that the change in the GDP growth rate is in highest correlation with the growth rate in household consumption out of all explanatory variables, thus confirming the research hypothesis of this analysis. Second to the household consumption in terms of high correlation with the dependent variable is the exports growth rate. The variables related to companies' investments and the government consumption show a somewhat smaller but also positive slope coefficient and the only variable with negative slope coefficient to GDP growth is the imports growth rate.

According to the above, the results from the empirical analysis for the given sample and chosen variables for the time period from 2001 to 2019 for the Macedonian economy are in line with what the consulted literature suggests – the household consumption is one of the most important engines of economic growth.

5. CONCLUSION

Poverty, income inequality and high unemployment are one of the most persistent concerns in the Macedonian society. Almost half a million people live below the poverty threshold in Macedonia and this number is expected to rise as the COVID-19 pandemic crisis develops. The economic decline is expected to endure even in the aftermath of the pandemic crisis, thus exacerbating these issues even further. Governments all around the world are finding new innovative ways to tackle this unprecedented situation in the economy. Although to a varying degrees in respect to the granted amount and diverse policy designs, many countries have implemented policies that envisage direct payments to citizens similar to the concept of universal basic income. However, this policy can be an expensive option for small economies with limited fiscal space. Another policy option that could target citizens in need in an effective way is implementing a negative income tax. This policy option is rarely discussed in academic circles and policy debates and could easily be labeled as progressive and unconventional. Although these challenging times call for innovative ideas, it cannot be denied that any policy reforms are as good as they are financially feasible. Due to this fact, this paper had aimed to explain what negative income tax is and provide an estimation of the potential costs arising from it.

The negative income tax rate was first proposed by Milton Friedman, a Nobel Prize winner and one of the most influential economists in the 20th century who is often associated with the neo-liberal economic thought. His idea of a negative income tax would be a cash-based substitute to the existing social welfare protection programs aiming at decreasing administration costs, increasing policy effectiveness while improving individual freedom of the citizens living in poverty. It should be noted that the negative income tax as proposed in this paper would not be supplemental to the existing social protection system in Macedonia, but would represent an additional and complementary policy in order to make the existing social welfare more effective

and inclusive. Unfortunately, in the last decade in Macedonia, despite the fact that the average net salary has increased for 20.18%, the average retirement pension has increased for 35.31%, the statutory minimum wage has increased for 51.11% and the average social transfers have increased by 49.59%, the income of the bottom 20% of the population has stagnated, indicating that these changes do not reach the poorest in the country. These developments are indicating that there is a need to reinvent the current social protection paradigm and find innovative ways to build a more resilient system.

The poverty rate for Y2018 in Macedonia is 22% meaning that 22% of the population live with incomes less that the poverty threshold income. Calculated as the difference between the amounts needed for the 22 centiles to reach the poverty threshold and their current disposable income, it can be concluded that the NIT policy reform would mean additional 11 billion MKD state budget expenses per year, which is 4% of the planned state budget revenues for Y2020, 8% of the planned social transfers for Y2020 and 29% of the funds that the state has already made available for tackling the COVID 19 crisis so far.

Since estimating the cost of the negative income tax policy would not be complete without calculating the positive effect it could have on the overall economy, this paper tested the hypothesis that the negative income tax policy could increase economic growth through increasing household consumption. In an attempt to determine the relationship of household consumption and economic growth in Macedonia, the results of this paper suggest that the change in the GDP growth rate is in highest correlation with the growth rate in household consumption out of all explanatory variables (government consumption, investments, export and import). For the given sample, the results indicate that when the household consumption growth rate rises for 1 percentage point, the GDP growth rate also rises for 0.4749 percentage points. Due to the fact that poor people use all of their income on domestic consumption rather than saving, it could be expected that the policy of negative income tax would be beneficial for the economic growth in Macedonia while also improving the lives of those who live in poverty.

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IS THERE A DOMINANCE OF SOCIAL PROTECTION EXPENDITURE IN THE EUROPEAN UNION?

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ABSTRACT
European welfare states, with their comprehensive and generous welfare model, create the largest part of general government expenditures in the European Union member countries. Given the rising trend of social expenditure and the long-run challenges coming from population ageing, this paper addresses the issue of social dominance, a situation in which, particularly when facing limited fiscal space, social expenditure could crowd-out other productive public expenditures, thus undermining growth potentials and possibly threatening fiscal sustainability. Using a panel regression analysis, the aim of the paper is to test whether social protection expenditure has crowded-out expenditures on other purposes in the European Union in the period 1995-2018. The results provide some evidence of crowding-out of infrastructure spending and education spending. Additionally, deficit financing and rising government debt have a significant adverse effect on spending on infrastructure, education and core public services, confirming that they are more prone to cutbacks in times of deteriorating public finance. These findings, along with the long-run fiscal pressure from the 'greying population' and the high political costs of welfare reforms suggest significant future risks of social dominance.

Keywords: *Fiscal policy, Social protection expenditure, Social dominance, Crowding-out.*

JEL classification: *E62, I3, H55, I30*

1. INTRODUCTION
Since the end of the Second World War, especially since the 1960s, the political economy of Europe has been defined by the development of a comprehensive and generous welfare model. While total public expenditures as a share of GDP have increased drastically in industrialized economies since 1960, the rise in expenditure has been concentrated on social expenditures, whose share in terms of GDP has tripled in the period. This was fueled by the expansion of the social welfare state together with increasing costs of services and an ageing population, which demanded higher-quality health services and a more generous pension system. Despite the rise of retrenchment narrative in the 1990s, in many countries welfare outlays have actually

increased since then. The increase in government revenues was not enough over the whole period to cater for the increased expenditures, leading to a significant build-up of government debt. The latter put pressure on governments, in particular at times of economic distress, making it more likely for the government budget constraint to bite during crisis times (Delgado-Tellez et al., 2020). Pressures on public finances, and the burden that social spending imposes on the 'productive' parts of economies, raise questions about whether European countries can still afford their welfare states. With limited fiscal space, social expenditure could crowd-out other productive expenditures, thus undermining growth potentials. This is known as 'social dominance', a term coined by Schuknecht and Zemanek (2018). They argue that this might even worsen social cohesion if only the rich can offset deteriorating public services (security, education, infrastructure) with private spending. Some explanations offered in the literature on why rising social expenditure could crowd-out other government expenditures are the higher political costs of cutting social expenditures. The political benefits in terms of voters and special interest support from social expenditure accrue immediately while the benefits of more productive spending and sound public finances tend to accrue only over time (Buchanan and Tullock, 1962). There is more inertia in social spending than in other parts of public spending that could be administratively more easily reduced. Due to limits to taxation, a trade-off emerges between social expenditure and other public expenditures, such as public investment and education expenditure, while stickier items such as public order and security spending, which are necessary for a stable institutional environment, are more resilient (Delgado-Tellez et al., 2020).

There is not a large empirical literature body exploring the possible dominance of social expenditure. The studies mainly focus on OECD countries and include various components of social spending and other public spending items. Bonoli and Reber (2010) and Bonoli (2013) examined the effect of old-age related expenditure on childcare services and on active labour market spending policies (ALMPs) spending, respectively, and found a negative effect on both components of social investment. Kim and Choi (2020) analyzed the relationship between social protection spending and social investment in the OECD countries and could not confirm the crowding-out effect in general. However, they established that the impact has turned negative in the more recent period, more pronounced for unemployment benefit spending than for pension spending. Schuknecht and Zemanek (2018) found some evidence of social spending dominance. Their results indicated a negative effect of social spending on infrastructure and on education (though the latter only significant at 10% significance level), while their regressions yielded insignificant coefficients for core public service spending. Delgado-Tellez et al. (2020) also found evidence of social spending crowding-out public investment.

This paper contributes to this literature and investigates whether social expenditure dominates fiscal policy in the European Union, i.e. whether social expenditure crowd-out more productive spending, thus undermining growth potential and endangering fiscal sustainability. Our sample differs from the reviewed studies and includes all member states of the EU. The paper is structured as follows. Section 2 examines the trends of social expenditure in the EU, followed by a descriptive analysis of the relationship between social protection expenditure and expenditure on infrastructure, public core services and education in Section 3. Section 4 introduces the methodology and data used. Section 5 presents the empirical results and section 6 gives concluding remarks.

2. SOCIAL PROTECTION EXPENDITURE IN THE EUROPEAN UNION

Spending on welfare presents the largest part of general government expenditures in the European Union member countries (see Figure 1). The largest share of total expenditure in

2018 was dedicated to social protection - 41.2%, followed by health expenditure with 15%. The share of government expenditure dedicated to social protection and health increased from 38.1% and 13.2% in 2001, respectively. Social protection accounts for 18.6% of GDP, while health accounts for 7% of GDP (increased from 17.3% and 6% in 2001). They constitute a largest share of GDP in France, Denmark and Finland, while the smallest in Ireland, Romania and Cyprus. On the other hand, total government expenditure grew from 45,1% of GDP to 45,8% of GDP (Figure 2). The share of education on the other hand, which is a social investment especially important for strengthening the human capital, has slightly fallen, from 10.3% to 9.9% of the GDP. Additionally, the expenditures on other purposes also fell, most notably those dedicated to general public services (from 16,6% of GDP to 12,9% of GDP). This also implies a certain crowding-out by social expenditure. Namely, the increase in social protection expenditure and health expenditure as a percentage of GDP was compensated by a decrease in other government expenditure functions. (Eurostat, 2020) Of course, the rising social expenditures were also financed by a rising public debt and in some countries rising revenues compensated the increase in spending (see for example Schuknecht and Zemanek, 2018, for analysis on OECD countries).

Figure 1: General government expenditure by function (COFOG) (% of GDP)
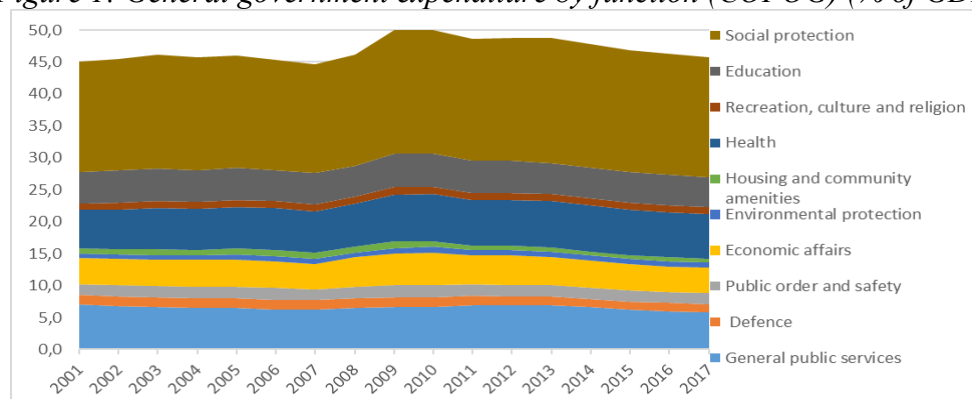
(Source: Eurostat database)

Figure 2 illustrates the evolution of social protection expenditure versus the evolution of total general government expenditures in the period 2001-2018. After a period of falling expenditure ratios in times of strong economic growth, a jump in both social and total expenditure was triggered by the Great Recession. A particularly big jump in expenditures was recorded in 2009. Total government expenditure had a steeper drop than social protection expenditure after the financial crisis (whether because the latter played its automatic stabilizing function or in order to protect particular segments of the population for political reasons), implying that the rising social expenditure had crowded out other public expenditure, and all of this occurred despite the 'austerity' narrative (Begg et al., 2015). Social spending thus has proved to be more immune to fiscal retrenchment than other public policy areas such as defense, education, economic affairs, public investments. However, the fiscal austerity measures did not leave social expenditure untouched, the reductions being more visible in the most recent period on the graph. After a double peak trend until 2014, public expenditure started to gradually decline in the last few years, partly due to reduction of spending, partly because of the resumed growth, but is still above the pre-crisis level.

Figure 2: Social protection expenditure and total public expenditure (% of GDP)
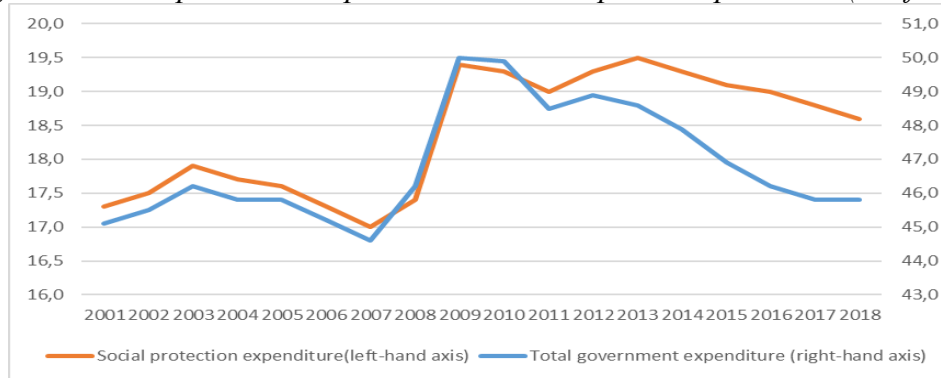
(Source: Eurostat database)

The member countries of the European Union differ regarding the generosity and universality of benefits, the different financing sources etc. The European welfare state literature recognizes the following groups of countries (see Obinger and Wagschal, 2012; Hemerijck et al., 2013; Kostadinova, 2014; ILO, 2017): Nordic (Social-democratic); Continental (Conservative-corporatist); Anglo-Saxon (Liberal); Mediterranean (Southern European); Central-Eastern European – in more recent studies. Hence, social protection expenditure differs significantly among countries, ranging from 12.41% of GDP in Central-Eastern Europe to 21.83% of GDP in Nordic countries. Despite the narrowing of cross-national differences in the last few decades, the division between larger spenders from the Nordic and Continental group and smaller spenders from the other groups exist. CEE countries have the lowest social protection expenditure ratios in the EU. Over the analyzed period, the Mediterranean countries, starting from a very low level, experienced the largest increase in social protection expenditure from 12.53% in 1995 to 16.2% of GDP in 2018, while social expenditure in the Nordic countries declined from 25.23% in 1995 to 21.83% of GDP in 2018. On the other hand, the Central-Eastern and Continental European countries maintained relatively constant levels of social protection expenditure around 13% and 19%, respectively. The cyclical component is evident after 2008 when social spending grew in almost all analyzed countries. After the initial increase due to the response to the crisis, social spending has stabilized and even declined in some groups of countries, as part of the austerity measures aimed at improving their public finances. The same dynamics would be evident if we include health expenditure in a wider social expenditure variable.

Figure 2: Social protection expenditure % of GDP in the EU country groups, 1995-2018
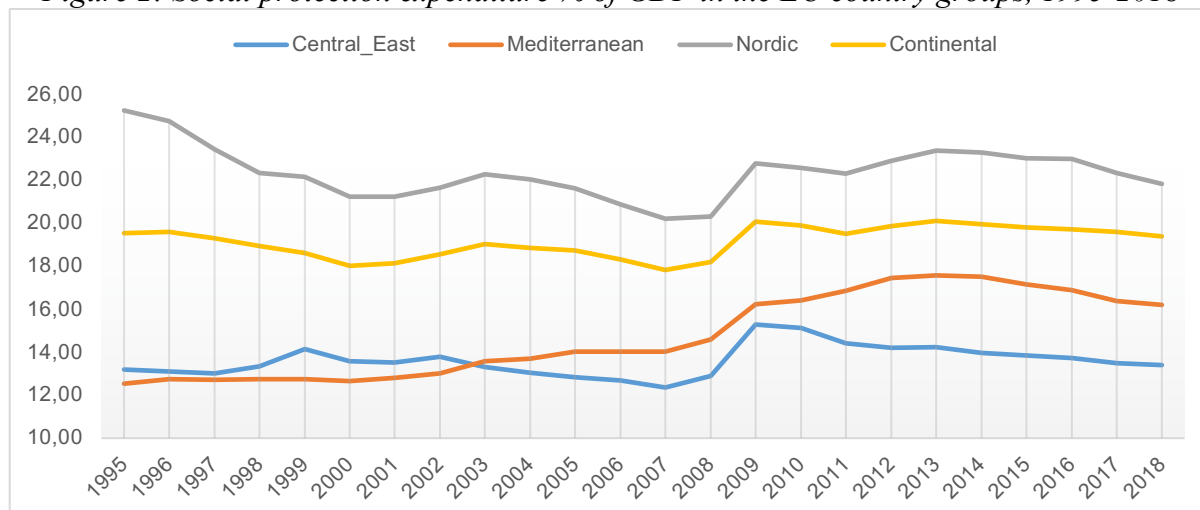
3. IS THERE A RISK OF SOCIAL DOMINANCE IN THE EU?

In order to determine whether social protection expenditure had some crowding-out effect on other public expenditures in European countries, we analyze its relationship with public gross fixed capital formation, core public expenditure and public education expenditure. The data captures the average value of each country group for every fifth year, beginning with 1995. The correlation between social spending and public investments over the period 1995-2018 is given in figure 3. Public investments differ significantly, ranging from 2.2% of GDP in 2019 in Continental European countries to 4.2% of GDP in Central-Eastern countries. As shown in figure 3, a strong negative correlation between social protection expenditure and public gross fixed capital formation (both as % of GDP) is observed only in the case of the Mediterranean countries. On the other hand, in the Continental and Nordic countries there is moderate positive correlation between social spending and public investment, while in the Central-Eastern European countries there is a stronger positive correlation between the two analyzed variables.

Figure 3: Social protection expenditure and public gross fixed capital formation expenditure in the EU, by country group (1995-2018)
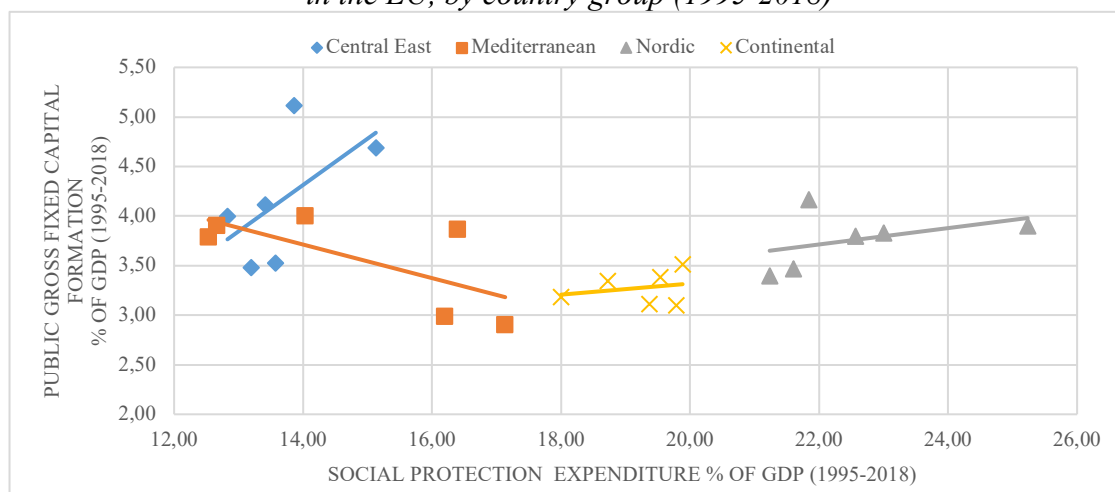
(Source: Eurostat database, authors' calculations)

The correlation between social spending and core public service expenditure (general public service, public order and safety, defense and recreation, culture and religion) is given in figure 4. Over the period 1995-2018, core public expenditure as % of GDP has declined in all European countries, from 14.87% to 11% in Nordic countries, from 14.18% to 10.72% in Mediterranean countries, from 12.68% to 9.48% in Continental countries and from 11.97 to 9.66% in Central-Eastern countries. In addition, the figure shows that there is a negative correlation between social protection expenditure and core public expenditure in all groups except for Nordic countries.

Figure 4: Social protection expenditure and core public service expenditure in the EU, by country group (1995-2018)
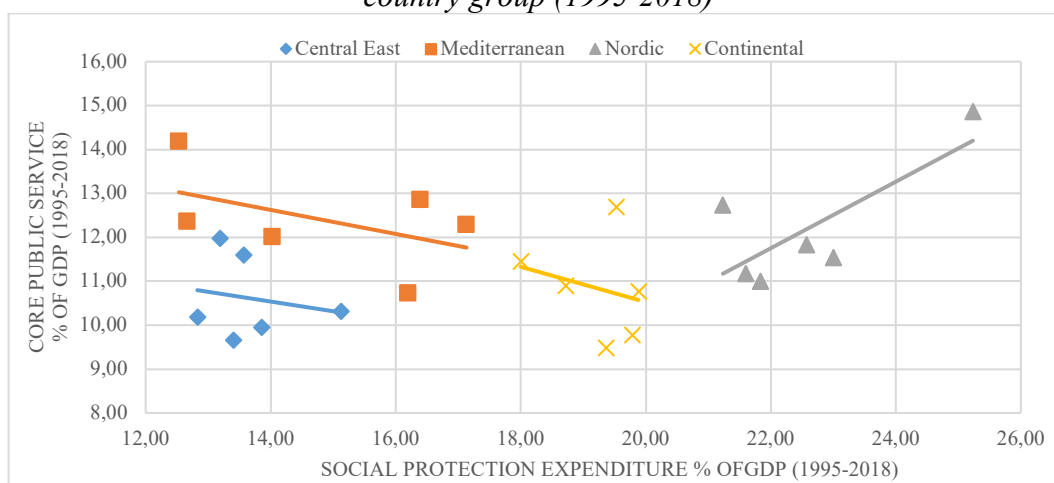
(Source: Eurostat database, authors' calculations)

As for public education, Nordic countries have the highest average education expenditure related to GDP (6.3%), while the Mediterranean countries are at the bottom with the lowest average education expenditure (4.5%). According to the data, over the analyzed period (1995-2018), education expenditure had remained relatively stable in Continental and Mediterranean countries and it has slightly declined in Central-Eastern and Nordic countries. Figure 5 doesn't provide evidence that social protection expenditure crowded out education expenditure in European countries, on contrary data shows that here is a positive correlation between the two variables in all four analyzed groups.

Figure 5: Social protection expenditure and public education expenditure in the EU, by country group (1995-2018)
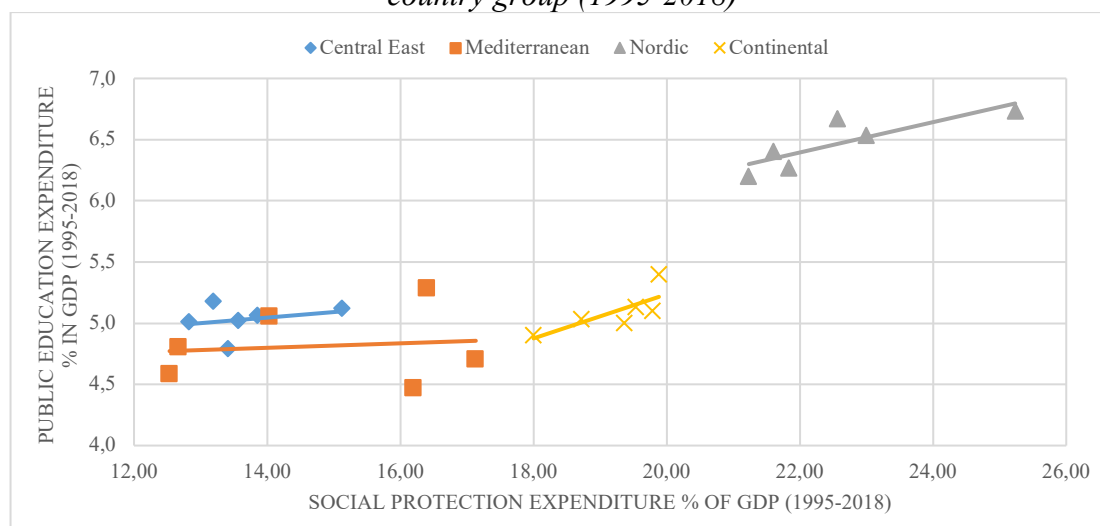
(Source: Eurostat database, authors' calculations)

4. METHODOLOGY AND DATA

The crowding out effect of social protection expenditure is examined by estimating six panel regression models. The purpose is to test whether social protection expenditure crowded out expenditure on infrastructure, core public service and education. The observed period is from 1995 to 2018 and the models include twenty-seven countries, current members of the European

Union. The total number of observations is 648. The summary of the variables is presented in Table 1.

Table 1: Variables included in the analysis

Dependent variables	Independent variables	Control variables
INF - Public gross fixed capital formation (% of GDP)	ΔGDP-trend - Business cycle	NETLEND – Net lending (% of GDP)
CORE - Core public service (% of GDP)	SOEXP - Social protection expenditure (% of GDP)	DEBT – Gross debt (% of GDP)
EDU - Education expenditures (% of GDP)		TERT – Tertiary school enrolment (%)

(Source: Eurostat, IMF, World Bank)

The empirical investigation includes as dependent variables the following general government expenditures: infrastructure (INF), proxied by government gross fixed capital formation, core public service (CORE), which includes general public services, public order, recreation and culture, defense, and education (EDU). The key explanatory variables are the business cycle (ΔGDP-trend) and social protection expenditure (SOEXP). The business cycle or automatic stabilizers is a variable that is derived from the difference between real GDP growth (in %) and the trend that was calculated with Hodrick–Prescott filter. For each dependent variable, a second equation is estimated, where net lending (NETLEND) and general government gross debt (DEBT) are included as control variables. The data on the various government expenditure items and real GDP growth rate are retrieved from Eurostat, the data on gross general government debt and net lending/borrowing come from IMF's World Economic Outlook database and the data on tertiary school enrolment are retrieved from World Bank. The estimated panel regression equations are as follows.

The first equation examines the impact of social protection expenditure (SOEXP) (up to four-time lags) on the differenced public gross fixed capital formation (INF), including the business cycle (ΔGDP-trend) as an additional explanatory variable. The noise term is represented with $\varepsilon_{i,t}$ and the country fixed effects with u_i:

$$\Delta INF_{i,t} = \beta_1\left(\Delta GDP_{i,t} - trend_{i,t}\right) + \beta_2(\Delta SOEXP_{t-1}) + \beta_3(\Delta SOEXP_{t-2}) + \beta_3(\Delta SOEXP_{t-3}) + \beta_4(\Delta SOEXP_{t-4}) + u_i + \varepsilon_{i,t} \qquad (1)$$

The second equation is an extension of the first one. Net lending (% of GDP) (NETLEND) and gross debt (% of GDP) (DEBT), both with one-time lag, are included in the equation as control variables:

$$\Delta INF_{i,t} = \beta_1\left(\Delta GDP_{i,t} - trend_{i,t}\right) + \beta_2(\Delta SOEXP_{t-1}) + \beta_3(\Delta SOEXP_{t-2}) + \beta_3(\Delta SOEXP_{t-3}) + \beta_4(\Delta SOEXP_{t-4}) + \beta_5(NETLEND_{t-1}) + \beta_6(DEBT_{t-1}) + u_i + \varepsilon_{i,t} \quad (2)$$

The third equation treats CORE (core public service as % of GDP) as a differenced dependent variable, while the independent variables are the same as in equation one:

$$\Delta CORE_{i,t} = \beta_1\left(\Delta GDP_{i,t} - trend_{i,t}\right) + \beta_2(\Delta SOEXP_{t-1}) + \beta_3(\Delta SOEXP_{t-2}) + \beta_3(\Delta SOEXP_{t-3}) + \beta_4(\Delta SOEXP_{t-4}) + u_i + \varepsilon_{i,t} \qquad (3)$$

Equation four includes $\Delta CORE_{i,t}$ as dependent variable, and the independent variables are the same as the ones in equation two:

$$\Delta INF_{i,t} = \beta_1\big(\Delta GDP_{i,t} - trend_{i,t}\big) + \beta_2(\Delta SOEXP_{t-1}) + \beta_3(\Delta SOEXP_{t-2}) +$$
$$\beta_3(\Delta SOEXP_{t-3}) + \beta_4(\Delta SOEXP_{t-4}) + \beta_5(NETLEND_{t-1}) + \beta_6(DEBT_{t-1}) + u_i + \varepsilon_{i,t} \quad (4)$$

The final two equations consider the differenced variable EDU (education expenditure as % of GDP) as dependent variable. In equation five the independent variables are the same as in equations one and three:

$$\Delta EDU_{i,t} = \beta_1\big(\Delta GDP_{i,t} - trend_{i,t}\big) + \beta_2(\Delta SOEXP_{t-1}) + \beta_3(\Delta SOEXP_{t-2}) +$$
$$\beta_3(\Delta SOEXP_{t-3}) + \beta_4(\Delta SOEXP_{t-4}) + u_i + \varepsilon_{i,t} \quad\quad\quad (5)$$

Equation 6 has the same dependent variable as equation 5, while the independent variables expanded with control variables NETLEND, DEBT and differenced and logarithm values of TERT (tertiary school enrolment in %):

$$\Delta EDU_{i,t} = \beta_1\big(\Delta GDP_{i,t} - trend_{i,t}\big) + \beta_2(\Delta SOEXP_{t-1}) + \beta_3(\Delta SOEXP_{t-2}) +$$
$$\beta_3(\Delta SOEXP_{t-3}) + \beta_4(\Delta SOEXP_{t-4}) + \beta_5(NETLEND_{t-1}) + \beta_6(DEBT_{t-1}) +$$
$$\beta_7(\Delta logTERT_{t-1}) + u_i + \varepsilon_{i,t} \quad\quad\quad (6)$$

4. DISCUSSION OF RESULTS

To explore the hypotheses of crowding out of more productive public expenditures by rising social protection expenditure, we estimate how the change in the social protection expenditure ratio (SOEXP) affects infrastructure spending (INF), core public administration (CORE) and public education spending (EDU). The effect of social protection expenditure is tested for up to four-time lags since rising social spending might crowd out other budgetary outlays gradually and with certain delays (see also Kim and Choi, 2020). If a statistically significant negative coefficient is estimated for the social expenditure variable, we can conclude that crowding out is at work (Schuknecht and Zemanek, 2018). The results from the estimated equations are presented in Table 2.

Table 2. Crowding out effects of social protection expenditure, 1995-2018, EU27 countries

Dependent variable	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 6
	ΔINF	ΔINF	ΔCORE	ΔCORE	ΔEDU	ΔEDU
CONS	0.012	0.187*	-0.104***	0.346***	-0.006	0.134**
ΔGDP-trend	0.032***	0.030***	-0.068***	-0.066***	-0.040***	-0.039***
Δ(SOEXP t-1)	-0.011	0.028	-0.005	0.006	-0.036	-0.041**
Δ(SOEXP t-2)	-0.091*	-0.040	-0.007	0.029	-0.024	-0.016
Δ(SOEXP t-3)	-0.053	-0.015	-0.011	0.017	-0.030*	-0.022
Δ(SOEXP t-4)	-0.060	-0.026	0.006	0.045	-0.021	0.001
NETLEND (t-1)		0.040***		0.023*		0.004
DEBT (t-1)		-0.001		-0.007***		-0.003***
Δ(log(TERT)						0.724**
R-squared	0.061	0.083	0.099	0.135	0.158	0.192
Observations	506	505	507	506	507	437
Fixed effect	Country	Country	Country	Country	Country	Country
Estimator	OLS	OLS	OLS	OLS	OLS	OLS

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

Regarding public infrastructure spending there seem to be some evidence of crowding out caused by the social protection expenditure, since there is a statistically significant coefficient for two-time lags in equation 1. If social protection expenditure grows by one percentage point, there should be a decrease in public infrastructure spending by 0.091 percentage points. However, when the control variables are included in equation 2, this relationship does not prove to be significant. On the other hand, the second equation confirms that there is a statistically significant positive short-term effect of net lending on the public infrastructure spending. This implies that larger deficits are followed by reduced infrastructure spending, confirming the claim that infrastructure spending is crowded out also indirectly by more deficit financing.

When core public administration is considered, the results from equations 3 and 4 do not seem to indicate presence of crowding out by social protection expenditure. As for infrastructure, larger deficits seem to cause scaling back of expenditure on core public service. Also, larger gross debt has an inverse and statistically significant effect on core administration spending, implying that rising debt and tightening fiscal space tend to lead to cuts in this component of public spending.

The last two specification refer to the effect of social spending on education spending. They confirm that a statistically significant effect from social spending on education expenses exists (though with a different time delay), thus crowding out is confirmed. There is a statistically significant indirect effect from gross debt and a positive effect from tertiary school enrolment. Similar to core public administration spending, an increase in gross debt causes a reduction in education spending. Ain the end, as expected, higher tertiary school enrolment rates contribute to more spending on education.

5. CONCLUSION

This paper analyzed the interaction of social protection expenditure with other government expenditure items in the European Union for the period 1980-2018, more specifically with spending on public infrastructure, education and core public service. The main objective was to test whether the 'social dominance hypothesis' is valid for this set of countries. This hypothesis claims that the upward social expenditure trends, related mostly to ageing populations and social preferences, are accompanied by declining expenditure in more productive areas of public expenditure. This could undermine the growth potential and could also threaten long-run fiscal sustainability. These spending items are usually more vulnerable to spending cuts in times of fiscal austerity, while social spending seems to be more resilient to adjustment measures.

The empirical results find some evidence for the social dominance hypothesis. There is some evidence of crowding out of infrastructure spending, but once fiscal balance is introduced in the equation, this effect disappears. Larger deficits are followed by a scaling back in public infrastructure expenditure, confirming the claim that infrastructure spending is crowded out not only by social protection expenditure, but mostly indirectly by more deficit financing. Deficit financing also negatively affects core public administration expenditure and additionally rising debt and tightening fiscal space tend to lead to cuts in this component of public spending. The results confirm a crowding-out effect of social spending on education spending. Education spending is also found to be negatively affected by increases in gross public debt but positively affected by tertiary school enrolment. The results indicate that in the analyzed period the fiscal balance and the fiscal space in the European Union countries have been a more significant determinant of spending on infrastructure, education and core public administration, confirming that they are more prone to cutbacks in times of worsening public finance, when governments take measure to contain the rising indebtedness.

Considering the results, it would be important for welfare states to pursue restructuring of existing social policies to cope with increasing social risks without losing the productive elements. It is not an easy task to introduce and implement efficient (and politically not very costly) measures for containing social spending, given the long-run pressure from population ageing. The old-age dependency ratio in the European Union already reached 30.5% in 2018. Yet, some measures identified in the literature could help contain rising social spending and reduce the risk of social dominance, many of which the European Union has already introduced. European Union countries have undertaken pension reforms in order to make pension systems sustainable under conditions of low or declining fertility and increasing life expectancy, such as: increasing the retirement age, limiting early exit, introducing occupational and private pillars on top of the public pension schemes and redefining the actuarial links between contributions and benefits. The demographic impact of population ageing can be partly alleviated with qualified immigration, particularly if migrants are predominantly younger working-age people. However, if the migrant structure is such that most do not join the labour market, then this would increase the welfare burden and their role in countering population ageing would be questionable. Additionally, countries work on improving the flexibility of labour markets and helping people balance work and family, so as to alleviate the difficulties of work-life balance and increase the work incentives of parents of small children. The EU member countries have agreed upon the European Pillar of Social Rights ('Social pillar') in 2017, which combines the principles of social investment, which enhances human capital, with social protection and stabilization and stresses the strong link between labour force activation and access to quality services (childcare, housing, healthcare).

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NEW PARADIGM IN ACCOUNTING INFORMATION SYSTEMS – THE ROLE OF THE LATEST INFORMATION TECHNOLOGY TRENDS

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ABSTRACT
The purpose of this paper is to identify the impact and benefits of the latest information technologies on Accounting Information Systems (AIS). Taking into account the numerous papers related to new technologies and their application in the accounting profession within Industry 4.0, and conducted survey about perception of practitioners in Republic of North Macedonia, this paper summarizes the characteristics and key benefits of some of the new technologies for the functioning of AIS in the digital age. First of all, the evolution of AIS is elaborated, based on theoretical and empirical analysis of the accounting process from the appearance of the first AIS up to nowadays' services and techniques available for supporting the accounting function. The first technology to be elaborated is Big Data and its potential to change the business landscape, especially in the field of automating operation processes, customer engagements, and predictive decision-making process. Secondly, the Blockchain Technology as an example of Distributed Ledger Technology (DLT), which adoption brings new possibilities in eliminating or redefining the role of entities external to the company. Cloud Computing i.e. Cloud Accounting is the third technology which is elaborated in this paper through the services it offers on the cloud, especially the way AIS process, store and backup the sensitive and confidential data. Last but not least, Artificial Intelligence (AI), a technology that could change the professional services, the need, and opportunities that are provided for a solution to the current accounting issues. In summary, taking into account the relevant literature and the perception of the respondents-practitioners, increased use of these technologies is necessary because their application reduces costs; increases transparency and confidence in information; flexibility, i.e. no time and space restrictions on their use, etc., which is especially useful in the current state of Pandemic, caused by the virus COVID-19.

Keywords: *Accounting Information Systems, Big Data, Blockchain, Cloud Computing, Artificial Intelligence.*

JEL classification: *M40; M41*

1. INTRODUCTION

Ever since the beginning of industrialization, technological leaps have led to paradigm shifts which today are ex-post named "industrial revolutions": in the field of mechanization (the so-

called 1st industrial revolution), of the intensive use of electrical energy (the so-called 2nd industrial revolution), and the widespread digitalization (the so-called 3rd industrial revolution). Based on an advanced digitalization within factories, the combination of Internet technologies and future-oriented technologies in the field of "smart" objects (machines and products) seems to result in a new fundamental paradigm shift in industrialization(Lasi et.al, 2014). Industry 4.0 has been considered as a new industrial phase in which new information technologies are converging to provide digital solutions for business. The power lays in the network of smart machines that are interconnected and can create, analyze, and share information (Marr, 2018). The McKinsey Global Institute estimates that "It´s happening 10 times faster and at 300 times the scale than the Industrial Revolution in the early 19th century" (Hoffman, 2017). The accounting process is based on recording financial information along with storing, sorting, analyzing, summarizing, and interpreting information in various reports and analyses towards internal and external users. The accounting system has a key role in providing the financial information used in the decision-making process. Considering the large volume of information and the necessary time to process it, accounting software became a very useful tool for accountants to do their job faster and more efficiently. Although accounting software has been around for decades, it has continued to develop its potential over the years; it has become highly sophisticated and this evolution marches on (Dimitriua & Mateia, 2015). As the digital revolution is shaping the field of accounting and auditing both current accounting and auditing professionals as well as students and professors at universities must fundamentally understand all of the information technologies that affect the accounting information systems. Accounting, the art and science of measuring business performance, has evolved with business, more so with information technology. Databases and data warehouses, specialized accounting software and Enterprise Resource Planning (ERP) systems, Local Area Networks (LANs), and Wide Area Networks (WANs), among other things, have left their mark on accounting theory and practice. Data-entry mechanisms, data storage and processing mechanisms, end reports, internal controls, audit trails, and skillsets for accountants have been in continual flux for the past several decades (Deshmukh, 2006).

2. EVOLUTION OF AIS

AIS is responsible for the collection, storage, and processing of financial and accounting data that is used for internal management decision making, including nonfinancial transactions that directly affect the processing of financial transactions (Belfo & Trigo, 2013). Typically an AIS is composed of three major subsystems: **(1)** Transaction Processing System (TPS) that supports daily business operations; **(2)** General Ledger System and Financial Reporting System (GLS/FRS) and **(3)** the Management Reporting System (MRS) (Hall, 2011). There are six components of an AIS: **(1)** people; **(2)** procedures and instructions; **(3)** data **4)** software; **(5)** information technology infrastructure and **(6)**internal controls and security measures that safeguard AIS data (Romney, 2018). Accounting information systems have three basic functions: **the first function** of an AIS is the efficient and effective collection and storage of data concerning an organization's financial activities; **the second function** of an AIS is to supply information useful for making decisions; **the third function** of an AIS is to make sure controls are in place to accurately record and process data (AccountingEdu, 2020). The Evolution of The Accounting Information System Model consists of: **1. Manual Process Models:** the oldest and traditional forms of accounting systems, forming physical events, personal resources that characterize most business processes. **2. Flat File Model:** describes an environment where individual data files do not relate to other files. End-use has data files and does not use it with other users. **3. Database System Model:** describes the centralization of company data into a shared database that is shared with all users. Access to data resources is

controlled through a database management system (DBMS). **4. REAREA system model.** It is an accounting framework for modeling resources, events (activities), and agents (actors) companies that are very important, and relationships between them. **5. ERP system model.** ERP is an information system model that allows companies to automate and integrate various key business processes besides that a variety of traditional functional barriers can be overcome because this system facilitates the existence of shared data among all users in the company (Hall, 2019).

3. BIG DATA

In recent years, "big data" has received increasing attention from accounting practice because more data have been collected by organizations in the recent two years than in the previous 2000 years (Syed et al., 2013). Big Data refers to data sets that are so voluminous and complex that traditional data processing application software is inadequate to deal with them. IBM data scientists break Big Data down into four dimensions: **1. volume** (quantity of data), **2. variety** (different sources of data), **3. velocity** (the speed of data), and **4. veracity** (the uncertainty of data) (CPA Canada, 2019). In organizational settings, disruptive phenomena significantly alter value chains. Indeed, big data and its four "V" characteristics have had a profound impact on the people, processes, and technologies related to the information value chain. First, the new value chain involves a different set of people, processes, and technologies. While IT is known to exist in a constantly changing landscape, we can see the accompanying changes to the people and processes attributable to big data as a disruptor. Second, there is greater amalgamation of technologies into "platforms" and processes into "pipelines" in the value chain's knowledge-derivation phase. Third, we see greater reliance on data scientists and analysts across all stages of the value chain to support self-service and realtime decision making (Abbasi et al., 2016). Data service companies specializing in collecting and evaluating designated data from various sources could emerge, such that big data pertaining to the fair value of assets and liabilities can mitigate subjective assumptions in fair value estimates (Hong Kong Institute of CPA, 2017). Big Data can exist as large structured data (e.g., data that fit into a defined schema, such as relational data), semi-structured data (e.g., data that are tagged with XML), unstructured data (e.g., text and video), and multi-structured data (e.g., integrated data of different types and structural levels). Unstructured data represent the largest proportion of existing data and the greatest opportunity for exploiting Big Data (Moffitt & Vasarhelyi, 2013). Unstructured information is 90% of Big Data and is 'human information' like emails, videos, tweets, Facebook posts, call center conversations, mobile phone calls, website clicks (Syed et al., 2013).

3.1. Big data opportunities and challenges

The management of big data for accountants and finance professionals means more than 'game-changing' opportunities. It means new challenges, as the importance of big data in business grows, they will need to find ways to measure its intrinsic value as an organizational asset (ACCA&IMA, 2013). Patterns and information that were previously hidden in large quantities of data (because extracting them required too much work, would take too long, or was too expensive) can now be exploited in many ways. Accountants and finance professionals have already spotted the potential. In the 2012–13 ACCA–IMA survey 78% of respondents said that they expect widespread adoption of the data analysis tools that can be used to collate, manage and analyze large amounts of structured and unstructured data (ACCA&IMA, 2013). Other research indicates that 80% of enterprises in the developed world are already investing at least some part of their budget in big data, and the role of big data is expected to increase over the next five years as new and existing systems further exploit its potential (Visiongain, 2013). The

analysis of Big Data moves the information professional away not just from historical to real-time processing but also from a focus on samples. Entire data sets become analyzable to determine unknown unknowns (Bhimani & Willcocks, 2014). Data is increasingly used to drive operating efficiencies. Some of the benefits are seen in the retail sector, where real-time analytics are helping companies keep pace with customer demand and reduce logistics and distribution costs. Big data is more than a business tool used for competitive advantage. The key concept here is that accountants and finance professionals who develop metrics for big data could differentiate themselves in the marketplace. Recent research has found that 20% of large companies already class data as an asset on their balance sheets – and that for companies with more than 10,000 employees, the figure rises to 30% (Dynamic Markets, 2012). Providing data valuation services could be a significant opportunity – and an important differentiator – for accountants in the future. Yet valuing data is fraught with difficulty.

4. BLOCKCHAIN

At its most basic level, blockchain is literally just a chain of blocks, but not in the traditional - sense of those words. When we say the words "block" and "chain" in this context, we are actually talking about digital information (the "block") stored in a public database (the "chain"). "Blocks" on the blockchain are made up of digital pieces of information. Specifically, they have three parts: 1) *Blocks store information about transactions like the date, time, and value; 2) Blocks store information about who is participating in transactions; 3) Blocks store information that distinguishes them from other blocks* (Reiff, 2020). The Blockchain can be seen as the distributed, decentralized, transparent, and chronological database of transactions, sometimes also called the Ledger. The data in the blockchain (e.g transactions) is divided into blocks. Each block is dependent on the previous one. The system in which a blockchain serves as the database comprises of nodes or workers. These workers are responsible for appending new blocks to the blockchain. A new block can only be appended after all nodes in the system reach a consensus, i.e all agree that this block is legitimate and contains only valid transactions. How the validity of transactions is determined and how the nodes compute new blocks, is regulated by the protocol. Blockchain is shared among all nodes in the system; it is monitored by every node and at the same time controlled by none. The protocol itself is responsible to keep the blockchain valid (Inghirami, 2019). Blockchain is the most common application of Distributed Ledger Technology (DLT). DLT uses cryptographic tools and a distributed consensus process to create a significant innovation in traditional record keeping. It has three main features: **1) Veracity** – multiple copies (as opposed to a single copy) of the complete historical record of ledger entries are each verified by consensus; **2) Transparency** – it is a public record of activity that can be seen by all market participants and **3) Disintermediation** – it operates using a peer-to-peer network, rather than requiring a specific central organization (Chartered Accountants A&NZ, 2017). It is common knowledge that the Internet is a key tool in the digitalization process. Tapscott indicated Blockchain to be the "World Wide Ledger", enabling many new applications beyond verifying transactions such as in smart deeds, decentralized and/or autonomous organizations/government services, etc. (Tapscott & Tapscott, 2016). The most common fields of applications, of the Blockchain, are: *Smart contracts, domestic payments, international payments, trade finance, and capital markets* (Frøystad & Holm, 2020). All of these areas of application of blockchain technology can be systematized into three main categories (Swan, 2015): **1) Blockchain 1.0:** *Currency* - The currency and services associated with money transfers such as payment mechanisms and remittance services. **2) Blockchain 2.0:** *Smart contracts* – a 'smart contract' is a computer protocol intended to digitally facilitate, verify, or enforce the negotiation or performance of a contract. Smart contracts allow the performance of

credible transactions without third parties. **3) Blockchain 3.0:** *Areas in government, health, science, etc.* - it is a Blockchain application system beyond financial markets and covers government, art, culture, and science. An example of 3.0 applications are Blockchain voting systems.

4.1. Blockchain Adoption in AIS

Blockchain ledger-based technology, i.e. GLT can simplify the procurement process because it enables secure recording of transactions in a way that can lead to unprecedented transparency and increased operational efficiency (Tysiac, 2017). Many "big players" like Microsoft, SAP, or Deloitte are starting to offer solutions that incorporate Blockchain-related technologies, typically based on a "Blockchain as a Service (BaaS)" approach as those that we have seen (Inghirami, 2019). **Blockchain as a Service (BaaS) & Real-time Blockchain Accounting System (RBAS) -** Claimed benefits of Blockchain include offering business value and efficiency gains by, for example, assisting compliance, asset tracking, supply chain management, and generally displacing intermediaries. The focus is particularly on multi-party scenarios (across organizations, departments, individuals, etc.), where the ledger provides a transparent and reliable source of facts across administrative domains. The precise nature of a BaaS deployment depends on the service provider, application specifics, and the customer goal.Several IT solution companies provide BaaS solutions, like *Microsoft, Deloitte, Peer Ledger, PayStand, Blockstream, Blocko, BitSE, SAP Cloud Platform Blockchain*, etc. (Patrizio, 2018). **Real-time Blockchain Accounting System (RBAS)** is a software solution that enables transactions of currency, financial derivatives, and other digital documents between two or more counterparts, stores the transaction data in cryptographically protected blocks whose integrity is verified through the process of mining, and allows the composition of financial statements at any time (Potekhina & Riumkin, 2017). **Database, ERP and Blockchain -** Databases are the best explored and widespread transaction recording and organizing applications. Specifically, distributed databases are more comparable with blockchain as both systems rely on multiple computers for operation and maintenance procedures. Peters and Panayi (2016) argued that blockchain helps to avoid the conflicts that occur when multiple modifications are made simultaneously by different computers within the distributed database system. They also mention other benefits of incorporating blockchain into such systems. These benefits include the ability to create self-enforcing contracts, as well as to ensure the security, confidentiality, and integrity of the data stored in its ledger (Peters & Panayi, 2016). ERP systems are among the most important innovations that incorporate database usage. An ERP system is prepackaged business software that provides an integrated solution for the organization's information processing needs.Blockchain is considered a new type of database that has the potential to either play the role of the accounting module in an ERP or be used in conjunction with the existing accounting information system. Unlike a regular ERP that is usually organized in a centralized architecture, blockchain distributes the power of transaction verification, storage, and organization to a group of computers (Dai & Vasarhelyi, 2017).

4.2. Blockchain opportunities and challenges

In their 2017 *Harvard Business Review* article "The Truth About Blockchain", professors Marco Iansiti and Karim Lakhani described how it is not a disruptive technology but rather a "foundational" one with the potential "to create new foundations for our economic and social systems". They also suggest that its adoption will be "gradual and steady", a finding in line with the Association of International Certified Professional Accountants 2018 Future of Finance survey. Only 2% of those surveyed said their finance teams were currently using blockchain, and only 9% were investing in it for the medium term. This shows a huge potential

for growth in this area (Rowe, 2019). The above-mentioned literature highlights characteristics, merits, and advantages deriving from the adoption of DLT systems, i.e. Blockchain technology.

5. THE IMPACT OF CLOUD COMPUTING ON AIS

Cloud computing is becoming a powerful and valuable tool for companies and has been identified as one of the key technology trends that accountants should stay abreast of over the next decade (Corkern et al., 2015). According to a report issued by the Committee of Sponsoring Organizations (COSO) of the Treadway Commission in 2012, authors defined Cloud computing as a computing resource deployment and procurement model that enables an organization to obtain its computing resources and applications from any location via an Internet connection. Depending on the cloud solution model an organization adopts, all or parts of the organization's hardware, software, and data might no longer reside on its technology infrastructure. Instead, all of these resources may reside in a technology center shared with other organizations and managed by a third-party vendor. Unlike traditional models where software applications are installed on the company's computers or servers, with cloud computing, software applications are accessed through an Internet connection and are rented rather than purchased. Armbrust, et al., (2010) in their paper state that cloud computing technology covers informatics applications provided through the internet, as well as the hardware and software equipment used in data centers for supplying these services. Generally, the accounting system gives the business a way to view and analyze financial information and provide: collecting and storing data, information useful for decision making, controls to ensure the accurate recording and processing of data, forecasts of future conditions such as projected financial statements and financial budgets.

Traditionally two types of accounting systems are known: a) accounting system locally installed on the company's computers, and b) web-based accounting software installed on a server. Today web-based accounting systems are closely related to the new cloud computing approach (Christauskas & Miseviciene, 2012).

Cloud computing services are generally divided into three separate categories or levels (KMPG, 2012):

1)Infrastructure as a Service (IaaS) is the lowest level. Renting access to computer processing power and storage over networks.

2)Platform as a service (PaaS) is the next level up. Developing and hosting bespoke software in cloud environments (platforms) that provide all required tools, languages, databases, and resources.

3) Software as a Service (SaaS) is the highest level of the cloud computing service. Renting access to software as web-accessed services instead of installing it on the premises.

According to the way these services deploy, there are four cloud computing deployment models (Mell & Grance, 2011; Attaran & Woods, 2018): **(1) Public cloud.** Cloud infrastructure is made available to the general public and all cloud services are available in an on-demand manner. It is owned, and exists on the premises of the cloud provider (third-party organization). Customers pay only for the CPU, storage, or bandwidth they consume.

(2) Private cloud. Private cloud infrastructure is provisioned and run exclusively for one organization. It may be owned, managed, and operated by the organization or by the cloud provider. The infrastructure may exist on or off-premises. Private clouds provide a high level of security and better control over the cloud infrastructure, which makes them more expensive than public clouds. **(3) Community cloud.** The cloud infrastructure is provisioned for exclusive use by a specific community of consumers from organizations that have the same requirements (such as mission, policy, performance, security, and compliance requirements). It may be owned, managed, and operated by one or more of the organizations in the community,

the cloud provider, or some combination of them. It may exist on or off-premises. **(4) Hybrid cloud.** Hybrid cloud combine two or more distinct cloud infrastructures – private, community, or public, bound together by technology that allows data and applications to be shared between them. A public cloud is used for non-critical information, while sensitive information is kept on a private cloud controlled by the organization. This cloud structure gives business flexibility, more deployment options, optimize security and compliance requirements.

Cloud-based AIS can integrate all the critical information needed for accounting processes within the same system and enables the various parties to access cloud-based AIS (such as client company, accountant, and auditor) to have the opportunity to work simultaneously on the real-time accounting process, in a transparent manner. Cloud accounting can be advantageous in many ways in today's business world. The potential impact of cloud computing on the accounting information system when applied is revolutionary, especially in the way AIS collect and store data about activities and transactions; process data into useful information for making decisions; and provide adequate controls to safeguard the organization's assets. According to Khanom (2017) and Al-zoubi (2017), the potential benefits of cloud computing in the field of accountancy and elements of AIS are summarized as follows:

- **Less costs**. It allows individuals and firms to use software and physical equipment without the need to make a lump-sum purchase of a program, or buy and set up a server to host it.
- **24/7 Accessibility to All Accounting Information**. Users can get all the financial reports provided by the established system at any time and any place according to the powers granted by the company to its users and so information from AIS can no more be delayed.
- **Real-Time Information Updating.** When new data is entered, it populates each location where it is required. Accountants on the cloud can do mobile accounting by approving transactions; authorizing payments; enter financial data; preparing financial statements.
- **Security of Financial Information.** There are a set of policies, controls, procedures, and technologies that work together to protect cloud-based systems, data, and infrastructure.
- **Scalability.** Every piece of infrastructure can be expanded to handle increased load. Scalability can be applied to: Disk, Memory, Network, CPU, etc.
- **Automatic Data Back-Up and Restoration.** This helps to secure the information in the event of a break-in, fire, or other incidents that could put sensitive and important information at risk.
- **Automatic Software Updates.** It adds new software that is simple and easy to use.

6. ARTIFICIAL INTELLIGENCE AND THE FUTURE OF AIS

Job description of today's accountant looks very different than that accountant 20 years ago. In another 20 years, accountants will again, play a different role. The roles of accountants and the way how accounting information flow will change substantially over the next decade. Accountants will need to embrace specialization and the use of Artificial Intelligence as on-going technology. Artificial Intelligence (AI), also called Machine Intelligence, could be simply defined as any machine or device which has the human ability to think, learn, solve problems and take decisions (Rane & Lahane, 2020). AI is a computer program to think and learn, with the main goal to provide software that can solve specific tasks, efficiently and effectively process the inputs into outputs, and alter required specific methodologies, information analysis, report preparation, and many cumbersome processes, without being encoded with commands. Accountancy, Accounting Information specifically is a field that AI has already been applied and is increasingly developing in the automation of the elements of the Accounting Information Systems (eg. save, retrieve, store, process, and analyze the firm's financial data). According to a study done by the Association of Chartered Certified Accountants, there is a possibility that automation will relieve many burdensome tasks that would enable accountants to focus on consulting services and other higher-value work.

Artificial intelligence is particularly applicable and with automation can replace routine tasks like accounting (bookkeeping), audit, taxation, analysis and calculation of indicators etc. In the era of artificial intelligence, with the popularization of intelligent accounting software, accounting presents the characteristics of intelligence and automation. The focus of accounting work has shifted to analysis, judgment, decision-making, management, and so on (Guo, 2019). The primary issue with bookkeeping is manual and repetitive data entry which makes the process tedious. It makes it less attractive for generations to come. Lack of competence, human error, unexpected life events, and lack of scalability makes humans inefficient in bookkeeping. According to research done by the University of Oxford in 2015, accountants have a 95% chance of losing their jobs as machines take over the role of data analytics and number crunching. In the era of AI, the New Management Accounting Theory believes that financial personnel still have a good space for survival and development (Li et al., 2020). This requires accountants to actively change their ideas and to understand and be prepared to work alongside artificial intelligence. Accountants need high quality, comprehensive, and timely financial and non-financial information and analysis to help and support businesses and stakeholders to make better decisions.

AI is critical to the future of the accounting and auditing professions. AI is a vital tool that will provide these professionals with the needed tools to increase the efficiency and effectiveness of their occupations (Baldwin & Trinkle, 2006):

- The presentation of accounting information can automatically generate accounting statements, which is helpful for staff to obtain dynamic accounting information in real-time (Guo, 2019). With AI-based accounting software, any document can be scanned and the relevant information is sorted and stored categorically to allow easier analysis of the same. It generates new insights from the analysis of data and provides better and cheaper data to support decision-making.

- The monthly, quarterly, or yearly closing procedures can be automated with an Artificial Intelligence system and thereby significantly reduce the amount of time spent on such activities. It will help in making such information available to the management immediately after the closing date. AI systems can also efficiently work to create reserves of funds for timely payment of such expenses thereby supporting Working Capital management and give proper priority to the expenses based on their nature and frequency (Rane & Lahane, 2020).

- They can process huge amounts of data (structured and unstructured), and pick up weaker or more complex patterns in data than humans can. They also do not exhibit human biases and therefore provide opportunities to eliminate cognitive biases, so can be more consistent decision-makers.

- AI using machine learning can make better predictive models to forecast revenues and expenses and increases the scope of control in the process of accounting and finance (Icaew IT Faculty, 2018).

- Improving fraud detection through more sophisticated, machine learning models of 'normal' activities and better prediction of fraudulent activities. A business can keep a categorized record of the spending and at the same time easily audit the same for various non-compliances as well as for any possible frauds.

7.   THE IMPACT OF COVID-19 ON AIS

The ongoing COVID-19 crisisis affecting the accounting profession as well as all professions. Its effects are contained in a way that generate, collect, analyze and interpret accounting information. One area in which the Covid 19 crisis could have a major impact is the internal control process. Accountants should be cautious about the threats and risks that may arise as a result of Covid 19. The following list of program areas is not exhaustive, but it highlights where

additional attention may be required (Deloitte, 2020): **1. Scoping and risk assessment**. Performing a tailored risk assessment, including review of the principles and points of focus in the COSO 2013 framework in light of changes, should be completed. Scoping and risk assessment conclusions should be revisited to verify that they reflect the current reporting period's organizational risks. Specifically, the following process areas may have increased risk: Revenue, supply chain, technology and other infrastructure disruption; Processes that are reliant on select few resources (e.g., highly technical areas, estimates, and significant judgments) and may require updates to delegation of authority; Processes that are highly manual; Areas that are susceptible to fraud (e.g., money movement). **2. The design of controls may need to be adjusted** (as well as appropriate documentation of the adjustment maintained) to compensate for changes in risk, or contingency plans may need to be put in place for outsourced service providers. **3. Evaluation of the operating effectiveness of controls may need to include a plan for increased levels of remote testing.** This will likely also result in an increased focus on the quality of documented evidence to support the evaluation of the operating effectiveness of controls, in particular a management review control where judgment is used by testers to evaluate the sufficiency of the documentation to support a conclusion that the control is operating effectively. **4. Changes in workforce, remote working and in the business as a result of COVID-19 may increase control deficiencies.** Management will need to put in place plans for a timely and effective response. This will require careful project management and put increased pressure on those individuals with the best knowledge of internal control. **5. Typical communication plans with senior management and board members may need to be revisited**, so that they are given the information they need on a timely basis to fulfil their responsibilities.

8.   RESEARCH METODOLOGY

The world of accounting is subject to change due to the evolution of the field of computer science. In this regard, this study focuses on the analysis of leading information technologies that have an impact on AIS. On the other hand, it assesses practitioners' perceptions of these technologies by analyzing their level of awareness and knowledge about Big Data, Blockchain, Cloud Computing, Artificial Intelligence, and related security challenges. This empirical study aims to find out whether certified professional accountants in the Republic of North Macedonia have a sufficient level of understanding of new technologies along with related benefits and challenges in the field of AIS, as well as to examine their perception of the role and impact of these technologies on AIS. For that purpose, we designed a survey aimed at practitioners working in the field of domestic accounting and auditing practice.

8.1. Sample characteristics

The questionnaire included 16 questions that focused on the professional activity of practitioners, their perception of new technologies, and the associated risks posed by the new situation with COVID-19. Most of the questions were answered on a Likert scale from 1 to 5 where 1 totally disagrees and 5 totally agrees. The survey was sent to 150 practitioners (accountants, auditors, and academics) in the Republic of North Macedonia. Participants received an email with a link to the questionnaire and 57 responses are received or a response rate of 38%. Professional field of the participants is presented in Table 1.

Professional field	No. of participants
Accounting	14 (24,6 %)
Audit	36 (63,2 %)
Academia	7 (12,3 %)
TOTAL	**57 (100%)**

(Source: Authors calculations)

9. RESULTS AND DISCUSSIONS

Prior to any research analysis of the results, an analysis of the reliability of the responses was performed. In order to measure the internal consistency and reliability of the questionnaire, the **Cronbach's alpha coefficient** was calculated. Its score is **0,83** which means high internal consistency, and all items seem worthy of retention.

The first introductory questions, Q2 and Q3 refer to the knowledge of technologies by the respondents, and whether they are applied in their companies.In both questions they had the chance to answer more than one answer, according to the nature of the questions. Cloud Computing is the most familiar technology between practitioners (59,6%) and also 43,9% of them are actively using this technology, so it is the most dominant technology according this questionnaire. Big data is also known between the practitioners (43,9%), and 15,8% of them are actively using it. Blockchain and Artificial Intelligence are less known between the participants in this questionnaire with 29,8% each, but on the second question, the results shows that only 7% of the participants are using Blockchain and 3,5% of the participants are using Artificial Intelligence. 28,1% are related to option – *None* in the first question, which means that they don't know the characteristics of these technologies, and in the second question the option – *None* counts 52,6%, that means in our domestic practice there is very poor practical use of these technologies.

Regarding Big Data, some of the large companies in the world already classify them as an asset in the Balance Sheet. Most of the participants generally think that Big Data should also have the same treatment in domestic practice. Participants also believe that the application of Big Data can reduce subjective estimates in determining fair value. The results of these responses are presented in more detail in Table 2.

Table 2: Big Data

Q4.	In regards of Big Data, some of the large companies in the world already classify them as an asset in the Balance Sheet. How much do you agree with this treatment and do you think that it should be applied in domestic practice? (Likert skale)			
Results	1- 7 (12,3%)	2- 5 (8,8%)	3- 19 (33,3%)	4- 10 (17,5%)	5- 16 (28,1%)
Q5	One of the many benefits of Big Data in AIS is the ability to mitigate subjective estimates in determining the fair value of a particular element in the financial statements. How much do you agree with this statement? (Likert skale)			
Results	1- 2 (3,5%)	2- 3 (5,3%)	3- 18 (31,6%)	4- 19 (33,3%)	5- 15 (26,5%)

(Source: Authors calculations)

The blockchain operates in a decentralized manner, with no central authority validating the transactions, which are validated by consensus by all participants. Regarding the reliability of the transactions generated in this way, most of the respondents think that they can have an adequate level of confidence in the integrity of the transactions. Also, the respondents believe

that the reduction of costs (73,7%) is the biggest benefit from the application of Blockchain in the operation, while reducing the need to use a sample in the audit is perceived as the least benefit (8,8%). Table 3 summarizes the results of these responses.

Table 3: Blockchain

Q6.	Blockchain technology operates in a decentralized manner, i.e. there is no central authority, as an intermediary, which would validate the transactions entered by the participants in the network. Do you think this kind of operation provide an adequate level of confidence in the integrity of the transactions? (Likert skale)			
Results	*1- 3 (5,3%)* *2- 6 (10,5%)*	*3- 22 (38,6%)*	*4- 14 (24,6%)*	*5- 12 (21.1%)*
Q7.	Of the following benefits from the application of blokchein technology, select (maximum of three) which of them would be most beneficial in the operation?			
Results	1.Reducing the use of paper documents			*42 (73,7 %)*
	2.Greater objectivity in terms of estimates			*8 (14%)*
	3."Smart contracts" - increased security of rights and obligations			*14 (24,6%)*
	4.Optimization in data analysis			*23 (40,4%)*
	5.Increased efficiency in the supply chain - by reducing the time to complete the process.			*16 (28,1%)*
	6.Reducing the need for intermediaries			*15 (26.3%)*
	7.Transparency of data in the network			*18 (31,6%)*
	8. Reducing the need for using sampling in audit			*5 (8,8%)*
	9.Increasing the efficiency of gathering evidence			*16 (28,1%)*
	10.Possibility to provide a perfect audit trail			*13 (22,8%)*
	11.Real-time Blockchain Accounting			*25 (43,9%)*

(Source: Authors calculations)

Cloud Computing technology reaches a great depth into everyday accounting practice and directly affects the way accounting information circulate. The greatest benefit from this technology according to the participants is the flexible accessibility – 24/7 access to all accounting informationfrom any place on any device based on Internet. Cost savings for Hardware, Software and IT maintenance is also great benefit that 22,8% of the participants voted for it. 42,8% of the participants in the question concerning about the biggest threat and constraint that affect the implementation and the use of Cloud Computing technology in AIS chose Skepticism about the security and protection of sensitive data, which means that they still are not 100% ready to believe and share the sensitive data to system or someone other than them. Most of the participants think that cloud computing technology will improve the application performance of AIS with 63,8% votes for agree and strongly agree. Table 4 gves more details about these questions.

Table 4. Cloud Computing

Q8.	Which of the following benefits of cloud computing technology do you think is most beneficial to accounting information systems?	
Results	1. Cost savings.	*13 (22,8%)*
	2.24/7 access to all accounting information.	*24 (42,1%)*
	3.Scalability.	*3 (5,3%)*
	4.Security of financial information.	*7 (12,3%)*
	5.Automatic backup and data recovery.	*10 (17,5%)*
Q9.	Which of the following constraints (threats) relating to cloud computing technology do you consider to be the greatest barrier to its acceptance in accounting information systems?	
Results	1.Integration into the existing system.	*9 (15,8%)*

	2.The company policy and the lack of complete control by the company.	7 (12,3%)
	3. Skepticism about the security and protection of sensitive data.	24 (42,1%)
	4. Possible incompatibility of cloud services in the internal process of the organization.	7 (12,3%)
	5. Necessary fast and stable Internet connection.	10 (17,5%)
Q10.	How much do you think the implementation of cloud computing technology will improve the application performance of accounting information systems? (Likert skale)	
Results	1- 0 (0%) 2- 2 (3,5%) 3- 19 (33,3%) 4- 20 (35,1%) 5- 16 (28,1%)	

(Source: Authors calculations)

Participants were asked about Artificial Intelligence and its application in AIS. On the question for how much they agree that the process of circulating accounting information can be automated, most of the participants (57,9%) agree or strongly agree to this. Only 8,8% disagree and none of them exposed strongly disagree reaction. In question 12 participants had different opinions (see Table 5) on whether AI can replace human factor and does Machine learning is better than Human learning. Question 13 concerns about the trust and confidence in the information generated and interpreted by AI, and also if are they willing to accept them as part of the daily operations. Participants also have different opinions, but with positive trend of trust (see Table 5). From these results we can see that practitioners in domestic practice are still skeptic and they need more time so they can relay on automation process and implementing AI in AIS.

Tabel 5. Artificial Intelligence

Q11.	To what extent do you think that the process of circulating accounting information can be automated,based on Artificial Intelligence? (Likert skale)
Results	1- 0 (0%) 2- 5 (8,8%) 3- 19 (33,3%) 4- 21 (36,8%) 5- 12 (21,1%)
Q12.	Do you think that Artificial Intelligence can replace the human factor, and also through the mechanism of machine learning to function better than human learning? (Likert skale)
Results	1- 4 (7%) 2- 9 (15,8) 3- 17(29,8%) 4- 20 (35,1%) 5- 7 (12,3%)
Q13.	Do you think that you can have confidence in the information generated and interpreted by Artificial Intelligence (reliability and accuracy)? and also if you are willing to accept as part of daily operations? (Likert skale)
Results	1- 0 (0%) 2- 10 (17,5%) 3- 20(35,1%) 4- 17 (17,8%) 5- 10 (17,5%)

(Source: Authors calculations)

COVID-19 imposes the work to be performed remotely, thus creating an opportunity and perhaps the need to apply more Information Technologies in the Accounting profession, especially in the way information circulate. Participants were asked how much they think this pandemic will contribute to the accelerated application of these technologies and their opinion on whether AIS redesign will take place. For the first question 79% agree or strongly agree, and 86% said Yes to the second question that leads to conclusion in our summary that AIS will be more digitalized, automated and based on the latest Information Technology trends in the very near future (see Table 6).

Table 6. Impact of COVID-19 on AIS

Q14.	How much do you think that the new situation with the COVID 19 crisis will contribute to the accelerated application of these technologies? (Likert skale)				
Results	*1- 0 (0%)*	*2- 2 (3,5%)*	*3- 10(17,5%)*	*4- 20 (35,1%)*	*5- 25 (43,9%)*
Q15.	Do you think that the pandemic is changing the way of functioning of accounting information systems in domestic practice and leads to their redesign?				
Results	*YES –49 (86%)*			*NO - 8 (14%)*	

(Source: Authors calculations)

The last question in this questionnaire was related to preference and choice of the participants for these technologies. They had the chance of choosing maximum two, so we find out that in domestic practice Cloud Computing with 71,9% and Big Data with 50,9% will be the most dominant technologies in practical application. The details are presented in Figure 1.

Figure 1: Technology with the most dominant application
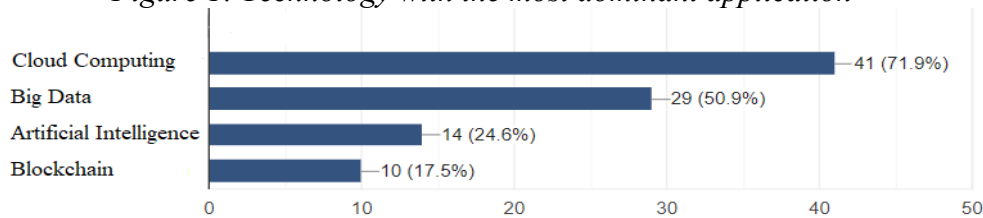
(Source: Authors calculations)

10. CONCLUSION

The digitalization process is changing dramatically the accounting profession. New technologies are changing the focus of the profession, that is, the routine work of accountants has now been replaced by technology. The automation process contributes to reducing the role of people as an element in AIS. The benefits of these technologies, which were elaborated earlier, are enormous, that is, they shorten the time it takes for accountants to perform their tasks, and therefore make them more efficient. Big data significantly reduces data analytics time, unlike traditional data analysis and processing software. Blockchain technology allows accountants to store digital information in a public database. Blockchain is the most common application of Distributed Ledger Technology (DLT), which uses cryptographic tools and a distributed consensus process to create a significant innovation in traditional record keeping. The increasing flow of accounting information is not sufficiently effective and efficient in traditional accounting information systems, so accountants have to master and use cloud computing technology, which is particularly applicable to small and medium-sized companies, and large companies that want to provide a better, lighter and more economical work. And, last but not least, Artificial Intelligence as technology changes the work of accountants, so that all continuous and repetitive work is automated. That does not mean completely replace human beings as a factor, but rather taking advantage of these benefits, accountants need to commit to more complex tasks such as analysis, projections, interpretations and help the company to meet its objectives. According to the results obtained from the survey conducted among practitioners in the Republic of North Macedonia, Cloud Computing and Big Data are the best known and most commonly used technologies in practical application on AIS. Artificial Intelligence and Blockchain as technologies are poorly implemented and insufficiently known in domestic practice due to the nature of the work in our country, the lack of advanced IT companies and the level of country development. The use

of these technologies is increasingly evident, and even necessary, which is particularly evident in the current state of the COVID-19 Pandemic.

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CONCEPTUAL FRAMEWORK FOR UNDERSTANDING EMERGING TECHNOLOGIES THAT SHAPE THE ACCOUNTING AND ASSURANCE PROFESSION OF THE FUTURE

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ABSTRACT
We are currently on the verge of the fourth industrial revolution (industry 4.0) that will fundamentally change the way in which businesses and individuals operate. It is characterized by the integration of both physical and virtual world with a new pulse for greater automation and autonomy of business processes without or limited need of human intervention. Cloud computing, the internet of things, big data and data analytics, artificial intelligence and machine learning, blockchain, augmented reality are among the most exploited contributing technologies. This paper provides a conceptual framework for emerging technologies with greatest disruptive potential for the accounting and assurance profession. We have surveyed the scarce literature with the aim of investigating the relationship and interplay between most potent emerging technologies and accounting and assurance services. Our findings suggest that cloud accounting, big data, blockchain, artificial intelligence and machine learning will most likely shape the accounting and assurance world for many organisations and future skills set pursued by professionals in order to add value. We conclude that current accounting research efforts are insufficient to understand and grasp the possible future interactions between the vibrant digital economy, its emerging technologies and the accounting profession, including the changing information needs of investors.

Keywords: big data, blockchain, accounting, emerging technologies, cloud

JEL classification: M15, M41, O33

1. INTRODUCTION

We are witnessing the early days of the fourth industrial revolution commonly referred to industry 4.0, characterized by the exponential pace of development and fusion of many emerging technologies that fade the borders between physical, digital and bio worlds (Schwab, 2016). Billions of people every day are connected by mobile devices with cost efficient access to increasing computational power, storage capacity and knowledge. Many businesses are looking at substantial increase in efficiency of operations and productivity through combination of advance manufacturing and some of the emerging technologies, such

as: Internet of Things (IoT), Big Data and data analytics, artificial intelligence and machine learning, robotics, autonomous vehicles, blockchain, cloud computing, augmented reality, nano and biotechnologies, cyber-physical systems, cybersecurity and others. The fast technological breakthroughs will impact many industries such as supply chain and logistics, manufacturing, automotive, information and communication, finance and banking, health. Researchers are arguing that many emerging technologies that are part of industry 4.0 will likely transform the accounting profession, the nature of accounting processes and the future roles and tasks performed by accounting professionals (Bhimani and Willcocks, 2014; Cong et al., 2018; Kokina and Davenport, 2017; Moll and Yigitbasioglu, 2019).

The aim of the paper is to provide a comprehensive conceptual framework for understanding the impact of most disruptive technologies for the accounting profession: cloud computing, Big Data, artificial intelligence and machine learning and the blockchain technology. The framework is built through extensive and combined literature review of research papers, applicative studies and industry articles in order to achieve comprehensive view on the implications of industry 4.0 on accounting processes and professional practice. We explore both strategic and operational aspects of the digital transformation of accounting practice, focusing on the areas of financial accounting and reporting, management accounting and auditing and assurance.

The paper contributes the literature on digitalization in accounting through conceptual and explanatory analysis of:

- main technology developments, proof of concepts and application tools for accounting and assurance activities,

- the nature of technology enabled accounting processes of the future, internal control mechanisms, fraud detection and prevention activities and assurance procedures,

- industry 4.0 implication on workplaces and roles associated with the accounting and assurance profession,

- knowledge and skills gap that accountants need to fulfil in the future.

The rest of the paper proceeds as follows. In section 2 we conduct a literature review on disruptive technologies for accounting. Specifically we explain the advantages and limitations in exploiting cloud computing in accounting, implications of Big Data phenomenon and data analytics for accountants analyzing performance, assessing business risk or perform technology enabled assurance procedures supported by artificial intelligence and machine learning. We conclude section 2 with exploratory study of the blockchain and its potential impact on accounting information and control systems through implementation of public distributed ledger and smart contracts. The next section provides an overview of the future role of accounting professionals and the changing needs for knowledge and skill sets amid young entrants in the profession. Section 4 concludes the paper with a discussion of the limitations and proposals for future research.

2. TECHNOLOGIES THAT WILL SHAPE THE ACCOUNTING AND ASSURANCE IN THE FUTURE

The digital transformation of businesses supported by innovative and disruptive technologies of the fourth industrial revolution (industry 4.0) is happening with accelerated pace in many businesses that are part of the global supply chain, advanced manufacturing, logistics, finance and health. Many of these emerging technologies will have profound effect on accounting processes and professional practice, including labour market and job opportunities for accountants. Among the technological innovations that are driving changes in current accounting practices, researchers emphasize the disruptive potential of cloud accounting, big

data and data analytics, artificial intelligence and machine learning and the blockchain (Kokina and Davenport, 2017; Moll and Yigitbasioglu, 2019).

2.1. Cloud accounting

Cloud computing is the provision of computing resources as ready to use services over the internet instead of providing traditional IT infrastructure in terms of selling and installing hardware and software and building capacity within organizations. In general cloud computing services fall into three broad categories (Du and Cong, 2010):

- Data storage as a service of storing and managing large volume of business data remotely on the servers of the cloud service provider,

- Application software as a cloud service where the cloud service provider offers various business software application and tools over the internet for handling business processes such as sales and customer relationship management, purchases or human resources management,

- Infrastructure/platform category where cloud service provider offers computing services of computer hardware and system software, which involves operating systems, security and network systems.

According to Mulholland et al. (2010) there are four possible variants of cloud deployment models, including public cloud, private cloud, community cloud and hybrid cloud. Public clouds are available to the general public, where data is created and stored on third party servers. The service providers offer the server infrastructure and service both free of charge or on pay-per-use basis. Private clouds are internal, usually corporate cloud systems that are no different in architecture compared to public cloud with exception to access rights being limited to company employees. In the community cloud deployment model several organisations with similar backgrounds share the infrastructure and related resources. The hybrid deployment model exists when there is a composition of two or more cloud approaches (private, community or public) which are connected together by standardized or proprietary technology that enables data and application portability.

Most of organizations and individuals are using cloud services provided through the public cloud deployment model, since there are multiple benefits of this model compared to other approaches. It allows companies to pay as they use the service, so they can easily monitor and control usage or predict future expenses as they scale up the use of service (Du and Cong, 2015). The capital investment in IT equipment and its maintenance is responsibility of the cloud service provider, so organizations could allocate more resources and build competence around their core business (Du and Cong, 2015; Mulholland et al., 2010). Another benefit is the cost effectiveness of cloud and additional application services offered simultaneously to a broader range of organisations (Bhimani and Willcocks, 2014; Mulholland et al., 2010).

Nowadays, increasing number of companies of different size rely on a cloud platform software for accounting purposes. Accountants and other employees spend less time in backing up their data with cloud solutions and also could access data and information anytime from anywhere as long there is internet access. Many cloud solutions providers are increasingly offering mobile apps that support monitoring, control and data analytics activities of managers. For multinational companies cloud ERP is more of a prepacked solution and contributes to better integration of the accounting information system on consortia level in comparison to traditional customized ERP solution that may differ significantly across various subsidiaries. For small and medium size accounting practices the cloud accounting software means more flexibility at workplace and vastly improved efficiency in accounting processes since they need to spend less time in communicating

accounting information with clients who have direct access to real-time information to support their financial decision-making. ERP systems are changing and vendors while keeping their interfaces and basic structures of business processes are transferring their solutions from company-located relational database towards emerging cloud technology. Also, according to Cong et al. (2018) the ERP market is changing with new more mobile and technology savvy market entrants, taking significant market share from larger and less agile firms that dominated the industry traditionally.

The decision to move towards cloud accounting software is not without drawbacks and limitations that must be considered by organisations. Generally, the service reliability of the cloud provider and reliability of the internet are a major concern for user organisations (Du and Cong, 2010). In addition data security and confidentiality are relevant concern, since user organizations could always have doubts how their data is being handled or possibly misappropriated. According to a survey conducted by Quinn et al. (2014) the primary reason for not adopting cloud technology for financial accounting processes are concerns about data security and protection. Approximately one third of respondents who decided not to move towards a cloud technology indicated no efficiency gains as a reason. Service performance quality, data ownership and regulatory compliance issues should also be considered by user organisations. Many organisations will decide to maintain full control of the communication and sharing of data and information with regulatory authorities and rather choose to build in-house capacity than going for cloud solution. Depending on the jurisdiction, authorities could have easy access and directly exchange client data and information with the cloud service provider, which can be often disadvantageous for cloud service users. There is also a going concern risk with the cloud service provider. If the cloud service organization goes out of business or significantly disrupts its operation, it will create significant interruption or even threat business continuity of user organisations. Businesses may also experience situation of being stuck with certain vendor as cloud service provider, unable to change easily the service provider without incurring significant costs or changing complete systems (Quinn et al., 2014).

The cost effectiveness and other benefits make cloud accounting solutions more attractive for small and medium size companies that usually lack resources to invest heavily in IT infrastructure. Internationally, many small businesses are adopting cloud solutions for a single or multiple business processes, including accounting for transactions, preparation of financial information and financial management. According to a survey conducted by national statistical authorities, 26% of enterprises with more than 10 employees in EU used cloud computing in 2018, mostly for hosting e-mails or storing files in electronic form. Around 10% of EU companies with more than 10 employees use advanced cloud services relating to financial and accounting software applications (Kaminska and Smihily, 2018). The statistics varied significantly among different EU member states. For example, in countries such as Finland, Sweden, Denmark or Norway roughly a third of surveyed companies where relying on cloud solution for financial and accounting purposes.

2.2. Big data, data analytics and artificial intelligence

The advancement of modern digital technologies around the internet and mobile technology has accelerated the trend of data generation and helped the creation of the big data phenomenon. Nowadays, globally produced data doubles every 18 months and organisations collected more data in the past 2 years than in previous 2000 years (Warren et al., 2015). Big data are large datasets with size that goes beyond the capacity of relational database and ability of traditional database software and tools to manage and effectively analyse the data. To fully understand the concept of big data a more holistic view is needed, since the concept

entails not only the data, data storage and computation power, but the new generation of IT tools and architecture for data analytics, identification of economic, social and technological patterns and provisions of valuable and actionable insights.

Gartner (2016) defines big data as high-volume, high-velocity and/or high-variety information assets that demand for cost effective and innovative forms of information processing that can provide for enhanced insight, decision making and process automation. Volume, velocity and variety are the three Vs that typify big data as vast amount of data created from different sources. Volume relates to the magnitude of the data in terms of huge storage requirements or large number of records. Velocity signifies the increase rate or frequency at which data is being generated and delivered. Variety means great diversity of the type of data being generated, and it might include structured and unstructured data such as e-mail messages, social media postings, phone calls, web traffic, GPS data, pictures and videos. The data derives from different sources such as industrial and individual users' sensors, satellites, social media feeds, photos or data created from various internet sources and physical devices (GPS on cars and phones, phone signals, cameras etc.). Over time additional Vs have been introduced, namely veracity and value (Fosso Wamba et al., 2015; White, 2012). White (2012) highlights the importance of veracity dimension of big data being the quality of the data and the level of trust in various data sources. If big data is insufficient in quality, when integrated with other data and information a false correlation could be made resulting in incorrect business analysis and decision making. The value dimension of big data relates to the economic benefit that is hidden and needs to be identified, transformed and extracted through analysis among larger body of structured and unstructured non-traditional data.

For accountants engaged in financial accounting and preparation of general purpose financial statements, big data may enhance their ability to understand assets, their features and conditions, including market opportunities for assets and related products. This can support the quality of fair value accounting or enable construction of new methods for valuation of intangible assets especially those that are currently not recognized in accordance with accounting standards, such as: customer base, the value of the brand, human resources or commitments (Vasarhelyi et al., 2015; Warren et al., 2015). Data generated from B2B (business-to-business) and B2C (business-to-customer) interactions, including data generated in the internal organization environment from devices with RFID or GPS chips could enrich the available data for accounting valuation and disclosure purposes. Valuation of assets such as inventories and PPE could move from historical cost towards more current estimates of value. FIFO, weighted average cost, measurement of historical cost of PPE and annual accounting estimate of depreciation are largely inaccurate compared to valuation based on information that could be obtained using the modern technology. For example, sensor data on machinery could be used to charge depreciation expense for a period that reflects more accurately the actual utilization of the asset and related benefits.

Furthermore, companies nowadays on average invest more in intangible relative to physical assets, many of which are not measured and shown on the balance sheet. This results in decline in relevance of traditional financial statements being less useful for investors with a growing gap between capital market indicators and reported company earnings (Lev, 2018; Lev and Gu, 2016). Big data analysis could help the creation of key value indicators for intangible assets for reliable accounting measurement and recognition in financial statements. Regardless of accounting valuation and recognition, if the indicators are properly disclosed to stakeholders in the notes or the annual report could increase their relevance for business and investment valuation purposes.

The decision making of investors is affected not only by financial statements, but also by exogenous data from sources such as social media, locational data, web path analytics and

electronic sales data (Cong et al., 2018). Krahel and Titera (2015) argue that business today actively seek to capitalize on the massive volume of available data and metadata, while accounting and auditing standards trail behind with traditional emphasis on presentation, aggregation and sampling rather than the added value of information. Financial reporting standards need to become more dynamic and focused on data, processes that generate them and their analysis, so financial reporting could regain relevance. Accounting processes performed need to be adjusted to incorporate wide-ranging data capturing and analysis activities, resulting in financial reports that contain more unstructured events information related to customers that better reflects on future economic value creation (Bhimani and Willcocks, 2014).Through introduction of Big Data analytics corporate reporting can change its approach and accelerate its move towards real-time reporting with emphasized prospective element of information content (Al-Htaybat and von Alberti-Alhtaybat, 2017; Krahel and Vasarhelyi, 2014).

Certainly there are some practical considerations when integrating big data in accounting analysis, such as the ability of accountants to use tools and technology to analyse data, integrate and correlate big data with traditional financial and non-financial data and the ability to transform accounting processes and measurement practices accordingly.

The management accountant too could utilize the technologies used to extract and analyse textual data from social media in order to evaluate product performance and customer satisfaction instead of using traditional customer satisfaction surveys. Social media (Facebook, Instagram, twitter etc.) is the fastest growing and one of the most important sources of textual data which if analysed appropriately could provide quality information supporting the decision making process. In addition, customer posts on company websites, chat rooms, audio data from phone calls, video reviews posted on the internet by customers and bloggers could add to the analysis.

Management accountants are responsible for creating management control systems that need to gather data and analyse whether the performance and behaviour of employees is aligned with organizational goals. If the organizational management control system is based on the popular balance scorecard framework, the management would like powerful decision-making information that analyses organizational performance in financial, customer, internal business processes and learning and growth perspective. Big Data analysis could expand and improve performance metrics used within the system. Analysis of employees' web and social media use in working hours could provide information relevant for internal business processes and learning and growth perspective. Customer social media posts, review posts on external web pages and vocalic tone of customer services calls could provide valuable information for customer perspective evaluation. According to Warren et al. (2015) Big Data can transform traditional management control systems in comprehensive monitoring and control systems. The use of Big Data analysis could persuade more organizations to move from traditional inward focused budgeting activities towards beyond budgeting practices. New information streams and data outside of the internal ERP system can improve operational planning, performance evaluation, communication of goals and strategy formation.

The Big Data phenomenon has a potential to disrupt and transform the auditing and assurance services industry as well. Today, Big Data analytics is used by increasing number of businesses which chose to rely more on technology when providing goods and services to a large customer base. The auditors need to understand the tools used by these companies in order to complete one of their most important goals during the audit, understanding client's business and environment in order to identify an address risks. If companies increase reporting transparency and more frequently disclose data as a result of advancements in digital technologies and Big Data analytics, the relevance of annual financial reporting could

diminish further and the case for continuous monitoring and assurance services could get stronger.

Currently, auditing standards keep the stance that testing all transactions can be costly and can make the audit inefficient, therefore the basic concept of sampling is well established in the auditing practice. However, the availability of continuous auditing techniques, progressive digitization of transactional data, availability of Big Data sets and developments in audit data analytics will necessitate changes in the auditing standards in the future (Krahel and Titera, 2015). The risk-based approach of the audit will continue, however the assessment of overall audit risk and its components will change. The move towards complete population could decrease detection risk arriving from extrapolating identified misstatements in sampled transactions. However, the assessment of audit risk need to be amended to incorporate complexity of evaluating the sufficiency, appropriateness and reliability of audit evidence obtained through Big Data analytics (Brown-Liburd and Vasarhelyi, 2015). The increased use of GPS devices, RFID chips and other IoT (internet of things) devices will enable auditors to obtain better audit evidence in respect of existence, completeness and valuation assertions for inventories or items of property, plant and equipment. Instead of traditionally vouching transactions against invoices and receipts, auditors could also use non-traditional and unstructured data and information such as photos, videos, GPS and RFID signaling data.

The audit will be enhanced with process mining techniques that will create numerous audit logs after each transaction path is evaluated, approvals of each transaction automatically checked in terms of segregation of duties and the network of people linked with the transaction appropriately traced and tracked (Jans et al., 2010). Big data analytics can enhance fraud risk analysis systems and improve their ability to identify fraud committed by employees'. Text mining and analysis of e-mail messages of employees could identify disgruntled workers and help more accurately predict organizational fraud risk (Holton, 2009). Other approaches in Big Data analytics that can be used to build financial statements fraud detection models are supervised and unsupervised neural networks, genetic programming, sentiment analysis and natural language processing tools, support vector machines or statistical logistic regression models (Gepp et al., 2018).

The idea of employing artificial intelligence in the accounting and audit field is not new and started in the early 60s, but recent developments in information and technology related to big data and low cost processing power will drive the future impact of this technology. Artificial intelligence and machine learning have limited use to date, however as the technology advances it will be most likely employed for:

- Coding accounting entries and compliance with accounting rules as they change, with limited or no human intervention when accounting standards are updated,
- Improving fraud detection through sophisticated machine learning models for prediction of fraudulent activities,
- Automated review of contracts and other documents and providing support to professionals for more efficient compliance assessment or predictive analytics.

Auditing is particularly appropriate for application of data analytics and artificial intelligence, since it is becoming more challenging to incorporate vast amount of structured and unstructured data to analyse financial performance and business risks associated with a client. Also many audit tasks are highly repetitive and can be automated (Kokina and Davenport, 2017). AI enabled technology can help auditors to locate and extract relevant information from large volume of documents allowing the professional to focus on applying unstructured analysis and judgement in evaluating trends, patterns and anomalies. Traditionally, accountants and auditors have performed algebraic analysis of numbers, but nowadays are increasingly implementing business intelligence and predictive and visual analytics to analyse

data and communicate effectively. When these tasks are operationally repetitive they can be supported by AI and machine learning.

Several leading professional accounting firms have started adopting cognitive AI technologies. Deloitte partners with many vendors and tries to develop technology enabled cognitive capabilities for audit specific tasks and technology enhanced solutions for clients' business. In 2014 Deloitte US developed AI-enabled document review platform that has automated the process of extracting relevant information from legal contracts, board meeting minutes, invoices, financial statements etc. According to their claims, the platform helped them reduce the time spent or reviewing documents by up to 50% or more. KPMG built its own portfolio of AI tools called KPMG Ignite, and applied artificial intelligence in predicting future anomalous business events, document compliance assessment for lease and investment contracts and building a call center analytics engine through the use of natural language processing technology (Faggella, 2020).

As explained above, artificial intelligence and machine learning technologies rather replace specific repetitive tasks performed by accounting professionals and are not likely to result in significant loss of human employment in accounting related positions in the future. However, the technology will be increasingly exploited in the future putting more pressure on accountants to develop skills to work alongside AI and machine learning software to perform more efficient analysis, oversee technology enabled external and internal audit processes and work with technology developers for new AI-enabled tools for business uses.

2.3. Blockchain technology

A blockchain is peer-to peer distributed ledger technology designed to record all transactions since its creation, in sequential continued archive. The technology gained world-wide popularity through Nakamoto's (2008) bitcoin proposal for peer-to-peer electronic cash system without the need for intermediaries approved by central authority. As explained by Nakamoto (2008) before transactions are recorded on the blockchain they are initiated and broadcasted to all nodes in the network, where each node collects the transactions into a block. In a costly computational process each node tries to find the hash, a number connected to other information in the block. Once found the new block of transactions can be added to the chain and is connected with previous blocks. This so called proof-of–work process is what preserves hackers to update the blockchain with fraudulent data. The described structure of the bitcoin blockchain has the characteristics of decentralization, strong authentication and tamper resistance (Dai and Vasarhelyi, 2017).

Many researchers see potential for the blockchain technology to transform accounting profession and the design of the accounting information systems, aid prevention of fraud in financial statements, increase efficiency, real-time performance and rise assurance levels in the audit (CPA Canada and AICPA, 2017; Dai and Vasarhelyi, 2017; Kokina et al., 2017). The technology could practically introduce in accounting what has been referred as triple-entry accounting mechanism, where each two-party transaction is verified by intermediary creating additional third verification entry (O'Leary, 2017; Schmitz and Leoni, 2019). The authentication of transactions with the technology is done transparently through the verification mechanism that prevents tampering of entries. Today many companies employ ERP systems for recording and reporting on transactions, with implemented IT controls that make it harder to retroactively change the transaction data and manipulate results of operation. However, more or less businesses are into position to manipulate earnings retroactively in traditional ledger environment through posting additional backdated entries since there is no strict requirement in the architecture to publicly verify the genuine nature of the transaction.

The blockchain technology if implemented could initiate considerable changes to how assurance procedures are being designed and executed by accounting professionals. One of the key features of the technology is the ability to create immutable records. In an audit of financial statements, this means a complete record list since the first transaction entry in the ledger and a comprehensive audit trail prone from corruptive actions of malicious actors.

Auditors have traditionally relied on sampling while performing audit of financial statements, due to high costs of reviewing all transactions and the need to complete an efficient audit. The use of distributed ledger technology such as blockchain could allow for auditing of complete transactions through review of exception reports. In addition, the traditional timing of the audit near or after financial year end, could be changed towards more continuous or real-time audit throughout the year, as transactions are arranged and recorded (Schmitz and Leoni, 2019; Vaidyanathan, 2017).

Since the appearance of the bitcoin, the blockchain technology went through several evolving phases. The first phase relates to cryptocurrency and potential disruption of international financial and payment systems. The second phase are the smart contracts, small autonomous computer programs on the blockchain that execute automatically when terms defined in a contract are met. Smart contracts reduce costs of contract execution allowing for tamper proof execution, block arbitrary activities and fraud by contract parties (Peters and Panayi, 2016; Schmitz and Leoni, 2019; Yermack, 2017). Smart contracts can be employed on accounting blockchain with incremental benefits for the efficiency and automatization of the accounting process. Compliance with financial reporting requirements can be automated, through encoding of accounting rules derived from accounting standards. When certain criteria are met by the underlining transaction, the accounting rule encoded in a smart contract executes and the transaction is recorded autonomously (Dai and Vasarhelyi, 2017; O'Leary, 2017; Schmitz and Leoni, 2019). Also, internal control procedures could be implemented through smart contracts and corrective actions can be perfectly executed in the organization based on predetermined rules. Smart contracts combined with IoT (internet of things) devices and technologies that capture physical conditions and activities (RFID scanners, GPS devices) can automate additional accounting related processes with limited or no employee intervention. Auditors could also make use of smart contracts, audit analytics and machine learning to automate transaction reconciliation procedures, saving time and reducing human errors in audit engagements (Kokina et al., 2017). Although the blockchain technology could largely make the audit and assurance procedures automated, auditors' professional judgement is still needed to challenge complex accounting estimates and management valuations in preparation of financial statements. Also auditors will need to gather evidence for the existence of transactions recorded on the blockchain and verify the consistency of recorded information with the physical world (Coyne and McMickle, 2017; Schmitz and Leoni, 2019).

Yermack (2017) has expressed more radical views on the potential impact of blockchain technology on accounting profession. The firm's transaction and accounting data could be recorded on a public or permissioned blockchain, allowing all interested parties to aggregate accounting data on income statements and balance sheets at any time without a need to rely on the integrity of the management or auditors' efforts and judgments to add credibility.

It is unquestionable that many businesses, governments and regulators recognized the potential of the blockchain technology and there is investment enthusiasm among tech savvy business leaders. However, there are many limitations for wider and accelerated adoption in many businesses and purposes. Among the limitations of the technology its lack of scalability, the need for processing power and large transaction costs, interoperability and confidentiality are usually highlighted (Aranda, 2017; Coyne and McMickle, 2017; Kokina et al., 2017).

3. CHANGING ROLE FOR ACCOUNTANTS OF THE FUTURE

One of the most frequent debates around the future of accounting and assurance profession is concentrated on technological developments and innovations that have the highest potential to affect the accounting practice. Many of current accounting processes such as expense management, invoicing, processing accounts receivable and payable are nowadays completed by machines powered by artificial intelligence. There are common arguments that in the long-term future further elements and segments of the profession will no longer require human labour and will be overtaken by robotics and artificial intelligence. In auditing, basic auditing tasks that are designed for entry level positions and young entrants in the profession, such as vouching for recorded transactions and investigating the audit trail, will probably be completely automated in the next decade or two. This will be the result of further development and adoption by the accounting and assurance profession of technologies such as big data analytics, cloud computing, blockchain and further enlargement of the Internet of Things phenomenon. The future role of accounting professionals will be all about using more sophisticated accounting information systems combined with data analytics and supporting technology such as robotics and artificial intelligence to perform comprehensive analysis and report to relevant parties.

According to Bhimani and Willcocks (2014) new possibilities for digitally enabled businesses create information challenges which are opportunity for accounting and finance professionals to adopt more Big Data analytics and fulfil more strategic role in the future. Given the potential of Internet of Things and Industry 4.0 to transform manufacturing and logistics businesses, companies will need to develop IT infrastructure and processes for continuous monitoring, analysis and interpretation of data captured both internally and generated externally. Management accountants will need to gain data analytics skills to use data generated by Industry 4.0 that will help them design modern tools and indicators for monitoring operations and product quality, discover opportunities to reduce costs and contribute management decision-making.

The auditors of the future will have different role in terms of their approach to data and information analysis. They will need to move from fact checking towards analysis of large and unstructured data sets demonstrating skills for in-depth regression analysis and predictive statistics (Krahel and Titera, 2015).

The progressing digitization of the profession will have profound effect on the skills and knowledge that need to be possessed by young graduates entering the profession. It is important for graduates to gain training in IT skills such as automatic identification systems, analytical programming and data mining (Kruskopf et al., 2019). Through education and internship students should strive to learn how to interact with data analytics software and tools, acquaint with cloud computing solutions, artificial intelligence and robotics. The common accounting curricula at many universities need to be updated to incorporate more technology related instructions. Students should also gain more abstract problem solving skills and develop critical thinking ability. In addition to technical or "hard skill", soft skills will become increasingly important too, especially effective communication, adaptability and innovativeness, customer service orientation, strong ethics and conflict solving skills.

4. CONCLUSION

Based on our comprehensive literature review on emerging technologies that are part of the fourth industrial revolution, we conclude that the accounting profession much like the global economy, trade and society will undergo significant changes in the decade or two ahead. The transformation of accounting processes and future role of professional accountants has begun,

driven and enabled by technologies such as cloud computing, big data and data analytics, robotics, artificial intelligence and machine learning, blockchain.

The blockchain technology can increase credibility of accounting information and financial statements through immutable and tamper proof records of accounting transactions, opportunities for public verification of transactions and comprehensive audit trail (Dai and Vasarhelyi, 2017). Smart contracts combined with IoT devices and artificial intelligence technologies can automate recording of transactions and enable perfect compliance with accounting rules (Kokina and Davenport, 2017; Schmitz and Leoni, 2019). In addition, financial accounting and financial statements could increase their relevance for investors through adoption of big data and data analytics for specific assets valuation and disclosure of non-financial information suitable for business valuation purposes (Krahel and Titera, 2015; Vasarhelyi et al., 2015).

The management accountants in the future will support decision-making through enhanced performance reports containing new generation metrics designed with the help of big data analytics on real-time data from social media, RFID chips and GPS devices, review posts from external web pages etc. (Warren et al., 2015).

Many researchers have conceptualized the transformation trends in audit and assurance through advancements in industry 4.0 technologies. The audit in the future will move towards more continuous and real-time audit that performs tests on complete population of transactions rather than relying on sampling. Such changes will be enabled through blockchain based accounting information systems, increased reliance on audit analytics and implementation of artificial intelligence and machine learning for repetitive audit procedures (Dai and Vasarhelyi, 2017; Kokina et al., 2017; Kokina and Davenport, 2017). The internal and external auditors will be able to better access business and fraud risks, predict and prevent fraudulent behavior by employees and fraudulent financial reporting by the management. Their fraud related activities will be supported by data analytics and artificial intelligence systems such as text mining and analysis, neural networks, sentiment analysis and natural language processing (Gepp et al., 2018). Internal control systems relevant for accounting and financial reporting can be enhanced through blockchain based ERP solutions and the use of smart contracts (Kokina et al., 2017).

Our paper contributes the recent and scarce literature on technology developments in the field of accounting and audit, by providing a conceptual framework that considers most potent industry 4.0 technologies and their implications for the future of the profession. Due to the lack of application data and the emerging and rapidly changing nature of these technologies, the research rather conceptualizes the effects and does not provide evidence on the their actual impact, contributions or challenges in implementation. Further research efforts through surveys, interviews with industry innovators and case studies could investigate many conceptual benefits and advantages of these technologies, including their implications for the role and skill set of future accountants.

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AUDIT PROFESSION IN THE SHADOW OF THE COVID -19 - A PERCEPTION OF AUDITORS IN REPUBLIC OF NORTH MACEDONIA

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ABSTRACT

The virtual practice has posed serious challenges and opened many dilemmas for the auditors. How to obtain sufficient and appropriate audit evidence in the absence of communication with the client, to assess the risks of material misstatement, to recognize the symptoms of fraud, to check subsequent events, to assess the ability for 'going concern', to exercise the required level of professional skepticism, and how to write an audit report in which the auditor will offer a reasonable assurance to users of the opinion expressed. Health experts warn that even in the post-COVID-19 period, the social distance will be an integral part of our lives. In that regard, IFAC also points out the need to prepare auditors for work in the so-called "the new normal". The paper researches how the COVID-19 pandemic affects the audit profession in the Republic of North Macedonia. For that purpose, our research is based on a survey distributed to the certified auditors, members of IORRM (Institute of Certified Auditors of the Republic of North Macedonia). From the questions asked, we have concluded whether and how much the pandemic has changed the approach of auditors in conducting audit engagements, how auditors have managed to amortize the initial shock, whether they have prepared a strategy for virtual practice in the environment of the so-called "new normal" and what are the biggest challenges they expect to face in the post-COVID world. In general, it can be concluded that all challenges posed by the pandemic will be more easily overcome by joint and smart action of certified auditors and related associations and regulatory bodies, in order to find alternative ways of acting in a radically changed environment under the influence of the COVID-19 pandemic. In addition to analyzing data obtained from the survey, documents related to the impact of COVID-19 pandemic worldwide are used, as well as other literature and scientific papers on how the audit profession responds to the COVID crisis.

Keywords: Pandemic, COVID-19, Audit Profession, Auditors

JEL classification: M40, M42

1. INTRODUCTION

Throughout history, the disease outbreaks have devastated humankind, sometimes changing the course of history, and at times even ending entire civilizations. Every crisis is different and they can disrupt our home life, our places of work, and our mindset, with repercussions for internal controls and processes, personal and professional behavior, and decisions made in the face of uncertainty and incomplete information. The International Federation of Accountants (IFAC, 2020) points out that such challenges impact the important services, professional accountants provide and can shake the foundation upon which relevant, reliable, and high-quality information - relied on by boards and the leadership of reporting entities, government/regulatory policymakers, investors, and other stakeholders - is based. When these challenges emerge and the importance of high-quality information is heightened, the expertise, trust, and judgment of the accountancy profession are tested and must truly shine. Every crisis teaches us something new about how best to prepare for, mitigate, or even try to prevent the next event (IFAC, 2020).

COVID-19 Pandemic in 2020 is proof that the world is not immune to new viruses and diseases, which can be significantly fatal in many areas of society (GHRF Commission, 2016). The unprecedented current situation caused by COVID-19, has disrupted most professions across the globe with accounting and auditing being no exception. Mandatory lockdown measures were imposed by governments to control the spread of the virus, with individuals having to work from home where possible. For auditors, this means they can no longer travel to audited entity premises, nor even to their own offices and that their audits will have to be completed remotely. The Association of Chartered Certified Accountants (ACCA, 2020) indicates that there is a positive side to this significant challenge for auditors, and that is that the audit profession was already on a journey to becoming more digital, and the investment in digital capability has allowed many firms and practitioners to adapt to the new circumstances relatively quicker than other industries (ACCA, 2020). All professional accountants need to continue to exercise high levels of diligence, integrity, and professional judgment. They, whether serving as members of a board or audit committee, organizational leaders, preparers, or auditors, are critical to the financial reporting ecosystem (IFAC, 2020).

Metaphorically, Brachio (2020) indicates that at a big-picture level, the most powerful learning to take away from the COVID-19 crisis is that there is always a potential "black swan" event around the corner – that is, an unpredictable event that has a severe impact. And with today's global connectivity, that event could again impact on the entire world. The risks associated with "black swan" events tend to be so big and so rare that many businesses do not contemplate them, much less plan for them. The auditors need to have a mindset where they are always prepared to think the unthinkable – because the "black swan" will show up (Brachio, 2020).

This paper highlights some of the practical challenges that auditors are now faced with, in light of COVID-19, and highlights some of the key considerations for auditors by referring to the relevant International Auditing Standards.

In this paper, we discuss the impact of the novel Coronavirus (COVID-19) outbreak on the auditing profession in the Republic of North Macedonia which not only includes writing an audit report in which the auditor will offer a reasonable assurance to users of the opinion expressed, but also obtaining sufficient and appropriate audit evidence in the absence of communication with the client, assessing the risks of material misstatement, recognizing the symptoms of fraud, checking subsequent events, assessing the ability for 'going concern', exercising the required level of professional skepticism.

We believe that this is the first study about the impact of the outbreak of COVID-19 on the auditing profession from the viewpoint of the Certified Auditors in the Republic of North Macedonia.

2. LITERATURE REVIEW

In the past and today, the impact of pandemics on the audit profession has not been well researched, given the fact that pandemics located worldwide with major consequences and changes in people's lives, such as COVID-19 Pandemic, are not common.

The need for the professional accountants in the society is indicated by IFAC in the recent issue of '*IFAC Point of View',* that defines them as an essential component of a sustainable and resilient global economy, guided by their fundamental ethical responsibility to act in the public interest. Maintaining trust and confidence during a crisis, such as the pandemics, is the fastest path to recovery after a crisis (IFAC, 2020). Dohrer & Mayes (2020) point out that many auditors have begun to turn their next group of audits: clients with the 2020 fiscal year ends. The World Health Organization declared a public health emergency on Jan. 30, 2020, meaning many of these clients will have been affected by the COVID-19 Pandemic during the period under audit. Auditing these clients will carry unique challenges, and certain areas may present heightened risks of material misstatement for the audit (Dohrer & Mayes, 2020).

According to the International Organization of Securities Commissions (IOSCO, 2020) in their Statement on Importance of Disclosure about COVID-19, it is observed that the COVID-19 presents a veritable "perfect storm" for fraud risk, and auditors should be on high alert. As it is stated in the IOSCO's statement, the investors and other stakeholders need timely and high-quality financial information complete with transparent and entity-specific disclosures, including information about the impact of COVID-19 on the issuer's operating performance, financial position, liquidity, and prospects. In terms of annual financial reporting, a critical part of the ecosystem that provides reliable, high-quality financial information to investors is the high-quality audits conducted by an independent auditor. Further, IOSCO (2020) reminds the auditors of their responsibilities to report on Key Audit Matters, including a description of how the auditor addressed these matters. Additionally, there may be circumstances for which the auditor concludes that the audit report should contain an emphasis of matter paragraph or a material uncertainty relating to going concern paragraph. Auditors should modify their reports when the standards require to do so (e.g., if there is a material uncertainty about the entity's ability to continue as going concern and this uncertainty has not been adequately indicated in the notes or the management commentary). In this regard, IOSCO reminds external auditors of their responsibility to communicate with management and audit committees and to evaluate the adequacy and transparency of disclosures provided in the financial statements (IOSCO, 2020).

3. OBJECTIVE OF THE RESEARCH AND A QUESTIONNAIRE DEVELOPMENT

As it is mentioned earlier in this paper, the audit profession in the first half of 2020 was faced with unknown circumstances due to COVID-19. As the pandemic persists later in the year and still is ongoing with immense impact on the whole economy affecting almost all companies, the need for audited financial statement gain on its popularity. On the one hand, we have companies that are negatively affected and are faced with serious challenges to survive in during this pandemic period working with reduced demand, reduced human capital, and reduced resources overall, and on the other hand companies with increased demand but also with reduced human capital due to saving human lives. In the situation when most of the companies have fully or partially moved to work from home relying on technologies internal controls are put on a serious test. All of these circumstances only complicate the work of auditors requiring them to be adaptable to the new situation and new working environment for themselves and their clients without endangering the quality of audits.

For the purpose of this research, a survey was conducted in July and August 2020, by an online questionnaire that consists of all aspects of the audit process, change working environment, need for changes into the law and regulation, implications on the audit reports for both 2019 and 2020, as well as the expectations of the auditors for the profession in the post-COVID period. Therefore, the research is based on five main objectives:

- To analyze how auditors' response to the new unpredictable situation caring for their health and the quality of their work.
- What changes they do, if any, in the audit process on the key audit elements?
- Does the pandemic has implications on the audit reports for the financial statements for 2019 and would they expect implication on the audit reports for 2020.
- To see their opinion or requirements for changes in the regulation.
- What are their expectations for the future of the audit profession in the post-COVID period?

Certified auditors are coded and categorized according to their current practical experience and place of work as auditors in "Big Four", other international audit networks, local audit firms, certified auditor – sole proprietor, and other (banks, insurance companies, consultancy firms, university, public companies). The survey was intended to take no more than 10 minutes. Most of the questions (except introductory and preliminary questions) were answered on a Likert scale from 1 to 5 where 1 is totally disagree and 5 is totally agree. Introductory and preliminary questions include where the certified auditors work (1 and 2 questions) and which services they are providing (3 question) in order to research the differences in views, for example, certified auditors in audit practice and certified auditors engaged in other activities (internal audit, bookkeeping, education etc.). These questions are given in Appendix A (Table A-1) and in further analysis, for the process simplification, only the number of the question is given.

Before starting with any research analysis of the results, reliability analysis was carried out. Cronbach's alfa coefficient was calculated in order to measure the internal consistency and reliability of the questionnaire. Its result is 0.872 which implies high internal consistency and all items appeared to be worthy of retention.

4. RESEARCH APPROACH TO ANALYZING RESPONSES AND RESULTS

As it is stated earlier in the study, the main purpose of the study is to provide empirical evidence on certified auditors' perceptions about working in a pandemic environment. The survey was web-based and it was sent to 120 certified auditors in the Republic of North Macedonia. Participants received an invitation email that provided a link to the survey. After a second reminding by email 62 responses are received, or a 51.7 response rate.

As it is mentioned earlier in this paper, most of the analysis are made on structured sample into the five groups – auditors from "Big Four" (10), auditors from other international audit companies (18), auditors from local audit companies (13), certified auditor – sole proprietor (8) and other (13). The group other mostly consists of certified auditors working as internal auditors, professors, or quality controllers.

It should be emphasized even in the very beginning of this analysis that all auditors employed within "Big Four" that audit quality (Q22) should not be sacrificed in the circumstances of working from home, restricted communication with the clients, closing the offices of the clients subject to audit and lockdowns (Table 1). Also, the other groups present high means, all above 4.4, and the conclusion based on ANOVA is that there is no difference between the groups related with their

attitude for the audit quality. Related to the quality of the audit profession during the COVID-19 pandemic (Q24) auditors with a mean of 4.45 agree that the risks imposed by the pandemic in the aspect of a true and objective presentation of financial statements emphasize the importance of quality accounting and auditing profession. There is no difference within the groups upon this question.

Auditors also answered with high certainty question 5 (Mean 4) that their companies were ready to apply the IFAC recommendations to work from home in order to save the health of the employees. This is an indication for the flexibility of the audit profession and its readiness to perform the audit in the changed environment without sacrificing the audit quality. However, there is a significant difference within the groups, especially between international audit companies (Big Four and other international audit companies) and local audit companies and certified auditor – sole proprietor.

Regarding the financial statements and expectations of the auditors and stakeholders from the audit report, auditors believe that world pandemic would slightly increase the expectations of the investors and other stakeholders for presenting quality financial statements (Q21) and will not increase the expectation gap between auditors and audit reports' users (Q23). Also, auditors do not believe that there will be increased demand for changed range of services offered by audit companies (Q25).

However, the majority of questions are dedicated to the audit process, and the impact of the world pandemic over it. Surprisingly, auditors are consent that COVID-19 pandemic will not influence the audit process in big part. They even have said that annual audit plan (Q7) will be subject only on minor changes. Uncertainties imposed by COVID-19 do not have big impact on auditors' professional judgment in the segment of reassessment of preliminary assigned levels of materiality and audit risk (Q8), as well as do not have big impact on the way of collecting and documenting audit evidence (Q9). This is the case also with the auditors' perception of the accounting estimations (Q10). Interesting is the fact that although the whole national economies are faced with difficulties and lowering levels of growth, where many companies are on the threshold of survival, auditors do not expect big changes of their clients' portfolio (Q11). For all these variables according to ANOVA there is no significant difference between the groups. The question related with the increasing the level of the professional skepticism due to the increased risk of material misstatements in the financial statements (Q12) shows that auditors have slightly increased professional skepticism and what is more interesting there is significant difference between the groups. In fact, auditors work in "Big Four" companies increase the level of professional skepticism more significantly than the other auditors.

The next three questions (Q13, Q14 and Q15) are related with the internal controls and frauds. There are no significant differences between groups in all three questions. It is interesting that auditors, again do believe that there is some non-significant change in the internal controls and their functioning, as well as with the elements of fraud triangle and even with the identification of the "red flags". Auditors believe that working from home and lockdowns do not contribute in significant increasing of frauds.

Regarding the audit reports for the audited financial statements for the year ended on 31 December 2020, auditors do not believe that there will be increased number of modified opinions (Q18), but do believe that there will be increased number of paragraphs with emphasis of matters (Q19).

Regarding the compliance with law and regulation, standards and ethics, auditors do not expect noncompliance with the regulation and standards (Q16) and also do not expect big compromises of the basic ethical principles from the International Code of Ethics of IFAC. For this question there is a significant difference between the groups.

At the end, having in mind the whole constellation of working environment beside the requirements for retaining and increasing the quality of audit work, auditors expect decreasing of their revenues for the period of the world pandemic (Q16).

For the post-COVID period auditors, as it is expected in all other professions, expect changing of the skills and knowledge required for the audit that should be included in the programs for professional certification of auditors (Q33).

Table 1. Case summaries

		4	5.	7.	8.	9.	10.	11.	12.	13.	14.	15.
Big Four	N	10	8	8	8	8	8	8	8	8	8	8
	Mean	3.80	4.75	2.75	2.63	3.13	2.88	2.38	4.25	3.75	2.88	3.00
	Std. Deviation	1.033	.463	.886	1.302	1.126	1.356	1.188	.707	.886	1.356	1.309
	Variance	1.067	.214	.786	1.696	1.268	1.839	1.411	.500	.786	1.839	1.714
	Sum	38	38	22	21	25	23	19	34	30	23	24
	% of Total N	16.1%	14.8%	15.1%	15.1%	14.8%	15.1%	16.0%	15.4%	14.8%	14.5%	14.5%
Other International audit network	N	18	18	17	18	18	18	18	18	18	18	18
	Mean	3.22	4.06	3.06	2.17	2.94	2.33	2.28	2.83	2.72	2.61	2.72
	Std. Deviation	1.060	.639	1.029	.618	.998	.907	1.179	1.098	1.074	.850	1.074
	Variance	1.124	.408	1.059	.382	.997	.824	1.389	1.206	1.154	.722	1.154
	Sum	58	73	52	39	53	42	41	51	49	47	49
	% of Total N	29.0%	33.3%	32.1%	34.0%	33.3%	34.0%	36.0%	34.6%	33.3%	32.7%	32.7%
Local audit companies	N	13	13	13	13	13	13	13	13	13	13	13
	Mean	3.15	3.77	2.62	2.31	3.00	2.31	1.92	2.69	2.77	2.54	2.85
	Std. Deviation	1.068	.725	.870	.855	1.000	.947	.641	.947	.832	.877	1.144
	Variance	1.141	.526	.756	.731	1.000	.897	.410	.897	.692	.769	1.308
	Sum	41	49	34	30	39	30	25	35	36	33	37
	% of Total N	21.0%	24.1%	24.5%	24.5%	24.1%	24.5%	26.0%	25.0%	24.1%	23.6%	23.6%
Certified auditor – sole proprietor	N	8	8	8	8	8	8	8	8	8	8	8
	Mean	3.63	3.75	3.25	2.38	3.38	2.88	2.25	3.38	3.25	2.88	2.75
	Std. Deviation	1.188	.463	1.389	.916	1.061	1.126	.707	1.188	.886	1.356	1.165
	Variance	1.411	.214	1.929	.839	1.125	1.268	.500	1.411	.786	1.839	1.357
	Sum	29	30	26	19	27	23	18	27	26	23	22
	% of Total N	12.9%	14.8%	15.1%	15.1%	14.8%	15.1%	16.0%	15.4%	14.8%	14.5%	14.5%
Other	N	13	7	7	6	7	6	3	5	7	8	8
	Mean	3.15	3.71	3.14	2.33	2.86	2.33	3.00	2.40	2.86	2.88	3.00
	Std. Deviation	1.068	.756	1.069	1.033	1.215	1.033	1.732	1.140	1.069	.991	.756
	Variance	1.141	.571	1.143	1.067	1.476	1.067	3.000	1.300	1.143	.982	.571
	Sum	41	26	22	14	20	14	9	12	20	23	24
	% of Total N	21.0%	13.0%	13.2%	11.3%	13.0%	11.3%	6.0%	9.6%	13.0%	14.5%	14.5%
Total	N	62	54	53	53	54	53	50	52	54	55	55
	Mean	3.34	4.00	2.94	2.32	3.04	2.49	2.24	3.06	2.98	2.71	2.84
	Std. Deviation	1.070	.700	1.027	.872	1.027	1.031	1.021	1.145	1.000	1.012	1.067
	Variance	1.146	.491	1.054	.761	1.055	1.062	1.043	1.310	1.000	1.025	1.139

Sum	207	216	156	123	164	132	112	159	161	149	156
% of Total N	100.0%	100.0%	100.0%	100%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Between groups (F-ratio)	0.846	3.933***	0.684	0.374	0.309	0.785	0.754	4.003***	1.928	0.280	0.149

*, ** and *** denote significance at the 0.01, 0.05 and 0,1 respectively

Table 1. Continue

		16	18.	19.	21.	22.	23.	24.	25.	26.	28.	33.
Big Four	N	8	8	8	10	10	10	10	10	8	10	10
	Mean	2.25	2.88	3.50	3.80	5.00	2.90	4.20	3.20	3.63	2.60	4.10
	Std. Deviation	1.282	1.356	1.069	1.033	0.000	1.197	1.033	1.135	1.408	1.265	.994
	Variance	1.643	1.839	1.143	1.067	0.000	1.433	1.067	1.289	1.982	1.600	.989
	Sum	18	23	28	38	50	29	42	32	29	26	41
	% of Total N	14.3%	15.1%	14.8%	16.1%	16.1%	16.1%	16.1%	16.1%	14.8%	16.1%	16.1%
Other International audit network	N	18	18	18	18	18	18	18	18	18	18	18
	Mean	2.00	2.44	3.06	2.89	4.56	2.39	4.33	2.78	2.67	2.00	2.89
	Std. Deviation	.907	.922	.938	1.023	.856	.916	1.188	1.060	.840	1.085	1.132
	Variance	.824	.850	.879	1.046	.732	.840	1.412	1.124	.706	1.176	1.281
	Sum	36	44	55	52	82	43	78	50	48	36	52
	% of Total N	32.1%	34.0%	33.3%	29.0%	29.0%	29.0%	29.0%	29.0%	33.3%	29.0%	29.0%
Local audit companies	N	13	13	13	13	13	13	13	13	13	13	13
	Mean	2.31	2.62	3.08	2.69	4.85	2.23	4.85	2.62	3.00	1.54	3.23
	Std. Deviation	.751	1.044	.954	1.032	.555	1.166	.555	1.325	1.000	.660	1.166
	Variance	.564	1.090	.910	1.064	.308	1.359	.308	1.756	1.000	.436	1.359
	Sum	30	34	40	35	63	29	63	34	39	20	42
	% of Total N	23.2%	24.5%	24.1%	21.0%	21.0%	21.0%	21.0%	21.0%	24.1%	21.0%	21.0%
Certified auditor – sole proprietor	N	8	8	8	8	8	8	8	8	8	8	8
	Mean	2.13	2.88	3.50	3.38	4.75	2.63	4.75	2.38	3.00	1.63	4.00
	Std. Deviation	1.126	.991	.926	1.188	.707	1.188	.707	1.408	.756	.916	1.309
	Variance	1.268	.982	.857	1.411	.500	1.411	.500	1.982	.571	.839	1.714
	Sum	17	23	28	27	38	21	38	19	24	13	32
	% of Total N	14.3%	15.1%	14.8%	12.9%	12.9%	12.9%	12.9%	12.9%	14.8%	12.9%	12.9%
Other	N	9	6	7	13	13	13	13	13	7	13	13
	Mean	1.89	2.50	2.43	3.38	4.38	2.54	4.23	2.77	2.57	2.62	2.85
	Std. Deviation	.782	.837	.787	1.325	1.261	1.050	1.301	1.013	1.397	1.387	1.068
	Variance	.611	.700	.619	1.756	1.590	1.103	1.692	1.026	1.952	1.923	1.141
	Sum	17	15	17	44	57	33	55	36	18	34	37
	% of Total N	16.1%	11.3%	13.0%	21.0%	21.0%	21.0%	21.0%	21.0%	13.0%	21.0%	21.0%
Total	N	56	53	54	62	62	62	62	62	54	62	62
	Mean	2.11	2.62	3.11	3.16	4.68	2.50	4.45	2.76	2.93	2.08	3.29
	Std. Deviation	.928	1.004	.965	1.148	.825	1.067	1.035	1.155	1.061	1.149	1.206

	Variance	.861	1.009	.931	1.318	.681	1.139	1.071	1.334	1.126	1.321	1.455
	Sum	118	139	168	196	290	155	276	171	158	129	204
	% of Total N	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Between groups (F-ratio)		0.367	0.397	1.617	1.862	1.043	0.622	0.992	0.621	1.398	2.496**	3.156**
*. ** and *** denote significance at the 0.01. 0.05 and 0.1 respectively												

Table 2. ANOVA analysis

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
4. CHANGE	Between Groups	3.916	4	.979	.846	.502
	Within Groups	65.971	57	1.157		
	Total	69.887	61			
5. TRANSITION_WORKFROM HOME	Between Groups	6.319	4	1.580	3.933	.008
	Within Groups	19.681	49	.402		
	Total	26.000	53			
7. UPDATING_AUDITPLAN	Between Groups	2.955	4	.739	.684	.607
	Within Groups	51.875	48	1.081		
	Total	54.830	52			
8. MATERIALITY_AUDITRISK	Between Groups	1.195	4	.299	.374	.826
	Within Groups	38.353	48	.799		
	Total	39.547	52			
9. AUDITEVIDENCE	Between Groups	1.374	4	.344	.309	.871
	Within Groups	54.552	49	1.113		
	Total	55.926	53			
10. ACCOUNTING_ESTIMATES	Between Groups	3.393	4	.848	.785	.540
	Within Groups	51.853	48	1.080		
	Total	55.245	52			
11. CHANGE_PORTFOLIO	Between Groups	3.211	4	.803	.754	.561
	Within Groups	47.909	45	1.065		
	Total	51.120	49			
12. SCEPTICISM	Between Groups	16.983	4	4.246	4.003	.007
	Within Groups	49.844	47	1.061		
	Total	66.827	51			
13. INTERNALCONTROL	Between Groups	7.206	4	1.801	1.928	.121
	Within Groups	45.776	49	.934		
	Total	52.981	53			
14. INCRFRAUD	Between Groups	1.212	4	.303	.280	.890
	Within Groups	54.134	50	1.083		
	Total	55.345	54			

15. REDFLAG	Between Groups	.724	4	.181	.149	.963
	Within Groups	60.803	50	1.216		
	Total	61.527	54			
16. NOCLAR	Between Groups	1.324	4	.331	.367	.831
	Within Groups	46.033	51	.903		
	Total	47.357	55			
18.AUDITREPORT_OPINION	Between Groups	1.681	4	.420	.397	.809
	Within Groups	50.771	48	1.058		
	Total	52.453	52			
19.AUDITREPORT_MATTER	Between Groups	5.752	4	1.438	1.617	.185
	Within Groups	43.582	49	.889		
	Total	49.333	53			
21. STAKEHOLDER_EXPECTATIONS	Between Groups	9.288	4	2.322	1.862	.130
	Within Groups	71.099	57	1.247		
	Total	80.387	61			
22. AUDITQUALITY	Between Groups	2.835	4	.709	1.043	.393
	Within Groups	38.714	57	.679		
	Total	41.548	61			
23. GAP_AUDITORS_USERS	Between Groups	2.909	4	.727	.622	.648
	Within Groups	66.591	57	1.168		
	Total	69.500	61			
24. QAAPROFESSION	Between Groups	4.255	4	1.064	.992	.419
	Within Groups	61.100	57	1.072		
	Total	65.355	61			
25. WEDSERVICES	Between Groups	3.400	4	.850	.621	.649
	Within Groups	77.971	57	1.368		
	Total	81.371	61			
26.DECR_REVENUES	Between Groups	6.114	4	1.529	1.398	.249
	Within Groups	53.589	49	1.094		
	Total	59.704	53			
28. COMPR_ETHICS	Between Groups	12.014	4	3.004	2.496	.053
	Within Groups	68.583	57	1.203		
	Total	80.597	61			
33. POSTCOVID_SKILLSKNOWL	Between Groups	16.096	4	4.024	3.156	.021
	Within Groups	72.678	57	1.275		
	Total	88.774	61			

The same results can be confirmed with performing nonparametric tests ok K independent samples through Kruskal Wallis Test (Table 3).

Table 3. Nonparametric tests on K independent samples

	Chi-Square	df	Asymp. Sig.
4. CHANGE	3.649	4	.456
5. TRANSITION_WORKFROMHOME	12.882	4	.012*
7. UPDATING_AUDITPLAN	2.305	4	.680
8. MATERIALITY_AUDITRISK	.866	4	.929
9. AUDITEVIDENCE	1.312	4	.859
10. ACCOUNTING_ESTIMATES	2.072	4	.722
11. CHANGE_PORTFOLIO	1.959	4	.743
12. SCEPTICISM	12.669	4	.013*
13. INTERNALCONTROL	7.177	4	.127
14. INCRFRAUD	.842	4	.933
15. REDFLAG	.883	4	.927
16. NOCLAR	1.553	4	.817
18.AUDITREPORT_OPINION	1.515	4	.824
19. AUDITREPORT_MATTER	5.978	4	.201
21. STAKEHOLDER_EXPECTATIONS	7.630	4	.106
22. AUDITQUALITY	3.853	4	.426
23. GAP_AUDITORS_USERS	1.711	4	.789
24. QAAPROFESSION	4.221	4	.377
25. WEDSERVICES	3.316	4	.506
26.DECR_REVENUES	5.027	4	.285
28. COMPR_ETHICS	8.222	4	.084***
33. POSTCOVID_SKILLSKNOWL	11.192	4	.024**

Furthermore, Spearman's correlation (Appendix B) was carried out in order to examine the correlation between variables. A general conclusion is that for most of the variables there is no strong correlation, but moderate or low positive correlation. However, interesting is the result that the variable related with the audit report opinion and emphasizing paragraph have a strong correlation with the variable for expecting decreasing of the revenues during the pandemic period. Also, there is a strong correlation of the variable related with the auditors' perception of accounting estimations made by the management in the circumstances of uncertainty and variable related with favorable conditions for fraud triangle components and barriers for identification of red flags. These findings are a clear indication that auditors are aware that accounting estimations made in circumstances of uncertainty, risk, decreased resources, and difficult economic conditions as a whole can contribute to increasing fraud and difficulties to detect red flags.

5. CONCLUSION

The impacts of COVID-19 have forced external auditors around the world to seek answers to questions they may never have previously imagined. Auditors in the Republic of North Macedonia, as members of a small profession, have been operating for more than six months in the great shadow of the COVID-19 Pandemic. COVID-19 was the most rigorous test for the profession from which the public expects quality implementation of audit engagements in an environment we do not remember. As the world continues to seek answers to COVID-19 pandemic's global impact, through research conducted with certified auditors, members of the IORRM, we have come to good information about the vitality of the domestic profession. External auditors since the beginning of the pandemic have shown flexibility and vision on how to deal with the challenges posed by the

pandemic. The results of the survey show that the auditors faced less impact of the pandemic on the audit of the financial statements for 2019 due to the fact that the pandemic followed the reporting period on December 31. For the financial statements for 2020, the auditors will focus on materiality, the risks of material misstatement, the risk factors of fraud related to the three elements of the fraud triangle, the issue of going concern, the manner of obtaining sufficient appropriate audit evidence in terms of remote work, assessment of accounting estimates, etc. According to the results of the research, it is realistic to expect the auditors to increase the level of professional skepticism, as a consequence of which the public will face a larger number of modified audit reports and more paragraphs to highlight the issue incorporated in them. Operating under the "new normal" according to the auditors will require different knowledge that should be part of the professional certification program. In general, the results of the research remind us that the challenges posed by the pandemic will be more easily overcome by joint and wise action of certified auditors, professional associations, supervisory bodies, and regulatory bodies in finding alternative ways not only to maintain routine activities but also to ways of acting in a radically changed environment under the influence of the COVID-19 Pandemic.

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APPENDIX A

Table A-1. Descriptive statistics of the responses

No.	Question	N	Mean	Std. Deviation	Variance	Min	Max	Sum
4	How much has the COVID-19 Pandemic changed the approach to your professional engagement?	62	3.34	1.070	1.146	1	5	207
5	In the new circumstances initiated by the COVID-19 Pandemic, was your audit firm prepared to implement the IFAC recommendations for the transition from the classic office to the remote environment in order to protect the health and lives of employees?	54	4.00	.700	.491	3	5	216
7	Given your client portfolio, did the uncertainties imposed by the COVID-19 Pandemic reflect your judgment in updating the audit plan of certain audited entities?	53	2.94	1.027	1.054	1	5	156
8	The uncertainties imposed by the COVID-19 Pandemic affect your professional judgment in the segment of reviewing the preliminary judgment about materiality and audit risk of certain audited entities?	53	2.32	.872	.761	1	4	123
9	Working in conditions of quarantine measures, self-isolation, and remote work influenced the application of audit procedures for collecting and documenting sufficiently appropriate audit evidence in existing and especially in new audit entities?	54	3.04	1.027	1.055	1	5	164
10	Working remotely affects your perception of the accounting estimates that were made in a time of uncertainty by the management of the audited entities or by using the work of experts in areas that require special knowledge?	53	2.49	1.031	1.062	1	5	132
11	As a consequence of the Pandemic with COVID-19 do you expect that the portfolio of your clients will change due to inability to work according to the going concern principle (clients from certain industries most sensitive to the measures taken to deal with the Pandemic such as restaurants, hotels, etc.)?	50	2.24	1.021	1.043	1	5	112
12	The health crisis initiated by the COVID-19 Pandemic and its overflow in the economy with complete closure of enterprises and their gradual opening, dismissal of employees, etc. influenced you to increase the level of professional skepticism during the audit engagements, due to the increased risk of material misstatement in the financial statements as a result of fraud or error?	52	3.06	1.145	1.310	1	5	159
13	Closing of clients, rotation of employees, application of quarantine measures supplemented by remote work, enabled possible modifications in the design and functioning of the elements of internal control in the auditing entities?	54	2.98	1.000	1.000	1	5	161
14	In times of crisis, such as the COVID-19 Pandemic, fraud risk factors become more numerous as companies and management face greater financial pressures, opportunities for fraud increase due to weaknesses in the functioning of internal controls, and individuals are more easily to rationalize their fraudulent activities. COVID-19 created favorable conditions for all three elements of the fraud triangle - even more than that - to be present in the operations of business entities?	55	2.71	1.012	1.025	1	5	149
15	In your opinion, working remotely even in case of an increased level of professional skepticism imposed certain barriers in identifying the symptoms of fraud (so-called "red flags") due to the impossibility of conducting an interview to establish closer contact with employees and to does body language follow?	55	2.84	1.067	1.139	1	5	156

16	In your opinion, will the new environment imposed by COVID-19 tempt the management of audited entities to disregard laws and regulations more often (NOCLAR - Non-Compliance with Law and Regulation)?	56	2.11	.928	.861	1	5	118
18	In your opinion, the COVID-19 Pandemic will affect the form and content of the audit report in terms of increased number of modifications in the expressed audit opinion (Unqualified opinion, Qualified opinion, Disclaimer of opinion, or Adverse opinion) for the audited financial statements of the entities for the year ending 31.12.2020?	53	2.62	1.004	1.009	1	5	139
19	In your opinion, will the work of the auditing entities in conditions of a COVID-19 Pandemic affect the more frequent use of paragraphs for emphasis of matters in the audit reports for presented financial statements for the year ended 31.12.2020?	54	3.11	.965	.931	2	5	168
21	The COVID-19 Pandemic more than ever raised the expectations of investors and other stakeholders for presenting quality financial statements and conducting quality audits?	62	3.16	1.148	1.318	1	5	196
22	In conditions of remote work, limited communication with the management and employees of the client, closure of the offices of the auditees, quarantine measures introduced, supply chain interruptions, and complete paralysis of the work of the auditees, the auditors must not sacrifice the quality of the audit?	62	4.68	.825	.681	1	5	290
23	The COVID-19 Pandemic will enlarge the expectation gap between certified auditors, on the one hand, and users of audited financial statements, on the other?	62	2.50	1.067	1.139	1	5	155
24	The risks posed by the COVID-19 Pandemic in terms of true and fair presentation of the financial statements, accent the importance of having a quality accounting and auditing profession?	62	4.45	1.035	1.071	1	5	276
25	The COVID-19 Pandemic will expand the range of services that existing and potential customers will require?	62	2.76	1.155	1.334	1	5	171
26	Work in an environment that is constantly changing under the influence of the prolonged first wave of the Pandemic in the summer months and the second wave announced by the World Health Organization by the end of the year, will adversely affect the results of auditors which may reduce your revenue based on audit services?	54	2.93	1.061	1.126	1	5	158
28	Do you think that the uncertain environment in which business entities operate in the face of the COVID-19 Pandemic will tempt auditors to compromise the basic principles of the International Code of Ethics for Professional Accountants?	62	2.08	1.149	1.321	1	5	129
33	In the post-COVID period more than ever before, auditing firms will need different skills and knowledge to be incorporated into professional programs?	62	3.29	1.206	1.455	1	5	204

APPENDIX B

Table B-1. Spearman correlation

		4	5	7	8	9	10	11	12	13	14	15	16
												Correlations	
4	Correlation Coefficient	1.000	.292*	.297*	.170	.316*	.063	.128	.148	.439**	-.055	.340*	.093
	Sig. (2-tailed)		.032	.031	.224	.020	.654	.378	.294	.001	.692	.011	.495
	N	62	54	53	53	54	53	50	52	54	55	55	56
5	Correlation Coefficient	.292*	1.000	-.142	-.024	.080	.115	-.097	.236	.307*	-.093	.114	.113
	Sig. (2-tailed)	.032		.310	.866	.566	.414	.502	.092	.025	.508	.412	.418
	N	54	54	53	53	54	53	50	52	53	53	54	54
7	Correlation Coefficient	.297*	-.142	1.000	.426**	.303*	.092	.224	.049	.279*	.060	.275*	.205
	Sig. (2-tailed)	.031	.310		.002	.027	.517	.122	.731	.045	.674	.046	.141
	N	53	53	53	52	53	52	49	51	52	52	53	53
8	Correlation Coefficient	.170	-.024	.426**	1.000	.300*	.230	.305*	.211	.299*	.200	.442**	.165
	Sig. (2-tailed)	.224	.866	.002		.029	.100	.031	.138	.031	.156	.001	.239
	N	53	53	52	53	53	52	50	51	52	52	53	53
9	Correlation Coefficient	.316*	.080	.303*	.300*	1.000	.481**	.139	.144	.274*	.414**	.474**	.308*
	Sig. (2-tailed)	.020	.566	.027	.029		.000	.336	.310	.047	.002	.000	.024
	N	54	54	53	53	54	53	50	52	53	53	54	54
10	Correlation Coefficient	.063	.115	.092	.230	.481**	1.000	.400**	.283*	.378**	.445**	.483**	.254
	Sig. (2-tailed)	.654	.414	.517	.100	.000		.004	.042	.005	.001	.000	.066
	N	53	53	52	52	53	53	50	52	53	53	53	53
11	Correlation Coefficient	.128	-.097	.224	.305*	.139	.400**	1.000	.405**	.146	.413**	.198	-.026
	Sig. (2-tailed)	.378	.502	.122	.031	.336	.004		.003	.310	.003	.169	.858
	N	50	50	49	50	50	50	50	50	50	50	50	50
12	Correlation Coefficient	.148	.236	.049	.211	.144	.283*	.405**	1.000	.361**	.254	-.057	.001
	Sig. (2-tailed)	.294	.092	.731	.138	.310	.042	.003		.009	.070	.686	.996
	N	52	52	51	51	52	52	50	52	52	52	52	52
13	Correlation Coefficient	.439**	.307*	.279*	.299*	.274*	.378**	.146	.361**	1.000	.282*	.437**	.286*
	Sig. (2-tailed)	.001	.025	.045	.031	.047	.005	.310	.009		.039	.001	.036
	N	54	53	52	52	53	53	50	52	54	54	54	54
14	Correlation Coefficient	-.055	-.093	.060	.200	.414**	.445**	.413**	.254	.282*	1.000	.335*	.160

	Sig. (2-tailed)	.692	.508	.674	.156	.002	.001	.003	.070	.039		.013	.244
	N	55	53	52	52	53	53	50	52	54	55	54	55
15	Correlation Coefficient	.340*	.114	.275*	.442**	.474**	.483**	.198	-.057	.437**	.335*	1.000	.423**
	Sig. (2-tailed)	.011	.412	.046	.001	.000	.000	.169	.686	.001	.013		.001
	N	55	54	53	53	54	53	50	52	54	54	55	55
16	Correlation Coefficient	.093	.113	.205	.165	.308*	.254	-.026	.001	.286*	.160	.423**	1.000
	Sig. (2-tailed)	.495	.418	.141	.239	.024	.066	.858	.996	.036	.244	.001	
	N	56	54	53	53	54	53	50	52	54	55	55	56
18	Correlation Coefficient	.032	.132	.033	.159	.358**	.348*	.212	.177	.259	.362**	.363**	.326*
	Sig. (2-tailed)	.822	.354	.818	.269	.010	.012	.140	.214	.064	.008	.008	.017
	N	53	51	50	50	51	51	50	51	52	53	52	53
19	Correlation Coefficient	.007	.044	.174	.198	.417**	.324*	.186	.309*	.130	.253	.189	.267
	Sig. (2-tailed)	.957	.755	.221	.164	.002	.019	.196	.026	.354	.065	.175	.051
	N	54	52	51	51	52	52	50	52	53	54	53	54
21	Correlation Coefficient	.268*	.185	.165	.371**	.058	.164	.366**	.400**	.413**	.204	.300*	.098
	Sig. (2-tailed)	.035	.180	.238	.006	.678	.239	.009	.003	.002	.134	.026	.472
	N	62	54	53	53	54	53	50	52	54	55	55	56
22	Correlation Coefficient	.224	.238	.029	.075	.063	.052	.177	.176	.280*	-.098	.032	.079
	Sig. (2-tailed)	.080	.083	.839	.596	.651	.713	.218	.211	.040	.475	.816	.561
	N	62	54	53	53	54	53	50	52	54	55	55	56
23	Correlation Coefficient	.185	.117	.280*	.320*	.344*	.548**	.359*	.358**	.257	.259	.300*	.391**
	Sig. (2-tailed)	.150	.401	.042	.020	.011	.000	.010	.009	.060	.057	.026	.003
	N	62	54	53	53	54	53	50	52	54	55	55	56
24	Correlation Coefficient	-.183	.137	.091	.143	-.028	.179	.012	.025	.321*	.134	.132	.211
	Sig. (2-tailed)	.154	.322	.518	.306	.843	.199	.933	.858	.018	.328	.337	.119
	N	62	54	53	53	54	53	50	52	54	55	55	56
25	Correlation Coefficient	.146	.206	.265	.221	.089	.095	.017	.002	.118	.047	.059	.195
	Sig. (2-tailed)	.258	.136	.055	.112	.522	.497	.907	.988	.396	.734	.669	.149
	N	62	54	53	53	54	53	50	52	54	55	55	56
26	Correlation Coefficient	-.001	.189	.015	.361**	.257	.394**	.147	.338*	.367**	.332*	.246	.153
	Sig. (2-tailed)	.993	.179	.915	.009	.066	.004	.309	.015	.007	.016	.076	.275
	N	54	52	51	51	52	51	50	51	52	52	53	53
28	Correlation Coefficient	.219	.206	.251	.252	.438**	.162	-.089	.164	.561**	.095	.328*	.241

	Sig. (2-tailed)	.088	.135	.070	.068	.001	.246	.540	.246	.000	.489	.015	.074
	N	62	54	53	53	54	53	50	52	54	55	55	56
33	Correlation Coefficient	.304*	.267	.033	.308*	.314*	.309*	.167	.344*	.456**	.419**	.303*	.103
	Sig. (2-tailed)	.016	.051	.817	.025	.021	.025	.247	.013	.001	.001	.025	.449
	N	62	54	53	53	54	53	50	52	54	55	55	56

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Table B-2. Continue

Correlations

		18	19	21	22	23	24	25	26	28	33
4	Correlation Coefficient	.032	.007	.268*	.224	.185	-.183	.146	-.001	.219	.304*
	Sig. (2-tailed)	.822	.957	.035	.080	.150	.154	.258	.993	.088	.016
	N	53	54	62	62	62	62	62	54	62	62
5	Correlation Coefficient	.132	.044	.185	.238	.117	.137	.206	.189	.206	.267
	Sig. (2-tailed)	.354	.755	.180	.083	.401	.322	.136	.179	.135	.051
	N	51	52	54	54	54	54	54	52	54	54
7	Correlation Coefficient	.033	.174	.165	.029	.280*	.091	.265	.015	.251	.033
	Sig. (2-tailed)	.818	.221	.238	.839	.042	.518	.055	.915	.070	.817
	N	50	51	53	53	53	53	53	51	53	53
8	Correlation Coefficient	.159	.198	.371**	.075	.320*	.143	.221	.361**	.252	.308*
	Sig. (2-tailed)	.269	.164	.006	.596	.020	.306	.112	.009	.068	.025
	N	50	51	53	53	53	53	53	51	53	53
9	Correlation Coefficient	.358**	.417**	.058	.063	.344*	-.028	.089	.257	.438**	.314*
	Sig. (2-tailed)	.010	.002	.678	.651	.011	.843	.522	.066	.001	.021
	N	51	52	54	54	54	54	54	52	54	54
10	Correlation Coefficient	.348*	.324*	.164	.052	.548**	.179	.095	.394**	.162	.309*
	Sig. (2-tailed)	.012	.019	.239	.713	.000	.199	.497	.004	.246	.025
	N	51	52	53	53	53	53	53	51	53	53
11	Correlation Coefficient	.212	.186	.366**	.177	.359*	.012	.017	.147	-.089	.167
	Sig. (2-tailed)	.140	.196	.009	.218	.010	.933	.907	.309	.540	.247
	N	50	50	50	50	50	50	50	50	50	50
12	Correlation Coefficient	.177	.309*	.400**	.176	.358**	.025	.002	.338*	.164	.344*
	Sig. (2-tailed)	.214	.026	.003	.211	.009	.858	.988	.015	.246	.013

	N	51	52	52	52	52	52	52	51	52	52
13	Correlation Coefficient	.259	.130	.413**	.280*	.257	.321*	.118	.367**	.561**	.456**
	Sig. (2-tailed)	.064	.354	.002	.040	.060	.018	.396	.007	.000	.001
	N	52	53	54	54	54	54	54	52	54	54
14	Correlation Coefficient	.362**	.253	.204	-.098	.259	.134	.047	.332*	.095	.419**
	Sig. (2-tailed)	.008	.065	.134	.475	.057	.328	.734	.016	.489	.001
	N	53	54	55	55	55	55	55	52	55	55
15	Correlation Coefficient	.363**	.189	.300*	.032	.300*	.132	.059	.246	.328*	.303*
	Sig. (2-tailed)	.008	.175	.026	.816	.026	.337	.669	.076	.015	.025
	N	52	53	55	55	55	55	55	53	55	55
16	Correlation Coefficient	.326*	.267	.098	.079	.391**	.211	.195	.153	.241	.103
	Sig. (2-tailed)	.017	.051	.472	.561	.003	.119	.149	.275	.074	.449
	N	53	54	56	56	56	56	56	53	56	56
18	Correlation Coefficient	1.000	.724**	.319*	-.186	.433**	.279*	.224	.523**	.219	.383**
	Sig. (2-tailed)		.000	.020	.181	.001	.043	.107	.000	.116	.005
	N	53	53	53	53	53	53	53	52	53	53
19	Correlation Coefficient	.724**	1.000	.307*	-.166	.328*	.079	.306*	.472**	.265	.485**
	Sig. (2-tailed)	.000		.024	.230	.015	.572	.024	.000	.053	.000
	N	53	54	54	54	54	54	54	52	54	54
21	Correlation Coefficient	.319*	.307*	1.000	-.097	.381**	.298*	.126	.273*	.274*	.490**
	Sig. (2-tailed)	.020	.024		.452	.002	.019	.329	.045	.031	.000
	N	53	54	62	62	62	62	62	54	62	62
22	Correlation Coefficient	-.186	-.166	-.097	1.000	-.128	.173	-.080	.133	.132	-.070
	Sig. (2-tailed)	.181	.230	.452		.320	.178	.534	.336	.307	.586
	N	53	54	62	62	62	62	62	54	62	62
23	Correlation Coefficient	.433**	.328*	.381**	-.128	1.000	.137	.360**	.272*	.140	.337**
	Sig. (2-tailed)	.001	.015	.002	.320		.287	.004	.047	.279	.007
	N	53	54	62	62	62	62	62	54	62	62
24	Correlation Coefficient	.279*	.079	.298*	.173	.137	1.000	.023	.455**	.112	.185
	Sig. (2-tailed)	.043	.572	.019	.178	.287		.858	.001	.384	.149
	N	53	54	62	62	62	62	62	54	62	62
25	Correlation Coefficient	.224	.306*	.126	-.080	.360**	.023	1.000	.165	.193	.300*
	Sig. (2-tailed)	.107	.024	.329	.534	.004	.858		.235	.133	.018
	N	53	54	62	62	62	62	62	54	62	62
26	Correlation Coefficient	.523**	.472**	.273*	.133	.272*	.455**	.165	1.000	.379**	.402**
	Sig. (2-tailed)	.000	.000	.045	.336	.047	.001	.235		.005	.003
	N	52	52	54	54	54	54	54	54	54	54

28	Correlation Coefficient	.219	.265	.274*	.132	.140	.112	.193	.379**	1.000	.249
	Sig. (2-tailed)	.116	.053	.031	.307	.279	.384	.133	.005		.051
	N	53	54	62	62	62	62	62	54	62	62
33	Correlation Coefficient	.383**	.485**	.490**	-.070	.337**	.185	.300*	.402**	.249	1.000
	Sig. (2-tailed)	.005	.000	.000	.586	.007	.149	.018	.003	.051	
	N	53	54	62	62	62	62	62	54	62	62

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

THE ROLE OF BANKS AND SECURITIES MARKETS IN THE POST-TRANSITION ECONOMIES OF EASTERN EUROPE

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ABSTRACT
Economic theory predicts that the development of the financial sector should have a positive impact on the overall economic development. Research has predominantly confirmed this expectation, with the remark that at earlier stages of economic development this impact should be higher, while a disproportionate banking sector has detrimental effect on growth through its impact on attracting highly skilled workforce, increased presence of moral hazard and the associated banking crises. This issue has been studied only occasionally in the case of the former socialist economies of Central and Eastern Europe and the former USSR. This paper represents an attempt to analyze the impact of the banking sector and securities markets development on the economic growth of these countries. A sample of 22 countries is assembled, using data from 1995 to 2018 and a panel regression and a GMM technique are used to derive conclusions on the researched topic. The analysis has shown that the banking sector has played a positive role in the economic growth throughout the analyzed period, while the role of the stock market is not significant. This is in line with the previous studies which have confirmed that the positive role of the securities markets should be expected only at higher levels of economic development. Also, the impact of the overall financial sector is deemed to be positive.

Keywords: *Financial development, Banking sector, Financial markets, Post-transition.*

JEL classification: *O16*

1. INTRODUCTION

The role of the financial sector in the economic development has been researched thoroughly (King and Levine, 1993; Levine and Zervos, 1998; Rajan and Zingales, 1998; Fisman and Love, 2004). The main dilemma attracting scholars' attention is whether the development of the financial sector is really contributing to the overall economic development or they both follow mutually unrelated pathways. In addition to the overall financial development, it was the structure of the financial sector that had been in the focus of numerous studies in terms of the optimal share of the banking sector and the stock market and their role as complements or counterparts.

The above issues in the case of the economies that underwent the process of economic transition from socialism to market economy have been researched only to a limited extent (Berglöf and Bolton, 2002; Koivu, 2002; Kenourgios and Samitas, 2007; Bonin and Wachtel, 2008; Cojocaru et al., 2016). However, most of these studies have been prepared relatively early and subsequently the time periods covered by them are rather short. Therefore, having in mind the dynamics of the changes these countries are still undergoing, their results, with all due respect, need to be reconsidered as new data become available.

These countries present a great opportunity to investigate the impact of financial development due to the compressed time period during which this process has been evolving and the exceptionally

low starting point for the observation of such an intensive social transformation. Namely, in the centrally-planned economies stock markets did not exist and the banking sectors were based on completely different principles from those in the market-based economies. Banks most often served as monetary transmission mechanisms, with the central banks (and the governments) directing the flows of money to certain economic sectors. The allocation of capital was mostly based on political, rather than economic principles, so that when these countries entered the process of transition, their banks lacked the expertise needed to properly address the needs of the business sector. Additionally, in some countries the banks were soon plagued by non-performing loans as a result of the flawed process of credit allocation and the collapse of numerous companies and entire industrial sectors due to the changed economic reality, military conflicts, disruption of market connections, etc.

This paper aims to fill a part of the gap by analyzing the countries in Eastern Europe that entered a process of transition in the 1990s and for which data have been available. The period covered is 1995-2018 and its length provides us with an opportunity to obtain longer time-series of consistent data, reflecting the processes of transition to competitive banking sectors and the privatization as the basis for the operation of the respective stock markets.

Some of the studies on this topic covering the transition economies focus on the role of the banking sector (Koivu, 2002; Petkovski and Kjosevski, 2014; Bonin et al., 2014), while others include the coexistence between banks and securities markets (Berglöf and Bolton, 2002; Kenourgios and Samitas, 2007; Fink et al., 2009), but the early stages of transition covered provide little basis for deriving workable conclusions. This paper adopts the broader approach in order to come up with a more comprehensive picture encompassing the financial sector as a whole. We believe that the time period since the inception of the stock markets in these countries has now been sufficiently long to provide us with relevant time series of data. Additionally, in order to avoid the impact of economic cycles, the 24-year time period is divided into non-overlapping three-year periods, which is also a novelty since most of the studies use five-year periods. We believe that the 3-year period is sufficiently comprehensive for this purpose, at the same time providing us with elongated series of data for the intended analysis (8 periods compared to 5 in five-year intervals).

The database has been assembled using several reliable sources (as explained bellow in the Data and methodology section) and as such, it represents a panel of data for 22 countries. The initial sample of 26 countries shrank to 22 due to the unavailability of data for some countries for various reasons (e.g. there is no stock exchange in Albania). Panel regressions and Generalized Method of Moments (GMM) are applied to come up to conclusions about the role of banking sectors and stock markets in the transition and post-transition economies in the three decades past the collapse of socialism. It is expected that the conclusions drawn in this study will provide a useful input for the pro-growth policies with respect to the development and structuring of the financial systems.

The paper is structured as follows. First, a review of the most relevant literature in the field is elaborated. The selection from the abundant corpus of related papers is chronologically presented, while paying attention to the articles covering the same group of countries. The next section describes the database used, its sources and the methodology of the research. It also contains a discussion of the results, while the last section covers the conclusions of the analysis, policy recommendations and recommendations for further research.

2. LITERATURE REVIEW

The earliest efforts to investigate the association between financial sector development and economic growth are made by Schumpeter (1912) and later by Goldsmith (1969), while a more

recent wave of research begins in the 1990s with the works of King and Levine (1993), Fry (1997) and Levine and Zervos (1998). With the availability of larger and more reliable databases and the econometric technics capable of capturing the endogeneity issues, the research has moved from theoretical to empirical, most often cross-country studies, testing the causality between various financial development indicators and the economic development. Some of the studies refer to a particular group of countries, while others are broad-based with the limitation that the development of the financial sectors and especially that of the stock markets have not been occurring simultaneously throughout the world, most notably in the former socialist economies.

Although the theoretical assertions and empirical conclusions are not undisputed, the prevailing view among researchers is that the development of the financial sector has positive impact on economic growth. The benefits of the developed financial sector are manifold, such as the mobilization of financial resources from various sources resulting in an increase of the overall amount of capital available for investments (McKinnon 1973; Greenwood and Jovanovic, 1990), provision of capital at lower cost for the investing companies (Rajan and Zingales, 1998), allocation of capital to its most efficient uses (King and Levine, 1993; Levine, 1997; Mishkin, 2002), efficient and innovative payment services (Kindleberger, 1993), financing of high-risk projects through diversification of risk, contribution to the capital account and trade liberalization (Edwards, 2001), etc.

Since the growth of the financial sector is itself a component of the rate of growth of GDP, Ductor and Grechyna (2015) explore the relationship between financial development and real output growth and conclude that the impact of financial development is optimal as long as the two sectors move together. When private credit increases rapidly, its effect on economy turns negative. Similarly, Rioja and Valev (2004) explore the impact of financial development on the sources of growth and find that in less developed economies the impact on economic growth goes through capital accumulation, while in the industrialized countries, the financial development affects productivity growth. On the other hand, when financial development surpasses the pace of overall economic development, it becomes detrimental to it, because it attracts high-quality labour force, the large financial sector produces higher levels of moral hazard ("too big to fail"), the frequency of boom-bust cycle increases, etc. (Gambacorta et al., 2014; Sahay et al., 2015). The results of Mhadhbi (2014) are far less conclusive, indicating that the direction of the relationship varies with the sample studied and the nature of the indicators used as proxies.

One of the dilemmas overburdening the entire line of thought is the possibility of bidirectional causality between financial and economic development. Researchers logically deduce that the higher level of economic development demands higher level of financial services but also the conditions for financial development are far more available in the developed economies in terms of financial resources, human capital, informational infrastructure, etc. (Robinson, 1952; Lewis, 1955). Since there is no clear-cut resolution regarding the direction of this impact, these influences are assumed to occur simultaneously in both directions, which is also reflected in the econometric techniques used to explore them.

Additionally, one of the most intriguing issues in this area is the structure of the financial system and not its overall development per se. Namely, as economic and financial systems develop, the latter not only grows in size, but also diversifies its structure through the emergence of new institutions, participants, instruments and practices. Researchers have attempted to determine whether the relative share of the most important components of the financial system, banks and securities markets and their interrelationship is relevant and if it is related to the stage of economic development. Goldsmith (1969) in his comparative analysis reaching back to the mid-19th century and covering 35 countries, including two socialist economies (USSR and Yugoslavia), comes to a

conclusion that financial intermediation increases in the course of development, while the share of banks in the financial intermediation drops in the later stages of economic development. A similar outcome is achieved by Demirgüç-Kunt et al. (2013). They implement a specific quantile regression on a sample of 72 countries to find out that as countries develop, the importance of banks diminishes, while the importance of financial markets increases.

The relative importance of banks and securities markets has been explored not only in relation with the level of development, but also with respect to the legal origin and the associated corporate governance systems. Traditionally, Anglo-Saxon countries with common law practice have been considered more market-oriented, while countries with civil law systems as bank-based economies. There has been a long debate regarding the comparative efficiency of both systems, but the practice denies the majority of the arguments, since the USA, UK, Germany and Japan belong to different groups and all of them are highly developed economies. Banks and capital markets should not necessarily be considered competitors. Song and Thakor (2010) in a theoretical paper depict three forms of interaction between banks and capital markets: competition, complementarity and co-evolution. The process of securitization is assisted by the banks' financial analysis which provides investors with valuable insight that lowers their investment risks. On the other hand, higher bank equity capital enables banks to expand their credit activity, thus further increasing the share of the banking sector. However, La Porta et al. (2000) reject the entire debate with the conclusion that it is overall financial development, and not financial structure that are important for the economic advancement of a country or a company.

The focus of this paper are the economies in Central and Eastern Europe (CEE) (including the Commonwealth of Independent States (CIS) countries) which began their transition into market economies after the collapse of socialism in 1990. They represent a very convenient field for exploration of the financial sector development, since they entered this process from nearly a zero starting point as their previous banking systems were centralized, sometimes operating as monobank systems, which mostly served the purpose of allocating state funds in the form of credit to the state-owned businesses. As a result, with the beginning of the transition, these banks needed intensive restructuring to enable them to operate under market conditions and in some cases they ended up flooded with non-performing loans because of the collapse of their debtors during the early nineties. In many of the countries, the period was marked with a dramatic rise in the number of banks, to a large extent assisted by the inflow of foreign capital in the banking sector (Bonin et al., 2014). The stock market did not exist at all and the process of privatization occurring in the same period was supposed to create preconditions for the opening and operations of the securities markets.

The number of studies exploring this problem in the CEE countries is relatively low. Also, most of them were published when the time-series were quite short to provide the basis for deriving sustainable conclusions. Most of the studies focus on the banking sector, with only a few of them involving the securities markets and their conclusions are mixed to a large extent. In one of the earliest efforts, the results of Koivu (2002) about the impact of the rising credit activity on growth are inconclusive, but the interest rate margin has the expected negative sign. Berglöf and Bolton (2002) also do not find real support for the thesis that finance has contributed to increased growth in the transition countries in the first decade of transition. The banking sectors were dominated by foreign banks, while the stock markets are assessed as illiquid and barely sustainable. The results of the Johansen's cointegration technique applied by Kenourgios and Samitas (2007) point to a significant impact of bank credit on economic growth, but the role of the stock market liquidity is insignificant. Fink et al. (2009) analyze 9 EU-accession countries and find that financial market segments which are linked to the public sector positively contribute to the economic growth, but

the period covered 1996-2000 could be the reason for the insignificant role of the stock market in this respect. Petkovski and Kjosevski (2014) apply GMM technique on a sample of 16 transition economies and conclude that the growth of private credit had a negative impact on economic growth in these countries, while the broader ratio of quasi-money had a positive impact.

3. DATA AND METHODOLOGY

3.1. Data and proxy measures

For the purposes of the analysis, a database was created comprising 26 CEE and CIS countries, but because of missing data on some crucial variables, 4 countries have been exempt and the final sample consists of 22 countries. The data cover the period 1995-2018 which corresponds to the period of transition and afterwards, but it also reflects the possibility to obtain relevant data regarding the banking systems and the capital markets which became operational after the first wave of privatization.

The data used in the analysis were assembled from several sources. Most of the data were obtained from the World Bank's World Development Indicators Database and the Global Financial Development Database, the IMF Financial Development Index database, while the data regarding the Human capital index were obtained from the Penn World Tables and the Capital Account Openness Index (KAOPEN) was taken from Chinn and Ito (2006).

The basic goal of the paper is to determine the impact of the two basic components of the financial system – banks and stock markets on economic growth and thus derive a conclusion about the relative importance of each of them for the economic development of the countries in transition. Having in mind that the economic development is a result of multiple factors, our basic model contains several control variables in addition to those that are our basic concern. In order to maintain comparability of our results within the broader corpus of research on this topic, we apply the widely used measures as proxies for economic and financial development.

The goal of the study implies that economic growth is used as a dependent variable and its most appropriate measure is the **annual rate of growth of real GDP per capita**.

The independent variables consist of variables representing financial development and a set of control variables generally used to represent other factors determining economic growth. We use several measures related to financial development:

- The level of financial development is usually represented by the size of the banking activity and the activity on the stock market. With respect to the banking activity, we use the amount of **credit extended by banks to the private sector** divided by GDP.
- The development of the stock market is represented by the **total value traded in the stock market** divided by GDP.
- Additionally, we use the amount of **liquid liabilities divided by GDP**, which is a measure of the overall size of the financial sector, i.e. the liquidity of the economy. This variable equals currency plus demand and interest-bearing liabilities of banks and non-bank financial intermediaries divided by the GDP.

The review of a broad corpus of relevant literature pointed that there is a selection of generally accepted control variables. The most frequently used variables include the initial level of GDP per capita, the size of government consumption, the rate of inflation, international openness of the economy, investments in fixed assets, human capital, etc.

- Initial GDP per capita. This is the lagged level of GDP per capita for the country. Economic theory predicts that the national economies move toward convergence, so that the expected sign is negative when growth is the dependent variable or positive when the level of GDP is the dependent variable.
- Government consumption. It is used to reflect the impact of government spending on GDP and its contribution toward accelerated economic growth. It is represented by the total government expenditures on final goods and services as a share of GDP, but the sign of this variable is indeterminate since it depends on the efficiency of the macroeconomic policies.
- Inflation. High inflation is expected to have a detrimental effect on growth, but no inflation or negative inflation are also considered impediments to economic growth. Having in mind the episodes of high and even hyperinflation among the transition economies, we expect a negative sign of this variable.
- International openness of the economy. The higher degree of internationalization of the economy is expected to have a positive impact on economic growth since the increased level of imports is usually linked to higher demand of inputs for the manufacturing and services sectors, while increased exports are a sign of the rising degree of competitiveness of the domestic economy. This variable is represented by the sum of total imports and exports as a share of GDP.
- Human capital. Countries with higher quality education and higher share of educated population are expected to exhibit higher growth rates. This variable is usually represented by the so-called human capital index, based on the average years of schooling and the returns to education. We take this variable from the Penn Tables because of the more complete data.
- Crisis. In order to capture the influence of periodic financial crises on economic growth, we use the indicator crisis as a dummy variable, which takes the value of 1 if a country went through a financial crisis in a particular three-year period and zero otherwise. The information for this variable was obtained from the World Bank Global Financial Development Database.
- EU membership. Assuming that the membership in the European Union has had some positive impact on economic growth for the countries which achieved full membership during the analyzed period, we include this variable as a dummy variable which takes a value of 1 for the period of full membership of a country and 0 otherwise.
- Capital account openness. The degree of openness of the capital account is measured by the index initially introduced in Chinn and Ito (2006). KAOPEN is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER).

Most of these variables are used in the panel regression, while for the GMM models, a selection of them is applied, to avoid the problem of excessive number of instruments.

3.2. Methodology

In order to avoid the impact of business cycles, it is customary in studies of this kind to use five-year averages for the variables in the model. We change this a little in order to obtain a richer time-series by using 3-year averages, so that the entire 24-year period is transformed into a series of eight observations per variable per country. Therefore, we obtain a panel of data and in the analysis we implement econometric techniques appropriate for this kind of datasets.

In order to control for unobserved country-specific effects, we use a dynamic panel procedure. The first estimate is therefore made using panel regression with country-fixed effects. However, as mentioned above, we face the problem of endogeneity of data, since the explanatory variables are also affected by the dependent variable. In other words, it is widely accepted that more highly developed economies have better developed financial systems and that the economic growth in the past has contributed to the financial development itself. The same can be said about human capital, international trade, etc. In order to overcome this problem, the dynamic panel GMM econometric tool is used, first described by Arrelano and Bond (1991) and further developed in Arrelano and Bover (1995), Blundell and Bond (1998).

The basic equation of interest is:

$$y_{i,t} - y_{i,t-1} = (\alpha - 1)y_{i,t-1} + \beta\, FD_{i,t} + \gamma X_{i,t} + \eta_i + \mu_t + \varepsilon_{i,t} \qquad (1)$$

Where y_t is natural logarithm of real GDP per capita in country i in period t, y_{t}- y_{t-1} is the growth rate of real per capita GDP, $FD_{i,t}$ is a measure of financial development, $X_{i,t}$ is a set of control variables, η_i are unobserved and country-specific fixed effects, m_t are unobserved time-specific effects and $\varepsilon_{i,t}$ is the error term.

Equation (1) can be rewritten as:

$$y_{i,t} = \lambda\, y_{i,t-1} + \beta\, FD_{i,t} + \gamma X_{i,t} + \eta_i + \mu_t + \varepsilon_{i,t} \qquad (2)$$

The above equation poses several problems: first, it is the existence of country-specific effects, and second, there is a likely endogeneity of most of the regressors with growth as a dependent variable, so we must control the issue of reverse causation. Classical panel regression models do not address these issues and thus we apply the first-difference GMM model proposed by Arrelano and Bond (1991), by using lagged values of explanatory variables as instruments. Period effects can be solved by using time-specific dummy variables. After first-differencing equation (2), it obtains the form:

$$y_{i,t} - y_{i,t-1} = \lambda\big(y_{i,t-1} - y_{i,t-2}\big) + \beta\left(FD_{i,t} - FD_{i,t-1}\right) + \gamma(X_{i,t} - X_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \qquad (3)$$

Since the new error term is correlated with the lagged dependent variable and there is still the endogeneity problem, the use of instruments is required to overcome these problems. The instruments should be variables that are correlated with the endogenous variables, but not directly with the dependent variable. For simplicity, lagged values of the independent variables are often used as instruments.

In this case, we implement a dynamic panel regression using OLS and GMM methods. The OLS is used only for comparison of the results.

4. RESULTS AND DISCUSSION

First, in Table 1we present the descriptive statistics of the variables. We can observe certain large discrepancies among the variables, depicting the divergent economic performances of the group of countries with relatively similar economic background. However, when interpreting panel data we need to have in mind that the mean values and deviations represent various units (countries) and various periods. In this case, the data used are 3-year averages per country and not annual data.

Table 1: Descriptive statistics

	Growth of per capita GDP (natural log)	GDP per capita (natural log)	Credit to private sector by banks/GDP	Value of stocks traded / GDP	Import + Exports / GDP	Govern-ment expenditure/ GDP	Rate of inflation	Human capital index
Mean	0.110	8.749	36.319	4.357	99.884	17.809	7.603	3.178
Median	0.104	8.897	36.320	1.359	96.166	18.352	4.908	3.166
Maximum	0.374	10.153	91.361	69.847	187.561	25.598	65.001	3.780
Minimum	-0.087	6.449	3.399	0.001	35.272	9.732	-0.210	2.744
St. deviation	0.081	0.906	20.250	7.932	32.515	3.126	10.004	0.225
Skewness	0.215	-0.641	0.275	4.576	0.3582	-0.595	3.274	0.331
Kurtosis	3.169	2.529	2.498	33.107	2.573	3.435	15.168	2.655
Observations	154	154	154	154	154	154	154	154

(Source: Author's calculations)

Table 1 shows that the share of credit extended by banks to private sector in GDP ranges between 3.4% and 91% as an average value for a 3-year period per country. The value traded on the stock market is also marked with huge deviations which are the result of their immaturity and the data from the very beginnings of these markets which are included in the time series. The rate of inflation depicts also episodes of very high inflation in some countries, such as 95% in Serbia in 1996 and 2001, 176% in Armenia in 1996, up to 1.058% in Bulgaria in 1997.

4.1. Panel regression

Next, we present the results of the panel regression using OLS method. Although the main focus is on the data from the difference GMM technique, we will use these as a first reference. For this purpose, several regression equations have been estimated, employing various variables as determinants. The first two columns show the results using growth and the next two use the level of GDP per capita as dependent variables.

Table 2: Panel regression results using OLS

	Model 1 Dependent variable Growth	Model 2 Dependent variable Growth	Model 3 Dependent variable GDP	Model 4 Dependent variable GDP
Constant	1.6033*** (0.0025)	1.4989*** (0.002)	1.6033*** (0.002)	1.4989*** (0.002)
Initial GDP per capita (GDP$_{t-1}$)	-0.1955*** (0.0001)	-0.1752*** (0.0002)	0.8044*** (0.000)	0.8247*** (0.000)
Bank credit to private sector "	0.0074 (0.585)		0.0074 (0.585)	
Stock traded to GDP "	0.0127** (0.022)		0.0127** (0.022)	
Liquid assets to GDP "		-0.0137 (0.586)		-0.0137 (0.586)
Trade openness "	-0.0164 (0.564)		-0.0164 (0.564)	
Capital account openness		0.0019 (0.797)		0.0019 (0.797)

Inflation "	-0.0913	-0.1429	-0.0913	-0.1429
	(0.229)	(0.069)	(0.229)	(0.069)
Government expenditure "	-0.0889**	-0.0913**	-0.0889**	-0.0913**
	(0.047)	(0.042)	(0.047)	(0.042)
Financial crisis	-0.0332**	-0.0276**	-0.0332**	-0.0276**
	(0.020)	(0.054)	(0.020)	(0.054)
Human capital	0.1617***	0.1444**	0.1617***	0.1444**
	(0.006)	(0.016)	(0.006)	(0.016)
EU membership	-0.0136	-0.0299	-0.0136	-0.0299
	(0.423)	(0.123)	(0.423)	(0.123)
	Cross section and period fixed effects	Cross section and period fixed effects	Cross section and period fixed effects	Cross section and period fixed effects
DW statistics	1.59	1.62	1.58	1.62
R2	0.748	0.736	0.998	0.998
Wald test for joint significance (p-value)	0.0000	0.0000	0.0000	0.000

Standard errors in parentheses.
*, **, *** - denote significance at 10%, 5% and 1% respectively
" Variables are used as natural logarithms of the respective values

The basic difference between the models is that models 1 and 3 use regressors representing the banking sector and the stock market separately, while models 2 and 4 use total liquidity as an indicator of the overall financial development. Also, models 1 and 3 use trade openness of the country as a regressor, while models 2 and 4 use capital account openness.

The results of the regressions are very interesting. As expected, past GDP per capita is negatively related to future growth, indicating a process of convergence among the economies in the sample. When the level of GDP is used as a dependent variable, past GDP levels have a positive sign, which is not surprising as countries with higher levels of GDP in the past still have higher GDP levels in the future (convergence means that the differences are shrinking relatively). Another interesting fact is that the values of all the other regressors, the intercepts and the standard errors are the same in models 1 and 3, and also in 2 and 4, respectively, which we will refer to back again later in the GMM model estimates.

The remaining indicators do not provide very valuable information as financial indicators are considered. Only the stock market has a significant positive sign, indicating its positive impact on growth, which we take with little confidence. The other significant regressors are quite as expected with crisis periods having negative impact on growth rates, human capital positively influencing growth and higher inflation having certain negative impact. The negative sign of government expenditure can be assigned to inefficient and possibly irresponsible macroeconomic spending during the transition and post-transition years. The insignificant value of the EU membership regressor is expected, since the positive effects of accession to the European Union might be linked even earlier, during the pre-accession period, which is not captured by this variable alone.

4.2. Generalized Method of Moments estimate

As previously explained, studies on economic growth based on simple panel regression estimates suffer from a serious weakness – endogeneity of the variables, i.e. the reverse causality between the dependent variable and at least some of the regressors. In this case, it is widely expected that

more developed countries would have better developed financial systems, but also such countries have better educational systems and thus higher human capital ratios, developed economies are usually preferred partners in international trade, etc. In order to cope with this issue, we apply the GMM technique, which provides a solution to the problem of endogeneity. More specifically, we apply the first difference GMM model (Arellano and Bond, 1991) in which the first differences of the variables are regressed, as explained above. Since the sample contains a small number of periods (8), we apply a dynamic panel GMM model. We use the second lags in levels of the variables as instruments, while for the lagged GDP, we use its dynamic form as an instrument, with lags between period t-2 and t-4). In order to avoid the problem of excessive number of instruments, we shorten the model by excluding the EU membership as a variable. To avoid period-specific effects, time dummies are included. To test the adequacy of the model and the validity of the results, we apply the Sargan test of overidentifying restrictions and the second-order serial correlation of the residuals in first differences.

Models 1, 2 and 3 use real GDP growth as a dependent variable, while model 4 uses real GDP per capita. In model 1, the financial sector is represented by the banking sector and the securities market, in model 2 it is proxied by the total liquid assets, while in model 3 only the banking sector is included.

The results of the first difference dynamic panel GMM model are presented in table 3.

Table 3: GMM model results

	Model 1 Dependent variable: Real GDP Growth	Model 2 Dependent variable: Real GDP Growth	Model 3 Dependent variable: Real GDP Growth	Model 4 Dependent variable: Real GDP
Initial GDP per capita "	-0.5358***	-0.6562***	-0.560***	0.2739***
	(0.000)	(0.000)	(0.000)	(0.002)
Credit to private sector / GDP "	0.0750**		0.088**	0.0750**
	(0.034)		(0.014)	(0.034)
Stocks traded / GDP "	0.0222			0.0222
	(0.330)			(0.330)
Liquid assets / GDP "		0.1521***		
		(0.000)		
Trade openness "	-0.1704**	-0.1372***	-0.0921**	-0.1704**
	(0.015)	(0.001)	(0.030)	(0.015)
Inflation "	0.1687	0.339***	-0.040	0.1687
	(0.514)	(0.004)	(0.806)	(0.514)
Government expenditure "	-0.0231	-0.0196	0.060	-0.0231
	(0.846)	(0.792)	(0.376)	(0.846)
Financial crisis	-0.0877*		-0.065**	-0.0877*
	(0.0757)		(0.041)	(0.0757)
Human capital	0.144	0.2104*	0.247***	0.144
	(0.158)	(0.055)	(0.005)	(0.158)

Sargan test (p-value)	0.259	0.473	0.260	0.259
AR(2)	0.43	0.36	0.78	0.43

Standard errors in parentheses.
*, **, *** - denote significance at 10%, 5% and 1% respectively
" Variables are used as natural logarithms of the respective values
Period dummies values not shown.
Sargan test null hypothesis: instruments used are not correlated with the residuals.
AR(2) null hypothesis: errors in the first difference equation exhibit no second-order serial correlation

The results of the estimates match our expectations to a certain extent. Again, we see that models 1 and 4 give identical results with the expected exception of the lagged dependent variable in model 4. The initial level of GDP has a negative sign in both growth equations and a positive sign in the GDP equation, which corresponds to the OLS panel analysis. It reflects the tendency of these economies toward mutual convergence, which is expected and in line with Rioja and Valev (2004), Gambacorta et al. (2014), etc. Unexpectedly, it seems that these countries have not benefitted from the increased trade openness and one possible explanation might be the likely unfavourable structure of foreign trade of the analyzed countries, consisting of imports of higher value added products and exports of inferior goods. Another explanation could be the increase of foreign trade with China, mainly imports, which poses a heavy competitive burden to the domestic industries. One should have in mind that the proxy used, trade openness, represents a sum of imports and exports, thus providing no indication as to the trade account balance and its trends. However, the results of Mhadhbi (2014) for developing countries and Ductor and Grechyna (2015) even for developed and middle-income countries which also confirm negative impact show that the expected effect of international trade might not be that clear as specified by theory.

Inflation has a positive sign in almost all equations, but it is only significant in the equation using overall liquidity as a proxy for financial development, pointing to a possible conclusion that countries with more expansionary monetary policies have experienced higher growth rates in the analyzed period. Available human capital, as expected, has had a positive impact on economic growth.

The basic variables of interest are those related to financial development. The development of the banking sector, proxied by the total value of loans extended to the private sector has contributed positively to the overall economic development. It is also confirmed in model 3, where it is the only financial sector variable. The same is true for the total amount of liquid assets in the economy. The impact of the securities market has not been significant, although its sign is positive. This is in line with our expectations, since the stock markets in these countries are immature, rather illiquid, volatile and highly vulnerable to internal and external shocks. In many occasions, these markets have been strongly influenced by the influx of foreign portfolio investors and their withdrawal. This outcome also corresponds to the findings of Demirgüç-Kunt et al. (2013), who show that at lower levels of economic development, banks provide more useful functions to the industrial sector, while at later stages, the importance of securities markets increases and substitute the functions previously dominated by banks. Since all the post-transition economies are, or at least, have been during a major part of the analyzed period, less-developed economies, this finding could indicate that they have not yet reached the turning point at which the stock markets would begin to provide their full contribution for the overall economic development.

5. CONCLUSIONS

After three decades of operating under market conditions, the economies of the former socialist countries of CEE and CIS are still coping with the challenges related to the economic transition. One of the most striking issues in this process is the establishment and development of an efficient financial system which would play the same role in the overall economic development comparable to what it does in the developed economies. Starting from a monobank system or centrally controlled banks and no financial markets, this was not an easy going and undemanding process.

The study shows that there are signs that the banking sector or the financial system as a whole have played a positive role in the economic development of these countries during the analyzed period. The contribution of the securities markets could not be confirmed yet. It is not surprising having in mind their low liquidity, the poor width of the markets and the episodes of severe capital flights. In addition, the period analyzed, though not very long, involved one major crisis (2008) which could also have affected the results.

The results suggest that these countries as a whole have not yet reached the level at which the benefits of the functioning securities markets positively reflect on growth. They mostly serve as a medium for reallocation of ownership, rather than as mechanisms for efficient allocation of capital. The corporate governance functions that these markets provide in the market-based systems are still absent and the companies are rarely using securities issues as a source of funding. The regulators should therefore pay a lot of attention at increasing the efficiency of the banking system, so that the allocation of capital through bank loans would be optimized and at the same time implement measures to further develop the securities market and the accompanying institutions to provide a functional alternative and a complement to the banking sector. At the same time, considering the widely recognized fact that at earlier stages the role of the securities markets is insignificant, one should not be disappointed by their irrelevant contribution in these countries.

One important constraint of this paper is the relatively small sample. This topic needs to be revisited in the future as lengthier time series of data become available and several additional countries provide data so that the sample could be more complete.

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THE IMPACT OF OVERCONFIDENCE BIAS ON PERSONAL INVESTMENT DECISIONS: THE CASE OF NORTH MACEDONIA

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ABSTRACT

The "Financial Behavior" in the field of "decision making" is the topic that awarded the economist Richard H. Thaler the Nobel Prize in 2017. According to him, after many investigations made on human decisions, it is noticed that they often depend on nature, intuition, habits, cognitive biases, emotional biases which lead the investor to wrong decisions. Given that the investments play an important and central role in the economy, the main purpose of the paper is to analyze the investment decision making process based on emotional bias, or more specifically the overconfidence bias. This study captures the impact of gender, and level of education on overconfidence during investment decision making in North Macedonia. The results show that investors' decisions were significantly influenced by the overconfidence bias. Although men and women are found to be overconfident, studies have shown that the degree of overconfidence varies among them and men are more overconfident than women. Also, overconfidence increases with the level of education.

Based on the results certain recommendations are provided in order to assist future investment decision-making processes by notifying and eliminating the overconfidence bias identified during this research as a key factor leading to wrong and failing, non-rational investment decision making.

Keywords: Behavioral Finance, Biases, Investment Decision, Investors, Overconfidence.

JEL classification: G02, G00, G11.

1. INTRODUCTION

Investors are influenced by many factors. The main hypothesis in this research is that the overconfidence bias affects investors decisions. Overconfidence bias is one of the many biases that behavioral finance identifies. Based on the complexity of the individual's character, it is very important for investors to have knowledge of these types of biases that affect the timing of investment decisions. We are unlikely to eliminate bias, but if we are aware of its existence and effect, we will be able to avoid the main pitfalls.

Kahneman and Riepe (1998) stated that it is very important to understand the investment decision making processes as they have both financial and emotional consequences overtime. Investors use several heuristics and exhibit behavioral biases during the process of making investment decisions.

The word "Bias" has been defined as "tendency towards a certain disposition or conclusion" (Wolman, 1973, p. 44). Sahi and Arora (2012) stated that the literature of behavioral finance considers bias as a systematic deviation from the norm, or an inclination for a particular

judgment. Kahneman and Twersky (1974) brought into light how investors take decisions under uncertainty, the causes and effects of human error. Kahneman and Riepe (1998) introduced behavioral biases in three categories (1) biases of judgment, (2) errors of preference, and (3) biases associated with living with the consequences of decisions. Biases of judgment include overconfidence, optimism, hindsight, and overreaction to chance events.

The decision-making process of investors includes a quantitative (objective) and qualitative (subjective) aspect based on the characteristics of the investment product or financial service. Investor behavior examines the mental processes and emotional biases that individuals, financial experts, and traders discover during the process of financial planning and investment management.

Emotional biases come from feelings, intuition, or impulsive thinking, and these types of biases can lead to weak, erroneous, irrational investment decisions. This is why understanding different biases and behavioral traits can help an individual make sound financial decisions, which is the key to successful investment (Ricciardi and Simon, 2008).

As a fundamental part of human nature, these biases affect all types of investors, both professional and private (Byrne and Utkus, 2013). They can also affect all types of decision-making, but they have special implications for investment and money. So since it is natural for us, the only thing we can do is be aware of their existence and try to manage and control them, since, when you are aware of the existence of a problem, you are able to deal with it in the most efficient way.

The analysis in the paper is followed by literature review, methodology and interpretation of the results. At the end conclusion and recommendations are given.

2. LITERATURE REVIEW

The psychological fact known as bias and its presence in human decision making provide the additional insight on the subject of investor irrationality and broaden the ideals of rationality (Chira, Adams and Thornton, 2008). Shefrin, has defined bias as being nothing more than the "predisposition towards error" (Shefrin, 2007). Shefrin (2007) defines bias as a predisposition towards error: It is a prejudice or a propensity to make decisions while already being influenced by an underlying belief.

Behavioral aspects and aims on application of psychological and economic principles for the improvement of individual financial decision making process are being acquainted by Behavioral Finance. Shefrin (2000) has written in his book named as "Beyond Greed and Fear" which is based on behavioral finance and EMH that people are "imperfect processors" of information and are usually biased, mistakes are being consigned and perceived by the people. In the present era, no unified theory of behavioral finance exists.

Decision making is being affected by overconfidence bias, in the corporate world as well as individual investments. Shefrin defines overconfidence as "showing concern about knowing one's own abilities and boundaries of knowledge" (Shefrin, 2007).

Studies emphasize that individuals are affected by psychological factors such as cognitive biases in their decision making process, rather than being rational and wealth-maximizing (Forbes, 2009).

Overconfidence has been studied in perplexingly different ways. De Bondt and Thaler (1985) argued that "the key behavioral factor needed to understand the trading puzzle is overconfidence".

Investors are full of overconfidence which can be defined as ignoring the apparent reasoning and having inopportune beliefs, judgments, and person's capabilities (Sadi, Ghalibaf, Rostami, and Gholipour, 2011).

According to Gervais and Odean (2001), the level of overconfidence decreases as an investor becomes more experienced.

The experiments by Gloede and Menkhoff (2011) show that working experience of a professional is accompanied by less overconfidence.

The danger of an overconfidence bias is that it makes one prone to making mistakes in investing. Overconfidence tends to make us less than appropriately cautious in our investment decisions. Many of these mistakes stem from an illusion of knowledge and/or an illusion of control. Experimentally alerting overconfident investors can eliminate overconfidence (Bloomfield et al. 1999). Likewise, Zacharakis and Shepherd (1999) recommend to reduce overconfidence by improving knowledge and thereby the decision quality of venture capitalists.

3. METHODOLOGY

3.1. Sample and data collection
The purpose of this study is to verify the impact of overconfidence bias on investment decisions. In order to achieve the purpose of the study, a structured questionnaire was designed to collect the data for further statistical tests. 450 questionnaires were distributed, out of which 110 were received back. The distribution of questionnaires was through physical and electronic methods. The deductive method was the main method used for analyzing the data.

3.2. Demographic detail of the respondents:
The total response sample size was 110 questionnaires, 72 male respondents (65.6% of total sample size) and 38 female respondents which equals 34.5%.

The population was categorized in six age groups as follows: less than 20 years; 21-30 years; 31-40 years; 41-50 years; 51-60 years and more than 60 years.

The age group of 31-40 years consists the largest share in the analyzed population with a total of 40% or 44 respondents. Then the age group from 21-30 years with a total of 39.1% or 39 respondents; followed by the age group from 41-50 years with a total of 15.5% or 17 respondents; whereas the individual investors that belong to the "less than 20 years" and "more than 60 years" age group include the smallest share of investors with 0.9% or 1 respondent and 3.6% or 4 respondents, respectively.

The results obtained from the survey show that the highest percentage of respondents are citizens of the city of Skopje with a total of 53.6% or 59 respondents; followed by the city of Tetovo with 22.7% or 25 respondents; and the city of Gostivar with 13.6% or 15 respondents. The results collected from the survey show that the dominant part of the respondents are the respondents with University Education with a total of 53.2% or 58 respondents; followed by Middle School respondents with a total of 24.8% or 27 respondents and then respondents with Post-University Studies with a total of 14.7% or 16 respondents. The lowest percentage is represented by the respondents with primary school with a total of 0.9% or 1 respondent.

In the analyzed poll 72.7% or 80 respondents are with "married" status, while the respondents with "single" status include 27.3% or 30 respondents.

3.3. Questionnaires and scale
The questionnaire consists of 6 categories of questions that focus on different aspects that affect the investment decision. The group of questions that analyze the impact of the overconfidence

on the investment decisions given in the null hypothesis consists from four questions which will be given in the following part.

Each descriptive question in the questionnaire was presented with three descriptive options: "always", "sometimes" and "never".

4. DATA ANALYSIS AND INTERPRETATION

The aim of the study was to verify the impact of overconfidence bias on personal investment decision-making of individual investors in the Republic of North Macedonia. In this part of the research the collected data along with the results are presented, interpreted and analyzed.

In order to test the hypothesis of this research a questionnaire was distributed and 110 responses were used for the data analysis. The results are summarized and presented in tabular and graphic forms.

The hypothesis put the following states forward:

H0: Overconfidence bias affects personal investment decisions

Table 1. Even if the investment may have a high risk, I still don't guess because I believe in my infallible decisions, gender and age structure

Gender / Age	Always	Sometimes	Never	Total
Female	**17.27%**	**13.64%**	**3.64%**	**34.55%**
20-30 years	10.00%	9.09%	3.64%	22.73%
31-40 years	7.27%	4.55%	0.00%	11.82%
Male	**36.36%**	**26.36%**	**2.73%**	**65.45%**
less than 20 years	0.91%	0.00%	0.00%	0.91%
20-30 years	9.09%	6.36%	0.91%	16.36%
31-40 years	18.18%	10.00%	0.00%	28.18%
40-50 years	6.36%	9.09%	0.00%	15.45%
51-60 years	1.82%	0.91%	0.91%	3.64%
more than 60 years	0.00%	0.00%	0.91%	0.91%
Total	**53.64%**	**40.00%**	**6.36%**	**100.00%**

The results in Table 1 show that even if the investment may have a high risk, still 53.64% of the investors, or more specifically 17.27% females and 36.36% males believe in their infallible decisions The structure of the investors in the research poll is as follows: 65.45% consisting of male investors and 34.55% consisting of female investors. The overconfidence, given with the belief in the infallible decisions is always present in the female aging group from 21-30 years, with 10% out of the total sample and 18.18% in the male age group from 31-40 years. 40% of the respondents sometimes believe in their infallible high risk investment decisions.

Table 2. Even if the investment may have a high risk, I still don't guess because I believe in my infallible decisions, gender and educational structure

Gender/Education	Always	Sometimes	Never	Total
Female	**17.27%**	**13.64%**	**3.64%**	**34.55%**
High school	0.91%	0.00%	0.00%	0.91%
University education	10.00%	12.73%	2.73%	25.45%
Post-University education	6.36%	0.91%	0.91%	8.18%

|				
Male	**36.36%**	**26.36%**	**2.73%**	**65.45%**
Primary education	0.00%	0.91%	0.00%	0.91%
High school	14.55%	9.09%	0.91%	24.55%
University education	18.18%	11.82%	0.00%	30.00%
Post-University education	3.64%	4.55%	1.82%	10.00%
Total	**53.64%**	**40.00%**	**6.36%**	**100.00%**

According to Table 2. focusing on the impact of overconfidence bias on personal investment decisions seen through the education and gender prism, we can conclude that the assertion of overconfidence bias in investment decision making is always and sometimes at women with university education with 22.73% of total respondents. The statement of overconfidence bias in investment decision-making at men with high school and university education is always and sometimes present by round 55% of the respondents.

Table 3. My skills and knowledge of investment forms help me in the investment decision-making process, age distribution

| Age	Always	Sometimes	Grand Total
less than 20 years	0.91%	0.00%	0.91%
20-30 years	23.64%	15.45%	39.09%
31-40 years	24.55%	15.45%	40.00%
41-50 years	12.73%	2.73%	15.45%
51-60 years	2.73%	0.91%	3.64%
more than 60 years	0.91%	0.00%	0.91%
Grand Total	**65.45%**	**34.55%**	**100.00%**

The results in Table 3 show that 65.45% of the analyzed respondents agree that their skills and knowledge of the investments forms are enough for the investment decision making process they are making, where seen through the age distribution this overconfidence bias is the highest in the 20-40 years group which consists almost half of the population that is being analyzed.

Figure 1. My skills and knowledge of investment forms help me in the investment decision-making process, regional distribution
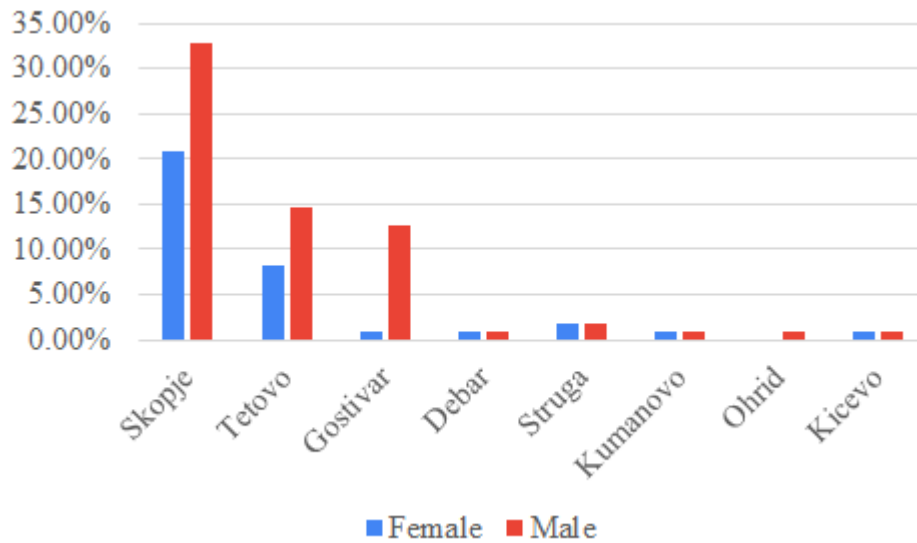
Seen from regional perspective (given in Figure 1) the self-confidence bias is present with more that 30% of male from the total male analyzed in the poll in the city of Skopje, followed by male in Tetovo and Gostivar. Around 30% of the biased females come from Skopje and Tetovo.

Figure2. My skills and knowledge of investment forms help me in the investment decision-making process, gender distribution
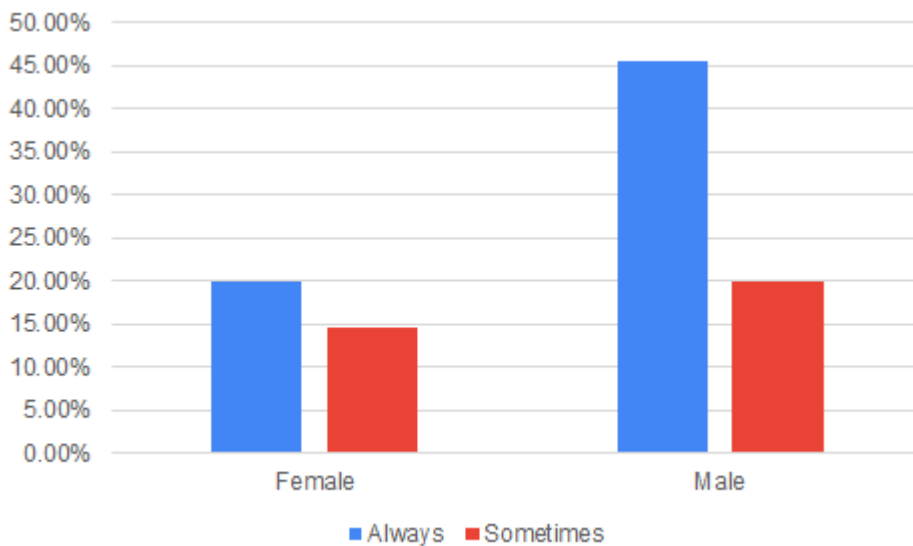

Analyzed from gender perspective, what is evident is that male are more biased than females in their investment decisions, where 45% of male always base their investment decisions on their skills and knowledge, compared to 20% of females.

Table 4. My investment decisions will definitely bring a high return, age distribution

Age	Always	Sometimes	Never	Grand Total
less than 20 years	0.91%	0.00%	0.00%	0.91%
20-30 years	20.00%	16.36%	1.82%	39.09%
31-40 years	26.36%	13.64%	0.00%	40.00%
41-50 years	11.82%	3.64%	0.00%	15.45%
51-60 years	2.73%	0.91%	0.00%	3.64%
more than 60 years	0.00%	0.91%	0.00%	0.91%
Grand Total	**61.82%**	**35.45%**	**1.82%**	**100.00%**

Table 4 shows that 61.82% of the respondents that have undertaken a certain investment decision believe that it will bring them a high return on investment, out of which 26.36% belong to the 31-40 years aging group. On the other hand, 16.36% of the respondents that believe that their investments can bring them sometimes a high return belong to the 20-30 years aging group.

Figure 3. My investment decisions will definitely bring a high return, gender and education distribution
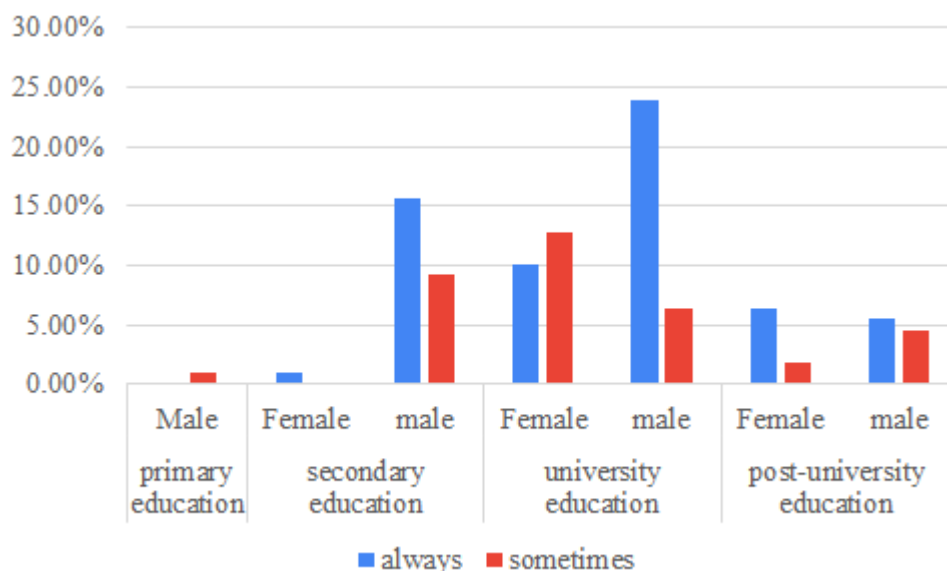
Males are more optimistic than females towards their investments return in the future, which could be seen from Figure 3, whereas around 65% of the respondents that believe in high return of their investments are male and the rest are females. Analyzed through educational attainment, the investment returns are expected to be higher at male with secondary and university education, whereas females with higher education sometimes expect that their investments will bring higher returns which is mostly dominant in the female group with university education with 13% of the total respondents.

Given the results from the respondents' answers we can conclude that the null hypothesis is being accepted.

5. CONCLUSION AND RECOMMENDATIONS

As Shefrin (2000) points out, investors need to recognize their mistakes and those of others, understand those mistakes, and take steps to avoid them.

The purpose of this research was to shed light on the phenomenon of overconfidence bias on investment decision making in real and financial assets.

The research paper summarizes the answers to the research question raised at the beginning of the research, which means that the research objectives have been achieved and the hypothesis has been tested. On this basis, we conclude that investors' personal investment decisions were largely influenced by emotional bias, "overconfidence", a factor that influenced the wrong decision-making of investors. Investors thus showed that their decisions are influenced by overconfidence bias attitudes toward being rational. The answers given by majority of the respondents verify the null hypothesis which stated that the overconfidence bias affects the investment decision.

A recommendation that could be given to the individual investors is their better understanding of the psychology and emotions underlying investment decisions that can help both financial advisors and individual investors in formulating their financial goals better.

Future research should further investigate overconfidence on the relation between overconfidence and personality traits, such as attribution styles, is needed to learn when and why certain characteristics trigger overconfidence.

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EXAMINATION OF CRISIS RESPONSE PREPAREDNESS IN LISTED JOINT-STOCK COMPANIES IN THE REGION

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ABSTRACT

As a consequence of the measures taken to remedy the medical problem, there may be a bigger one - economically, all over the world. The paper analyzes the consequences of the current economic crisis caused by the COVID-19 virus pandemic. The key economic consequences of the pandemic for companies but also for the economy have been identified. Entrepreneurs, small and medium enterprises, with the smallest liquidity stocks, are expected to feel the greatest consequences of the economic crisis. Taught by the failures of the Great Depression and the relative successes of the crisis in 2008, governments have already announced and launched massive programs to help businesses. At this moment, the supply of liquidity of deficient economic entities is a critical issue. The previous crisis showed that governments have tried and tested mechanisms for supplying liquidity to the financial sector, but transmission mechanisms to end-users were the Achilles' heel of the mechanism. We believe that success in finding adequate channels for the transfer of liquidity to economic entities with a liquidity deficit will be crucial for the character, length, and depth of the crisis. The paper offers a number of proposals for key necessary measures at the state level to overcome the observed economic disruptions. One of them is the request of the regulator, the other is the reaction of the state, but an important part must also come from the company. In addition, the research conducted by the questionnaire method for joint-stock companies from the Western Balkans resulted in a set of measures that serve as a basis for determining the gap in the required and current set of measures taken at the level of an individual organization.The aim of this paper is to point out that in the short term it is possible to stabilize the system through the application of macroeconomic and microeconomic measures.

1. INTRODUCTION

Since the beginning of this millennium, the world has been hit by the outbreak of several dangerous virus pandemics: SARS from 2002 until 2003 (death toll:770); 2009-2010 Swine flu (200,000 death cases); MERS 2010 – still not eradicated (850 death cases); 2014-2016 Ebola (death toll:11,300). This year, 2020, the world has seen a pandemic caused by a new, mutated version of the SARS virus, coronavirus (LePan, March 14, 2020). What is specific about this virus is that it is highly contagious, whereas its mortality rate, according to some estimates, is up to ten times higher in comparison with the seasonal flu. The number of infected and sick persons changes every day. According to the latest data, a total of 4,032,763 infected people have been registered in a period of about five months, 276,677 (7% mortality rate) have died until now, while 1,399,718 have recovered (Worldometers, 2020; Hopkins, 2020).

In the month of March, which was the most critical month, the transmission rate of coronavirus was terrifying. The Australian professor of economics, Steve Keen, at that time gave the estimate that a number of infected people doubled every six days. Under such circumstances, if the infection had continued to spread at such a rate, with only registered cases taken into account, "the entire planet would have become infected within three months" (Zec & Radonjić, 2020).

On the other hand, restrictive measures certainly lead to major economic problems - according to some authors, in case the pandemic does not last for too long, a combination of expansionary monetary policy (interest rate cuts) along with fiscal stabilizers should be sufficient to address this crisis, the recovery from which, similar to what has happened with the 2003 SARS pandemic, would be "V"-shaped (Sell, 7.4.2020). Contrary to this, should the crisis pursue to exist and should it erupt again in the fall, production chains and profit margins would be seriously jeopardized. In the latter case, apart from the policy of lowering referential interest rates, central banks might be forced to pump liquidity into the system whereas fiscal authorities would have to significantly increase their spending and make huge efforts to further stimulate free market flows and foreign investment. The recovery would then be "U"-shaped (OECD, 2.3.2020).

Figure 1. Real world GDP growth rate (in%)
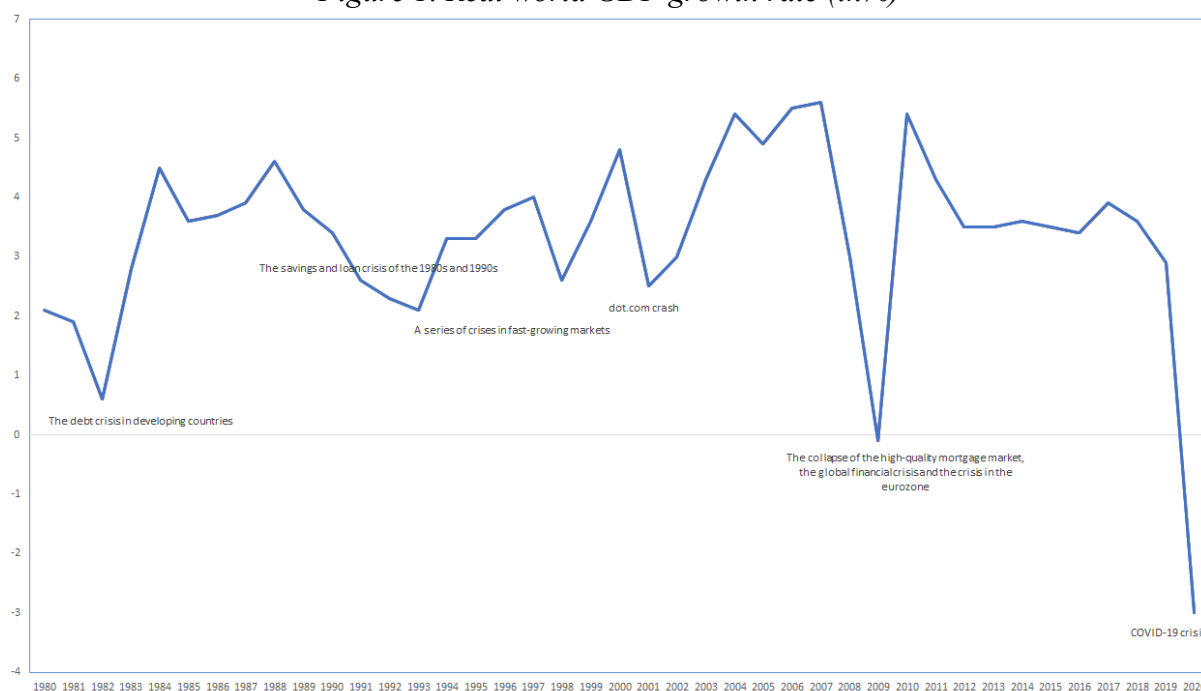
Source: World Economic Outlook Database (April 2020). Note: estimates are given for 2019 and 2020.

The impacts of the crisis manifest themselves through a financial performance decline, jeopardized liquidity, and impaired financial stability of companies. When the crisis grows from a tactical to a deep strategic crisis, the consequences become far more radical and can lead to bankruptcy and liquidation of a company.Based on what was said above, the detection of early crisis signals can have a determining influence on the scope of the damage caused, whereas the flexibility of the crisis plan and the comprehensiveness of crisis measures may contribute to the effectiveness of implemented activities for mitigating the consequences. Given the depth of the current crisis, the measures taken at the level of an individual company are not sufficient to achieve the desired result. The deep economic crisis caused by

the COVID-19 virus pandemic requires crisis management both at the state level and at the organizational level.

There is no doubt that everyone will have a need for liquidity. The cash holdings or investment into the quickly marketable securities proved to be a wise strategy. The first step in defining crisis measures is to analyze the current situation where the consequences of the crisis would be identified so that its causes could be mitigated and eliminated.

2. CONSEQUENCES OF THE GLOBAL COVID-19 PANDEMIC

The proportions of the global crisis caused by the COVID-19 pandemic still cannot be fully comprehended. It is evident that the damage inflicted on the economy already exceeds the effects of the global financial crisis from 2008, and some sources claim that the crisis is even worse than the Great Depression (Roubini, 2020; Chan, 2020). These two crises were accompanied by a 50% decline in financial markets, a contraction in demand, freezing of credit-related activities, accelerated unemployment growth, a significant decline in gross domestic product, a rapid corporate profit decrease, and the final outcome was the bankruptcy of numerous companies. Local economies have been affected to a greater or lesser extent, but in general, due to the global interconnection, the economy has suffered extremely high losses in a very short time and is facing a potential recession in the coming quarters. Also, this economic crisis is specific for the fact that it has not been caused by economic factors and that nothing of a kind has been described in economic books and textbooks. So far, there is even no consensus on whether this is a supply shock, a demand shock or asymmetrical shock of both. At the moment there is only a consensus that the virus-induced crisis will most likely be the catalyst of a large-scale financial crisis.

Payment limitations and a slowed process of settling obligations launched an avalanche of illiquidity that is spreading at a high speed throughout the entire economic system. In addition to that, many companies have optimistically initiated new investment cycles encouraged by the preceding period of prosperity, where this has clearly strained their liquidity position.

Following initial estimates, some businessmen have made one-month crisis plans, only a few have developed plans covering a two monthperiod, and almost non created crisis plans for the coming year. Undoubtedly, the effects described so far will continue to affect liquidity until the end of this year as a result of the measures taken by the governments of some countries. For example, the Government of Hungary imposed a moratorium on loan repayments for businesses and citizens until the end of the year.

The greatest pressure of the current crisis will be experienced by entrepreneurs, micro, small and medium enterprises. Given a high level of participation of the mentioned sector in economic activities, their preservation in times of crisis becomes one of the major tasks of authorities. The consequences of the crisis will be reflected in reduced employment in this sector and in the bankruptcy of a large number of entrepreneurs and micro-enterprises. In the state of "hibernating economy", it is not going to be possible to provide for the salaries from the current reduced cash inflow and from accumulated reserves, therefore social (and security) tensions will rise proportionally to the duration of the entire situation and to the reduction of personal savings of dismissed employees. Milanović argues that one of the key dangers of this pandemic is a social collapse, and that one can expect a large number of dissatisfied people who will see themselves as unjust losers in this pandemic (Milanovic, 2020).

Furthermore, the banking sector is under great pressure. There is a liquidity outflow from the banking system due to the irrational funds withdrawal by the citizens and by the economy as a result of uncertainty, fear among the population, the urge to use accumulated reserves and

to save the cash for the "rainy days". Apart from that, as a consequence of the moratorium and the inability to ensure new loans, banks will have to seek external liquidity support.

Also, the cost-benefit analysis will show that in certain economic areas, it might be more profitable to initiate deliberate bankruptcy and liquidation of the company. More specifically, it could happen that the company owners might withdraw liquid assets and declare bankruptcy, using the entire economic situation as an alibi for their bad business results, and thus preserving their reputation. In addition to the closure of these companies, we could expect a high risk of bankruptcy of associated companies in the value chain of such companies.

Taking into account those negative trends, the seriousness of the situation and the potentially devastating effects of the pandemic on the economy of all countries, it is of utmost importance to adopt a package of coordinated and comprehensive measures to support business entities in order to overcome the already present and evident liquidity crisis rising. In addition to state measures, the measures at the level of individual companies are also required.

3. PROPOSAL OF STATE MEASURES TO OVERCOME THE CRISIS

Based on the lessons learned on the failures in tackling the Great Depression and on the relative successes in addressing the Great Repression in 2008, governments have already announced and launched massive aid programs for businesses. At this moment, the liquidity supply in deficient business entities seems to be an essential issue. The previous crisis showed that the governments had at disposal already implemented and tested mechanisms for liquidity supply in the financial sector, but the mechanisms of transmission towards the end-users proved to be a sort of the Achilles' heel of such mechanisms. We believe that success in searching for adequate channels for the transfer of liquidity towards businesses facing a liquidity deficit will be crucial for the characteristics, length and depth of the crisis. All the measures introduced and announced until now, first of all the moratorium on loans and certain fiscal policy measures, represent a partial relief for business entities. However, in the current situation, characterized by the paradigm of a dramatic drop in turnover, i.e. profit, and then in the cash inflow, state measures will be far from enough. In principle, if we keep in mind a very low level of liquidity reserves in the economy, especially in the segment of small and medium enterprises, the total absence of inflow in a short period of time leads to a situation where there is a lack of financial means to cover basic operating costs, primarily those related to wages, suppliers and taxes. Following the economic logic, companies will start reducing all controllable costs very soon.

With this in mind, it is necessary to decide about urgent measures aimed at the emergent increase of economic liquidity, the implementation of which would have to be inevitably rapid so that the first bankruptcy and dismissal wave could be avoided. All measures taken by the German Government and Bundestag account for 10% of German GDP.[1] Spanish authorities announced measures worth 200 billion euros to help the economy, the Portuguese Government adopted a package of economic measures in the amount of 9.2 billion euros, and the French Government provided 60 billion euros worth funds to help SMEs[2]. So far, the package of measures to help the economy with the highest value has been the one announced

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[1]Available at: https://www.ft.com/content/dacd2ac6-6b5f-11ea-89df-41bea055720b. Page visited on: 07.04.2020.
[2]Available at: https://www.dw.com/en/coronavirus-what-countries-are-doing-to-minimize-economic-damage/a-52816921. Page last visited on: 07.04.2020.

by the United States, worth more than one trillion euros[3]. The described packages should be directed towards entrepreneurs, micro, small and medium enterprises, regardless of the economic branch in which they operate, as well as towards large enterprises that are directly affected by the current crisis.

When approving emergency liquidity loans, it is necessary to additionally specify and clarify the criteria. One of the basic conditions for approval is a non-discriminatory approach, i.e. the absence of customer favoring by commercial banks. On the other hand, in order to ensure the general economic stability, the clients must commit themselves not to reduce the number of employees for a minimum period of six months, to ensure regular payment of wages, of public revenues and to make duly and regular payment of obligations towards suppliers. Furthermore, credit requirements should be as simple as possible with an aim of quick approval and in line with the minimum acceptable criteria unique for all commercial banks: that the client's account has not been blocked prior the state of emergency, that certain standard criteria measurable by ratio indicators have been fulfilled and the like. At the same time, loans must be made available for those companies that are not currently in debt, because at the moment they have no benefit from the already implemented moratorium measures. Most importantly, there must be zero tolerance towards the non-payment of state duties since it is imperative to strengthen the tax discipline. So, the world is to face two drivers of recession, the first being a pandemic and the second, the subsequent one, being a typical financial recession caused by a collapse of credit markets and confidence that could easily turn into a recession on balance sheets should reactions fail to provide adequate success in the first, liquidity step, and in the second, investment reviving step.

State level decisions are not easy to make, and they require coordinated calculations of implications by central banks and Ministries of Finance. It is important to highlight that partial and delayed measures or the absence of additional measures undoubtedly lead to the economic liquidity collapse, and this could launch irreversible structural effects in the coming period. A coherent set of previously proposed measures, quickly implemented, will ensure the necessary liquidity and reduce to an extent the fear of non-payment produced by the effects of the economic system freezing. If we take a look at the comparative practice, i.e. the world's largest economies, we can draw a conclusion that the focus of economic measures is on increasing the liquidity of the economy, which in turn protects the liquidity of the state and maintains social peace in it. Rapid implementation of measures is crucial in order to use the existing reserves capacities for creating a reaction. With the passage of time and the reduction of reserves, the response ability of the state will be smaller and smaller, and the effectiveness of economic aid will be lower and lower. To ensure a quick response, complicated bureaucratic procedures have to be avoided.

4. IDENTIFYING CRISIS MEASURES GAP AT THE COMPANY LEVEL

Big companies and financial sector companies have crisis plans pre-prepared and crisis teams pre-formed, the main role of which is to implement pre-prepared plans when the crisis emerges. However, a pre-formed crisis team is not necessarily a guarantee of a quality and quick response to the crisis. Augustine (1995) argues that crisis teams are not of great use in crisis situations if they have never been tested before. Mitroff, Harrington, and Gia (1996) specifically accentuate that the crisis team training is extremely important for the team members to be able to make quick and quality decisions once a real crisis emerges.

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[3]Available at: https://www.cnbc.com/2020/03/23/trump-fed-congress-government-efforts-to-contain-coronavirus-economic-impact.html. Page last visited: 07.04.2020.

On the other hand, it is necessary to highlight that the entrepreneurs, small and many medium-sized enterprises lack in sufficient human, organizational and financial capacities, as well as in experience that would enable them to be prepared for the anticipated crisis and to offer a systematic response. In a time of deep economic crisis, which the current crisis caused by the COVID-19 pandemic is, all crisis measures, regardless of the size of the company, should be directed at survival in the short period of time and at the preservation of stability so that the companies could continue their business when the acute crisis ends.

A crisis management plan, by its nature, is a set of guidelines and not a fully precise action plan given that no single crisis shares identical symptoms and consequences with any other. Authors Barton (2001), Fearn-Banks (2001) and Coombs (2007) claim that a crisis plan saves time when the crisis appears because it proactively defines team members' tasks, provides necessary information and guidance for action.

Once the first crisis consequences are manifested, it is necessary to make a quick reaction in the form of crisis measures that should prevent a bigger negative impact. Carney and Jorden (1993) point out that a speedy response means that the organization is active and that it is in control of the current situation. A similar conclusion was reached by the authors Arpan and Rosko-Ewoldsen (2005) who argue that a rapid and early response to a crisis enables a company to gain and maintain great credibility among its stakeholders.

However, it is very common in business practice that the focus of the management at the time of crisis is directed only on finances and financial indicators, because the consequences of the deep economic crisis are effected precisely through a drastic drop in income and profitability indicators. In such circumstances, when there is a high degree of uncertainty, an integrated approach to crisis planning is entirely neglected and many business areas remain outside the reach of crisis management. In order for crisis management and crisis planning to have a positive effect, it is necessary to take an integrated approach to crisis planning and to expand the focus from finances to other related business areas.

In this context, it is necessary to identify a comprehensive gap in crisis management practices and recognize neglected crisis areas. The management team, based on the recommended self-assessment questions, is able to make a quick and easy test of the implementation of existing crisis management practices in the areas of finance, leadership and organization, human resources, marketing and sales, communication, procurement and logistics, production and law.

5. METHODOLOGY

The research was conducted by the survey research method. Managers in joint-stock companies listed on stock exchanges in the region were surveyed: Banja Luka Stock Exchange (companies from the entity Republika Srpska), Sarajevo (companies from the entities Federation of Bosnia and Herzegovina), Montenegro Stock Exchange, Belgrade Stock Exchange, Zagreb Stock Exchange, Macedonian Stock Exchange, Budapest Stock Exchange, and Ljubljana Stock Exchange. For the most part, the sample includes non-financial companies that were or are still part of the main stock exchange index and that paid dividends (Table 1). The questionnaires were submitted electronically, in the form of a form, during May 2020. The process of collecting survey questionnaires was completed on June 4, 2020. The tendency was to include a sample of at least a double-digit percentage of listed joint-stock companies. Responses were obtained to 125 of the 164 questionnaires sent. The rate of return should be attributed to the relatively small number of respondents, but also to the long period of conducting the survey, which is why, in addition to sending questionnaires, it was possible to contact respondents and encourage them to cooperate.

The questions were taken from the author Lončar & Stojanović (2020) with certain modifications by the author. Lončar and Stojanović presented a set of questions from eight business areas that serve as a basis for determining the gap in the necessary and current set of measures taken for crisis management at the level of an individual organization. Issues are in the areas of finance, leadership, and organization, human resources, marketing and sales, communications, procurement and logistics, manufacturing, and law. The authors did not state whether certain answers should be accompanied by specific weight. Selected and refined questions that were used in the research, ie sent in the form of an electronic questionnaire are:

1. Have you made an analysis of different financial scenarios in business?

2. Have you made a financial risk register by the time the pandemic is declared?

3. Have you made a cash flow plan on a daily, weekly, and monthly basis?

4. Have you analyzed the portfolio of current investment projects and determined the priorities and the possibility of postponing individual projects?

5. Have you done a detailed financial stress test?

6. Have you singled out key goals and success indicators for the crisis period?

7. Have you clearly defined your priorities in the crisis period and directed all employees to work in this direction (are employees informed about priorities)?

8. Have you determined which level of operations in each of the business functions of the company is considered the minimum level of maintenance of the work process?

9. Have you defined a model for ensuring business continuity in case of operational risks (eg main server shutdown, power outage, breakdowns, and other escalations)?

10. As a direct consequence of the pandemic, were you forced to lay off employees?

11. Do you think that you will have to reduce the number of employees by the end of the year?

12. Do all employees have clear instructions on how to function during the crisis?

13. Have you considered alternatives to permanent employment (eg alternating unpaid leave, collective leave, dismissal of temporary and occasional workers, etc.)?

14. Have you analyzed contracts with workers and identified the risks that may arise in the case of some employment activities on your part?

15. Have you assessed the risk of leaving some key employees during or after the crisis?

16. Have you backed up all relevant data?

The obtained research results contain the following risks, ie limitations of the conducted research: respondents who participated in the research are not representative representatives of the sample companies, respondents misunderstood the questions asked, after completing the questionnaires there was a change of attitudes among respondents, and respondents individuals could not complete the questionnaire twice but were until June 4th could correct the answers offered. The collected data were subjected to statistical analysis.

*Table 1: Data on the sample and the obtained answers*

Stock exchange	Received a questionnaire	Percent of total	Responded to the questionnaire	Percent of responded	Percent of recieved	Number of listed companies	Number of listed comanies per 1,000,000 inhabitants
(1)	(2)	(3)	(4)	(5)	(6)=(4)/(2)	(7)	(8)
Banja Luka Stock Exchange	61	37.195122	56	44.8	91.8	541	261
Sarajevo Stock Exchange	35	21.341463	27	21.6	77.1	315	261
Montenegro Stock Exchange	21	12.804878	12	9.6	57.1	390	621
Belgrade Stock Exchange	6	3.6585366	5	4	83.3	19	2
Zagreb Stock Exchange	14	8.5365854	5	4	35.7	127	31
Macedonian Stock Exchange	11	6.7073171	10	8	90.9	100	48
Budapest Stock Exchange	9	5.4878049	4	3.2	44.4	43	4
Ljubljana Stock Exchange	7	4.2682927	6	4.8	85.7	31	15
Total	164	100	125	100	76.2	1,566	-

(Source: Authors own calculations)

6. RESULTS

The largest number of respondents, 28.8% or 36 out of 125 respondents, realized the income of more than 10 million euros (Figure 1).

Figure 1: Companies per income (in 000 €)
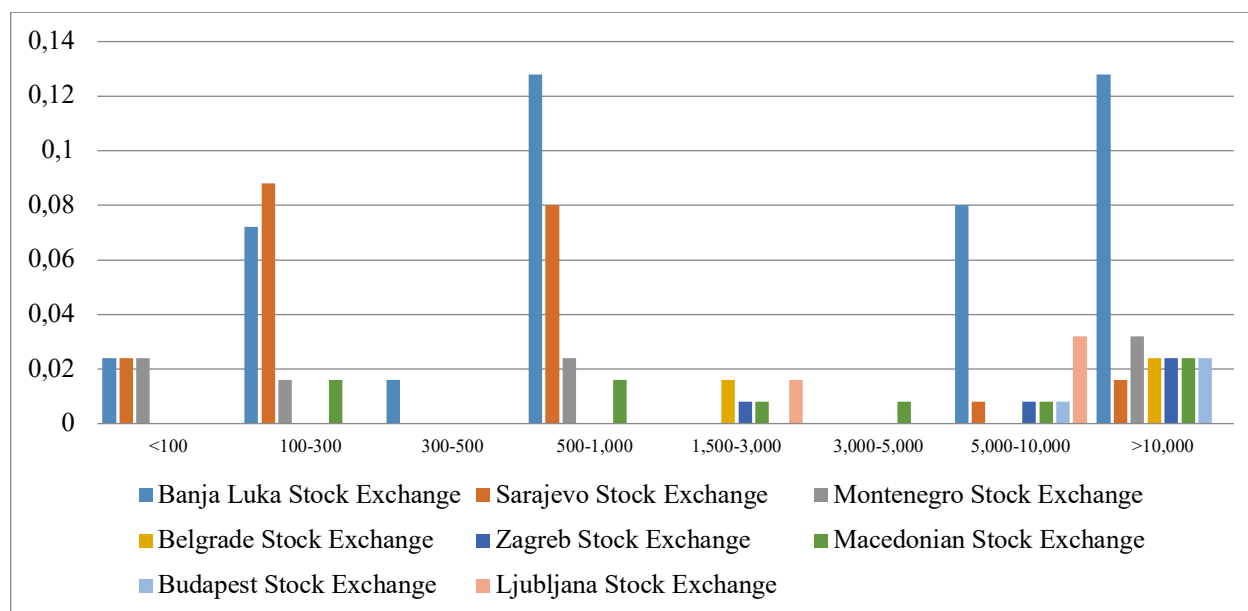
(Source: Authors own calculations)

Positive answers to the questions from the questionnaire were sorted by stock exchanges and presented in columns by ordinal numbers of questions (Table 2).

Table 2: Cross-country differences in companies

Number of question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Banja Luka Stock Exchange	44,64	26,79	19,64	50,00	42,86	37,50	30,36	39,29	57,14	51,79	51,79	26,79	37,50	37,50	37,50	64,29
Sarajevo Stock Exchange	29,63	25,93	7,41	51,85	48,15	33,33	33,33	33,33	48,15	22,22	22,22	25,93	25,93	25,93	25,93	51,85
Montenegro stock exchange	41,67	33,33	16,67	41,67	41,67	50,00	50,00	50,00	41,67	33,33	33,33	8,33	16,67	8,33	16,67	33,33
Belgrade Stock Exchange	80,00	40,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	60,00	80,00	100	100	100
Zagreb Stock Exchange	100	20,00	60,00	60,00	60,00	40,00	40,00	80,00	80,00	80,00	80,00	40,00	40,00	40,00	60,00	80,00
Macedonian Stock Exchange	70,00	30,00	40,00	70,00	60,00	50,00	50,00	60,00	40,00	30,00	30,00	50,00	60,00	50,00	50,00	60,00
Budapest Stock Exchange	100	50,00	100	75,00	75,00	100	100	75,00	75,00	50,00	50,00	75,00	100	75,00	75,00	75,00
Ljubljana Stock Exchange	100	33,33	100	83,33	100	83,33	83,33	83,33	100	33,33	33,33	66,67	66,67	66,67	66,67	83,33

(Source: Authors own calculations)

More than 50% of the companies listed on the Budapest Stock Exchange have the register of financial risks. Afterward, the same register have 40%companies which are listed on the Belgrade Stock Exchange, 33.3% listed on Montenegro, 33.3% listed on the Ljubljana Stock Exchange, 30% listed are listed on the Macedonian Stock Exchange, 26.8% are tickets on the Banja Luka Stock Exchange, 25.9% are tickets on the Sarajevo Stock Exchange and 20% are tickets on the Zagreb Stock Exchange.

Cash flows plan on a daily basis, weekly and monthly levels have made 100% of the companies listed on the Ljubljana Stock Exchange and 100% of the companies listed on the Budapest Stock Exchange, 60% of the companies listed on the Belgrade Stock Exchange and the Zagreb Stock Exchange, 40% of companies that are listed on the Macedonian Stock Exchange, 19.6% of companies that are listed on the Banja Luka Stock Exchange, 16.7% of companies that have a list on the Montenegrin Stock Exchange, 7.4% are listed on the Sarajevo Stock Exchange.

The percentage of companies that analyzed the portfolio of current investment projects and determined the priorities and the possibility of postponing individual projects is 83.3% of companies listed on the Ljubljana Stock Exchange, 75% of companies listed on the Budapest Stock Exchange, 70% of companies listed on the Macedonian Stock Exchange, 60% of companies listed on the Zagreb Stock Exchange, 60% of companies listed on the Belgrade Stock Exchange, 51.85% of companies listed on the Sarajevo Stock Exchange 50% of companies listed on the Banja Luka Stock Exchange and 41.7% of companies listed on the Belgrade Stock Exchange on the Montenegro Stock Exchange.

A detailed financial stress test was performed by 100% of companies listed on the Ljubljana Stock Exchange, 75% of companies listed on the Budapest Stock Exchange, 60% of companies listed on the Macedonian, Zagreb, and Belgrade Stock Exchanges, 48.15% of companies listed on the Ljubljana Stock Exchange. listed on the Sarajevo Stock Exchange, 42.86% of companies listed on the Banja Luka Stock Exchange, and 41.7% of companies listed on the Montenegro Stock Exchange.

Key targets and success indicators for the crisis period were singled out by 100% of companies listed on the Budapest Stock Exchange, 83.3% of companies listed on the Ljubljana Stock Exchange, 60% of companies listed on the Belgrade Stock Exchange, and 50% of companies listed on the Macedonian Stock Exchange 50% and on the Montenegro Stock Exchange, 40% of companies listed on the Zagreb Stock Exchange, 37.5% of companies listed on the Banja Luka Stock Exchange and 33.3% of companies listed on the Sarajevo Stock Exchange.

All listed companies listed on the Budapest Stock Exchange believe that all employees are informed about the priorities in the crisis period. Then, the same belief in 83.3% of companies listed on the Ljubljana Stock Exchange and 60% of companies listed on the Belgrade Stock Exchange, 50% of companies listed on Montenegro and the Macedonian Stock Exchange, 40% of companies listed on the Zagreb Stock Exchange, 33.3 % of companies listed on the Sarajevo Stock Exchange and 30.36% of companies listed on the Banja Luka Stock Exchange.

Five from six companies listed on the Ljubljana Stock Exchange believe that they have determined the level of operations in each of the business functions of the company, which is considered the minimum level of maintenance of the work process. Then follows 80% of companies listed on the Zagreb Stock Exchange, 75% of companies listed on the Budapest Stock Exchange, 60% of companies listed on the Macedonian Stock Exchange and the Belgrade Stock Exchange, 50% of companies listed on the Montenegro Stock Exchange, 39.29 % of companies listed on the Banja Luka Stock Exchange and 33.3% of companies listed on the Sarajevo Stock Exchange.

A defined model for ensuring business continuity in the event of operational risks (eg central server shutdown, power outages, accidents, and other escalations) have 100% of companies listed on the Ljubljana Stock Exchange, 80% of companies listed on the Zagreb Stock Exchange, 75% of companies listed on the Budapest Stock Exchange, 60% of companies listed on the Belgrade Stock Exchange, 57.14% of companies listed on the Banja Luka Stock Exchange, 48.15% of companies listed on the Sarajevo Stock Exchange, 41.67% companies listed on the Montenegro Stock Exchange and 40% of companies listed on the Macedonian Stock Exchange.

As a direct consequence of the pandemic, workers were laid off by 80% of the companies listed on the Zagreb Stock Exchange, 60% of the companies listed on the Belgrade Stock Exchange, 51.78% of the companies listed on the Banja Luka Stock Exchange, 50% of the companies listed on the Budapest Stock Exchange, 33.3% of companies listed on the Ljubljana Stock Exchange, 33.3% of companies listed on the Montenegro Stock Exchange, 30% of companies listed on the Macedonian Stock Exchange and 22.22% of companies listed on the Sarajevo Stock Exchange.

Sixty percent of the listed companies on the Belgrade and Zagreb Stock Exchanges believe that they will have to lay off workers by the end of the year, 51.79% of the companies listed on the Banja Luka Stock Exchange, 50% of the companies listed on the Budapest Stock Exchange, 33.3% of the listed companies. listed on the Ljubljana Stock Exchange, 33.3% of companies listed on the Montenegro Stock Exchange, 30% of companies listed on the Macedonian Stock Exchange.

Three out of four listed companies in Hungary believe that all employees have clear instructions on how to function during the crisis, 66.67% of companies listed on the Ljubljana Stock Exchange, 60% of companies listed on the Belgrade Stock Exchange, 50% of companies listed on On the Macedonian Stock Exchange, 40% of companies listed on the Zagreb Stock Exchange, 26.78% of companies listed on the Banja Luka Stock Exchange, 25.92% of companies listed on the Sarajevo Stock Exchange and 8.33% of companies listed on the Montenegro Stock Exchange.

Alternatives to permanent employment (eg alternating unpaid leave, collective leave, dismissal of temporary and occasional workers, etc.) were considered in 100% of companies listed on the Budapest Stock Exchange, 80% of companies listed on the Belgrade Stock Exchange, 66.67% of companies listed on the Ljubljana Stock Exchange, 60% of companies listed on the Macedonian Stock Exchange, 40% of companies listed on the Zagreb Stock Exchange, 37.5% of companies listed on the Banja Luka Stock Exchange 25.9% of companies listed on the Ljubljana Stock Exchange on the Sarajevo Stock Exchange and 16.67% of companies listed on the Montenegro Stock Exchange.

The analysis of contracts with employees and the identification of risks that may occur in the case of some labor law activities were done in 100% of companies listed on the Belgrade Stock Exchange, 75% of companies listed on the Budapest Stock Exchange. 66.67% of companies listed on the Ljubljana Stock Exchange, 50% of companies listed on the Macedonian Stock Exchange, 40% of companies listed on the Zagreb Stock Exchange,

37.5% of companies listed on the Banja Luka Stock Exchange 25.9% of companies listed on the Banja Luka Stock Exchange and 8.33% of companies listed on the Montenegro Stock Exchange.

The risk of leaving some key employees during or after the crisis was considered in 100% of companies listed on the Belgrade Stock Exchange, 75% of companies listed on the Budapest Stock Exchange, 66.67% of companies listed on the Ljubljana Stock Exchange, 60% of companies listed on the Ljubljana Stock Exchange. are listed on the Zagreb Stock Exchange, 50% of the companies listed on the Macedonian Stock Exchange, 37.5% of the companies listed on the Banja Luka Stock Exchange, 25.92% of the companies listed on the Sarajevo Stock Exchange and 16.67% of the companies listed on the Montenegro Stock Exchange.

Backup of all data was made in 100% of companies listed on the Belgrade Stock Exchange, 83.3% of companies listed on the Ljubljana Stock Exchange, 80% of companies listed on the Zagreb Stock Exchange, 75% of companies listed on the Budapest Stock Exchange, 64.29% of companies listed on the Banja Luka Stock Exchange, 60% of companies listed on the Macedonian Stock Exchange, 51.85% of companies listed on the Sarajevo Stock Exchange and 33.3% of companies listed on the Montenegro Stock Exchange.

7. DISCUSSION

The paper presents a number of consequences that the current crisis has caused in the economy. The key consequence is a drastically reduced liquidity of all market participants, and on that basis, financial stability. However, having in mind the global character of the crisis, all the countries in the region and most of the world are facing very similar consequences for the national economy. The differences stem from the size of individual economies, and thus the losses that economies record on a daily basis.

Less than half of the companies from the Banja Luka, Sarajevo, and Montenegro stock exchanges offered positive answers to each of the questions asked. In this regard, it is obvious that there are fewer listed companies in more developed markets, but that they have better corporate governance. For example, less than half, ie 45% of the surveyed companies listed on the Banjaluka Stock Exchange, 42% from the Montenegro Stock Exchange, and only 30% of the companies from the Sarajevo Stock Exchange analyzed different financial scenarios in business taking into account different levels of activities crisis. This data is dramatic when you consider that all surveyed companies from the Zagreb, Budapest, and Ljubljana stock exchanges have already made an analysis of different financial scenarios in business, having in mind the different levels of activity under the influence of the crisis.

It is similar with cash flow planning on a daily, weekly and monthly basis, highlighting key goals and success indicators for the crisis period, defining priorities and directing employees in the crisis period, considering alternatives to permanent employment, analyzing contracts with employees, assessing the risk of leaving key employees and make copies of all relevant data. The justification for such devastating data should be sought in the manner of privatization of state-owned enterprises. Most listed companies (utilities, veterinary stations in small local communities, etc.) on these exchanges do not meet the criteria of stock liquidity, market capitalization, and size of companies compared to companies listed on exchanges characterized by higher turnover and higher market capitalization.

8. CONCLUSION

The results of the research reflect the situation in the listed social regions in the region, but having in mind the stated limitations, the conclusions and results of the research should be explained. A major limitation of the research is the fact that it is not known which issuers gave certain answers to the questionnaire. In this regard, it is not possible to classify issuers except according to the criteria of the stock exchange on which they are listed. Another

limitation of the research stems from the fact that there are fewer listed companies on larger stock exchanges and that two-thirds of the answers came from companies listed on the stock exchanges in Bosnia and Herzegovina. Namely, in BiH, there are the most listed joint-stock companies per million inhabitants. This is the first reason why not all companies from abroad were surveyed. The results would certainly be statistically significant if we were able to collect data and evaluate a larger number of companies from all over Bosnia and Herzegovina or from the observed countries. Third, the research is primarily based on a questionnaire and reflects the perception of the respondents, there is a possibility of the actual situation to some extent the deviation of the stated opinions. In addition, we note that the response of respondents was very good (76.22 percent, or 125 out of 164), and that the sample is statistically significant in terms of the number of listed joint-stock companies by the stock exchange.

The paper presents a number of proposals in the form of issues that should encourage companies to create an integrated package of crisis measures. The speed of response in times of crisis is one of the most important factors that can affect the survival of a joint-stock company and ensure the stability of business during and after the crisis. In the deep current crisis caused by the COVID-19 virus pandemic, comprehensive and rapid support to states is necessary. The responsibility of the state for the crisis must be primarily aimed at significantly increasing the liquidity of the economy. Government support measures should use fiscal and monetary policy mechanisms and instruments. It is expected that entrepreneurs, small and medium enterprises, with the smallest liquidity stocks, will feel the consequences of economic crises the most.

Undoubtedly, the joint-stock companies on developed stock exchanges are really better prepared and have taken the crisis more seriously. Most of the positive answers were given by the companies listed on the stock exchanges in Budapest, Ljubljana, and Belgrade.

Based on the overall research, overall results, and conclusions, attitudes are made that give suggestions for assistance to joint-stock companies from foreign countries, but also for self-assessment of the joint-stock company. The future research agenda should go in this direction. Namely, the proposed questions take into account the causes of problems in listed joint-stock companies, business conditions, capital market inactivity, and macroeconomic situation because they reveal problems that occur in the process and cause self-assessments of listed joint-stock companies on stock exchanges.

The paper shows that the capital market of Bosnia and Herzegovina has an excessive number of listed equity securities created in the privatization process. It is natural that the number of "smaller" companies that are, "by force of law" - privatization, listed on the stock exchange, is declining under the influence of amended legislation. It implies that the majority owner who owns 95% of the company can buy the remaining part, change the legal form of the company, and delist it. The fallacy is the smaller number of companies means a less developed capital market.

The speed of response in times of crisis is one of the most important factors that can affect the survival of a joint-stock company and ensure business continuity after the end of the crisis. In a deep economic crisis, such as the current one caused by the COVID-19 virus pandemic, integral, comprehensive and rapid state support is primarily necessary because individual measures at the enterprise level cannot give effective results. The state's response to the crisis must be primarily aimed at significantly increasing the liquidity of the economy and restoring participants' confidence in the stability of the economic system. Government measures to support the economy must combine the mechanisms of fiscal and monetary policy in order to achieve an efficient and systematic result.

A comprehensive proposal for crisis measures at the state level is presented in detail in a previous paper. The monetary, fiscal, and parafiscal measures available to the state, the

central bank, and the competent ministries were discussed. However, the question is whether these packages of measures will be sufficient to compensate for all the economic consequences caused by the crisis.

It is expected that entrepreneurs, small and medium enterprises, with the smallest liquidity stocks, will feel the consequences of the economic crisis the most. In addition, companies whose sales range consists of products and goods that do not include basic foodstuffs will also face significant consequences in the short and medium-term.

Regardless of size, no organization is immune to the crisis and its consequences. Therefore, crisis management must provide a rapid response to the current crisis and crisis teams have a primary role in preventing greater damage and long-term consequences. The previous paper presents a series of proposals in the form of issues that should encourage companies to create an integrated package of crisis measures. Based on questions and evaluations of the readiness of the current management system, managers can assess the gap in the quality and comprehensiveness of currently taken measures and make their company more agile more prepared for crisis response. The lessons learned from this crisis must be the subject of detailed study and translated into organizational knowledge, which would further improve the crisis management system of the company and prepare it for the new (in)normalcy.

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POSSIBILITIES FOR APPLICATION OF E-CMR
FROM A CUSTOMS POINT OF VIEW

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ABSTRACT

Given the widespread development of information technology in business and government, it is increasingly logical to introduce electronic documents that partially or completely replace paper ones. In the EU Member States, the digitalisation of customs controls is at one of the best levels in the world, but there are still areas where paperwork is the only way to process specific information on cross-border trade in goods. As such an area, the information in the transport documents for the carriage of goods by road, known as CMR waybills, may be indicated. In this report, we will try to look at the trends in Europe regarding the application of electronic CMR (e-CMR) and the importance of this process for the customs control system. The information on each transport operation is of great importance to the customs and is a key component of their risk analysis to detect illegal cross-border movements of goods. By its nature, the movement of goods is a risk area because the possibilities for control by the customs authorities are very limited. Therefore, opportunities should be sought here for the introduction of effective measures to ensure the proper application of customs control functions. The linking of information from electronic consignment notes to customs information systems can be seen as a measure that would significantly contribute to the overall digitalisation of customs control.

Keywords: *Customs control, Customs digitalization, Electronic consignment note*

JEL classification: *M49*

1. INTRODUCTION

Among the numerous conventions that regulate relations in the field of transport, the Convention on the Contract for the International Carriage of Goods by Road (CMR Convention) of 19 May 1956, concluded under the auspices of the United Nations Economic Commission for Europe (United Nations, 1956), occupies an important place. The consignment note by its nature is not a commodity-disposal document, but serves as proof of accurate and timely delivery of goods to the final destination (Mladenov, 2000, p. 188). It can also be defined as a tripartite contract, the parties to which are the consignor, carrier and consignee of the goods. From a customs point of view, the consignment note is an important source of information on individual parameters of the transport operation, which are also important for the proper conduct of customs formalities. In practice, it is a proof of transport of the goods described in it and imposes certain responsibilities on the persons specified in it. Due to this role, it is not possible to admit goods in the customs processes without the presence of a consignment note according to the type of transport used.

Some forecasts show that the volume of road freight is expected to increase by more than 50% by 2050 (European Commission, 2016, p. 2). This means that paperwork will become an even more serious problem in the coming years, and CMR paper consignment notes are invariably present in it. The European Parliament and the Commission have repeatedly called for a stronger commitment to paperless transport in the EU and called for a simpler, fully electronic, continuous, transparent, secure and reliable flow of information between economic operators and control bodies covering cross-border goods traffic. In terms of the processes developing everywhere for automation of many activities, incl. and in transport, logistics and forwarding,

it is necessary, where possible, to make electronic document exchange mandatory. The risk of the COVID-19 virus spreading through the exchange of paper documents between those employed in these sectors and the relevant control authorities must now be taken into account. At the same time, it is necessary to take the appropriate steps on the part of the state administration for the acceptance and recognition of such electronic documents (consignment notes), incl. and electronic copies of already issued ones on paper.

2. SCOPE OF THE e-CMR PROTOCOL
In modern dynamic conditions, the time for delivery of goods is considered as one of the most important factors related to the efficiency of transport systems. New means and mechanisms for its reduction are constantly being sought, while at the same time efforts are being made to increase the quality of transport services and the added value in the sector. Achieving these goals is possible through the automation of some processes and their transfer to an electronic environment. The digitalisation of cross-border road transport is encouraging the process of moving from a paper to an electronic version of the CMR consignment note, with more and more countries joining this initiative. This could save transport companies a lot of costs and make them more efficient and sustainable. It should be borne in mind, however, that this does not mean an obligation for participants in transport operations (consignors, carriers and consignees) to use only electronic transport documents, but an opportunity to optimize their activities.

2.1. Application of the e-CMR Protocol
The rules for the carriage of goods by road internationally are covered by the CMR Convention, which has been ratified by most European countries, as well as by several other countries around the world. Freight companies, consignors and consignees use the CMR consignment note, which contains information on the goods loaded, the persons involved in the transport operation and the places for loading and receiving the goods. Until recently, CMR consignment note took place only on paper and against the background of the universal digitalisation of logistics and transport, business stakeholders and governments are pushing for a transition to an electronic format for this document. Of fundamental importance in this regard is the Additional Protocol to the Convention on the contract for the international carriage of goods by road (CMR) concerning the electronic consignment note (United Nations, 2008). This Protocol entered into force on 5 June 2011 and has currently been ratified by 27 States (see Table 1), representing about half of the 56 Member States of the CMR Convention. However, it should be borne in mind that only 6 of these countries (Spain, France, Estonia, Finland, the Netherlands and Luxembourg) actually carry out the electronic version of the CMR consignment note, which shows a rather limited geographical scope and a relatively small volume of cargo. According to the European Commission for 2017, road transport accounts for 50% of the total freight transport in the EU, as the 6 countries implementing e-CMR have realized about 30% of this traffic (European Commission, 2020, p. 36). However, the available data do not show the share of e-consignment notes and the share of paper waybills, which does not allow more accurate conclusions to be drawn about the importance of e-CMR for the EU transport sector.

Given the implementation of the European Commission's Mobility Package 3, which introduces a regulation guaranteeing that all state institutions in the EU Member States should receive data in electronic format, it can be said that the full introduction and use of electronic transport documents in the EU is only a matter of time. On 7 April 2020, the Council of the European Union approved the report on information on electronic freight transport (eFTI), adopted by the European Parliament's Transport Committee in January of that year. On 8 July 2020, the European Parliament adopted in its plenary meeting the Regulation on electronic Freight Transport Information (eFTI) (Regulation (EU) 2020/1056 of the European parliament and of the Council of 15 July 2020 on electronic freight transport information, 2020). The regulation

obliges all competent public authorities to accept electronic information through certified platforms (by 2025 at the latest) if companies wish to provide data in this way to demonstrate compliance with legal requirements. All this shows that the digital exchange of information from road consignment notes in Europe between actors in supply chains, customs administrations and other stakeholders is entirely possible. However, account should be taken of the fact that eFTI information is currently envisaged to be summarized at Brussels level and not in the individual EU Member States. In practice, information on individual shipments will be collected at the level of an individual Member State (consignor or consignee) and then directed to a common platform to which other EU Member States covered by the transport have access.

Table 1: States that have ratified the Additional Protocol to the CMR Convention

Participant	Signature	Ratification	Accession
Belarus			7 Feb 2019
Belgium[1]	27 May 2008		
Bulgaria			15 Sep 2010
Czech Republic			14 Apr 2011
Denmark			28 Jun 2013
Estonia			2 Nov 2016
Finland	27 May 2008	11 Jan 2019	
France			5 Oct 2016
Iran (Islamic Republic of)			8 Nov 2017
Latvia	27 May 2008	3 Feb 2010	
Lithuania	27 May 2008	7 Mar 2011	
Luxembourg			26 Dec 2017
Netherlands	28 May 2008	7 Jan 2009	
Norway	27 May 2008		17 Jun 2020
Poland			13 Jun 2019
Portugal			26 Sep 2019
Republic of Moldova			14 Mar 2018
Romania			14 Mar 2019
Russian Federation			6 Mar 2018
Slovakia			21 Feb 2014
Slovenia			15 Aug 2017
Spain			11 May 2011
Sweden	27 May 2008	9 Mar 2020	
Switzerland	27 May 2008	26 Jan 2009	
Tajikistan			9 Jul 2019
Turkey			31 Jan 2018
Ukraine			10 Jul 2020
United Kingdom of Great Britain and Northern Ireland			20 Dec 2019

(Source: https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XI-B-11-b&chapter=11&clang=_en, last visit: 28.09.2020)

For its part, the effective implementation of the e-CMR e-consignment note was launched in January 2017, when the first such transport of goods between Spain and France took place. As

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[1] Belgium signed the e-protocol on 27 May 2008 but has not ratified it to this day.

mentioned above, from the geographical distribution of e-CMR shipments, it can be concluded that they are not yet widespread. The reason for this can be found both in the still small number of countries that have ratified the e-CMR Protocol and in the need to build the relevant electronic platforms. The reason for the slow entry of electronic transport documents can be pointed out the lack of universal recognition of the legal equivalence of electronic documents by the competent state authorities. It is also influenced by the fragmented IT environment, in which in many places there are no established and interoperable systems with generally applicable and binding rules on electronic data interchange. Practical difficulties in using e-CMR also arise where the point of loading and the point of delivery of the goods are not in neighbouring countries, but require the consignment to be transported through countries that do not accept e-CMR. All this shows that maximizing the benefits of electronic documents requires the participation of more countries and the development of single electronic e-CMR platforms accessible to all stakeholders in those countries. The introduction of eFTI will certainly intensify these processes and will be a major reason for achieving a wider digitalisation of freight transport in the EU Member States.

2.2. Features of the e-CMR electronic consignment note

According to the Additional Protocol to the CMR Convention, the electronic consignment note has the same probative value and functions provided that it contains all the mandatory details and is the full equivalent of the paper consignment note. The Protocol also clearly mentions the requirements that the e-CMR electronic consignment note must meet to have legal force and practical application, and these are:

➢ To have a unique number;
➢ To be signed with an electronic signature;
➢ To apply special technology for its use (according to art. 1-6 of the Protocol):
  ▪ contain the same information as the paper consignment note;
  ▪ the e-consignment note is created by a registered and eligible for state administration software provider;
  ▪ the software provider must provide information to the competent authorities, the consignor, the freight forwarder acting as a commission agent;
  ▪ the software provider must maintain a database, a list of all e-consignment notes issued by it and provide them to the competent authorities if necessary;
  ▪ the parties to the transport operation to accept the e-consignment notes as a valid alternative to the paper one, if it meets the requirements of Art. 1-6 of the Protocol.

The introduction of electronic consignment notes aims to reduce administrative costs and the time required to process the information contained in them, and these benefits can be identified both for business and for the various control authorities. The objectives fulfilled by the consignment note are not only preserved in its electronic version, but also new possibilities are added in terms of both the security of the data and their type and volume. Most e-CMR platforms allow the attachment of photos to waybills from the moment the goods are loaded or unloaded, which is very useful in identifying possible problems with their quantity, type and condition.

For e-CMR platforms to work well, it is necessary to have opportunities for standardized data exchange not only between the economic operators using them, but also between the platforms themselves. This is necessary due to the possibility of individual participants in the transport operation to use different platforms. For example, there are currently 11 accredited e-CMR providers in the Benelux region alone. They all meet the requirements of the e-CMR protocol, but without the exchange of certain data between them, the effect of their use would be controversial.

3. APPLICATION OF e-CMR IN CUSTOMS CONTROL

The e-CMR e-consignment note project can enable businesses and control bodies to optimize the processes of import, export or transit of goods by integrating their activities into common networks of information systems. This will not only increase the speed of information exchange between all stakeholders in the supply chain but could also minimize errors and prevent fraud. At the same time, control authorities could increase their efficiency by focusing on other aspects of transport operations and identifying possible disturbances in cross-border traffic of goods by road on time. On the other hand, the application of standardized electronic communications in freight transport can facilitate further interaction of stakeholders with other modes of transport and with other national public administrations (United nations center for trade facilitation and electronic business (UN/CEFACT), 2018, p. 6) (tax administration, veterinary control, phytosanitary control, market surveillance authorities, etc.).

According to the CMR Convention, a road consignment note affects private legal relations between the parties to a contract of carriage in the context of international road transport and in this sense has no significant consequences for public authorities. However, the consignment note is used by many government institutions to control shipments, and for customs authorities it plays a leading role in trade with EU third countries. About to the use of e-CMR instead of a paper consignment note, there is a problem as to the extent to which the customs authorities can accept monitoring carried out on the screen of a mobile device or on a paper printout available in the vehicle. In practice, the question arises as to whether the customs authorities can have sufficient confidence in the electronic consignment note. The answer to this question may have to be sought in who administers the online e-CMR publishing platforms - a private organization, the state or a joint venture. Currently, the existing e-CMR platforms on the territory of the EU member states, which also apply this version of the consignment note, have been developed and sold as a private initiative. However, no problems have yet been identified and reported by the customs authorities regarding the security and reliability of the data exchanged on cargo between those involved in transport operations, which can be considered as a quality certificate for this electronic document.

The eFTI Regulation introduces the use of new platforms for the provision of transport information, and e-CMR is not specifically covered by it. However, it should be borne in mind that in practice there is a significant overlap of information on both types of platforms. This information refers to data on the persons involved in the transport operations, the type, packaging and quantity of the transported goods, the place of loading and unloading, etc. This data contained in the e-CMR overlaps with the information required by the customs authorities to prove compliance with customs formalities for goods transported across borders by road. Directly speaking, e-CMR can play an important role as proof of compliance and even lead to a reduction in the volume of data submitted by economic operators to customs authorities. This information may be used both in the framework of the preliminary control and risk analysis carried out through submitted Entry summary declarations or Exit summary declarations, and at the end of customs procedures for customs clearance of goods. The use of electronic transport documents can be considered as a precondition for granting new customs simplifications, based on the information contained in them to automate (in whole or in part) the processing of certain customs documents, such as entry or exit summary declaration, temporary storage declaration, re-export notification, etc.). From a legal point of view, this is legally regulated because customs legislation in the EU (Union Customs Code - UCC) (Regulation (EU) No 952/2013 of the European Parliament and of the Council of 9 October 2013 laying down the Union Customs Code, 2013) provides for possibilities to use "electronic transport documents" instead of customs declarations (CLECAT Digitalisation WG, 2020, p. 31). Such an approach is partly supported by the introduction through eFTI of a requirement that when public authorities can retrieve information electronically, they should not require its retransmission by economic

operators. However, the fact that the customs must use a specific system for coding goods (Harmonized Systems code), which is not mandatory for use in transport documents, must also be considered here. The introduction of a requirement to indicate the HS-code of goods in these documents may make it difficult for economic operators or lead to significant inaccuracies.

Member State authorities will have various requirements regarding a solution for sharing (access to) data of eTransport Documents. First, the solution has to fit a particular inspection regime and secondly it has to provide a guaranteed data quality. There are also particular archiving laws to consider in this respect. Administrative burden should not increase, which means that the once-only principle has to be obeyed (European Commission, 2018). The e-CMR concept imposes some requirements on stakeholders using this consignment note option:

➢ **Requirements for customs authorities:**
  ▪ to accept electronic information for forthcoming or realized transport, provided by the economic operators;
  ▪ apply harmonized rules for access to electronic information;
  ▪ to use a common set of data for electronic information processing.
➢ **Requirements to economic operators:**
  ▪ the information should be provided to the authorities through certified e-CMR platforms:
    – in machine-readable format;
    – in a human-readable format, if (explicitly) requested by the relevant authority.
➢ **Requirements for e-CMR platforms and e-CMR service providers:**
  ▪ e-CMR platforms must meet certain functional requirements to ensure, among other conditions, the authenticity, integrity and cybersecurity of the data;
  ▪ providers of such services must keep the data for a certain period of time, provide access to them to the competent authorities, etc.

Many documents that are sent with the goods have a similar content of the consignment note (packing lists, proofs of origin, specifications, etc.), which can and should lead to optimization of commercial and transport documents, incl. and from a customs point of view. These documents contain several repetitive data, such as who sends the goods, to whom they send them, what they send (type, quantity, value), what type of transport is carried out, etc. In practice, there is a circulation of the same information in different systems, without many possibilities for its reuse. At the same time, there are many standards developed for document management, incl. and for the electronic exchange of specific information that is not fully used. A number of standards are widely used in customs - WCO Data model, developed by UN / CEFACT standard EDIFACT (messaging widely adopted and implemented in logistics), Multi Modal Transport model (MMT), Transport Data Model (EUTDM), as well as some other specific modules for transport by sea or rail. Creating opportunities for the exchange of information between the various transport and customs systems following these standards would make a significant contribution to achieving a better electronic environment in the sector and maximizing the benefits of the use of electronic documents.

3.1. Application of e-CMR in the import of goods

The implementation of each import operation is associated with the submission and execution of several documents, the consignment note is one of those mandatory. It accompanies the goods during transport, and in the country of importation before customs clearance of the goods it is not permissible to make any additions or corrections in it (except in cases of objective circumstances during the transport of the goods, affected their quantity and quality). This allows the customs authorities to consider the information in the consignment note as a basis for checking the actual condition of the imported goods in terms of type and quantity. The use of the possibility for the customs authorities to access the data for a specific transport with e-CMR is a prerequisite for the timely establishment of possible discrepancies regarding the type and

quantity of the declared goods and those actually located in the cargo space of the vehicle. At the same time, e-CMR can also be considered as reliable proof of receipt and delivery of goods in the case of import under the simplified procedure " Entry in the declarant's records" (Article 182 of the UCC). In this case, the importer is released from the obligation to present the goods to the customs authorities and they carry out a risk analysis to carry out a possible verification only based on the information submitted to them.

The information from e-CMR may also serve other customs formalities when importing goods, as similar possibilities are provided for the submission of the Entry summary declaration (Article 127, paragraph 7 of the UCC) and the Temporary storage declaration (Article 145, paragraph 6 of the UCC). The customs authorities may accept that commercial, port or transport information systems are used to lodge a Temporary storage declaration provided that they contain the necessary particulars for such declaration. The customs authorities may also accept that the Temporary storage declaration is made in the form of a transport document, provided that it contains the particulars of a Temporary storage declaration, including a reference to any entry summary declaration for the goods concerned (Article 145, paragraph 5 of the UCC).

The above examples show that CMR e-consignment notes can have important applications in import customs procedures, with the benefits of their application for both economic operators and customs authorities. The information contained therein can successfully power the relevant modules of the customs information systems and allow effective controls to be carried out on imported goods so that the functions and tasks of customs control are fully achieved.

3.2. Application of e-CMR in the export of goods

Like the documentation of imports of goods, consignment notes play an essential role in export customs formalities. They prove the conclusion of a contract for the transport of the goods declared for export to a place outside the customs territory of the EU. Based on the information contained therein, the customs authorities may seek equality between the goods declared and prepared for export. The use of e-CMR also provides additional post-release controls options, as the customs authorities could check in the system what type and quantity of goods are accepted by their final consignee in the third country. This means that e-CMR could be considered as proper proof of completed exports, even in cases where there are not regularly completed SADs or Exit summary declarations.

The Union Customs Code provides some opportunities to streamline export procedures by allowing customs authorities to accept the use of commercial, port or transport information systems to submit an Exit summary declaration (Article 271, paragraph 3 of the UCC) or notification of re-export (Article 274, paragraph 3 of the UCC), provided that they contain the necessary particulars for such notification and these particulars are available before the goods are taken out of the customs territory of the Union. In practice, this means that the use of e-CMR can contribute to the simplification of export customs procedures by releasing economic operators from the obligation to submit the same data several times to different control systems.

The introduction of electronic consignment notes would also have a direct effect on the VAT administration processes, both on the part of businesses and the part of the competent national control authorities. Paper document circulation in transport processes is associated with the presence of many difficulties, primarily related to the delay of the relevant documents in time, and often due to their loss. This leads to some problems in proving to the tax authorities the international transport of goods in the direction of their export and the provision of services for the transport processing of exported goods. The impossibility of proving such carriage deprives exporters of the right to a timely refund of VAT paid on the goods exported by them, which has a direct financial and economic effect on their business. Overcoming these problems is entirely possible using of e-CMR in export operations and the addition of electronic consignment notes to documents proving international transport. At present, however, not all EU Member States

have updated their tax legislation in this direction and the proof of international transport and transport handling services cannot be done with the electronic equivalent of a CMR consignment note. With the introduction of eFTI, this will soon change and then e-CMR will become the preferred option for documenting international road haulage, at least by legally operating economic operators.

3.3. Application of e-CMR in the transit of goods

Transit, by its very nature, allows the transport of goods from one place to another in a customs territory, and they are placed under customs supervision during its course. The Transit regime is ancillary to other customs regimes, but it is part of the logical development of customs control from a spatial point of view. It can precede the application of one regime or finalize the development of another, ie. transit cannot be considered as a separate process. However, its proper organization and implementation is a challenge for both economic operators and customs.

From the point of view of the customs processing of consignment notes for goods under the Transit procedure, it is important in the first place to take into account where the consignor of the goods is positioned - at the office of departure or destination. This is important from a customs point of view because in the first case the transport will start and the consignment note will show the type and quantity of goods sent, and in the second case the transport will end and the consignment note will prove the type and quantity of goods received. In both cases, e-CMR can ensure that real-time access to this data is available and that the customs authorities take it into account when initiating or terminating the transit operation. Such a possibility is provided in the European customs legislation, as according to art. 233 (4) (e) of the UCC, the customs authorities may authorize certain simplifications of customs procedures with regard to the placing of goods under the Union transit procedure or the termination of that procedure. In practice, the use of an electronic transport document as a customs declaration for placing goods under the Union transit procedure is permitted, provided it contains the particulars of such declaration and those particulars are available to the customs authorities at departure and at destination to allow the customs supervision of the goods and the discharge of the procedure.

It is essential for the transit of goods under customs supervision to link e-CMR to eTIR. Almost all customs administrations use IT systems, including the TIR Customs Portal, to manage their procedures and exchange information in real-time with fellow national agencies, with trade actors or with international partners (customs or organizations such as UNECE or IRU). TIR Electronic Pre-Declarations (TIR-EPD), developed by IRU, enable TIR operators to send advance cargo information and exchange messages with multiple customs authorities throughout a TIR transport, in full respect of all national customs requirements and the format of information to be submitted. This application is used widely by transport operators and their representatives. It saves border waiting time and reduces transport operator costs, while allowing customs to do proper risk assessment (IRU, 2020). The exchange of information between e-CMR and eTIR systems will significantly intensify the processing of transit operations through the EU Member States and would have a positive effect on all stakeholders.

4. CONCLUSION

The ongoing processes of digitalization of our society have an impact on the transport sector, and the tendency to move to the processing of related documents in an electronic environment is becoming increasingly important. The gradual development and implementation of electronic consignment notes are one of the main steps that must be taken to achieve the desired effect of these processes. Customs controls in EU member states also use IT and more and more procedures are covered by electronic documents. In this regard, the exchange of information between transport systems and customs systems should be seen as a logical continuation of efforts to build an e-society and e-government.

Due to its digital nature, e-CMR can be easily integrated with many services used by transport companies, such as customs clearance or freight forwarding management services. Also, the information from e-CMR can be electronically received in several other external systems, such as customs and to service the processes developed in them. In practice, e-CMR information can be used as a reliable signal to start certain processes or as evidence of their completion. In this way, the effect of the use of electronic waybills could be multiplied and their application would have a positive effect on all participants in transport operations. The main purpose of the use of electronic documents (not only in transport) is to create opportunities for the exchange of information contained in them, not just their existence. It is, therefore, necessary to make e-CMR platforms operating in different countries interoperable (single format for data exchange or use of a common interface). This would allow an e-CMR created on the platform of one provider of a similar service to be signed by a user on the platforms of other providers. This example shows that to increase the usefulness of the use of e-CMR, it is necessary not only to expand the geographical scope of the countries using it but also to unify the type of information collected in electronic platforms so that it can be shared with all stakeholders. Then the customs could expand the scope of application of information from e-CMR and improve the automation of several of its processes.

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COVID-19 CHALLENGES FOR EU EXTRA AND INTRA-REGIONAL TRADE

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ABSTRACT
The current COVID-19 crisis will take a severe toll upon the world and the EU economy. Exports and imports between member-states account for around 30.6% of EU GDP (average value for the period 2007-2018) and some EU economies are particularly exposed to the crisis due to their strong trade and value chain linkages. The trade with the rest of the world also decreased by mid-March 2020, and Rotterdam's traffic from China fell for 20% compared to the same period in 2019.

This paper estimates the different impact of the intra- EU trade and extra-EU trade on EU GDP growth. By separating extra-EU trade flows from intra-EU trade flows and using cross-section fixed method, panel least squares for the period 2008-2018, we obtained results that confirm that trade exchange within EU has significantly higher effect on per capita economic growth in comparison with trade exchange with countries outside the EU (taking in consideration the sample of EU-27 countries, excluding Great Britain).The findings prove that the current measures proposed by the EU institutions are essential for sustaining the function of the Internal Market and for EU growth prospects.

Despite all efforts to remain united against the rising global challenges under the COVID-19 crisis, the Union is growing further apart. The member-states are imposing restrains on the internal trade flows thus jeopardizing the achieved positive effects of trade liberalization. It is certain that the financial crisis from 2008 caused increased Euro scepticism. Therefore differences in national views and priorities must be taken into account in order to reach a democratic compromise within the EU that is going to be both effective and legitimate in order to confront the consequences of the COVID-19 pandemics. The solidarity among member-states is challenged once again.

Keywords: European Union, intra EU -trade, extra EU-trade, economic growth, COVID-19 pandemics.
JEL classification: F13, F15, F43

1.   INTRODUCTION

The European Union is the world`s biggest trader at present. The total EU-28 export (the trade exchange within the EU and with non-EU countries) accounted for 15.2%of the total world export and 15.1% of the world import in 2018. The EU is the top trading partner of 80 countries. For comparison the USA is the top trading partner of slightly over 20 countries (European Commission, 2020). The dominant position in the world market is a result of the process of European Economic Integration.

However, due to the current pandemics of COVID-19 the four freedoms of the EU Internal Market have been severely restricted. EU countries took precautionary measures in order to protect the health and safety of their citizens. Most of the businesses were shut down, the transportation was restricted and the movement of people across borders was banned. This situation created inconvenient trends within the intra-EU supply chains, as well as in intra EU-trade. Latest projections point out that the world health crisis will result in a decline of 9.2% in EU exports to and 8.8% in EU imports from third countries by the end of 2020, based on the estimated decline in GDP worldwide (European Commission, 2020).

The EU has been the dominant player in the world economy by creating an average share of 25% of real world GDP during the last 10 years (World Bank database). However EU`s average share of the world output is experiencing a declining trend. The new enlargements partly compensated this negative trend, but the main reason for the decline was the faster growth recorded by the emerging economies. Due to the current health crisis, the economic activity in the EU dropped by about one third at the beginning of June, 2020. The contraction of EU GDP in 2020 is expected to be 7.5%, far deeper than the one recorded in the period of the financial crisis in 2009. This assumption is based on the scenario where restrictive measures will be gradually relaxed (European Commission, 2020).

The research in this paper focuses on the question: *whether intra-EU trade contributes more to the economic growth of the regional integration than extra-EU trade?* It is divided in four sections: first, a brief analyses of intra-EU trade; second, literature overview; third, description of data and methodology used for the creation of the econometric model; and fourth, presentation of the results obtained from the model. The end of the paper provides final conclusions. .

2.   INTRA-TRADE IN EU

An important indicator for assessing the intensity of regional economic integration for its member-states is the percentage share created by intra-regional trade in the total trade exchange of the integration. Deepening and strengthening the economic integration among EU member-states has certainly contributed to an increase in intra-EU trade flows. One of the reasons for the increased intra-trade was the enlargement process of the integration that significantly increased the scope of the Internal Market. The integration of new countries increased the opportunity to gain from specialisation within the European value chains, as well from easier achieving economy of scale in most of the industries throughout the region. The intra EU- trade created 63.9% of the total EU trade in 2018 (European Commission, 2019).Table 1 presents the individual share of each EU country in the total export and import of the region as well as in the total trade.

Table 1: Share of intra-EU trade in the total trade, 2018

Member State	Share of intra-EU exports in total exports	Share of intra-EU imports in total imports	Share of intra-EU trade in total trade
EU-28	64.3	63.5	63.9
Austria	71.4	77.5	74.5
Belgium	72.8	64.4	68.7
Bulgaria	68.6	63.6	65.9
Croatia	67.7	77.6	73.8
Cyprus	28.6	57.4	48.3
Czech Republic	84.4	76.5	80.6
Denmark	61.0	70.0	65.4
Estonia	68.0	76.6	72.5
Finland	59.0	70.1	64.6
France	59.0	69.1	64.4
Germany	59.0	66.4	62.3
Greece	52.8	51.4	52.0
Hungary	81.8	74.8	78.4
Ireland	50.2	64.1	55.7
Italy	56.3	59.0	57.6
Latvia	66.9	74.8	71.3
Lithuania	58.6	68.2	63.6
Luxembourg	84.1	87.7	86.2
Malta	57.7	72.2	67.5
Netherlands	74.4	45.8	60.9
Poland	80.3	69.3	74.8
Portugal	76.1	75.7	75.9
Romania	77.1	74.7	75.7
Slovakia	85.7	80.0	82.8
Slovenia	76.2	67.2	71.8
Spain	66.2	58.4	62.1
Sweden	59.5	69.8	64.7
United Kingdom	47.1	52.8	50.4

(Source: https://trade.ec.europa.eu/doclib/docs/2013/may/tradoc_151348.pdf)

Measuring the same indicator (intra-export and intra-import) of goods as a percentage of GDP shows that in the period from 2007-2018 intra EU-trade created 30.6% of EU GDP on average. However, from data presented in Table 2 it is evident that this percentage started to decrease in 2018.

The European integration process has not been even across the region and has led to a stronger relative concentration and spatial clustering of exporting activities between CEE countries and old member-states i.e. the core of the EU: Germany, Austria, Belgium, Luxemburg and the Netherlands (Stöllinger, 2016). For the other countries, bilateral trade intensities have increased less significantly or even remained more or less constant over the whole period. Within the EU, Germany is by far the biggest trader. In 2019, Germany's exports were worth over 57.5 billion Euro and its imports were valued at 54.9 billion Euro. Combined, France, Italy, Belgium, and the Netherlands accounted for the bulk of the EU internal trade, with each country worth in net-trade of 30-50 billion Euros. These countries are the largest trading partners in the EU.

The top five products traded within EU are: Motor vehicles, trailers and semi-trailers: Chemicals and chemical products; Machinery and equipment; Computer, electronic and optical products and Food products. Together they account for almost half of all exports (47 %) for the period 2015-2019. Motor vehicles, trailers and semi-trailers is the most significant category with share of 13 p.p. Germany is the dominant exporter in regard of all observed categories.

Table 2:Intra EU trade (in goods as a percentage of GDP for the period 2007-2018

Year	Share
2007	33.0
2008	31,8
2009	31,4
2010	30.6
2011	30.4
2012	29.5
2013	30.0
2014	30.0
2015	30.2
2016	30.0
2017	30.3
2018	29.7

(Source: UN COMTRADE database)

Most of the academic papers (Vetter, 2013; Leitner, Sandra M. et al. 2016) confirm that EU integration and the functioning of the Internal Market contributed to an increase in intra-EU trade flows despite strong extra-EU trade growth. Prior to the financial crisis intra-trade was growing faster than the world trade. However, after 2009 the growth of intra-EU trade slowed down and in 2011 came to a standstill or to some extent to a decline. A similar pattern is also present for exports of non-EU countries towards the EU-28, i.e. EU-28 imports. Both trends reflect low growth and sluggish demand in EU compared to other economies (Leitner, Sandra M. et al. 2016).

The current threat is that the health crisis will lead to severe distortions within the Internal Market as governments introduced temporary restrictions to border traffic. The real threat however is the possibility of re-introducing tariff and non-tariff barriers. Route suspensions and delays on the roads caused problems in the supply chains, as well as considerate losses for the companies. This situation is threatening to suspend the functioning of the Internal Market that would create a real breakdown of the prospects of further economic growth. The EU leaders responded to this challenge by installing so called "Green Lanes (Corridors)" for traffic trucks at border crossings and for minimizing checks and screening of truck drivers. Also, the priority was given to essential goods, medical equipment and supplies. The Commission approved temporary suspension of the waived customs duties and VAT for these goods. The EU introduced Temporary Framework that will ensure food security within the EU, including measures such as aid of up to 100,000 Euros per farm and prolonged deadlines to apply for support. Also, the EU has put forward a package of540 billion Euros to support member-states, as well as ease access to structural funds. The European Investment Bank offered 40 billion Euros for small and medium size enterprises, while the European Central Bank has announced a 750 billion Euros worth of a pandemic emergency program for the purchase of private and public securities during the crisis. Due to the COVID -19, EU suspended all the austerity measures of the Stability and Growth Pact, allowing the counties to use their budgets according to their national needs. It is still uncertain how the countries will act, i.e. will they use the funds properly and towards the

strengthening of the Internal Market (European Council,2020)or will they protect their national industries and suspend the functioning of the Internal Market?

3. LITERATURE REVIEW

The objective of the European Economic Integration was to increase intra-trade and spur economic growth by increased competition, better possibilities for achieving economies of scale and significantly increased number of innovations. The process of European Economic Integration started in the 1960s and in the1970s and was in fact accompanied with high growth rates in the member countries of the regional integrations at that time, the European Economic Community (EEC) and the European Free Trade Area (EFTA). That created a belief that economic integration had an important effect on the level and growth of the economic activity (Robson, 1972).

This hypothesis was confirmed by classic theories on the effects of creation of a regional integration formulated by Viner (1950), Meade (1956) and Lipsey (1957). Viner (1950) introduced the static concept of trade creation and trade diversion. Regional integration can improve the welfare of the member-states by trade creation, but on the other hand it may have welfare-reducing effects for the integration and world welfare through the trade diversion. Balassa 1958; Lipsey, 1960 and Janssen, 1961 investigate the dynamic effects of regional integration. They implied that regional integration might increase investments, provide better opportunities for achieving economy of scale, enhance technological progress as the process of regional integration increases the competitive pressure and therefore contributes to higher economic growth. However, the main assumptions in these classic theories are that: trade is done with homogeneous goods; import-competing goods may be produced under increasing marginal cost conditions; export goods are produced under constant cost conditions; pure competition exists both on commodity and factor markets; there are no transportation costs; trade restrictions exists only in the form of specific or ad valorem tariffs; opportunity costs of production are fully reflected in prices and trade in goods is balanced at full employment of resources (Robson, 1998).

Static and dynamic effects of the creation of the custom union, the internal market and the monetary union were thoroughly analysed in the economic literature, confirming that positive effects of the economic integration within the EU prevail over the negative effects of the process (Grossman and Helpman, 1991; Sala-i-Martin and Barro, 1997).

Modern theories try to include the effects of imperfect competition (Baldwin, 1997; Page and Bilal, 2001 and Schiff and Winters (2003) and others). These theories highlight the effects of regionalism: from the static through to the dynamic and finally to open and developmental regionalism. Developmental integration theory was put forward in response to problems created by market integration (McCarthy, 1996). In the first instance, states must make a political commitment to integration, since such a commitment is seen as laying the foundation for cooperation. It is anticipated that this will contribute towards member-states' progress in implementing policies that will help resolve problems created because of the unequal distribution of benefits, one of the major causes of market failure within RTAs (McCarthy, 1996). The members need to introduce corrective policies (regional policy, social policy, etc.) in order to redistribute the benefits from the unperfected market competition. Many authors (Bhagwati and Panagariya, 1996) claim that development integration has proven more difficult to implement than market integration. This is mainly because institutions are associated with corruption and

rent-seeking. Additionally, the degree of state intervention in economic activities (particularly in trade) could negatively influence the process of integration.

4. DATA AND METHODOLOGY

The empirical model that we use in this paper is based on the Bassanini et al., 2002 and Wooster et al., 2006 which uses the basic determinants of output growth. The used variables in the empirical analysis are given in Table 3, along with data sources (data used on 27 member-states of EU, excluding Great Britain). We believed that excluding Great Britain would give us better perspective about the actual trade flows within the EU, and that would lead us to better conclusions and suggestions on present policy options. The main variables, intra and extra-EU merchandize trade, are retrieved from the EUROSTAT database for the period 2008-2018.

In order to get relative indicator to the size of the economy, the variables (intra and extra-EU trade) are expressed by percentage of GDP in each year for each member-state. In other words the extra-trade in million Euros was divided with the GDP value in million Euros. Data on GDP is also retrieved from the EUROSTAT statistics.

Table 3: Description of the data

Variable	Description	Source
GDP per capita growth (lnY)	GDP per capita growth (annual %)	World Development Indicators
Population growth (n)	The rate of growth in total population	World Development Indicators
Investment (k)	The percentage share of investment in GDP	World Development Indicators
Intra- EU trade (lnr)	The intra-EU trade (export+import) as a percentage of GDP	EUROSTAT
Extra-EU trade (lnw)	The extra-EU trade (export+import) as a percentage of GDP	EUROSTAT
Government Size (G)	Government consumption expenditure as a percentage of GDP	World Development Indicators
Inflation (π)	The rate of change of the GDP deflator	World Development Indicators

(Source: Athor`s calculations)

The dependent variable is the growth of the GDP per capita expressed in 2010 purchasing power parity. This data is retrieved from the World Bank Development Indicators database, along with the rest of the data for the independent variables. The analysed period is from 2008-2018 and the number of observation is 297, having in mind constrains in data availability. The method used is the fixed method; panel least squares with cross-section weight. We estimate only the long term growth effect of the respective explanatory variables.

The equation can be written as follows:

$$\Delta nYit=\beta_0+\beta_1 k_{it}+\beta_2 n_{it}+\beta_3 lnr_{it}+\beta_4 lnw_{it}+\beta_5 g_t+\beta_6 \pi_{it} \qquad (1)$$

where **k** is the share of investment in GDP, **n** is population growth, **r** is the ratio of intra-EU trade as percentage of GDP, **w** is the ratio of extra-EU trade to GDP, **g** is government consumption expenditure relative to GDP, **π** is inflation and β coefficients measure the long term growth effect on the explanatory variables.

The R2 in the estimated model is 62.7% showing that the independent variables explain the dependent variable in significant percentage. The Durbin-Watson statistics is 1.59 showing that there is no autocorrelation detected in the sample.

4. RESULTS OF THE ECONOMETRIC MODEL

The results of the econometric model we used indicate that all independent variables that we included in the analysis are statistically significant for the dependent variable, the growth of GDP. The coefficients of intra EU trade and investment have positive signs, and the other four variables: extra EU trade, population growth, government consumption expenditure and inflation have negative signs.

The main focus of our analysis is the influence of intra and extra EU trade over GDP growth. As the results indicate, the influence of intra EU trade on GDP is significant and with a positive sign. This confirms that intra EU trade is significant for EU GDP growth and 1% growth of intra EU trade could lead to 1.12% growth of EU GDP. On the other hand, extra EU trade appears to have negative influence over EU GDP growth. 1% Growth of extra EU trade could actually lead to a decrement of the EU GDP by 0.85%. These findings indicate the high importance of intra EU trade as trade creation is the recognized positive effect of the process of regional economic integration. It confirms that for the European Union intra EU trade is highly important factor for the functioning of the whole economic integration.

This, however, also points out that the trade diversion effect is strongly present in the case of the EU, meaning that EU is trading more with partners within the EU rather than with trade-partners outside the EU. EU members diverted their trade to partner countries, as most of them do not have lower comparative costs than the world average. The negative effect of extra-trade on the GDP per capita can also be indicating that EU is losing its positions on the world market due to lower competitive advantage.

The positive coefficient of investment is also expected and indicates that 1% growth of the investment shares in GDP could lead to 3.8% growth of EU GDP. The negative signs of the coefficients of government consumption expenditure and inflation growth are logical and expected. Higher growth of government consumption expenditure and higher inflation could lead to decrease of GDP growth rate.

Table 4. Results from the econometric model

Variables	Coefficient (t-statistics)
Intra-trade (lnintra)	1.122*** (2.058)
Extra-trade (lnextra)	-0.854*** (-2.350)
Investment (inv)	0.038*** (-2.027)
Population (pop)	-0.475 *** (-3.483)
Government consumption (gov)	-0.308 *** (-6.755)
Inflation (inf)	-0.1045*** (4.226)

(Notes: *** represents the p-value at 5% significance)

CONCLUSION

The European solidarity is challenged once again with the pandemic of COVID-19. One country`s implemented restrictive measures may affect the rest of the member-states within the regional integration. EU needs to act as one in order to deal successfully with the economic consequences of pandemics and sustain the functioning of the Internal Market and the Monetary Union.

The results from the model in this paper confirmed that intra-trade is much more important for EU growth prospects then extra-trade. On the other hand, extra-trade with third countries is lowering GDP per capita in the EU. Theory confirms that favorable conditions in the regional integration can cause the effect of trade diversion since the world trade is diverted to partner countries with comparative costs within the integration (Lipsey, 1957). Therefore EU is increasing the welfare of its members by trade creation (intra-trade), but on the other hand it has welfare-reducing effects through the effect of trade diversion. That can mean that the EU is losing its competitive strength hand is losing its dominant position on the global market, which might be a result of the inability to allocate its resources efficiently.

It is almost certain that the crisis will take a severe toll on the EU economies. How hard members' economies will be hit depends on the length of their lockdowns and aggregate undertaken countermeasures. Member-states are not united in their response to the COVID-19 crisis and do not have single opinion on the future prospects for EU. Unfortunately, this is not the first time. The members failed to find common approach during the financial crisis and the migrant crisis. For example, Hungary and Poland were introducing measures that EU is considering opposite to the fundamental democratic values of the Union.

We believe that (policy) measures and adjustments for re-accelerating economic growth in Europe should be designed to boost the strengths of the Internal Market. Most of the measures are proposed in order to repair and revitalize its functioning, ensure fair rules, support investments, as well as creative ideas and innovations. But there are certain risks that most of the measures instead of being implemented will be abandoned or suspended by the member-states.

The members still do not have common positions on the next multiannual framework (2021-2017). The Commission is proposing new financial instrument - Next Generation EU. The aim is to help the countries in their fight against COVID-19 and also to stimulate future investment by enforced digitalization and investment in green economy. Of course that needs strong political will and agreement among the countries for joint financing since the Commission is planning to raise the ceiling of their own resources as revenues in the budget up to 2% of the EU Gross National Income.

On the other hand, the EU is also temporary suspending all austerity measures related to the revised Stability and Growth Pack. The overall budget deficit of the euro area and the EU was projected to rise from 0.6% of GDP in 2019 to around 8.5% in 2020 (European Commission, 2020b). Countries with the limited fiscal space can be hit harder from the crisis. In times of crisis, national policies can turn to protectionism measures that would endanger the functioning of the Internal Market. There is a risk that uncoordinated national measures will create further economic, financial and social divergences among the EU members and could threaten the stability of the Economic and the Monetary Union. To some extent the different measures enacted in different member-states at their national could be justified with the different intensity and threat of the COVID-19 pandemics they were and are facing. Still, it is evident that the more organized approach at EU level in enacting economic packages that will secure economic stability at supranational level was lacking in the past months and is not present at the moment. Instead EU authorities redirect their focus on the latest announcements by the British government on abandoning the achieved deal on BREXIT and leaving the EU by the end of this year with no deal at all. All these issues overcome the scope of this paper, and are certainly topics for new research endeavor in near future.

There is no doubt that free trade and deeper economic integration provides long-term benefits for the members of the regional integration. However, it is important to recognize the possible short-term effects of the process and provide sustainable policies in order to eliminate or minimize the negative consequences. The current crisis might contribute to create additional risks upon the growing discrepancies between member-states. The European Union is facing a situation where unity and cooperation is needed more than ever. Internal strength of the Union is needed to face the external challenges. Thereforeit is important for the EU to have a common strategy to sustain the economic growth and the dominant position in the world market.

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THE IMPACT OF COVID-19 ON THE PERFORMANCE OF INTERNATIONAL COMMERCIAL CONTRACTS FOR THE SALE OF GOODS – FORCE MAJEURE AND HARDSHIP

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ABSTRACT

The outbreak of COVID-19 has had massive negative impact across all industries and fields in the entire world. While the negative health impact is slowly stabilizing, the economic impact is in full effect and the harm is yet to be evaluated. On macroeconomic level, the necessary measures for combating the pandemic which were undertaken by governments have significantly restricted international trade. On microeconomic level, merchants and businesses are faced with inability or extreme obstacles in their daily operations and particularly in performing their international sales contracts. Failure to perform results in contractual breach and unwanted claims for damages.

The paper addresses the impact which COVID-19 has on the performance of international commercial contracts for the sale of goods. The paper considers the impediments which may arise due to the pandemic outbreak and evaluates them from a legal perspective under the UN Convention on Contracts for the International Sale of Goods from 1980 (CISG), which is the main legal instrument governing international sales contracts. Particularly, the paper focuses on the question of exemption from liability in a situation where either of the contractual parties fails to perform and breaches an obligation. The evaluation is conducted through interpretation of the concepts of force majeure and hardship, as grounds for non-performance or contract renegotiation in light of the current situation.

*Keywords: Covid-19, CISG, Hardship, Force Majeure, Exemption of Liability*

JEL classification: F10, K12, K33

1. INTRODUCTION

The international sale of goods is performed in a complex environment composed of numerous domestic and international regulations and standards, and in a form of web of arrangements among traders in the supply chain. In such a complex system, predictability is key factor. However, unexpected events can occur which can disrupt the normal course of business. The nature of the events can vary, ranging from natural disasters, wars and conflicts, riots, pandemics all the way to governmental actions and sanctions. More often than not these events are non-business related and outside of the sphere of control of the contracting parties. The manifestation of these types of events also makes the performance of the contract either impossible or significantly more difficult for one or both of the contracting parties.

The outburst of COVID-19, the virus which was first identified in Wuhan in December 2019, has transformed into a humanitarian crisis on a global scale. On 11th of March 2020, WHO proclaimed pandemic on a global scale (www.who.int). The virus has affected all aspects of society and all industries are facing turmoil. COVID-19 is upending normal life around the world, and with it, hindering the performance of many commercial contracts. On global scale the international exchange of goods has been in steady decline. According to the WTO, world trade is expected to fall between 13% and 32% in 2020 as a result of COVID-19 (Figure 1).
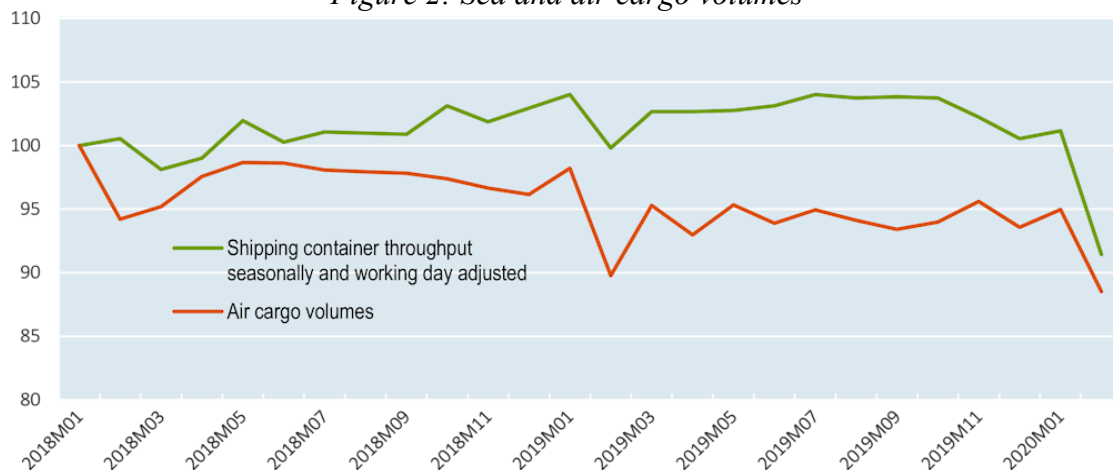
Figure 1: World merchandise trade volume 2000-2022
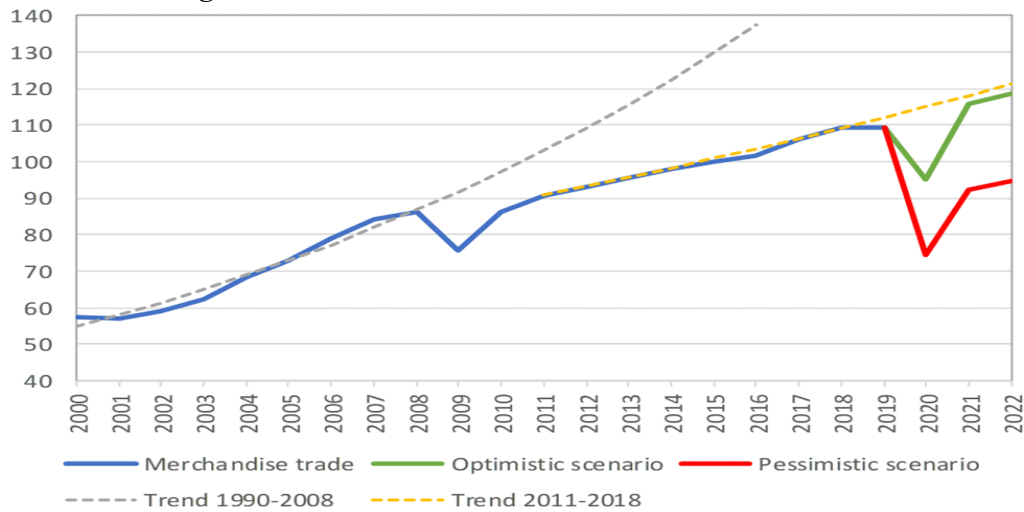
(Source: WTO secretariat)

Similarly, reports from the OECD show disruption in global supply chains, indicated from the sharp drop in volume of air and sea cargo (Figure 2).

Figure 2: Sea and air cargo volumes

(Source: OECD, drawing on data from Innovative Solutions in Maritime Logistics (www.isl.org/en/containerindex) and International Air Transport Association (www.iata.org))

The state of play on macroeconomic level is the result of the set of actions taken at microeconomic level. With borders and factories being closed, and people staying at home for several months, most international commercial relationships have been, and will be affected further down the line. Consequently, the need for contractual and statutory remedies will be increasing. In anticipation of the aftermath, domestic courts and arbitral institutions have yet to witness an array of international commercial disputes. In light of this, merchants and businesses suspecting their incapability of compliance with the contractual obligations, or doubting the ability of the opposing contracting party, should consider and evaluate the options which they have within their contracts and the applicable law in the face of non-compliance.

The article offers guidance on how business parties should approach their contractual relationships, asses (non)performance of the contractual terms in light of the current situation and evaluate the available options in consideration of the applicable law. The key focus is on

the question whether the parties can be exempted from liability in potential default of their contractual obligations due to COVID-19, under the regime of the United Nations Convention on Contracts for the International Sale of Goods (CISG). The question of exemption of liability is evaluated through the analysis of two broadly recognized concepts in international commercial law – force majeure and hardship.

2. ASSESMENT OF THE CONTRACTUAL RELATIONSHIP

When assessing the possible options, the starting point is always to take into consideration the contract of the parties. In international commerce, the parties have the widest discretion and freedom to regulate their business relationship as they deem appropriate. According to the principle of party autonomy, aside from the essential contractual elements, the parties are free to incorporate in their contract, among others provisions, the applicable law, dispute resolution mechanisms, penalty clauses for breach of obligations, limitation of liability clauses etc. Depending of the size of the business, the geographical area, as well as the industry in which the company operates, it is very common for the parties to have standard for inclusion of limitation liability clauses in their contracts. These clauses usually encompass events which make contract performance either impossible (e.g. force majeure events) or more onerous (e.g hardship events) for either of the parties. The occurrence of the event would either exempt the parties from liability for non-performance, or would oblige the parties to renegotiate the contract and agree on more favorable terms. Many prominent institutions such as the ICC have their own versions or templates of such clauses (www.iccwbo.org), which the parties can accept in their contracts as drafted by the institutions, or have them modified in a way which they find suitable. If the parties have incorporated limitation of liability clause, then this would be the basis for assessment whether either of the parties can default on an obligation without being liable for damages, or can request renegotiation of the contract.

Alternatively, even if the contract does not specifically contain limitation of liability clause, it can nevertheless be incorporated through the standard terms and conditions of either of the contracting parties. Usually business parties have pre-drafted standards terms and conditions regulating issues which they consider to be important in the form of a boilerplate clauses. The standard terms can be incorporated in the contract, either explicitly, through their referral in the contract, or implicitly through the communication of the parties and exchange of offers and acceptance.

In absence of limitation of liability clause, the relevant question is whether the parties have chosen the applicable law for their contractual relationship. The choice of law clause determines the set of rules on which the legal evaluation of the contractual relationship would be performed. The incorporation of these clauses offers predictability to the parties and excludes the rather "uncertain" application of the conflict of law rules. It is important that the choice of a law of a country leads to application of its domestic law, but also to the international treaties and conventions which that country has signed and ratified as well (Lookofsky, 2012). One of the most significant instruments regulating international sale of goods is the United Nations Conventions on Contracts for the International Sale of Goods from 1980 (hereafter CISG). The CISG regulates several aspects of international sale of goods, but it focuses primarily on contract formation and performance. There are a number of ways in which the CISG can be applicable. Firstly, it will apply if the parties have explicitly chosen it to govern their contractual relationship. Secondly, the CISG would be applicable if the parties have not explicitly chosen it, but they have selected the law of a CISG contracting state. Thirdly, the CISG can be applicable even if the parties have not made any choice of law, but both parties have their place of business in CISG contracting states. Lastly, the CISG can be applicable if the rules of private international law lead to the application of a CISG contracting state. Given the number of ways in which the CISG can be applied, as well as the fact that to this date it is

in force in 91 states worldwide (www.uncitral.un.org), a large number of international contracts for the sale of goods are subjected to its regime, and there is a high likelihood that disputes for failure to perform as a result of COVID-19 pandemic would have to be assessed in light of its provisions.

When assessing exemption of liability within the CISG, article 79 provides guidance. Article 79(1) has three prerequisites which need to be met in order for a party to be exempted from liability for non-performance: firstly, there must be an impediment hindering the contract performance which is beyond the control of the party claiming exemption, secondly, that it could not have been reasonable to expect that the party could have taken the impediment into account at the time of the conclusion of the contract, and thirdly, it could not be reasonably expected that the party could have avoided or overcome the impediment or its consequences (Schwenzer & Schlechtriem, 2010). These prerequisites have to be met cumulatively. However, as evident from the text, the CISG does not contain possible scenarios which might be characterized as impediments, it does not contain references to hardship or force majeure, and for the matter of fact it does not even contain guidance of what is an "impediment".

The CISG contains unique and innovative concepts which had to be incorporated and drafted in such a manner in order to be freed from preconceived notions of concepts which already exist in various national laws (Kocev, 2018). The downside of this is that many of the innovative concepts and terms are vague and thereby require careful assessment and interpretation. In line with this, it is necessary to consider whether the current pandemic, caused by COVID-19 can be qualified as force majeure or hardship event, and whether either of these concepts is recognized and can fall within article 79 CISG.

3. FORCE MAJEURE

Force majeure has its roots in French law dating from the Civil Code of Napoleon. Force majeure or *vis major* is an event which is beyond the control the parties, and prevents one or both parties from performing their contractual obligations. The event must be of extraordinary nature and one which is unforeseeable and unavoidable (www.law.cornell.edu). It is important to note that at international level, there isn't a unified concept of force majeure, due to the fact that there are differences in national legislation. Nevertheless, certain general characteristics of the concept can be determined.

In international transactions force majeure generally refers to maters such as Acts of God, natural disasters, labor disputes and strikes, adverse governmental actions, expropriation, war or civil upheaval (Klotz & Barrett, 2008). For example, the ICC force majeure clause (www.iccwbo.org) contains extensive list of events which can be considered as force majeure which among other encompass: wars, invasions, extensive military mobilization, riots rebellions and revolutions, acts of terrorism, currency and trade restrictions, embargos, acts of authorities (lawful and unlawful), expropriation and nationalization, plagues, epidemics, natural disasters, explosions, fires, break-down of transport, labor disturbances such as strikes and boycotts etc.

Regardless of the difference in origin, magnitude and to some extend duration of these events, what is common is that they make contractual obligations for one or both contracting parties incapable of being performed. These events make the contract performance objectively impossible, either because the goods have been destroyed (e.g. fire, flood), because one of the parties is unable to conduct its business in usual manner (strikes, boycotts, wars, terrorist attacks), the transport has become impossible (embargoes, transport break-downs, earthquakes) or maybe due to a combination of several events. The result of the occurrence of a force majeure event is that the contract would most likely have to be terminated, or in rare scenarios suspended (Rimke, 1999). From the perspective of the defaulting party, this would

mean that it is not liable for the damage which has occurred (CISG Advisory Council Opinion No. 7, 2007).

However, the mere occurrence of a force majeure event would not exempt the breaching party from liability by default. Firstly, the event must occur after the conclusion of the contract. If the event has occurred prior, it is reasonable to believe that both parties had knowledge, and accepted the situation as such. Secondly, the event must occur prior to the expiration of the date for performance. For example, if the delivery of goods is due until the 10th of the month, but the force majeure event materializes on the 20th, the seller cannot claim exemption of liability since he was already in breach of his delivery obligation, and had he performed on time he would have avoided the consequences.

As already noted, the CISG does not provide explicitly that force majeure events exempt the breaching party from liability. While it is generally accepted that force majeure events fall within the scope of the CISG, both in commentary (Schwenzer, 2008; Honnold, 1999) and in case law (Chinese Goods Case, 1996), the characteristics of force majeure event would still have to be evaluated through the requirements of article 79(1) CISG. This is due to the fact that unlike national laws, the CISG sets a very strict standard for exemption of liability, and the threshold is considered to be very high (Kröll et. al., 2011).

The first requirement for existence of an impediment which is beyond the control of the breaching party is relatively easily established. Namely, the existence of the impediment itself is a fact which can be easily verified, since earthquakes, wars, governmental sanctions are reported worldwide through media. Additionally, once the impediment is established as a fact is easily determinable that it is beyond the control of the parties since business parties cannot have an impact or control on wars, earthquakes and governmental sanctions. However, there might be some events which are considered to be force majeure, but over which the parties can have a control or at the very least an impact. For example, a general strike or boycott organized at state level, might be beyond the control of the contracting parties, however a strike or boycott organized at an industry branch level, or by one of the parties' own employees is certainly within the sphere of control or at the very least an event on which the affected party can have an impact.

The following two requirements are more problematic as there is a need for both objective and subjective assessment. The second requirement is that the event could not have been foreseen at the time of the conclusion of the contract. The "foreseeability" requirement contains geographical, historical as well as social perspectives. Namely, a certain event can be completely unforeseeable for one place or at one point in time and be completely normal and usual for another place or at another point in time. For example, while monsoons are common for South Asia, or fires are common for Australia, they are completely atypical for Europe. Similarly, wars and conflicts are typical for the past decades in the Middle East, while Canada has not had a war conflict on its territory for more than a century. In relation to commerce and governmental sanctions, in the past couple of years there had been a significant increase in trade wars compared to the past. In line with this, if a Chinese and a U.S. company have concluded a long-term contract 5 or 6 years ago, they could not have foreseen the outbreak of a trade war at the beginning of 2018. Thereby, depending on the geographical area, the place of business of the contracting parties as well as the socio-economic situation, one business party may be able claim exemption of liability due to a force majeure, while others would not be able to do so based on the same or similar circumstances.

Lastly, the breaching party has to prove that it could not have avoided or overcome the consequences of the impediment. This would mean that at the very least, the parties are obliged to show reasonable effort to overcome the effects of the impediment (Kröll et. al., 2011). For example, if the governmental sanctions are announced days in advance, then the seller should do everything in his power to deliver or dispatch the goods before the sanctions effectuate,

even if that would mean paying higher prices for transport and forwarding. Comparably, the destruction of generic goods due to force majeure event would not release the reseller from liability as long as there are quantities of the generic goods left, even at higher prices. However, the situation is different if the seller is also producing the goods. In similar fashion with the "foreseeability" requirement, the conclusion here should be made on a case by case analysis.

Another important issue which should be considered, is the duration of the force majeure event –the defaulting party is exempted only for the duration of the impediment (Article 79(3)CISG). This means that breaches which have occurred prior or subsequent to the event cannot be exempted from liability. Finally, a party who is hindered from performing must notify the other party in reasonable manner about the impediment and its effect on the performance of the obligation. The notification is a formal requirement under article 79(4) CISG, but it also stems from the good faith principle embodied in Article 7(2) CISG (Kröll et. al., 2011).

When applying the legal rules on the current COVID-19 pandemic, the key issue is whether epidemics are considered force majeure events, and most importantly do they fall within the scope of article 79 CISG. Firstly, as evident from the long form of the ICC force majeure clause, epidemics are listed as an example of force majeure event (www.iccwbo.org). While this is not a definitive conclusion on the nature of epidemics, it is indicative that some forms of epidemics can be considered force majeure events, given their magnitude and effect on international trade. Taking this into consideration, COVID-19 is a worldwide pandemic, which has resulted in 400,000+ deaths so far and has led to preventive measures that have shut down factories, borders, seaports and airports. The number of victims and the preventive measures which have been taken so far on a global scale can hardly be matched to any epidemic within the last 50 years.

In light of the CISG, there is no explicit reference that epidemics fall within article 79, neither in the Secretariat Commentary, nor in the Advisory Council Opinion No. 7. In these instances, case law provides guidance. In one case (L-lysine case, 2005) the respondent pleaded exemption of liability for failure to deliver connected to the 2002/2003 Severe Acute Respiratory Syndrome ("SARS") epidemic, which he qualified as force majeure. While the tribunal rejected the plea, it was due to the fact that the contract was concluded after the outbreak of the virus. The tribunal, as well as both parties accepted the notion that SARS constitutes a force majeure event.

In relation to the requirements of article 79(1) CISG, COVID-19 satisfies the first requirement, since there is no doubt that it is an impediment outside of the sphere of control of either of the parties which can hinder contract performance. In relation to the second requirement, unless the contract has been concluded after the proclamation of pandemic on global scale, it is very likely that the effects which the virus could not have been foreseen by the parties. A point for debate might be the period between the outbreak of the virus in China at the beginning of January, or the peak in China which was registered mid-February (www.worldometer.info), and the proclamation of worldwide epidemic. However, unless one of the contracting parties is from China, or supplies the goods directly from China, it is unlikely that the magnitude of the pandemic could have been foreseen, bearing in mind the unique features of the virus which also leave medical scientists and professionals perplexed.

The most difficult requirement for the exemption of liability is the inability to overcome the impediment caused by COVID-19, or its consequences. Namely, while governments have imposed drastic measures for the prevention of the spread of COVID-19, these restrictions were more lenient when it comes to trade. For example, most of the borders, ports and airports have been completely closed for transport of passengers, but remain open for transport of goods. Similarly, universities, schools and kindergartens are shut down while many factories remain open (albeit with reduced capacity). In light of this, unless the measures prevent either of the parties directly in performing the contract, it may be that the requirements of Art. 79(1)

CISG are not met. This raises the question whether commercial parties are truly unable to overcome the impediment or its consequences, or are they simply put in more difficult situation. For example, if the seller's business operation has been shut down as a result of governmental measures, then he would be able to claim inability to overcome the impediment. On the contrary, if the seller is buying and reselling goods from multiple factories, and is operating only as a reseller in the supply chain, he would not be able to claim inability to overcome the impediment or its consequences if one of the factories is shut down, even if that puts him in more difficult situation. If the goods are generic, he might not be able to claim inability if all of his own suppliers are shut down, as long as there are factories, or sources from where he could obtain goods, regardless of the fact that there will be significant price increase. In China, the China Council for the Promotion of International Trade (CCPIT), a quasi-government trade body, upon request of businesses, can issue a document which certifies inability of contract performance, which serve as a force majeure certificate. Only in the first weeks of February CCPIT has issued 3,325 force majeure certificates, with total contracts value of US$38.4 billion (www.scmp.com). While these certificates have significance in proving inability for performance, in the absence of their uniform acceptance throughout the world, in international disputes they should serve only as *prima facie* evidence and not a definite proof for exemption of liability.

Given the fact that business parties might be faced with various impediments as a result of different measures imposed by the countries where they conduct their business, it has to be evaluated on a case by case basis whether the impediment would qualify as a force majeure event which makes contract performance impossible, or as an event which makes contract performance more difficult. While impossibility for contract performance leads to exemption of liability under article 79 CISG, the effects of changed circumstances which make contract performance more onerous will be discussed below.

4. HARDHSIP

Hardship is defined as something that causes or entails suffering or privation (www.merraim-webster.com). In legal terms, hardship is change in the circumstances which occurs after the conclusion of the contract, which is independent of the will of the parties and makes the performance of the contract on one or both of the parties more burdensome. The theory of hardship is widely accepted in the legal systems in continental Europe (Schwenzer & Schlechtriem, 2010). The U.S. and the U.K. accept the notion of frustration of purpose – which is a type of change of circumstances where the contract purpose is rendered useless (Schwenzer, 2008). Whereas the continental systems are more focused towards the difficulty in performing an obligation, the common law systems assess the situation form the perspective of the purpose which the parties had prior to entering into contractual relation.

When it comes to the CISG, similarly like the concept of force majeure, hardship is not explicitly mentioned. On the other hand, the UNIDROIT Principles, which are very often used to supplement gaps within the CISG (Gotanda, 2007), contain detailed article which pertains to hardship. According to article 6.2.2 of the UNIDROIT Principles (2016) hardship exists when the occurrence of event "fundamentally alters the equilibrium of the contract either because the cost of a party's performance has increased or because the value of the performance a party receives has diminished." Additionally, Article 6.2.2. sets 3 prerequisites which need to be met: firstly, the event must have occurred or become known to the disadvantaged party after the conclusion of the contract, secondly, the event could not have been reasonably taken into account by the parties at the time of the conclusion of the contract, and thirdly, the event is beyond the control of the disadvantaged party (UNIDROIT Principles Article 6.2.2.). The ICC also has a model hardship clause which contains similar prerequisites (www.iccwbo.com). Some examples of hardship would be sharp increase in price in relatively stable market,

imposition of duties, excessive tariffs or quotas for certain products, escalation of currency exchange rate beyond certain margins etc.

Unlike force majeure events which render contract performance impossible, the difference in hardship events is that the performance of the obligation is still possible, however it is excessively burdensome and onerous for the affected party. When considered, the prerequisites for both force majeure and hardship bear resemblance. Because of that, some authors (Schwenzer, 2008) consider hardship events as special group which falls within the more general sphere of force majeure. However, there seems to be functional difference between the two concepts generated through their different effects. While the effect of force majeure is contract termination or contract postponement (if applicable), the effect of hardship event is primarily contract renegotiation, adaptation and in the last instance termination. According to Rimke (1999) hardship is the reason for the change in the contractual program of the parties, since even in those circumstances the aim of the parties remains to implement the contract. According to Article 6.2.3 of the UNIDROIT Principles, the occurrence of hardship event gives the affected party the right to request renegotiations. This is the principal right in case of hardship. However, the request for renegotiations cannot itself serve as an entitlement to withhold performance. In case the negotiations fail, then either of the parties may resort to court or arbitration, and only the court or arbitral tribunal may further terminate or adapt the contract. Unlike force majeure, where contract termination is the most viable option, the main goal in situation of hardship is to keep the contract alive by restoring its equilibrium. This can be done either voluntarily by the parties through negotiations, or involuntarily by courts and arbitral tribunals through the remedy of adaption. Contract termination is remedy of last resort. While the traditional view was that hardship events do not fall within the scope of the CISG, this rigid stance has been slowly amended by authors who support the position that "impediment" within Article 79 can also encompass hardship events (Honnold, 1999; Schwenzer, 2008). The same progression of interpretation has also been evident in CISG case law (Nuova Fucinati v. Fondmetall International, 1993; Scafom International BV v. Lorraine Tubes S.A.S., 2009). The prerequisites listed under article 79 CISG are similar to the prerequisites for hardship accepted in other legal texts. In light with this, the question which remains is not whether events which make the contract performance more onerous can be considered as impediments under article 79 CISG, but rather how much more onerous the contract performance has to become in order for the affected party to be exempted from liability.

It is clear that not any event which makes the performance more burdensome would qualify. From the plain wording of various legal texts, it is evident that the event, or more specifically its consequences, have to be of magnitude which either makes contract performance excessively more onerous (PECL, Article 6:111), or fundamentally alters the equilibrium of the contract (UNIDROIT Principles, Article 6.2.2). Still, wording like this does not give definite answer what the threshold for hardship should be. While the commentary of article 6.2.2 of the 1994 version of the UNIDROIT Principles suggested 50% contract alteration as a benchmark for hardship (UNIDROIT Principles 1994, Article 6.2.2.), from the 2004 version onwards, the practice for recommending a figure has been abandoned. Some authors (Brunner, 2009) have suggested that a threshold of 100% change should be taken as a general rule of thumb. However, a definite answer might not be merely impossible, but also inadvisable.

Even if we take the 100% threshold as standard for ordinary circumstances, in some specific cases lowering it or rising it would be necessary. For example, the Appellate court in Hamburg did not exempt the seller from liability under article 79 CISG, despite the fact that the price of the goods had risen by 300 percent (Iron molybdenum case, 1997). The court considered that due to the speculative nature of the market for the goods in question, the threshold for hardship should be raised. On the other hand, in relatively stable markets, even increase of 10-15% can

be considered as sufficient especially if the contract has small profit margin. Another factor for decrease of the threshold for hardship may be a situation where the affected party is facing financial ruin. Consequently, where the threshold would be set has to be determined on a case by case analysis.

The prerequisites for exemption of liability for hardship under article 79(1) CISG would be identical with the requirements for exemption of liability for force majeure. The only difference regarding the conditions would be that under the concept of force majeure the affected party would have to plead that contract performance is impossible, whereas under the concept of hardship the affected party would have to prove that while performance is not impossible it is excessively more difficult. Additionally, although both force majeure and hardship would lead to exemption of liability for damages, the possible outcome of both concepts differs. Namely, the only viable remedy for force majeure is contract termination, whereas in cases of hardship renegotiation and adaptation have precedence over contract termination.

5. CONCLUSION

In light of the elaborated, the question which remains is whether COVID-19 can be considered a force majeure or a hardship event. Given the character of the pandemic and the various ways in which it can affect a contractual relationship, definite qualification cannot be given *a priori*, but rather a case by case analysis has to be conducted. While there are cases where contractual obligation might become impossible to fulfill due to COVID-19, it seems more likely that majority of the affected parties would only have difficulty in performing their obligations. Even in those cases where performance becomes impossible, it is probable that the impediment would be only temporary due to the nature of the virus.

In any case, parties in international transactions would have to carefully examine and evaluate both the factual and legal situation before they act. The first step in the legal evaluation is always to turn to the contract and see whether the parties have agreed on a clause regulating unforeseen events, such as force majeure or hardship. If they have done so, it is relevant to see if they have actually considered a pandemic or epidemy as an event which may disrupt the contractual relationship. If the parties have not implemented a limitation of liability as a contractual clause, then it has to be determined whether it has been done so through the applicability of the standard terms and conditions of either of the parties.

In absence of any contractual clause between the parties, the applicable law takes precedence. Here, it is very likely that the CISG would apply as a default law even if the parties have not chosen it, as long as they have not explicitly excluded its application. This is due to the fact that the CISG can be applied as a default law if the parties have places of business in contracting states, if the parties have chosen a law of a contracting state or if the conflict of law rules lead to the application of a law of a contracting state. Under the scope of the CISG exemption of liability is dependent on the fulfillment of several prerequisites listed in Article 79(1). The existence of those prerequisites to some extend might even undermine the classification of the impediment as force majeure of hardship in relation to exemption of liability for damages. However, the classification becomes necessary when we evaluate the remedies which would be at parties' disposal. In any case, while the selected approach is the party's strategic choice, it will be dependent on the objective factual situation. Namely, if the party is directly affected by the pandemic (e.g. factory ceases production due to governmental decision, governmental decision changes production lines, or factory shuts down due to spread of virus among employees), then it would be reasonable to argue force majeure, whereas if the party is indirectly affected (e.g. one of its suppliers has ceased production, transport has become more expensive due to lack of transporters and quarantine periods) it is more likely to plead hardship. However, in cases of hardship the establishment of the threshold for impediment, and more importantly proving that the impediment is above the threshold becomes crucial.

Another important aspect, especially in cases of pandemic is the time factor on performance. If timely performance of the obligation is of essence, then using remedy different from termination might be superfluous. In all other cases suspension of the contract for the duration of the impediment or renegotiation of contract terms would be more feasible. In light with this, the CISG exempts the affected party from liability only for the duration of the impediment (Article 79(3) CISG). This approach prevents parties from taking advantage of the situation and using it either to gain more profit or to get out form a bad deal.

Finally, regardless of which approach is taken by the affected party, it is always necessary that the opposing party is notified for the impediment. Timely communication is of utmost importance in international trade, and in period of turmoil it becomes even more crucial. Informing the counterparty helps mitigate losses, especially in supply chains where the default of one supplier might lead to disruption of the whole chain.

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INCOME-SPECIFIC INFLATION RATES AND THE EFFECTS OF MONETARY POLICY: THE CASE OF NORTH MACEDONIA

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ABSTRACT
In this paper, we investigate the effects of monetary policy concerning the inflation rates specific for each income group of households. We find that the prices specific for high-income households are generally more rigid and less volatile compared to the prices specific for middle and lower-income households. This means that monetary policy can differently affect the different inflation rates specific for each of the income groups. By using a Factor-Augmented VAR (FAVAR) model, we show that a monetary policy shock affects high-income households less compared to middle and lower-income households, although the differences between the separate income groups are generally small. Then, by using a small scale gap model, we find that the prices of low-income households are the most sensitive to a monetary policy shock, while the prices of the top-income households are the least sensitive to the shock, which is in line with our empirical findings.

Keywords: *Inflation, monetary policy, distributional effects.*

JEL Classification Numbers*: E31, E52.*

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THE EFFECT OF BANK DENSITY ON FINANCIAL DEVELOPMENT AND ECONOMIC PERFORMANCE

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ABSTRACT

This paper provides evidence about the link between bank density as a form of financial deepening, and financial development and economic performance. We construct a panel of European countries and develop a dynamic regression model with GDP dynamics up to three lags and a full set of fixed effects to study the effect that the number of bank branches and automated teller machines per capita have on real GDP per capita. Our baseline estimates point out to a weak negative impact of the increased number of bank branches per capita on economic performance by around 0.3 per cent annually. We find similar results from the subsequent IV and GMM estimates as well as when swapping the population basis of the bank density measures with the area. The IV strategy reveals that our both measures are endogenous with the respect to the level of urbanisation and the share of Internet users up to three lags. We further include financial development as a covariate and find weaker negative impact of the number of bank branches and a weak positive impact of the number of automated teller machines by about 0.15 per cent annually. Our estimates with respect to financial development reveal that both bank measures can be considered significant drivers given the positive impact of about 0.8 to 1.2 percentage points obtained for the number of bank branches and about 0.6 to 0.7 percentage points for the number of automated teller machines. We do not find any significant differences between the countries with harmonised regulations and shared currency as a result of the EU and Eurozone membership.

Keywords: *bank density, financial development, economic performance*

JEL Classification: *G21, O10*

1. INTRODUCTION AND BACKGROUND

The link between finance and economic growth is a subject of debate that has been boggling economists for a long time. After the early argumentation in favour of the finance-growth nexus made by Bagehot (1873) and Schumpeter (1912), many economists directed their attention to the origin of the relationship and have come to the conclusion, albeit not universally, that causal relationship goes from financial development to economic growth. In this vein, Schumpeter (1912) pioneered the idea that economies driven by efficient financial institutions grow faster; Kurt and Levine (1993) provided sufficient evidence for a robust long-run causal relationship from financial to economic development in a seminal paper that eventually invited the coming of a new wave of economic research in the same context; and

Nobel laureate Miller (1998) argued that the proposition that financial markets affect economic growth is too obvious for discussion. On the other hand, Robinson (1952) was an early proponent of the notion of a reversed causality, that is, economies with good growth prospects efficiently develop financial institutions that mount those good prospects; and Lucas (1988) also refused finance as an 'over-stressed' determinant of economic growth. However, the accumulation of economic literature on the topic has recognised its subtlety and did not entirely throw away the possibility of reverse causality, reflected through the growing amount of papers with findings on the existence of bi-directional relationship (see for example Berthelemy and Varoudakis, 1996; Luintel and Khan, 1999; Shan, Morris and Sun, 2001; Calderon and Liu, 2003; and Ghirmay, 2004).

Economists nowadays generally see financial development as a complex system of many integral parts, such as quality of financial services, diversity of financial products, efficient provision and inclusive reach, whereby the amount of credit extended to the private sector relative to GDP has become a standard proxy for financial development. An important concept underpinning financial development in its entire complexity is that of financial deepening. While Levine, Loayza and Beck (2000) present strong evidence that financial depth promotes economic growth, the forthcoming strand of literature went deeper to examine in what form and to what extent financial deepening can affect economic growth (see for instance Deidda and Fattouh, 2002; Rousseau and Wachtel, 2002; Rioja and Valev, 2004a, 2004b; Aghion, Howitt and Mayer-Foulkes, 2005; Demirguc-Kunt, Feyen and Levine, 2011; Arcand, Berkes and Panizza, 2011; and Barajas, Chami and Yousefi, 2016).

In this paper, we use bank density as a measure of financial deepening to investigate its linkage with financial development and economic performance in 41 European countries during the period from 2004 to 2018. Our definition of bank density relates the feature of inclusive reach of financial services, which makes up the initial assumption that developed networks of bank branches and automated teller machines significantly contributes to increased financial development and favourably affects economic performance. We test the validity of this relationship by developing a dynamic panel-regression model. However, the estimation of whether and how bank density affect financial development and economic performance faces several challenges. Firstly, legislation and bank regulations at national level vary across countries and the harmonised regulation of the EU member states along with the shared currency in the Eurozone defines a homogenous area with greater interconnectedness compared to the non-EU member states. Secondly, the bank presence is subject to geographic factors such as population density and urbanisation, and their dismissal in the analysis may severely bias the estimation results. Thirdly, the eminent rise of electronic and mobile banking throughout the period weakens the relevance of the initial assumption as increased financial deepening may not have come as a result of the bank presence but rather because of the widespread use of the digital services. In order to address these challenges, we make several extensions of the baseline model to perform robustness checks.

This paper contributes to the related economic literature in that it observes financial deepening through the little-studied concept of bank density, thus adding to a new perspective of examining the finance-growth nexus. Furthermore, it develops a model that takes into consideration the development of new technologies inevitably impacting the provision of bank services. Finally, it produces a study that coalesces socio-economic, demographic and geographic factors in a more realistic attempt to estimate the effect of financial deepening.

2. DATA, SUMMARY STATISTICS AND MAIN TENDENCIES

We construct a panel of 41 European countries[1] with data collected from World Bank's World Development Indicators database for the period from 2004 to 2018. For the measurement of bank density, we adopt the number of commercial bank branches (CBBs) and the number of automated teller machines (ATMs) per 100,000 adults from the database and additionally introduce two similar measures per 1,000 square kilometres. On the other side, we use domestic credit extended by financial sector as proxy for financial development and the real GDP per capita to measure economic performance. We also include a set of additional variables to study the potential endogeneity of bank density such as the share of urban population and share of Internet users.

Although the countries in our sample belong to a single geographic region and share many commonalities, there is pronounced heterogeneity in regulation and development stemming from the history of economic systems and mutual integration. Therefrom, we tell apart the countries that are part of the European Union and the Eurozone from those that are not in order to examine the existence of patterns that might be familiar with process of integration. Furthermore, we construct a set of two dummy variables that capture country's EU and Eurozone membership at the end of the year, respectively, and use them as additional inputs in the model to test the extent of the differences between country groups.

Table 1. Summary statistics for the main variables used in the model

| Variable	EU members			Other countries		
	Obs.	Mean	St. Dev.	Obs.	Mean	St. Dev.
CBBs (per 100,000 adults)	383	35.296	21.607	215	28.555	17.312
ATMs (per 100,000 adults)	380	82.348	36.068	217	57.193	33.600
CBBs (per 1,000 sq km)	383	39.034	37.031	215	18.256	19.949
ATMs (per 1,000 sq km)	380	91.894	76.089	217	34.189	37.408
Domestic credit of GDP (in per cent)	375	128.037	61.585	223	38.586	52.687
Real GDP per capita (in intl. dollars)	390	34,060	21,367	225	18,962	27,087
Urban population (share of total pop.)	390	0.722	0.119	225	0.636	0.133
Internet users (share of total pop.)	390	0.696	0.173	220	0.517	0.271

Notes: The sample is split into two sub-samples depending on the value of the EU dummy (1 for EU members and 0 for non-EU members). Statistics are calculated after all variables have been previously normalised to address the bias from differences between countries in terms of population and area.

Summary statistics for the main variables in our analysis are reported in Table 1. EU members clearly have substantially greater bank density on average with regards to all four measures and the means for the other variables are also higher for this group of countries. The statistics for the group of non-EU countries should be taken with a grain of salt, though, as it combines high-income EFTA members with middle-income countries from Southeast and East Europe, which can be plausibly concluded from the greater volatility expressed through the standard variations relative to the means. One way to get rid of this heterogeneity is by removing the EFTA countries and adding them to the group of EU members with whom they share more similar values but this is not going to be of great practical value for the paper's goal because the EU dummy was purposely defined to capture the effect of the harmonised bank regulation resulting from the adopted EU directives. For that reason, we move on to an observance of the time-variant correlation coefficients between different pairs

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[1]Countries in the panel were selected on the basis of their membership and association with the European Banking Federation. Thus, a total of 45 countries (32 members and 13 associates) was sampled. Of this number, the four microstates – namely, Andorra, Liechtenstein, Malta and Monaco – were removed because of the outlying tendency of their figures, which eventually resulted in the final sample size.

of variables in order to examine if high-income countries with higher level of urbanisation and higher share of Internet users really have denser bank services and how this develops over time.

Figure 1. Correlation between number of CBBs and ATMs per 100,000 adults and selected variables
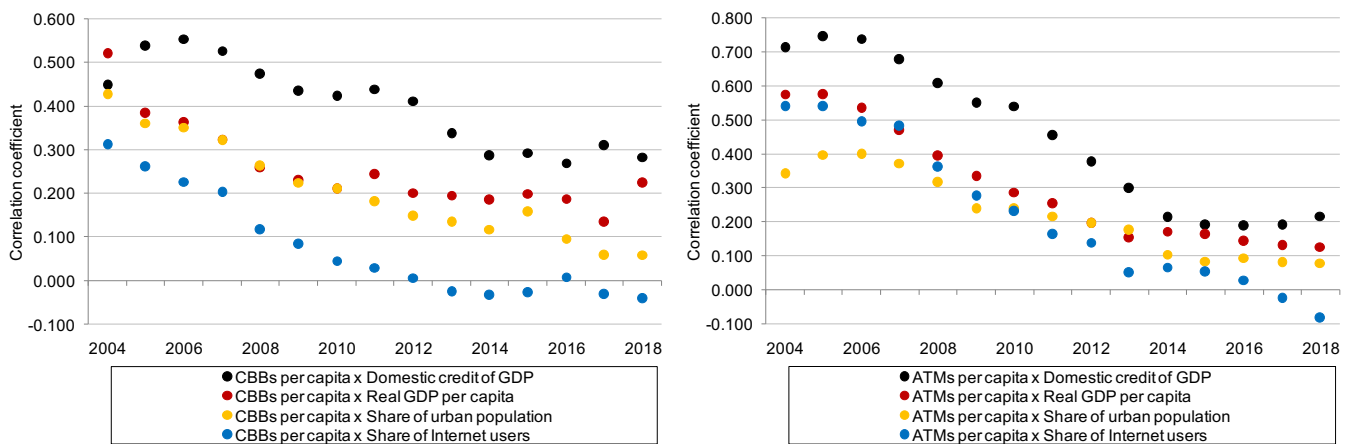
Development of correlation coefficients over time is depicted in Figure 1. A positive correlation with a varying strength from weak to strong has been established for all pairs in the initial period but the downward trend with sporadic ups at some pairs has weakened it to a weak positive correlation in the end year and even a very weak negative correlation for the pairs involving the share of Internet users. But the correlation weakening for most pairs has ceased around the year of 2014 and the correlation coefficients remained fairly constant afterwards. We reveal an interesting pattern from the observance of the correlation pairs involving the share of Internet users. Namely, the sign change by the end of the time horizon indicates that higher shares of Internet users are associated with slightly lower numbers of CBBs and ATMs per capita, which points out to a possible migration of the bank services from the CBBs and ATMs to the online e-banking platforms. However, the conclusiveness of this pattern should be supported by additional observations on the numbers of CBBs and ATMs per capita, and we therefore take a look at these movements over time in order to study the level of convergence across country groups.

Figure 2. Average number of CBBs and ATMs per 100,000 adults across country groups over time
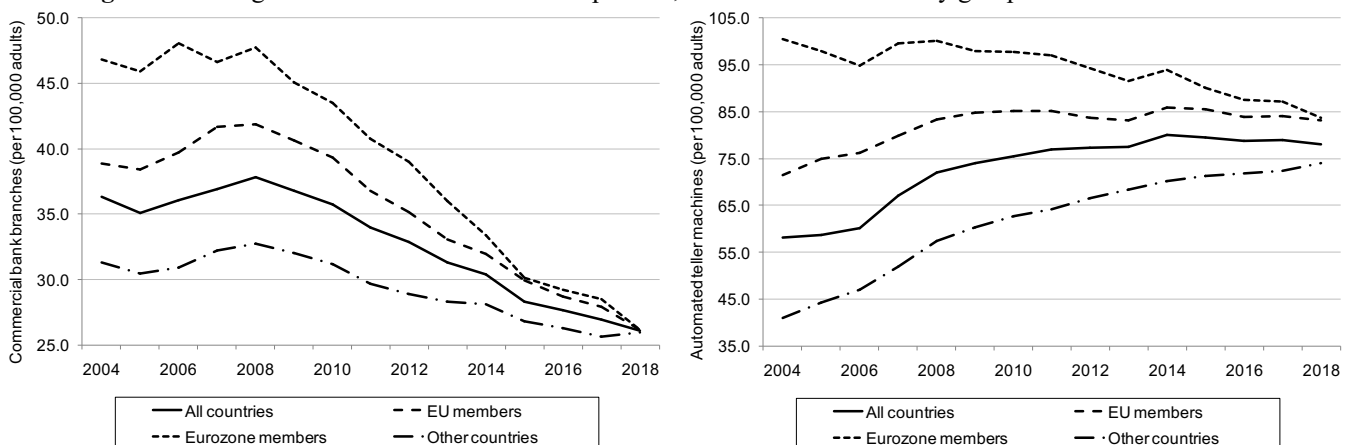
Notes: Montenegro has unilaterally adopted the euro as its official currency but it is not part of the Eurozone and is included in the Other countries group rather than the Eurozone members as such.

The time series of the average numbers of CBBs and ATMs per capita are plotted in Figure 2. For the sake of greater detail, apart from the sub-samples of EU members and Other countries based on the values of the EU dummy, we make a further step in sampling a new group of Eurozone countries based on the values of the Eurozone dummy. The charts clearly show that

there is convergence in both the average number of CBBs and ATMs per capita across all groups. We note that the convergence is stronger when CBBs is an underlying variable, where the averages for all groups in the end year are almost equal, while there is still some gap between EU and non-EU members when observing the ATMs. Furthermore, we also find different patterns in the convergence processes. That is, the average number of CBBs per capita follows a decline after 2008 with sharpest fall at the EU member states as opposed to the upward trend in the average number of ATMs at all groups but the Eurozone members with that of the non-EU members being the most pronounced.

3. BASELINE MODEL

The baseline model that we use to estimate the effect of bank density on economic performance is a dynamic panel regression of the form

$$y_{c,t} = \beta d_{c,t} + \sum_{i=1}^{p} \gamma_i y_{c,t-i} + \alpha_c + \delta_t + \varepsilon_{c,t}, \tag{1}$$

where the $y_{c,t}$ denotes real GDP per capita for country c in year t, $d_{c,t}$ is the bank density measure with respect to population, α_c is a full set of time-invariant country fixed effects, δ_t is a full set of year fixed effects and $\varepsilon_{c,t}$ is the error term. We include p lags of the dependent variable in this specification to examine the GDP dynamics.

We impose the following assumptions on the specified model above.

Assumption 1 (Sequential exogeneity): $\mathbb{E}\left(\varepsilon_{c,t} \middle| y_{c,t}, \ldots, y_{c,t_0}, d_{c,t}, \ldots, d_{c,t_0}, \alpha_c, \delta_t\right) = 0.$

This assumption is a standard one when working with dynamic panel regression models, which implies that the past values of real GDP per capita and the bank density measure are orthogonal to the error term in the current period. Importantly, the assumed exogeneity is not strict because of the inclusion of lagged values of the real GDP per capita.

Assumption 2 (No serial correlation): $\mathbb{E}\left(\varepsilon_{c,t} \middle| \varepsilon_{c,t-1}, \ldots, \varepsilon_{c,t_0}\right) = 0.$

Along with Assumption 1, this is another standard assumption made and it essentially states the same with the difference that orthogonality should be established between the error term in the current period and its past values. In order to obey Assumption 2, we opine that the inclusion of lagged values of real GDP per capita, albeit violating strict exogeneity, is helpful in eliminating the residual serial correlation.

Assumption 3 (Stationarity): *The characteristic equation $r^p - \sum_{i=1}^{p-1} \gamma_i r^{p-i} = 0$ of the time series $y_{c,t} = \sum_{i=1}^{p} \gamma_i y_{c,t-i} + \varepsilon_{c,t}$ does not have a root $r = 1$.*

The notion of stationarity is important in time-series analyses, although it is frequently dropped when $C > T$. In that light, we simplify our baseline model with the assumption that the characteristic equation of our dependent variable has no unit root, that is the time series is stationary, but later we test the validity of this assumption using the panel unit root test by Levin, Lin and Chu (2002).

Table 2. Effect of bank density measured per capita on economic performance

Independent variable	Dependent variable: log GDP per capita					
	(1)	(2)	(3)	(4)	(5)	(6)
log GDP per capita first lag	0.720***	0.999***	1.050***	0.761***	1.067***	1.165***
	(0.039)	(0.057)	(0.060)	(0.068)	(0.056)	(0.048)
log GDP per capita second lag		-0.223***	-0.405***		-0.261***	-0.515***
		(0.044)	(0.075)		(0.051)	(0.060)
log GDP per capita third lag			0.138***			0.239***
			(0.050)			(0.042)

CBBs (per 100,000 adults)	-0.117***	-0.141***	-0.131***			
	(0.034)	(0.038)	(0.042)			
ATMs (per 100,000 adults)				-0.049	-0.014	-0.045
				(0.032)	(0.027)	(0.031)
European Union dummy	0.053	-0.064	0.013	0.131*	0.084	0.299
	(0.066)	(0.079)	(0.083)	(0.076)	(0.059)	(0.284)
Eurozone dummy	0.015	0.002	0.001	0.035**	0.015	-0.002
	(0.014)	(0.015)	(0.012)	(0.015)	(0.016)	(0.013)
Unit root test adjusted t-statistic	-7.444	-8.977	-7.860	-7.444	-8.977	-7.860
p-value (rejects unit root)	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Observations	520	480	440	525	488	448
Countries	41	41	41	41	41	41

Notes: The reported coefficient of bank density is multiplied by 100. All specifications include a full set of country fixed and year effects. Standard errors robust against heteroscedasticity and serial correlation at country level are reported in parentheses. Symbols *, ** and *** denote statistical significance at the level of 1, 5 and 10 per cent, respectively.

Table 2 reports the estimation results from the baseline model. The results show statistically significant coefficients on the GDP dynamics in all equations, implying alternating impact with growing magnitude of the first lag coefficient as the GDP dynamics gets enriched with additional lags, while the magnitude of the last lags asymptotically diminishes. Bank density measured through the number of CBBs has negative effect on economic performance. The estimated coefficients ranging from -0.117 to -0.141 point out that any unit in the number of CBBs per 100,000 adults adversely affects economic performance by 0.269 to 0.324 per cent. When the number of ATMs is used as a bank density measure, we again find negative effect but with less intensity and much higher standard errors. Statistically insignificant results are found for the dummies as well in all but the specification with one lag and the ATMs as bank density measure, indicating to a better economic performance of EU and Eurozone members under the given circumstances. Finally, the panel unit root test on a demeaned time series of the GDP measure strongly rejects the existence of a unit root, thus confirming the validity of Assumption 3.

An important issue that needs to be addressed in a dynamic panel regression is the failure of the LSDV estimator known as the Nickell's bias (see Nickell, 1981; and Anderson and Hsiao, 1982). This results from the violation of the strict exogeneity with the introduction of lagged values of the dependent variable and, in our case, it might severely affect the validity of results considering that it is of asymptotic order $1/T$ and our observation period is $T = 15$. There are several techniques developed as solutions to this bias but the most common ones when working with macroeconomic data are the IV approach (Anderson and Hsiao, 1982) and the GMM approach (Arellano and Bond, 1985) that we elaborate in greater detail in the rest of the paper.

3.1. IV estimates

Apart from the failure of strict exogeneity in a dynamic-panel setup, the general notion of exogeneity per Assumption 1 may not hold, which leads to measurement errors in the effects of bank density on economic performance. For the purpose of solving this potential issue, we develop an IV strategy with the lagged values of the share of urban population and share of Internet users used as instrumental variables. The selection of the two variables was made under two reasonable considerations: firstly, banks operating in regions with different level of urbanisation are likely to exhibit different preferences towards their presence; and secondly, differences in the number of Internet users may be linked with higher use of the online e-banking platforms and that might severely affect the use of bank services provided through other means. There is one additional assumption that the instruments have to obey.

Assumption 4 (Exclusion restriction): $\mathbb{E}\big(\varepsilon_{c,t}\big|x_{c,t-i},,z_{c,t-i},\alpha_c,\delta_t\big)=0$.

This assumption is nothing new but an extension of Assumption 1 in the sense that there has to be a specification for which exogeneity holds. In other words, if exogeneity fails for the bank density measures in the model, then we are in the search of variables impacting the endogenous bank density measure that are orthogonal to the error term.

Given that we use lagged values of two variables as instruments to a single bank density measure, we over-identify the model that allows us to implement the 2SLS approach with the following two stages. In the first stage, we estimate the equation of the form

$$d_{c,t}=\sum_{i=1}^{p}\tau_i y_{c,t-i}+\xi_i x_{c,t-i}+\zeta_i z_{c,t-i}++\eta_c+\theta_t+u_{c,t}, \tag{2}$$

where the bank density measure $d_{c,t}$ is treated as an endogenous variable and is regressed on the GDP dynamics with $p=3$, and $x_{c,t-i}$ and $z_{c,t-i}$ denote the instrumental variables with up to three lags. We opt for the GDP dynamics with three lags given the statistically significant regression coefficients that reveal the patterns already discussed. Then, we re-run a slightly modified version of the model specified in (1) in the form

$$y_{c,t}=\beta d_{c,t}+\sum_{i=1}^{p}\gamma_i y_{c,t-i}+\alpha_c+\delta_t+\epsilon\hat{u}_{c,t}+\varepsilon_{c,t}, \tag{3}$$

where the key difference is the decomposition of the error term to $\epsilon\hat{u}_{c,t}$ and $\varepsilon_{c,t}$. In order to remove endogeneity from the model, we use the Durbin-Wu-Hausman test (see Durbin, 1954; Wu, 1973; and Hausman, 1978) on the coefficient ϵ. In the second stage, we estimate the regression coefficients of the model in (3).

Table 3. Instrumental variables estimates on the effect of bank density on economic performance

	Endogeneity test estimates (stage one of 2SLS)					
	$H_0:\epsilon=0, H_1:\epsilon\neq0$					
	Endogenous variable					
Instrument	Share of urban population			Share of Internet users		
	Instrumental lags					
	One lag	Two legs	Three lags	One lag	Two legs	Three lags
	(1)	(2)	(3)	(4)	(5)	(6)
Share of urban population	-1.321***	-1.344***	-1.352***	-2.772***	-3.015***	-3.213***
	(0.276)	(0.281)	(0.291)	(0.691)	(0.546)	(0.570)
Share of Internet users	-0.120***	-0.167***	-0.206***	0.691***	0.593***	0.482***
	(0.025)	(0.025)	(0.025)	(0.046)	(0.047)	(0.048)
	IV regression estimates (stage two of 2SLS)					
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
log GDP per capita first lag	1.169***	1.169***	1.156***	1.211***	1.211***	1.200***
	(0.048)	(0.048)	(0.048)	(0.048)	(0.048)	(0.048)
log GDP per capita second lag	-0.423***	-0.423***	-0.407***	-0.484***	-0.484***	-0.469***
	(0.071)	(0.071)	(0.071)	(0.070)	(0.070)	(0.070)
log GDP per capita third lag	0.124***	0.124***	0.135***	0.131***	0.132***	0.147***
	(0.043)	(0.043)	(0.043)	(0.048)	(0.048)	(0.050)
CBBs (per 100,000 adults)	-0.095***	-0.094***	-0.096***			
	(0.020)	(0.019)	(0.019)			
ATMs (per 100,000 adults)				0.013	0.013	0.011
				(0.020)	(0.020)	(0.021)
European Union dummy	0.009	0.009	0.009	0.007	0.007	0.008
	(0.009)	(0.009)	(0.009)	(0.011)	(0.011)	(0.011)
Eurozone dummy	0.002	0.002	0.001	0.013**	0.013**	0.011*

	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)
Observations	520	480	440	525	488	448
Countries	41	41	41	41	41	41

Notes: The reported coefficient of bank density is multiplied by 100. All specifications include a full set of country fixed and year effects. Symbols *, ** and *** denote statistical significance at the level of 1, 5 and 10 per cent, respectively.

The estimation results from the IV strategy are presented in Table 3. In the first stage of the 2SLS approach, we identify strong endogeneity of both bank density measures with respect to the selected instruments in any specification up to three lags. Subsequently, we find general consistency of the results in the second stage with those from the baseline model. In fact, very similar results are obtained in the equations where the endogenous variable is instrumented with one or two legs, while differences are noticeable in those with three lags of the instrumental variables. GDP dynamics still shows alternating impact that asymptotically diminishes as the number of lags increases. Bank density has statistically significant negative impact when measured through the number of CBBs, which is slightly less than the baseline estimates, ranging from -0.094 to -0.096. This implies an adverse impact by 0.216 to 0.221 per cent. The Eurozone dummy coefficient has statistically significant positive impact only in the specifications with the number of ATMs as bank density measure.

3.2. GMM estimates

Although the IV approach developed by Anderson and Hsiao (1982) solves the problems posed by violating Assumption 1, it has a low asymptotic efficiency due to the somewhat large asymptotic variance. In order to attain higher asymptotic efficiency of the estimated results, we move on to the GMM estimator proposed by Arellano and Bond (1991), which has lower asymptotic variance and might provide more efficient estimates.

Table 4. General method of moments estimates on the effect of bank density on economic performance

Independent variable	Dependent variable: log GDP per capita					
	(1)	(2)	(3)	(4)	(5)	(6)
log GDP per capita first lag	0.703***	0.878***	0.924***	0.745***	0.959***	1.027***
	(0.039)	(0.057)	(0.063)	(0.053)	(0.058)	(0.062)
log GDP per capita second lag		-0.176***	-0.363***		-0.226***	-0.443***
		(0.046)	(0.060)		(0.042)	(0.061)
log GDP per capita third lag			0.144***			0.186***
			(0.038)			(0.040)
CBBs (per 100,000 adults)	-0.122***	-0.118***	-0.123***			
	(0.029)	(0.029)	(0.032)			
ATMs (per 100,000 adults)				-0.016	$-\beta < 0.001$	-0.011
				(0.018)	(0.015)	(0.016)
European Union dummy	0.012*	0.017**	0.025	0.026***	0.022***	0.072
	(0.007)	(0.008)	(0.021)	(0.010)	(0.008)	(0.062)
Eurozone dummy	0.009	0.013	0.013	0.025**	0.027**	0.022**
	(0.010)	(0.009)	(0.010)	(0.012)	(0.011)	(0.011)
AR (2) z-statistic	-4.288	-3.772	0.679	-4.048	-3.525	0.813
p-value (serial correlation)	[0.000]	[0.000]	[0.497]	[0.000]	[0.000]	[0.416]
Observations	520	480	440	525	488	448
Countries	41	41	41	41	41	41

Notes: The reported coefficient of bank density is multiplied by 100. All specifications include a full set of country and year fixed effects. Standard errors robust against heteroscedasticity and serial correlation at country level are reported in parentheses. Symbols *, ** and *** denote statistical significance at the level of 1, 5 and 10 per cent, respectively.

Table 4 reports the GMM estimation results. The findings are generally consistent with those from the baseline model in terms of statistical significance, the sign of the effect and its magnitude. Differences can be noted for the dummy coefficients with evidence of positive statistically significant effect, especially in the specifications with the number of ATMs as bank density measure. Yet the consistency in the estimation results, the AR (2) test shows no serial correlation only in the specification with three lags.

4. ROBUSTNESS CHECKS

In this section, we test the robustness of the estimated results from the baseline model.

4.1. The effect of financial development

The estimates so far show the bank density's effect on economic performance, while keeping the impact of everything else contained in the residual. But it is reasonable to guess that potential impact on economic performance might have come from elsewhere. We therefore extend the baseline model by adding domestic credit of GDP as a covariate in order to test extent to which the level of financial development affect economic performance and additionally study the consistency of the estimated regression coefficient of bank density. The estimation results from this extended model are presented in Table 5.

Table 5. Effect of bank density on economic performance including a covariate for financial development

Independent variable	Dependent variable: log GDP per capita					
	(1)	(2)	(3)	(4)	(5)	(6)
log GDP per capita first lag	0.764***	0.910***	0.928***	0.666***	0.871***	0.944***
	(0.035)	(0.056)	(0.066)	(0.052)	(0.058)	(0.067)
log GDP per capita second lag		-0.108**	-0.335***		-0.147***	-0.378***
		(0.052)	(0.059)		(0.046)	(0.063)
log GDP per capita third lag			0.211***			0.244***
			(0.054)			(0.052)
Domestic credit of GDP	-0.033***	-0.033***	-0.050***	-0.060***	-0.059***	-0.064***
	(0.006)	(0.008)	(0.012)	(0.013)	(0.013)	(0.015)
CBBs (per 100,000 adults)	-0.087***	-0.109***	-0.079			
	(0.033)	(0.040)	(0.049)			
ATMs (per 100,000 adults)				0.061**	0.067**	0.016
				(0.027)	(0.032)	(0.031)
European Union dummy	0.051	-0.047	0.010	0.083	0.036	0.125
	(0.055)	(0.067)	(0.078)	(0.063)	(0.048)	(0.137)
Eurozone dummy	0.006	-0.008	-0.010	0.020	0.002	-0.010
	(0.013)	(0.015)	(0.015)	(0.017)	(0.020)	(0.018)
Unit root test adjusted t-statistic	-7.444	-8.977	-7.860	-7.444	-8.977	-7.860
p-value (rejects unit root)	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Observations	507	470	432	512	478	440
Countries	41	41	41	41	41	41

Notes: The reported coefficients of bank density and financial development are multiplied by 100. All specifications include a full set of country fixed and year effects. Standard errors robust against heteroscedasticity and serial correlation at country level are reported in parentheses. Symbols *, ** and *** denote statistical significance at the level of 1, 5 and 10 per cent, respectively.

While GDP dynamics is highly consistent with that in the baseline model, the coefficients of the dummies are still statistically insignificant and the assumption about unit root can again be comfortably rejected, we pay attention to three conclusions. Firstly, the financial development measure has weak negative statistically significant effect on economic performance. Secondly, the introduction of the financial development measure as a covariate commensurately reduced the adverse effect of bank density in the baseline model on account

of its own. Thirdly, the commensurate split-up of bank density's impact resulting from the negative coefficient of financial developments brings up the effect of the number of ATMs to a positive statistically significant one in the specifications with one and two lags. The magnitudes of 0.061 and 0.067 indicate that a unit increase in the number of ATMs per 100,000 adults leads to higher economic performance by 0.141 and 0.154 per cent, respectively.

4.2. Population coverage vs area coverage

Our analysis so far presumed that banks diffuse their services to cover population as a primary goal but another possibility is that banks expand their network of services to cover the area that they serve. We check this by running the model in (1), where CBBs and ATMs per capita as bank density measures are swapped with CBBs and ATMs per area.

Table 6. Effect of bank density per area on economic performance

Independent variable	Dependent variable: log GDP per capita					
	(1)	(2)	(3)	(4)	(5)	(6)
log GDP per capita first lag	0.712***	1.024***	1.094***	0.734***	1.070***	1.160***
	(0.040)	(0.056)	(0.053)	(0.064)	(0.051)	(0.046)
log GDP per capita second lag		-0.243***	-0.439***		-0.277***	-0.515***
		(0.042)	(0.071)		(0.040)	(0.064)
log GDP per capita third lag			0.152***			0.205***
			(0.048)			(0.056)
CBBs (per 1,000 sq km)	-0.107**	-0.129***	-0.112***			
	(0.044)	(0.045)	(0.045)			
ATMs (per 1,000 sq km)				-0.053	-0.004	-0.022
				(0.034)	(0.024)	(0.031)
European Union dummy	0.088	-0.027	0.076	0.131*	0.078	0.285
	(0.087)	(0.061)	(0.106)	(0.079)	(0.057)	(0.274)
Eurozone dummy	0.030	0.019	0.014	0.042**	0.016	0.002
	(0.016)	(0.015)	(0.013)	(0.017)	(0.016)	(0.013)
Unit root test adjusted t-statistic	-7.444	-8.977	-7.860	-7.444	-8.977	-7.860
p-value (rejects unit root)	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Observations	520	480	440	525	488	448
Countries	41	41	41	41	41	41

Notes: The reported coefficient of bank density is multiplied by 100. All specifications include a full set of country fixed and year effects. Standard errors robust against heteroscedasticity and serial correlation at country level are reported in parentheses. Symbols *, ** and *** denote statistical significance at the level of 1, 5 and 10 per cent, respectively.

Table 6 reports the estimation results from this modified version of the model and shows very high consistency with those obtained from the baseline model. Of the statistically significant coefficients, we note that the magnitude of bank density's negative impact is somewhat lower and ranges from -0.107 to -0.129, which translates to an adverse effect on economic performance by 0.246 to 0.297 per cent.

5. BANK DENSITY AND FINANCIAL DEVELOPMENT

We used the financial development measure in all previous equations as a fixed explanatory variable that potentially accounts for a large portion of the impact on economic performance. Since financial deepening underpins the concept of financial development, it is reasonable to shed light on bank density as potential driver of financial development. In the context of this discussion, we reverse our baseline model in (1) so that real GDP per capita is the fixed explanatory variable and domestic credit of GDP by the financial sector is taken as a dependent variable. Then, the model takes the form

$$f_{c,t} = \beta d_{c,t} + \sum_{i=1}^{p} \varphi_i f_{c,t-i} + \alpha_c + \delta_t + \varepsilon_{c,t}. \tag{4}$$

Table 7. Effect of bank density per capita on financial development

Independent variable	Dependent variable: Domestic credit of GDP					
	(1)	(2)	(3)	(4)	(5)	(6)
Domestic credit of GDP first lag	0.696***	1.021***	1.013***	0.653***	1.154***	1.115***
	(0.052)	(0.132)	(0.138)	(0.063)	(0.114)	(0.122)
Domestic credit of GDP second lag		-0.200*	-0.082		-0.343***	-0.108
		(0.106)	(0.112)		(0.083)	(0.135)
Domestic credit of GDP third lag			-0.151*			-0.225***
			(0.080)			(0.080)
CBBs (per 100,000 adults)	1.163***	1.030***	0.815***			
	(0.325)	(0.241)	(0.222)			
ATMs (per 100,000 adults)				0.592*	0.703**	0.658**
				(0.311)	(0.311)	(0.323)
European Union dummy	65.726	136.544	87.644	-139.093	-174.633	-48.288
	(95.451)	(148.477)	(119.534)	(132.985)	(155.648)	(84.906)
Eurozone dummy	-1.579	-1.118	4.646	-12.567	0.360	-1.591
	(12.722)	(8.616)	(4.989)	(17.837)	(7.462)	(4.216)
Observations	503	463	423	508	471	431
Countries	41	41	41	41	41	41

Notes: The reported coefficient of bank density is multiplied by 100. All specifications include a full set of country fixed and year effects. Standard errors robust against heteroscedasticity and serial correlation at country level are reported in parentheses. Symbols *, ** and *** denote statistical significance at the level of 1, 5 and 10 per cent, respectively.

The estimation results from the reversed model are presented in Table 7. The financial development dynamics exhibits statistically significant coefficients with opposite signs for the first and third lags, while the coefficient for the second lag loses statistical significance and changes sign as the number of lags gets increased. Both bank density measures have positive statistically significant impact on financial development. For the number of CBBs, it suggests that a unit increase leads to higher financial development in the range from 0.815 to 1.163 percentage points; and for the number of ATMs, the increase caused by a unit change upwards is between 0.592 and 0.703 percentage points. Given the unbalanced data for the lagged variable, we could not verify Assumption 3 with the panel unit root test.

6. CONCLUSION

Our approach to examine the link between finance and economic growth through the concept of bank density as a form of financial deepening for a panel of 41 European countries for the period from 2004 to 2018 yields results that differ substantially from the orthodox belief that financial development is a source for growth. We identify the number of commercial bank branches per 100.000 adults and the number of ATMs per 100,000 adults as measures of bank density, and observe a high level of convergence over time across countries grouped as EU and non-EU members along with decreasing correlation of both bank density measures on one hand and the financial development and economic performance measures on the other hand.

The baseline dynamic regression model that we develop to study the effect of bank density on economic performance measured by real GDP per capita reveals a weak negative statistically significant impact of 0.269 to 0.324 per cent annually for a unit increase of the number of bank branches and no statistically significant impact for the ATMs. The estimation results from our subsequent IV estimates with 2SLS approach and Arellano-Bond GMM estimator

largely verify the consistency of the results from the baseline model. In the first stage of the 2SLS approach, we find that our bank density measures are both endogenous with respect to the level of urbanisation and the share of Internet users; and in the second stage, we obtain a weaker negative statistical significant impact in the range of 0.216 to 0.221 per cent annually for the bank branches. Our robustness checks performed in addition further confirm the consistency of the estimates as we get statistically significant negative impact of 0.247 to 0.296 per cent annually when swapping the population basis of the number of bank branches with the area. In the case with financial development included as a covariate, we estimate that the domestic credit of GDP has weak negative impact on real GDP per capita and get statistically significant results for both bank density measures with an opposite impact. We also conclude that the financial development measure commensurately splits up the effect of bank density, resulting in weaker negative impact for the bank branches and stronger positive impact between 0.141 and 0.154 per cent annually for the ATMs. From the regressions on domestic credit of GDP as a dependent variable, we find that both measures are drivers of financial development with a unit increase in the number of bank branches contributing to higher financial development by 0.815 to 1.163 percentage points and between 0.592 to 0.703 for a unit increase of ATMs. In all specifications, we estimate positive impact of the dummy coefficients for EU and Eurozone membership but we safely dismiss its overall validity due to the lack of statistical significance in most cases.

By summing up the foregoing findings, we conclude that the numbers of bank branches and ATMs, albeit important drivers of financial development, do not contribute to better economic performance across Europe. This can be explained through the increased number of Internet users and growing use of e-banking services. There is also no strong evidence that the harmonised bank regulation across EU countries and the shared currency help these countries perform better than the rest.

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ON THE INFLUENCE OF BANKING RELATIONSHIPS ON FRENCH SMES FAILURE

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ABSTRACT
Small and medium firms are highly dependent on banks to finance their business activities. Thus, banking relationship may be crucial to overcome financial difficulties and to ensure their continuity. Accordingly, this paper investigates the influence of banking relationship on SMEs failure. In particular, four measures that firms can control to build their banking relationships and, that resemble standard variables from the literature on bank/firms relationships are evaluated: the breadth of relationships (number of banks), the relationship length(relationship duration), the relationship proximity (bank-firm distance) and, the relationship form (type of bank). Applying a logistic regression to a unique sample of 4960 French SME firms over the period 2013-2016, we evidence that banking relationships have a significant role on the SMEs likelihood of failure. More precisely, we find that multibank relationships, working with a small bank and relationship length are significantly negative correlated with SMEs failure. The opposite effect appears in bank-firm distance, which increases the SMEs probability of failure. Additionally, a corporate failure prediction model was built based on both financial ratios and banking relationship variables. The performance of this model was compared to a model based solely on financial ratios as predictive indicators. The results indicate that banking relationship variables possess prediction power to failure and enhance the performance of corporate failure models. Consequently, our findings are important from a policy perspective to further comprehend the role that banks play on SMEs failure.
Keywords: *Banking Relationship, Corporate Failure Prediction, Finance*
JEL classification: *G21, G23, L26*

1. INTRODUCTION

In today's economic environment, the number and magnitude of bankruptcy procedures are increasing considerably. In this regard, whether firms receive sufficient support from their correspondent banks and financial institutions has become a key factor to overcome their critical financial difficulties and to ensure business continuity (Franco and Haase, 2010). This fact is notably more crucial for small and medium-sized enterprises (SMEs) due to they do not usually have access to organized capital markets; banks represent the main source of external financing. Indeed, SMEs reported that access to finance is an elemental assistance for their activities and growth (Carbo-Valverde et al., 2016). Thus, bank involvement with SMEs is significant everywhere in the world. Nonetheless, one may call into question whether banking relationships might influence SMEs failure risk, as SMEs business activities and performance are strongly dependent on banking financing. This is the reason why this paper explores the role that banking relationship plays in SMEs likelihood of failure.

2. BACKGROUND

Boot (2000) defined banking relationships as "the provision of financial services by a financial intermediary that invests in obtaining customer-specific information, often relevant and private in nature, and evaluates the profitability of these types of investments through multiple interactions with the same customer over time and/or across products". In this regard, banks and firms

must develop trustworthy relationships based on the exchange of specific information that is only available for them, which might lead to fruitful relationships for both counterparts. Nonetheless, these relationships may be also detrimental, especially for firms in close banking relationships. In this case, studies suggest that banks might appropriate the unique information provided by firms and that is not available to other organizations, which may lead to firms becoming captives of their financial intermediary (Von Thadden, 2004). Banking relationships thus might lead to favorable or detrimental effects and consequences. Our study is of significant importance to clarify the effects of those characteristics on the SMEs exposure to failure.

In this regard, Degryse et al. (2009), in line with Agarwal et al. (2018), specify four measures that firms can control to build their banking relationships and, that resemble standard variables from the literature on bank/firms relationships: the breadth of relationships (number of banks), the relationship length (relationship duration), the relationship proximity (bank-firm distance), the relationship form (type of bank). The discussion on the breadth of relationships has been historically the main focus of empirical studies, analyzing firms' number of bank relationships that serve as an indicator for the presence of relationship lending. From Carletti (2004) theoretical paper, maintaining a single relationship firms strengthen the link with their lender. Therefore, it is the optimal mechanism to channel loan from bank to firms because it minimizes monitoring costs. This is based on the premise that maintaining an exclusive bank relationship promotes the development of close ties between bank and borrower (Elsas, 2005). Relationship length reflects the intensity of banking relationship over time. In general, a longer relationship creates incentive for a firm to share exclusive information, which encourages the willingness of a bank to increase financing resources to a firm because it can be easily screened and monitored. Indeed, the literature predicts a positive effects of length for firms financing because strengthen their bank relationships is essential in raising firms' ability to borrow (Bartoli et al., 2014). As small bank use more subjective processes, they are capable of transmitting and quantifying the information of opaque SMEs to engage on a banking relationship (Stein, 2002). In addition, small banks may have a comparative advantage in verifying that information because they are closer to their borrowers in local markets (Agarwal and Hauswald, 2006). Thus, the capacity of different type of banks in quantifying and transmitting through its communication channels the information gathered from opaque SMEs might influence their willingness to supply financing. Finally, bank-firm distance concerns the ability to collect and use private information in banking relationship, which might explain the availability and pricing of bank loans. Thus, the expected effects on firms financing held by a firm depend on the geographic extend (Neuberger and Räthke, 2009). In sum, these variables determine the factors to establish banking relationships and, empirical studies on banking relationships to SMEs have been often relied on those measures to investigate their positive/negative consequences for firms.

3. DATA

We gathered the data over two periods of time (2013-2014; 2015-2016) from Diane database managed by bureau Van Dijk, which provides information for French Firms. The dataset then was built through the following stages. Firstly, we identify French SMEs firms according to European Commission criteria that went bankrupt, that is, those proceeded to be liquated or reorganized in the period studied. Secondly, we collect those samples that provide information about banking relationships, from which annual accounts and income statements as well as firms' bank information were extracted. Finally, we collect the additional information required about banks-firm relationships using Altares dataset managed by Insead OEE Data Services (IODS). There were 2480 failed SMEs in this position. Moreover, in line with Ciampi (2015), non-failed firms were randomly selected, by a paired-match technique to obtain the same proportion and characteristics of failed firms. Thus, our final dataset is composed of 4960 samples, which includes the same number of failed and non-failed firms. The fact that samples

from two periods present different characteristics allows evaluating the robustness in two independent datasets.

3.1. Banking relationship variables

Four characteristics have been considered: number of banks, type of bank, relationship length, and bank-firm distance. The "number of banks" is a dummy variable that takes a value 1 if a firm has multibank relationships and 0 in the case that it works with a single bank (Bartoli et al., 2014). The variable "type of bank" has a value 1 for a small bank and 0 for a big bank (Höwer, 2016). The "bank-firm distance" variable considers the physical distance that separates firms from their main bank. More precisely, it is the logarithm transformation of the kilometers distance between a firm and its main bank (Neuberger and Räthke, 2009). Finally, the variable "relationship length" has a value of 1 is a firm works with the same main bank over the period study and 0 otherwise.

3.2. Control variables

Financial ratios represent the primary explanatory variable to predict corporate failure. That is why they have been included in our model. From the gathered annuals accounts and financial statements, we have computed 50 financial ratios. The stepwise method was applied to select the most relevant variables. In this regard, five variables were selected, which represent all financial dimensions. In line with expectations, failed firms present lower liquidity and profitability values (current liabilities / total assets; quick assets / total assets; EBITDA / Permanent equity) as well as a weaker financial structure (value added / fixed assets; NOWC / total sales) in comparison to non-failed firms

Moreover, a set of variables is also computed to control for other factors related to banking relationships that may play a role on SMEs likelihood of failure. Coverage and financial demands are introduced because it measures the capacity of a firm to fulfill its financial obligation and the financial requirement, which might effect on SMEs failure. Besides, firm size, measured as the natural algorithm of total assets, is also included as banking relationships and then, the likelihood of failure may be affected by firm dimension.

4. EMPIRICAL EVALUATION

The literature offers a diverse and extensive amount of methods to design corporate failure models. Recently, a vast amount of studies have been designed based on artificial intelligence techniques because they do not require any specific assumption, that is, they learn directly from the data which makes them more reliable and, the reliance on nonlinear approaches offers extended possibilities for testing complex data (Kumar and Ravi, 2007). However, even if these techniques present such advantages, they are often criticized because the determination of parameters associated with the classifier is not straightforward and, they are a black-box for the decision makers, preventing any type of interpretability. Thus, in the context of our study, the impossibility of analyzing the estimated coefficient is a major inconvenient that prevent to evaluate the effect of banking relationship variables on SMEs probability of failure and its prediction power.

Consequently, as the purpose of this study is to explore the role of bank relationships on predicting SMEs failure, we used a method, logistic regression, which is widely employed in corporate failure. Indeed, the fact that logistic regression method provides estimated coefficients and their significance can be separately interpreted makes possible to explore our research objective. Besides, the selection of this method over commonly used discriminant analysis is due to logistic regression requires fewer statistical condition to be optimal. This method is based on well-known concepts from statistical decision and on analyzing, summarizing and interpreting data.

Table 1: Coefficients and classification results

	2013-2014 period		2015-2016 period		Entire data (2013-2016)	
	Model A	Model B	Model A	Model B	Model A	Model B
Intercept	-0.653**	-0.803**	-0.451**	-0.705**	-0.516**	-0.743**
Explanatory variables						
Nº banks		-0.473**		-0.478**		-0.457**
Type of bank		-0.350**		-0.313**		-0.379**
Relationship length		-0.147*		-0.235*		-0.176*
Bank-firm distance		0.367**		0.423**		0.393**
Control variables						
Current liabilities/ Total assets	1.064**	1.123**	0.987**	1.068**	1.052**	0.997 **
Quick assets / Total assets	-1.109**	-1.121**	-1.086**	-1.233**	-1.014**	-1.118**
EBITDA / Permanent Equity	-0.519**	-0.439**	-0.553**	-0.492**	-0.498**	-0.451**
Value added / Fixed assets	-0.615**	-0.613**	-0.475**	-0.326**	0.512**	-0.444**
N.O.W.C / Total sales	-1.355**	-1.550**	-0.741**	-0.649**	-1.135**	-0.938**
Coverage		-0.115*		-0.197*		-0.190*
Financial needs		-0.001		0.091		0.080
Firms size		-0.093		-0.069		-0.049
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.513	0.565	0.598	0.634	0.537	0.584
Observations	2538	2538	1926	1926	4464	4464
Accuracy (correctly classified firms) (%)	73.1	76.6*	77.7	81.1*	73.3	77.5*
Correct classified bankrupt firms (%)	71.3	75.8**	74.9	79.5**	71.0	77.0**
Correct classified healthy firms (%)	74.9	77.4	80.6	82.6	75.6	78.0
Observation	282	282	214	214	496	496

Model A includes only financial ratios. Model B includes bank-firms relationships with financial ratios.

Coefficients were average over 200 dataset splits. * Significant at 5% threshold ; ** Significant at 1%threshold

4.1. Results

The estimated results indicate that all banking relationship characteristics present significant coefficients, evidencing that these explanatory variables play a role in SMEs likelihood of failure. It is important to remark that we interpret our result cautiously but, as causal relation between banking relationship characteristics and SMEs performance and failure. In this context, a firm having multibank relationships is less likely to fail, which confirms H1. This is an important result of this study and for the existing literature because it enlightens the controversy about the number of banking relationship effects. This finding corroborates the Detragiache et al. (2000) study that support the beneficial gains that SMEs can profit from multibank relationships, in which is more likely to obtain liquidity and avoid the risk of failure. Besides, the diverse options to finance access will finally result in less financial constrain and better term conditions for firms because it gives more flexibility. One may consider that a multibank relationship could provide a "funding oxygen pump" because of having this relationship increases the chance of finding a creditor ready to grant financing. This fact may be especially relevant if a SME suffer financial distress because the additional funding that it can be acquired from one of its bank relationships can avoid the implications that this circumstance can cause on its performance, that is, several negative aspect that might lead to an involvement on a bankruptcy procedure. Indeed, Fuss and Vermuelen (2008) corroborate that a SME can obtain extra credit in the case of adverse shock working with multiple banks.

Furthermore, a SME that works with a small bank is negative correlated with the probability of failure. It then attests the general concept that SME-small bank relationship is fruitful for both parts and, especially to tailor the firm necessities. Indeed, it is not entirely odd to think that the decentralized organization of small banks, which is crucial for manage the information provided by SMEs (Stein, 2002), makes it possible that SMEs can receive personalized financial services and products adapted to their industry sector and business. Thus, it enables that SMEs might possess adequate source of financing and resources to develop their projects and investments that encourage their competiveness and performance. As a result, the SME-small bank relationship facilitates the firm survival.

In line with the literature, longer banking relationships is beneficial for SMEs as it is negative correlated with their probability of failure. The trustworthy relationships encourage firms to

transmit data and, to banks to better monitor and serve firms. As a consequence, SME should obtain an increased availability of debt at lower cost (Berger et al., 2001), which favors the development of its operation and reduces the risk of being default. Moreover, because of community-based contact that a banking relationship represents, the closeness between a firm and its bank implies a major key element to ensure that the SME will be financially supported by the bank, which is crucial for its survival. In the case of SMEs, the closeness involves personalized and domestics contact to be more likely to transmit the prospect of their project and the viability of their business so that they can be financed and backed in the moment of distress. Indeed, this result and assentation are consistent with the literature that indicates that close relationships are linked with easier access to bank loans and SME profitability, fundamental elements for SMEs survival (Hasan et al., 2017). Thus, the increment on bank-firms distance is detrimental for the informational channel between both counterparts, especially for the quality and quantity of information received by bank. This result in making more risky and less efficiency for bank to serve firms, which lead to the worsening of firms financial condition and credits availability. Indeed, Agarwal and Hauswald (2006) evidenced that the probability of default on SMEs loans increases with the distance between borrowers and lenders. That may explain why bank-firm distance is found to be positive correlated with SMEs likelihood of failure. Finally, it is interesting to remark that banking relationship characteristics have certain prediction power to bankruptcy but, not that of financial ratios. Nonetheless, it is observed that those variables produce an improvement on failed firms, which is crucial in corporate failure prediction.

5. CONCLUSION

This paper resorts the role that banking relationship plays on French SMEs likelihood of failure. More precisely, we examine four characteristics that have been widely considering in the literature of banking relationships and that it is known that they might influence SMEs performance: number of banks relationships, type of bank, the duration of banking relationship, and bank-firm distance.

Our results indicate that banking relationships play an important role on the SMEs likelihood of failure. One may consider that this is the product of complete dependence of SMEs on banking financing to carry out their activities. Thus, governments should implement policies to facilitate favorable access to finance and to control for the uncompetitive conditions that banks may impose so that those SMEs with genuine potential could compete and grow, especially in the early stages. In this scenario, the number of SMEs that have to cease their activities due to the lack of financing could be reduced, lessening the role that banks play on SMEs failure, and creating a business-friendly environment to maintain a broad base of SMEs, which is crucial for the economic development and sustainability in industrialized countries.

Unfortunately, our dataset is limited to three years of banking relationship, which make it impossible to establish the effects of more prolonged banking relationships. This could explain why the relationship length variable is less significant on SMEs failure, though it is mainly considered in banking relationship literature. That is why, the following further research will be considered to enhance the quality of this study. Firstly, collect larger data on banking relationship. Secondly, our results are based on the analysis of only one country, France, in which banks have a significant role in corporate finance, so more research is needed in order to generalize our results. Additionally, in this paper could only be considered banking relationships characteristics but, one may wonder whether credits terms (interest rates, repayment years, rate of late payments ...) might influence the SMEs failure as well as regional characteristics. Finally, acknowledging that failure is a dynamic process in which the initial condition of a firm changes over time until it fails, it would be interesting to contemplate the entire process of failure alongside with banking relationships. One could therefore investigate

how this relationship impacts firm financial situation over time, from financial distress to bankruptcy.

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THE IMPACT OF HUMAN FREEDOMS ON ECONOMIC GROWTH

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ABSTRACT

The impact of formal institutions, including rule of law, human rights, and civil liberties on economic growth has been in the focus of the latest research agenda of the new institutional economics due to the current pandemic of the Corona-19 virus. Some limitations are necessary to be imposed to address a pandemic, but this is a real risk of lasting deterioration in basic human freedoms. Increased surveillance, restrictions on free expression and information, and limits on public participation are becoming increasingly common. The present fear is that the authorities worldwide are using the current situation to repress human rights for political purposes.

This paper aims to explore the effect of the overall institutional environment, understood as the concept of human freedom, on economic prosperity in different jurisdictions around the world.

Human freedom is a general term for personal, civil, and economic freedom and therefore the interconnection with economic growth can be seen in both directions. In our analysis, we use the Human Freedom Index published by the Fraser Institute as a proxy for human freedom. Here, human freedom is understood as the absence of coercive constraint. The index is calculated based on 79 distinct indicators representing different aspects of personal and economic freedom.

This analysis seeks to answer several questions. First, we are interested in examining whether there is empirical evidence about the causality between human freedoms and economic growth. Second, we are interested in whether human freedom has a positive impact on growth rates. And third, we are interested in examining the influence of other determinants on economic growth.

To test the causality between human freedom and economic growth, we have conducted a Granger causality analysis. The empirical strategy for identification of the possible influence of human freedom to growth rates includes the development of ordinary least squares (OLS) panel regression models for selected economies of the world, or around 174 cross-section units (countries) in the period between 2008 and 2017.

I. INTRODUCTION

The paper seeks to explore the relationship between human freedom and economic growth. Human freedom is a broad term for personal, civil and economic freedom and therefore the interconnection with economic growth can be seen in both directions. Economic growth can impact human rights by reducing economic inequality, effective institutions and governance, investing in human capital and by increasing political stability (Sano and Marslev, 2016).

Economic development can also have a negative influence by adverse impact on the human rights of workers, citizens, local communities and consumers. However, the inverse relationship is less well understood. The main research question of this paper is whether higher protection of human rights can influence economic development.

Currently, due to the current COVID-19 crisis, the economic slowdown will negatively influence the basic human rights in the following aspects: lack or worsen quality of food, housing, health, education, social protection,increased discrimination and so on(Bohoslavsky, 2020). Other deterioration in basic human rights can be seen in the increased surveillance, restrictions on free expression and information, and limits on public participation. The present fear is that the authorities worldwide are using the current situation to repress human rights for political purposes.

Sectiontwo is the literature review and *section three*describes the data used in our models. In *Section four*we test the direction of causality between GDP per capita and human freedom. *Section five* describes the methodology used for the creation of the econometric model along with the presentation of the results. The final section concludes.

II.   LITERATURE REVIEW

There is no academic consensus on the two-way relation between GDP per capita and human freedoms. Koob, Jørgensen and Sano (2017) find no evidence that freedom and participation rights in different regions of the world are harmful to growth: it either promotes growth or has no effect on growth. Blume and Voigt (2007) examine the effect of four different categories of human rights on economic growth and welfare. Precisely, they are interested in the impact of basic human rights, property rights, civil rights and social rights on investment and productivity. Their factor analysis shows that none of these categories of human rights has a significant negative impact on welfare and growth.By using pooled ordinary least squares regression models, the authors have found that basic human rights and property rights encourage investment, while social or emancipatory rights have a distinct impact on productivity development. In general, this group of economists and political scientists take up the stance that protecting human rights collides with economic growth.

Blanton and Blanton (2007) confirm the inverse relationship:economic factors such as trade and investment might act as transmission channels between human rights and economic growth.However, McKay and Vizard (2006) argue that although it is expected that economic development has an impact on human rights, the strength and direction of the relationship are unclear. Other authors (Seymour and Pincus, 2008) warn about the possibility of delegitimization of social choices that deny minority rights to generate growth of the majority in a society. This group of scholars argues that granting too many political or civil rights to individuals could even make the economy worse off.

Nevertheless, a majority of economists emphasize the positive role of human rights on economic prosperity. The fundamental argument in favor of this thesis is that societies, where human rights are respected, generate certainty and predictability for economic actors. Secure and predictable environments are supportive of economic growth and welfare, investments and productivity.

Previous papers of Disoska and Kocevska (2017; 2019) werefocusing on the link between institutions and economic growth. The findings were that better and freer institutional quality has a positive influence on economic growth and productivity in the countries from Eastern Europe and also the joint influence of institutional quality and trade increase economic prospects for selected transitional economies from Central and Eastern Europe and the Western Balkans. Therefore, Europe should be oriented towards liberalism and respect all aspects of human freedom to enhance the growth prospects.

III. DATA

We use an unbalanced panel consisted of 174 countries for the period from the year 2008 to 2017.The dependent variable in the model is gross domestic product per capita calculated in 2010 US dollars in constant prices (Variable name: *GDP per capita*). The variable is obtained from the World Development Indicators from the World Bank. The data are available for the entire period. Logarithmic transformation of this variable is undertaken before using it in the models. All variables are checked for unit roots. We have determined that all variables are stationary at level 0 (appendix 1).

We use several independent variables to explain the volatility in GDP per capita. Our main variable of interest is human freedom. Human freedom is presented by the score of the Human Freedom Index (Vásquez and Porčnik, 2019).This index is a broad measure of human freedom and is calculated by using 76 distinct indicators. These indicators are organized into two broad groups: personal freedom and economic freedom. Personal freedom covers the areas: Rule of Law, Security and Safety, Movement, Religion, Association, Assembly, and Civil Society, Expression and Information, Identity and Relationships. Economic freedom, on the other hand, covers the following topics: Size of Government, Legal System and Property Rights; Access to Sound Money; Freedom to Trade Internationally; Regulation of Credit, Labor, and Business. The index is presented on a scale of 0 to 10, where 0 stands for least free and 10 represents most free countries and territories. In the latest report (Vásquez and Porčnik, 2019) referring to 2017, total of 162 countries were included. The index is published on a regular, annual base.

Further, we use several economic variables or factors. The first one is *Trade.* Trade is calculated as the sum of exports and imports of goods and services and is given in the form of a share of gross domestic product. The data is acquired from the World Development Indicators. Thesecond economic factor also obtained from the World Development Indicators database is the unemployment rate (Variable name: *Unemployment*). *Unemployment* is understood as a share of the labor force that is without work but available for and seeking employment (definition of labor force and unemployment is distinct for the separate countries). *Total factor productivity*refers to the level of the total factor productivity at current PPPs. It is obtained from the Penn World Table 9.1. (Feenstra, Inklaar and Timmer, 2015). The fourth economic variable that we imply in our model is *Investment.* This variable is given in a form of a ratio of total investment (or gross capital formation) and gross domestic product, both calculated in current local currency.*Investment* is obtained from the IMF's World Economic Outlook database.

Further, besides human freedom and the economic factors, we introduce two more variables in our models. The first one, *Life expectancy*,indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life. The data is also published in the World Development Indicators database. We understood *life expectancy*as a human development variable (UNDP, 2019).

In the end, we introduce one variable that explains the broader political environment. The variable is titled *Conflict* and is obtained from the Center for Systemic Peace, Major Episodes of Political Violence database. The variable represents the total summed magnitudes of all societal major episodes of political violence (Marshall, 2019).

Descriptive statistics (number of observations, mean, standard deviation, minimum and maximum) are presented in Table 1. The correlation matrix between the variables is given in Table 2.

Table 1. Descriptive statistics of variables

Variable	Observations	Mean	Std. Dev.	Min	Max
GDP per capita	2230	14621.04	19900.3	214.139	111968
Human freedom	1482	6.985904	1.058813	3.69	9.12
Trade	2148	91.82166	56.49294	.167418	442.62
Unemployment	1517	8.188234	5.924041	.14	37.2499
Total factor productivity	1508	.6444152	.2585639	.0986217	2.364419
Investment	2001	24.78419	8.420553	-3.744	73.002
Life expectancy	2224	70.65124	8.929667	42.518	84.6805
Conflict	1950	.4661538	1.333406	0	7

Source: Authors` own calculations

Table 2. Correlation matrix of variables

	GDP per capita	Human freedom	Trade	Investment	Life expectancy	Unemployment	Total factor productivity	Conflict
GDP per capita	1.0000							
Human freedom	0.6674	1.0000						
Trade	0.3381	0.2589	1.0000					
Investment	-0.1643	-0.2478	0.0385	1.0000				
Life expectancy	0.6369	0.6390	0.1622	-0.1634	1.0000			
Unemployment	-0.1389	-0.0254	-0.0593	-0.2517	-0.1055	1.0000		
Total factor productivity	0.6373	0.4470	0.0147	-0.1829	0.5661	0.0347	1.0000	
Conflict	-0.1807	-0.2621	-0.1799	-0.0249	-0.1749	-0.1138	-0.0799	1.0000

Source:Authors` own calculations

This paper goes further into examining the casual relations between GDP per capita and human freedom index, by performing a Granger causality test and by using the latest data for the Human Freedom Index for 2017 (the report name is 2019). The index is calculated for 162 countries, and we used all the available data to make relevant conclusions for the interdependence between human freedom and economic growth on a global level. Furthermore, in order to quantify the effect of human freedom on economic growth, we use the ordinary least squares (OLS) panel regression model.

IV. CAUSALITY BETWEEN GDPE PER CAPITA AND HUMAN FREEDOM INDEX

In order to examine the direction of causality between GDP growth and human freedom index, we perform a Granger causality test. We use the latest data for the Human Freedom Index for 2017 (the report name is 2019). The index is a result of the work of the Cato Institute, the Fraser Institute, and the Liberales Institut at the Friedrich Naumann Foundation for freedom and is it free of charge. Another option as to consider human rights as freedom and participation rights defined in Empowerment Rights Index from CIRI human rights data (Cingranelli, and Richards 2008, Koob, Jørgensen and Sano, 2017).

The index is calculated for 162 countries, and we used all the available data to make relevant conclusions for the interdependence between human freedom and economic growth on a global level.

The Granger causality means that a variable x_{it} is causing y_{it} for each individual if y_{it} is better predicted using all available information instead of using information apart from x_{it} (Granger, 1969). The Granger causality test is performed on the following panel data model:

$$y_{it} = \Sigma \, \gamma k y_{i,t-k} p_k{=}1 + \Sigma \, \beta k \, x_{i,t-k} r_k{=}0 + u_{it}$$

The null hypothesis is that there does not exist any causality relations. H_0: $\beta k = 0$; the alternative is that there exist lags for which the parameter is nonzero, HA: $\beta k \neq 0$ (Koob, S.A., Skriver, S. and Hans-Otto, J.). The test is performed for the human freedom index (and its sub-indexes) and GDP economic growth – in both directions.

Because we expect that the effect of the human freedom index on economic growth comes with a time lag, the tests are performed with different lag lengths. The data is given in tables with three columns for each separate relationship. The first one summarized the lag lengths (from 1 to 8), the second and third columns give the t-statistics and the corresponding p-value. The null hypothesis is rejected at 99% significance level. If most of the lags reject the null hypothesis, we conclude that there is long-run relationship between the two observed variables.

Table 3. Causality between GDP per capita and human freedom

From GDP per capita to human freedom			From human freedom to GDP per capita		
Lags	Test statistics	P-value	Lags	Test statistics	P-value
2	0.53432	0.5862	2	21.4493***	7.E-10
3	0.2894	0.8333	3	7.54267***	5.E-5
4	0.51536	0.7245	4	3.31973***	0.0104
5	0.429290	0.8283	5	3.37431***	0.0051
6	1.51178	0.1719	6	3.31781***	0.0032
7	1.34722	0.2266	7	2.09092***	0.0435
8	0.58661	0.7886	8	3.85264***	0.0003

Note: The model is estimated using Granger causality stacked test (common coefficients). Lags refer to the number of lags of the regressor, the test statistic is F-stat and is reported with corresponding p-values. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

In the first three columns is presented the relationship of GDP per capita (constant 2010 US$), as a measure of economic growth on the human freedom index. According to the p-value, we accept the null hypothesis, meaning that economic growth does not affect human freedom. The inverse relationship i.e. the effect of human freedom on GDP per capita is positive and statistically significant according to the performed Granger causality test.

V. ECONOMETRIC MODEL, RESULTS AND DISCUSSION

In order to confirm the relationship between human freedom and GDP growth, we extend the model by adding instrumental variables and the use of the OLS model in a panel data framework. The form of panel data regression equation is similar to ordinary least square, i.e: Description: For i = 1, 2, ..., N and t = 1, 2, ..., T. Where N = Number of individuals or cross section and T is the number of time periods. From this model NxT can be generated

equation,that is equal to T equation of cross and as much N equation coherent time or time series.

$$yit = \alpha + \beta`kxi + uit \text{ where } t = 1, \dots , T \text{are years and } i = 1, \dots , N \text{ are countries.}$$

yit is the dependent variable, GDP growth per capita, xi, are the explanatory variables, the Human freedom Rights index, and also other intermediary factors through which freedom and participation rights may affect growth such as economic and institutional factors. uit is the unobserved error term. We used pooled regression, based on Hausman test and F-test of individual effects.

The dependant variable in the models is *GDP per capita*, measured in constant 2010 international dollars which is a variable in real terms. The variable is not used in absolute terms, but as a logarithm of the value. Different independent variables are employed to explain the variance of the dependent variable. Independent variables are used in linear form. Therefore, we constructed several models by adding an extra variable in each model. All of the constructed models are panel regressions using the OLS method.

We were working with unbalanced panel database since some of the data were missing. However, countries with very limited data have been discarded. Another methodological obstacle for the research was to find adequate variable that would quantify and measure human rights. Of course the Human freedom index is a broad measure of human rights, so we were not able to indicate which of the components have higher influence on the economic growth. Also, considerable variations among countries cannot be determined. Despite these methodological challenges, we are giving the following explanation of the model in the following Table.

Table 4. Regression models (Dependent variable: logGDP per capita in constant 2010 $US)

	(1)	(2)	(3)	(4)	(5)	(6)
Human freedom	1.0136 (0.0276)***	0.9625 (0.2970)***	0.370 (0.0304)***	0.3433 (0.0300)***	0.2568 (0.0257)***	0.3995 (0.0351)***
Trade		0.0031 (0.0005)***	0.0021 (0.0004)***	0.0022 (0.0004)**	0.0019 (0.0003)***	0.0022 (0.0004)***
Investment			0.0080 (0.0027)***	0.0069 ***		
Life expectancy			0.1062 (0.0034)***	0.107 (0.0033)***	0.0675 (0.0032)***	0.0656 (0.0032)***
Unemployment				-0.0296 (0.0038)***	-0.0183 (0.0034)***	-0.0208 (0.0035)***
Total factor productivity					2.6716 (0.1094)***	2.5169 (0.1119)***
Conflict						-0.0286 (0.0049)***
R-squared	0.4799	0.4913	0.7173	0.7292	0.8326	0.8361
Adjusted R-squared	0.4795	0.4905	0.7165	0.7282	0.8318	0.8351
F-statistics	1353.617***	688.9605***	864.6189***	730.8067***	1074.273***	883.4178***

Note: Standard errors are given in parenthesis.
*p-value: *** significant at 99% level; ** significant at 95% level, * significant at 90% level.*

The results from the regressions are presented in the previous table. All models have high R squared which explains the variability of the dependent variables the most of the variability of the independent variable. Also, the R squares are increasing meaning that each additional variable has additional influence on the dependant variable. The F-statistics is also reported. It indicates the significance level of influence of predictor variable to response variables. All regressions show high statistical significance (at 99% level).

The first model, the model (1), is a simple regression where *human freedom* is an independent variable. The estimated value of the coefficient is 1.01. On average, if human freedom increases by 1 unit on a 0-10 scale, GDP per capita is expected to increase by 10,1 percentages.Compared with the other indicators, the value of the coefficient is significantly higher. That just confirms the main hypothesis of the paper, that there is a strong positive relationship between human freedom and economic prosperity.

The following models (2-6) are improved by including additional variables as independent variables. The independent variables are economic variables as possible explanatory variables of GDP per capita, according to the academic literature. We can conclude that adding new variables in the model slightly improves the explanatory power of the regressions, presented by higher values of adjusted coefficient of determination. Most of the estimates are significant at 99 percent level.

The variable *human freedom* has permanently statistical and economical significance. *Trade,* as well, is statistical and economical significant independent variable, with coefficients ranging from 0.0019 to 0.0031. *Investment* proves to have a positive influence on the GDP per capita, or in other words, one percentage change in the investment (measured as % of GDP) will increase in GDP per capita by 0.69-0.8%. The empirical literature confirms the positive correlation between these two variables.

Life expectancy has a positive and strong correlation with GDP per capita in the observed countries all around the world, *ceteris paribus.* Therefore, all else held constant increase in the averagenumber of years of the humans by one year will increase GDP per capita by 6.5 percent – 10.6 percentage, on average. The results are both statistically and economically significant. Regarding the variable *unemployment*, we use the data from the national statistics and the indicator is expressed as a percentage of the total labor force. The estimated coefficient confirms the negative relationship with the GDP per capita, meaning that an increase in the unemployment rate by 1 unit will decrease the GDP per capita by 1.8% to 3%. Another economic variable is the *total factor productivity*. The difference in total factor productivity explains the variations in income between countries. In this model, the total factor productivity have the highest coefficient ranging from 2.51 to 2.67.

Aside from economic variables we include one political variable: *Conflict.*This variable represents the total summed magnitudes of all societal major episodes of political violence and conflict regions. The variable is re-scaled from 0-100. On average, 1 unit increase in indicator for political violence and conflict regions, in the sample countries, leads to 2.86 percentage negative changes in GDP per capita, *ceteris paribus.*

VI. CONCLUSION

The relationship between human development and economic growth is in two directions. The improvements in human development lead to higher economic growth, which further promotes human development.In this paper, we developed ordinary least squares (OLS) panel regression models for countries all around the world, in the period between 2008 and 2017 to quantify the effect of human freedom on economic growth. We included a number of economic variables in the model. The cross-country regression models demonstrate that human freedom, life expectancy and total factor productivity have the highest influence and are statistically significant determinants of economic growth.

The results from the econometric model can be used as a policy recommendation in the current situation of pandemics. Therefore, if governments are imposing a disproportionate restriction that limits the information, free expression in the name of stopping Covid-19, the negative effects will extend far beyond this outbreak. People will suffer a lasting deterioration in basic freedoms, and they will lose confidence in the institutions. The challenge of the policy makers is finding an appropriate balance between protecting public health and minimizing economic consequences.

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World Bank national accounts data, and OECD National Accounts data files.

Appendix 1. Unit root tests

INDIVIDUAL INTERCEPT			INTERCEPT AND TREND	
Series	ADF - Fisher Chi-square	PP - Fisher Chi-square	ADF - Fisher Chi-square	PP - Fisher Chi-square
Log (GDP per capita)	441.415***	621.987***	298.502	512.842***
Human freedom	323.531	400.482***	287.537	466.182***
Trade	366.951	391.847**	367.235	562.185***
Investments	388.687***	433.026***	321.54	431.501***
Life expectancy	1252.36***	1126.48***	550.657***	542.391***
Unemployment	297.538***	346.408***	196.375	293.379*
Total factor productivity	273.725**	322.244***	201.008	288.189***
Conflict	66.6749*	69.2154**	70.483*	87.555***

Note: p-value: *** significant at 99% level; ** significant at 95% level, * significant at 90% level.

E-COMMERCE IMPACT ON ECONOMIC GROWTH

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ABSTRACT
Ever since the dawn of merchanting, traders have sought ways to ease the cost of transactions. The recent growth of information and communication technology provided a wide range of solutions for international and national transactions by introducing e-commerce. As a result of this development, e-commerce recently emerged as a dominant transaction activity with a significant impact on the national economies. In recent years the potential of e-commerce has been widely discussed, with a particular focus on its effects on greater economic welfare and prosperity. Yet, despite an abundance of studies that have been done on investigating the role of e-commerce in an economy, a thorough and detailed econometric examination on its impact is still an underexplored avenue. This paper attempts to bridge this gap by investigating the impact of volume of online transactions (e-commerce) and gross capital formation on economic growth, using panel data on 31 European countries covering a 16 years' period. The empirical panel data model is estimated by employing the Generalized Method of Moments. The main findings from the study show that e-commerce and gross capital formation have positive and significant effects on GDP per capita based on purchasing power parity, with e-commerce having a weaker development-enhancing effect in comparison to gross capital formation. In addition, this paper proposes a fruitful discussion on how to provide balance between the growth of e-commerce, the focus on improving other aspects and generating optimal economic welfare and prosperity. Our paper ends with directions for future research.

Keywords: E-commerce, Economic growth, Generalized method of moments (GMM)

JEL classification: O47, F43, L81

1. INTRODUCTION

Ever since the dawn of merchanting, traders have sought for ways to ease the cost of transactions, (Mankiw, 2014). The recent rise of information and communication technology provided a rapid solution for international, as well as national, transactions by introducing e-commerce. Formally, e-commerce is understood to mean the production, distribution, marketing, or delivery of goods and services by electronic means. An e-commerce transaction can be between enterprises, households, individuals, governments and other public or private organizations (WTO, 1998). In other words, e-commerce is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet. As such, this mechanism changed the transactions between businesses, consumers and all the parties included in the process and resulted in the development of new payment methods, enterprise resources planning systems, etc.

A growing body of literature indicates that e-commerce has a positive impact on economic growth which describes the increase of efficient production of goods and services in an economy. Hence, it can be conjectured that e-commerce may have an inevitable potential in improving the welfare of a nation.

Motivated by these discussions, here we evaluate the empirical impact of e-commerce on economic growth using panel data on 31 European countries, covering a 16-year period. We provide evidence on the positive impact and quantify the corresponding magnitude. By comparing the estimated regression coefficient with th at of gross investments, we find that e-commerce has 10 times smaller impact. Even though it may be argued that the effect of e-commerce on growth is negligible, we conjecture that this value is further dependent on the level of information and communication usage by a particular country. This leads to a discussion on how to provide balance between the growth of e-commerce, the focus on improving other aspects and generating optimal economic welfare and prosperity.

The rest of the paper is organized as follows. In Section 2 we review the existing literature. In Section 3 we specify our econometric model and describe the data. In Section 4 we provide our empirical results, whereas in Section 5 we discuss relevant implications for achieving optimal growth of e-commerce by giving a simple example for the economy of North Macedonia. In the last section we summarize our findings.

2. LITERATURE REVIEW

There is a significant amount of research that has been done on investigating the role of e-commerce in an economy. Here, in short we review this literature.

First, Jo *et al.* (2019) examined the impact of e-commerce on urban prices and welfare. Their results show that goods sold intensively online had lower relative rates of price increase than goods sold mainly in physical stores. Additionally, their findings suggest that e-commerce has contributed in increasing the gap in inflation rates. Furthermore, their results show that national gains from e-commerce were substantial and the welfare rose much more for residents of high-income cities with highly educated populations and may have fallen for residents of other cities.

In a similar context, Cardona *et al.* (2015) use a macro-economic general equilibrium model that brings together the impact on consumers as well as on producers. In this study, the authors detected that cross-border e-commerce reduces trade costs compared to offline trade. Subsequent increases in competitive prices squeezes domestic retail price margins and has a negative output effect in that sector (the effect is approximately a decline of 2.6%). However, the resulting retail efficiency gains have a positive effect on production in other sectors (between 0.9 and 2.6%) and on household consumption (1.07%). The combined macro-economic effect of these transmission channels adds

0.14% to GDP in the European Union. Therefore, the relatively weak GDP effect in comparison with the production and consumption effects indicates that the shift from offline to online retail induces considerable welfare redistribution from retailing to other sectors and to households, more so than a production effect. It is evident that e-commerce has an influential role not only on production and consumption but also on GDP and welfare.

Sumanjeet (2008) aimed to study the economic implications of e-commerce. In his paper, two types of potential economic gains from the use of e-commerce and IT enabled technologies are pointed out. First, there are the gains in efficiency, i.e. efficient use of scarce resources allowing higher consumption in the present and enabling of new digitized goods and services. The second type of potential benefits comes from cost reductions emphasizing search cost, administration cost, distribution cost and even labor costs. Terzi (2011) elaborates on the impact of e-commerce on international trade and employment. Assuming that e-commerce will contribute to increases in volume of international trade. Thus, import open countries will benefit from knowledge spillovers from high-income economies. In addition, creation and job losses are expected to be driven by e-commerce. Xing (2017) examines the impact of internet and e-commerce adoption on bilateral trade flows. The results indicate that better access to the modern ICT and adoption of e-commerce applications stimulate bilateral trade flows at various levels and highlight a great potential of e-commerce for developing and least-developing countries. Conversely to most of the authors, He and Wang (2019) estimate the relationship between cross-border e-commerce trade (import and export) and macroeconomic indicators like GDP, population, terms of trade and real exchange rate. Operating with dynamic ordinary least squares and error correction model their findings express a long run relationship between the variables and that the GDP and the real exchange rate always affect the development of cross-border e-commerce trade. Georgiou (2009) attempts to inspect the impact of e-commerce on economic growth. It is elaborated that e-commerce has a positive impact on economic growth through promoting consumptions which in turn improves company performance.

Rao *et al.* (2010) analyze the impact of the development of e-commerce on China's economic growth from an empirical perspective. Using e-commerce transactions and GDP data as well as an error correction model, it was concluded that e-commerce transactions promote economic development. Liu (2013) examines the impact mechanism of e-commerce development to the national economic growth. The used variables were the development of e-commerce in consumption, investment, government purchase and net exports respectively, leading to the conclusion that e-commerce is indeed a promoter of economic growth. Lund and McGuire, (2005) questioned the readiness of developing countries for e- commerce adoption in order to take full advantage of the process actually from the e-commerce benefits in sense of development. Even though exceptions exist, they emphasize the need of government policies improvements especially in the field of infrastructure and human capital, with an aim of better utilization of e-commerce macroeconomic gains. Liu *et al.* (2013) investigated the impact of e-commerce and research and development (R&D) on productivity. Using the generalized method of moments technique and unique panel dataset from manufacturing firms, their results showed that both e-commerce and R&D capital have positive influence on productivity with a complementary relationship between them, on enhancing productivity. At the same time, R&D exhibits larger productivity-enhancing effects. Similar to them, Anvari and Norouzi (2016) inspected the impact of e-commerce and R&D on economic development. Working with panel data (purchases by individuals as measure for e-commerce, R&D expenditure and other variables) and generalized least squares method, they found out that e-commerce and R&D expenditure have a long run impact with GDP per capita. Actually, both e-commerce and R&D expenditure have been found to have a positive impact on GDP per

capita with e-commerce having a stronger development-enhancing effect. Falk and Hagsten (2015) investigated patterns in e-commerce activities and their impact on labor productivity growth. Concretely speaking, their findings showed that one percent point increase in e-sales raises labor productivity growth by 0.3 percent point over two-year period. Also, a larger impact is noticed in the services industries rather than those in manufacturing. Furthermore, their results indicated that smaller firms gain the most from increases in e-sales.

It is evident that e-commerce is influential to many economic aspects, in one way or another, to the overall economic prosperity. This fueled our interest in exploring this impact more deeply, and while doing so, to see if there is a potential for improvement.

3. EMPIRICAL MODEL AND DATA

In this section, we adopt an empirical specification that captures the long-run relationship between a set of three variables: income per capita, volume of e-commerce and gross capital formation; and describe the data.

The dependent variable, income, is measured as real GDP per capita corrected for Power Purchasing Parity. Its changes usually represent the economic growth of a country and they can be explained with various factors. However, our main goal is to do it with an indicator of the volume of e-commerce. For that purpose, we follow the existing literature, in particular Anvari and Norouzi (2016), and use the percentage of the total population that made an online purchase as our measure of e-commerce development.

Nevertheless, e-commerce volume alone is not enough to explain economic growth, as it fails to explain various effects. Therefore, we include the Gross Capital Formation as a percent of nominal GDP. This indicator represents a simplification of the investments in the country which have been extensively utilized as a crude approximation for a number of factors that can affect both financial development and economic growth by evolving smoothly over time, see (Herzer and Vollmer, 2012). In the long run this ratio should promote technology indirectly and increase the wealth of a nation, (Levine and Renelt, 1992).

3.1 Empirical specification

Many of the endogenous growth proponents, such as Romer (1990), suppose that an economy grows exponentially. We accept their opinion and assume that our basic empirical model is given by:

$$\mathrm{dlog}(gdp_{ct}) = \alpha_c + \beta_1 \mathrm{dlog}(ec_{ct}) + \beta_2 \mathrm{dlog}(gcf_{ct}) + u_{ct} \tag{1}$$

where $i = 1,2,...,C$ and $t = 1,2,...,T$ are country and time notations, d is the first difference operator, ec_{ct} stands for the percentage of the population that made an online purchase and gcf_{ct} is the Gross Capital Formation as a percent of GDP. The level of economic development is represented by real GDP per capita, gdp_{ct}. The β coefficients in (1) capture the relationships between the variables, while α_c are country specific fixed effects that help to control any omitted factors that are stable over time. We point out that every variable is measured in its logged first differences. This means that we are looking at the growth rates of each variable, thus controlling for possible non-stationarity of the data.

3.2 Data and descriptive statistics

For the purpose of examining the effect of e-commerce over growth we collect annual GDP and gross capital formation data from the World Development Indicators Database. The data for the percentage of the population that made an online purchase is taken from the Eurostat database and has been cross-validated by analyzing the statistical accounts of each country.

We focus on the period from 2004, when most of the sampled countries started reporting the data, until 2018, when was the last time they reported it. In total, we end up with an unbalanced panel of 417 observations, covering 31 European countries. The panel is unbalanced because in some years some country data was missing. We choose this period as it produces the largest relevant dataset for Europe, which can be used for investigating the impact of e-commerce on economic growth. The countries included in the sample represent a heterogeneous group of economies, i.e. the sample includes both developed and developing countries and thus it provides a representative picture for the global behavior. We opt to use online purchases by individuals, as it offers detailed information for the activity of the users of e-commerce within the population and as such, it is a suitable approximation for the level of development of the e-commerce industry in the economy.

Table in Appendix gives the country summary statistics. The statistics reveal that the selected countries exhibit great disparities in the magnitude of the studied variables. Between the cross sections, Sweden has the highest average percentage of online purchases, followed by Finland, Iceland and Netherlands, while North Macedonia has the lowest average percentage. This can be assumed as an indicator that Macedonian e-commerce is at its early stages of development.

Average per-capita GDP is highest in Norway, followed by Netherlands and Denmark. North Macedonia is the poorest country in the sample. The summary statistics suggest that, overall, the percentage of online purchases, the Gross Capital Formation to GDP and the income per capita have grown constantly through the years, with more developed countries (in terms of GDP) exhibiting faster e-commerce volume growth.

4. EMPIRICAL ANALYSIS

4.1 Stationarity test

Prior to conducting an empirical panel regression estimation, all variables should be stationary. This is formally tested by examining the unit roots of the variables. Since the data we gathered is unbalanced, a convenient test is the Fischer-type Phillips-Perron test (Phillips and Perron, 1988). Under this test the null hypothesis states that all panels contain unit root, and the statistic follows an inverse Chi-squared distribution.

The unit root statistics for each of the variables is given in Table 1. We observe that the null hypothesis is rejected for every variable at the 1% level, thus suggesting that all of them are stationary and convenient for modeling.

Table 1: Panel Unit Root Test statistics

Variable	PP-Statistics
dlog(gdp_{ct})	152.63*
dlog(gcf_{ct})	266.49*
dlog(ec_{ct})	687.14*

*Notes: One lag were selected to adjust for autocorrelation. Individual intercepts were included in every test. *Indicates significance at 1% level.*
Source: Authors' compilation

4.2 Model estimation

Since the pre-test for unit-roots suggests that the data is suitable for evaluating the relationship between growth, investments and e-commerce volume we proceed with estimation of the model. In general, the relationship between the studied variables may be endogenous, i.e. e-commerce may drive the economic growth, but also the economic growth of the country may improve the level of e-commerce development. As a way to deal with this problem, we opt for a generalized method of moments estimation. This procedure yields consistent, asymptotically normal, and efficient estimates, even if there are endogenous regressors, thus allowing us to control for the potential endogeneity in the relationships of our variables of choice. Table 2 provides the estimates of our model.

Table 2: GMM estimates of relationship

Dependent variable: $dlog(gdp_{ct})$		
Variable	Coefficient	Standard Error
$dlog(ec_{ct})$	0.02*	0.00
$dlog(gcf_{ct})$	0.22*	0.02

*Notes: Lagged values of the independent variables were used as instruments. *Indicates significance at 1% level.*
Source: Authors' compilation

The results suggest that both investments and development of e-commerce have a significant and positive impact on economic growth. A positive change of one percentage point in the growth rate of gross capital formation is associated with an increase in the growth rate of GDP by 0.22 percentage points. Similarly, a change of one percentage points in the volume of e-commerce leads to an increase in the economic growth of 0.02 percentage points. The magnitude of the effect of volume of ecommerce is more than 10 times smaller than the gross effect investments. On the first sight, this may suggest that the impact of e-commerce is negligible. Nevertheless, we point out that given the fact that e-commerce trade is based on new technologies whose full potential is yet to be explored, the observed effect is already larger than one should initially expect. We believe that a more detailed approach which captures the extent of e-commerce development will elucidate the differences in the magnitude of the coefficient between countries whose usage of information and communication technologies is by far more pronounced. However, such study is out of the domain of the current paper and we leave it for future work.

5. DISCUSSION

As we observed from the literature review and this research, there is an abundance of empirical evidence which suggests that e-commerce and its development may have a positive impact on the economic growth of a country. This should be especially true in developed countries, which due to more favorable conditions had the opportunity to invest earlier in the development of this trade. Our sample included both developed and developing countries and, thus, we can conjecture that e-commerce development is also of immense importance in less developed economies.

To this end, here we comment on a few possible suggestions that, in our modest view, would be appropriate for how a developing country, should streamline their development strategies in order to maximize the benefits from e-commerce. Specifically, we believe that governments should:

Invest in ICT infrastructure;

This can be done with telecom liberalization, which will make the telecommunications market more competitive and, in turn, lead to lower prices and better quality services for consumers. As a result it would increase the overall quality of the infrastructure in terms of speed, reliability and of course usage. Regarding e-commerce this means that the greater part of the population will have the potential to become a participant in such transactions.

Opt in digitization of society;

The services provided by the government to the businesses and consumers need to be in electronic form and preferred. This will encourage users to participate in electronic transactions more frequently, depending on their needs. It can also contribute to increased confidence in established systems.

Invest in human capital;

Investments in human capital are needed to develop e-commerce. Specifically, it is necessary to invest in knowledge that can contribute in many ways. One aspect is the creation of a skilled workforce, which is important when creating any form of electronic infrastructure. Another aspect is the reduction of the digital illiteracy of the population, which is considered a barrier of e-commerce development. Such measures can greatly contribute to accelerated development.

Protect trade participants;

Protection involves the creation of mechanisms and legal frameworks that allow for increased security, privacy, protection of intellectual property rights and so on; for each of the participants. In fact, it is necessary to advance the relevant laws and regulations to create a good e-market. This is a key element, from the very existence of e-commerce to the present day.

Set e-commerce entrepreneurship as a national priority;

Promoting entrepreneurship in e-commerce should be a priority. This is supported by the fact that most of the volume of trade belongs to transactions between businesses. Some of the measures that can be mentioned to encourage entrepreneurship are tax exemptions for all those who want to create their own online business. Innovative entrepreneur approach, access to global markets followed by lower costs will for sure boost the national economy.

To summarize, it is required governments to adopt macroeconomic policies that will continuously provide a favorable economic environment for the sound development of electronic commerce. It is important to emphasize that we believe that our suggestions will exhibit distinct importance depending on the economy under question, given the fact that the level of development of e-commerce is also different.

6. CONCLUSION

Research on technological changes, their significance and impact, are constantly rising. The purpose of this research was to investigate the effect of a particular technological change, the introduction of e-commerce, and how its development affects economic growth. In addition, it attempts to determine the intensity of the impact of e-commerce development compared to the Gross Capital Formation, which is predicted to have an influence on growth. The need for this research stems from the accelerated advances in technology as well as the global increase in the volume of e-commerce. According to the results, which showed a strong relationship between the used variables, we can conclude that electronic commerce contributes to the growth and development of national economies. This finding is supported by empirical research that included macroeconomic aspects through Gross Domestic Product (GDP) and Gross Capital Formation (GCF), as well as an indicator of the development of e-commerce in selected countries through online purchases by individuals. The results indicate the importance of the role e-commerce has,

as measured, in the economic growth and development of a country. They are in line with existing literature on the chosen topic, in which we find the contribution not only to reaffirm the impact of e-commerce, but also to demonstrate its importance. We believe that this encourages further scientific research to be focused on finding ways to maximize its benefits.

It is important to note that this research may be perceived as being limited mainly because of short time series, as is the case with some other studies, but nevertheless it still produces relevant implications. Another limitation of our study is that we focus on the level of e-commerce development within a country, and an enterprise specific analysis is not taken into account here. This is a consequence of the lack of data on selected countries, which have a significant share in the volume of e-commerce. In this aspect, we believe that an analysis which incorporates micro level data is a fruitful subject for further expansion of this research. Finally, we point out that it would be much more appropriate to analyze the impact and dependencies if there is a generally accepted e-commerce index, which is not the case yet. In this aspect, our measure should only represent a part of this index.

We conclude by re-stating our initial hypothesis that e-commerce has an impact on economies and its scope and influence are growing. Therefore, it is necessary to think in the direction of making the best use of its potential. In this sense, it is desirable for countries to adopt policies that will contribute to a more stable and greater development of e-commerce and thus to the national economy. This is especially true for developing countries where the e-commerce technology is still in its infancy, such as the Republic of North Macedonia. In this country, the low level of e-commerce is a result of several factors such as low level of financial literacy, distrust in the banking system, aversion to innovation in traditional ways of trading, high degree of informal economy, etc. We argue that the most appropriate measures to encourage the implementation of e-commerce in North Macedonia is to follow our policy recommendations, described in the Discussion section and improve the digitalisation of society, the protection of trade participants and the establishment of entrepreneurship in e-commerce as a national priority.

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APPENDIX

Table: Summary Statistics

Country	Statistic	gdp	gcf	ec
Austria	Obs.	15,00	15,00	15,00
	Mean	43791,49	23,94	48,00
	Std. Dev.	1484,78	0,67	12,72
Belgium	Obs.	14,00	14,00	14,00
	Mean	41315,61	23,91	40,00
	Std. Dev.	1166,85	1,04	13,72
Bulgaria	Obs.	13,00	13,00	13,00
	Mean	16152,18	24,81	15,23
	Std. Dev.	1660,96	5,92	8,53
Croatia	Obs.	12,00	12,00	12,00
	Mean	21483,63	22,59	25,58
	Std. Dev.	1142,56	3,94	11,88
Cyprus	Obs.	14,00	14,00	14,00
	Mean	32947,33	20,05	20,64

	Std. Dev.	1933,01	4,98	9,55
Czechia	Obs.	15,00	15,00	15,00
	Mean	28972,87	27,66	34,60
	Std. Dev.	2365,60	2,18	18,02
Denmark	Obs.	15,00	15,00	15,00
	Mean	45403,30	21,35	73,40
	Std. Dev.	1477,95	2,14	11,80
Estonia	Obs.	13,00	13,00	13,00
	Mean	26446,95	28,11	35,00
	Std. Dev.	2419,47	5,93	21,15
Finland	Obs.	15,00	15,00	15,00
	Mean	40358,53	23,42	63,67
	Std. Dev.	1337,12	1,33	13,32
France	Obs.	13,00	13,00	13,00
	Mean	37659,64	22,91	56,15
	Std. Dev.	852,82	0,81	13,55
Germany	Obs.	15,00	15,00	15,00
	Mean	41641,38	20,39	62,27
	Std. Dev.	2784,35	0,89	12,78
Greece	Obs.	13,00	13,00	13,00
	Mean	27812,80	18,07	20,15
	Std. Dev.	3163,18	6,23	13,75
Hungary	Obs.	15,00	15,00	15,00
	Mean	23920,01	23,10	26,67
	Std. Dev.	1937,06	2,55	12,71
Iceland	Obs.	6,00	6,00	6,00
	Mean	43905,96	18,17	63,67
	Std. Dev.	3436,53	3,33	11,52
Ireland	Obs.	14,00	14,00	14,00
	Mean	51914,83	25,15	50,07
	Std. Dev.	8940,64	6,42	11,84
Italy	Obs.	14,00	14,00	14,00
	Mean	36148,99	19,29	19,64
	Std. Dev.	1559,12	2,02	9,26
Latvia	Obs.	15,00	15,00	15,00
	Mean	21068,55	27,56	28,27
	Std. Dev.	2830,92	7,13	15,35
Lithuania	Obs.	15,00	15,00	15,00
	Mean	23832,42	21,60	22,87
	Std. Dev.	4094,95	4,69	16,02
Luxembou rg	Obs.	15,00	15,00	15,00
	Mean	92565,99	19,06	60,47
	Std. Dev.	3253,99	1,24	17,52
Malta	Obs.	14,00	14,00	14,00

	Mean	30759,38	20,80	38,93
	Std. Dev.	4079,71	2,19	12,37
Netherlands	Obs.	15,00	15,00	15,00
	Mean	46423,07	20,52	63,60
	Std. Dev.	1723,04	1,46	14,70
North Macedonia	Obs.	13,00	13,00	13,00
	Mean	11812,51	28,24	8,79
	Std. Dev.	1102,11	3,68	8,85
Norway	Obs.	15,00	15,00	15,00
	Mean	63478,52	26,06	73,87
	Std. Dev.	1165,26	1,99	8,97
Poland	Obs.	15,00	15,00	15,00
	Mean	22419,39	21,13	34,60
	Std. Dev.	3645,09	1,77	14,86
Portugal	Obs.	15,00	15,00	15,00
	Mean	26964,57	19,34	22,93
	Std. Dev.	898,13	3,48	11,81
Romania	Obs.	13,00	13,00	13,00
	Mean	19450,41	26,74	11,92
	Std. Dev.	2561,37	2,91	7,72
Slovakia	Obs.	15,00	15,00	15,00
	Mean	25680,73	24,55	40,53
	Std. Dev.	3540,79	3,09	19,40
Slovenia	Obs.	13,00	13,00	13,00
	Mean	29489,25	23,09	35,77
	Std. Dev.	1493,20	5,36	11,99
Spain	Obs.	15,00	15,00	15,00
	Mean	32673,16	22,96	32,60
	Std. Dev.	1283,54	5,01	14,65
Sweden	Obs.	15,00	15,00	15,00
	Mean	44112,52	23,86	70,40
	Std. Dev.	2226,90	1,48	9,97
United Kingdom	Obs.	14,00	14,00	14,00
	Mean	38081,29	17,00	63,64
	Std. Dev.	1181,10	1,05	15,72

HIGHER EDUCATION AND ECONOMIC GROWTH IN NORTH MACEDONIA: EVIDENCE FROM CAUSALITY TESTING AND COVID-19 CHALLENGES

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ABSTRACT
The link between education and economic growth has been the subject of public debate, and it has been widespread interest among economists in solving key economic problems. As a determinant of human capital, which is one of the factors of production, education has its own contribution in the process of globalization where economies are transformed and based on knowledge. Particularly higher education has a high economic value because it causes the formation of human capital and it is often seen as vital for a continued growth performance, prosperity, and competitiveness in national and global economies. Higher education contributes to the economic growth by producing higher-level skills and competencies needed for a shift towards knowledge-based economy. For these reasons, countries all over the world especially the developing countries such as North Macedonia, are giving higher education special attention to facilitate the economic growth. In this study, the co-integration between higher education and economic growth in North Macedonia is analyzed using dynamic methods. Toda Yamamoto's approach for Granger's causality (TY) developed by Toda and Yamamoto (1995) is used to analyze the causality between economic growth and higher education. For this aim, a bivariate VAR model is constructed. This study provides an evidence for the causality between higher education and economic growth in North Macedonia. Moreover, a key role of higher education institutions is to drive innovation, with the aim of finding solutions to global challenges. Today, in response to the COVID-19 pandemic, there is a danger that COVID-19 will destabilize this educational level, with serious consequences. Therefore, the challenges that higher education is faced are emphasized in order to help education institutions and policy-makers to reflect on them and be prepared to address them, while re-emphasizing the role of higher education in supporting to conform the post-COVID-19 pandemic.

Keywords: economic growth, COVID-19, higher education, human capital, North Macedonia

JEL classification: I20, I23, O40

1. INTRODUCTION

The link between education and economic growth has been a subject of public debate, and there has been widespread interest among economists in solving key economic problems. As a determinant of human capital, education contributes to solving key economic problems, especially in the process of globalization where economies are transformed and based on knowledge. The role of education should be seen in a broader macroeconomic context to ensure that education contributes for the growth of a country's economy. Education is broadly accepted as a strong human capital determinant for poverty reduction, encouraging people towards earning and investment, and creating a competitive environment to enhance economic growth.

The development and progress of a country in the global economy depends on the creation of a highly skilled people with the ability to access, adapt and create new knowledge and technologies.

The impact of education on economic growth has been an important issue for analysts since the late twentieth century, when specialized literature discussed the role of human capital. Human capital theory has become widely debated among economists who have turned their attention from the amount of natural resources to the extent of their efficient use. There is no doubt that investing in human capital is considered a key condition for successful economic policy. Individuals cannot be sufficiently qualified in the workplace without accumulating appropriate education. Education is widely accepted as a leading tool for promoting economic growth at all levels.

In the attempt to find appropriate measures for the concept of human capital, education stands out as one of the most important aspects of human capital. All the arguments about the importance of education for the development of a country are close to the fact that education plays a key role in preparing individuals to enter the labor market by providing them with appropriate knowledge and skills in order to practice lifelong learning. To cope with today's frequent technological changes, people need technical skills and knowledge that need to be acquired, above all, through education. At the European Union level, education and knowledge are the top priorities in the EU 2020 Strategy. Therefore, the contribution of education as human capital in the process of economic growth is not controversial, but it is important to know the level of education that is most relevant in terms of contribution and statistical significance (Qadri and Waheed, 2017).

In the new era of the knowledge society, where education in general is recognized as an instrument of great importance, particularly higher education is one of the most important determinants of the economic growth. Higher education has been considered as a key factor for the progress and development of any country, and also as an initiator of change and development of the nations. The contribution of higher education to economic growth is presumed to occur through a number of distinct interacting functions. *First*, it is believed that higher education contributes to economic growth through the production of knowledge and that this largely takes place within the major universities through faculty members' and their advanced students' research and creative activities. *Second*, it is generally acknowledged that colleges and universities contribute to national growth through the diffusion of knowledge, which may result from the external service activities of their faculty, staff, and students. *Finally*, it is universally accepted that postsecondary institutions contribute to the transmission of knowledge through extensive and varied teaching activities (Becker and Lewis, 1993).

The roles of higher education in sustainable economic and social development increase year by year, and this will continue over the next decades. Higher education can be seen as a focal point of knowledge and it makes a great contribution to the economic growth and development through fostering innovation and increasing higher skills. On one hand, higher education serves the purpose of signaling student abilities for higher-order skills as opposed to other purposes like increasing human capital or employability. On the other hand, undergraduate students may signal their college degree to increase their status in the job market. More educated workers may receive higher pay wages because higher education provides them with a credential, rather than acquired skills (Chan, 2016).

There is a rapidly growing demand for higher education because of the substantial expansion in primary and secondary education. Many factors drive rapid growth in higher education. The two main proximate determinates are growth in secondary education and an increased transition rate from secondary to tertiary education. Behind these trends are many cultural and economic factors. Growth in the knowledge-based economy and the perception that the most desired

employment requires a university degree, also drives demand for higher education (World Bank, 2017).

Although there is a solid theoretical background for the economic growth and its relationship with education, the empirical evidence of this relationship is deficient. We have studied the impact of human capital (measured by educational qualifications) on economic growth in North Macedonia using regression and correlation analysis and found that economic growth can be predicted by higher education. Moreover, in North Macedonia, there is a positive link between the level of education and access to work, the employment rate increases with increasing levels of knowledge. Also, the lowest rates of unemployment were registered among those with high education. Furthermore, the largest differences in average monthly earnings are registered among employees with higher education and those with low level. (Cvetanoska and Trpeski, 2019).

Therefore, in order to evaluate the importance of tertiary education, in this study we analyze the causality between higher education (as the highest level of acquired knowledge) and economic growth in North Macedonia. We will test the existence of a direct causality relationship between higher education and economic growth and the direction of this causality, if such a relationship exists.

After the introduction section, the second part of the paper presents a review of relevant literature, which examines the aspects of the research that is the subject of this paper. The third part of the paper covers the methodological approach applied to the paper's research and data sources followed by the empirical analysis and the results. In response to COVID-19 pandemic, the fourth part presents the challenges that higher education is faced. Last section covers the conclusion of the study and in the end the references are presented.

2. LITERATURE REVIEW

Numerous articles discuss the importance and logical connection between higher education and a country's economic growth, but just few of these can justify the direction and the scale of causation. If we look at these studies, the literature consists of examining the co-integration, causality, and regression which seek to understand long-term and causal relationships between education and economic growth.

Lucas (1988) developed an endogenous growth model that considered the human capital as one of the main determinants of the economic growth and in this model, education was considered as a proxy for the human capital.

Mankiw et al. (1992) showed that the human capital has a significant role in the economic growth. They measured human capital through education as a new variable in the model, showing the importance of the investment in education as a determinant of the economic growth.

Agiomirgianakis et al., (2001) examined the relationship between human capital (according to rates in primary, secondary and higher education) and economic growth in Greece and found that causality ranges from educational variables to economic growth, with the exception of higher education where exists reverse causality.

Jaoul (2004) analyzed causality between higher education and economic growth in France and Germany in the period before the Second World War. The results showed that higher education has an influence on gross domestic product for the case of France. For Germany, education did not appear as a cause of growth.

Chaudhary at al., (2009), using the approaches of Johansen and Toda & Yamamoto within VAR, showed that there is a unidirectional causal link from economic growth to higher education and that there is no causality from higher education to economic growth.

Huang et al. (2009) found that there is a long-run relationship between enrollment in higher education and economic growth. Also, Katircioglu (2009) found a long-run relationship

between higher education and economic growth and a direct causality relationship from higher education to economic growth in North Cyprus.

The results of a study by Erdem and Tugcu (2010) showed that higher education is cointegrated with economic growth and higher education or economic growth have significant causal effects in both directions.

Examining the causality between higher education and economic growth in Romania, Danacica et al., (2010) proved that there is unidirectional causality between economic growth and higher education in Romania, from economic growth to higher education.

In another work, Danacica (2011) found a unidirectional causality between school education measured by enrolment ratio in secondary and higher education and economic growth in Romania, showing that the education has a positive effect on the economic growth.

Barro (2013), who found that education significantly influences economic growth using a cross section of 100 countries, showed that there is a direct causality relationship running from education measured by schooling rates to the economic growth and education has a positive effect on economic growth.

Obradovic and Lojanica (2016) investigated the long and short run relationship between higher education and economic growth for Sweden, for the period from 1971 to 2013, by using ARDL approach. They applied Toda-Yamamoto procedures of Granger non-causality test in order to detect the direction of causality in the relationship between economic growth and higher education and they found that unidirectional causality between higher education and real GDP per capita, exists.

The empirical analysis of Pegkas (2014) reveals that there is a long-run relationship between educational levels and gross domestic product. The overall results showed that secondary and higher education have a statistically significant impact on growth, while primary hadn't contributed to economic growth. He also found an evidence of unidirectional long-run causality running from primary education to growth, bidirectional long-run causality between secondary and growth, long-run and short-run causality running from higher education to economic growth.

3. METHODOLOGY AND EMPIRICAL ANALYSIS

The study on the relationship between variables analyzes the causality between higher education and economic growth in North Macedonia, using dynamic methods. This analysis uses annual time series for gross domestic product and higher education for the period 1990-2018 (there is no data for the academic year 2019/2020). Higher education is expressed through the number of enrolled students, measured as an absolute number. In addition, in order to exclude the impact of population migration on education, due to the demographic changes that took place in North Macedonia in the analyzed period, the number of enrolled students is divided by the total population. For the analysis of economic growth in North Macedonia, the gross domestic product per capita is used as a variable. Databases of the State Statistical Office and the National Bank of North Macedonia are used as data sources.

In this study, Toda Yamamoto's approach (TY) is used for testing Granger's causality developed by Toda and Yamamoto (1995) with the aim to test the causality between economic growth and higher education. This approach is an extended Granger causality test and uses a modified Wald test to limit the parameters of the VAR model. Toda and Yamamoto (1995) developed and used this test to overcome the limitations of the basic Granger causality test. Namely, in most analyzes, it is not known *a priori* whether the variables are integrated, cointegrated or stationary. Consequently, pretests for unit root and cointegration in economic time series are usually required before estimating the VAR model in which statistical inferences are implemented (Toda and Yamamoto, 1995, p.226).

However, in many studies, the researcher's interest is not in the existence of unit roots or cointegrated relations, but in the testing of economic hypotheses expressed as restrictions on the coefficients of the model. To overcome these limitations, TY method is applicable whether the VAR can be stationary, integrated, or co-integrated by estimating the levels of series used and by applying the Wald test. Also, when a shorter time series are considered in analysis (which is often the case when limited data is available), this method is considered more useful in practice.

The causality between two variables can be described as unidirectional, bidirectional or no causality. To test the TY causality between the two variables, the following bivariate VAR model was constructed:

$$GDP_t = \sum_{i=1}^{h+d} \alpha_i HE_{t-i} + \sum_{i=1}^{l+d} \beta_i GDP_{t-i} + \varepsilon_{1t} \quad (1)$$
$$HE_t = \sum_{i=1}^{h+d} \gamma_i HE_{t-i} + \sum_{i=1}^{l+d} \delta_i GDP_{t-i} + \varepsilon_{2t} \quad (2)$$

Where: d is the maximum order of integration, h and l are the optimal lag length and $\varepsilon_{1t}, \varepsilon_{2t}$ are the error terms.

The subject of this analysis is to determine which of the following relations applies to the variables mentioned:

- higher education cause the gross domestic product per capita;
- gross domestic product per capita cause the higher education;
- there is bilateral causality between higher education and gross domestic product per capita;
- between variables exists no causality.

For this purpose, the following hypotheses are specified:

For equation (1):

H0: HE does not Granger cause GDP, or $\sum_{i=1}^{l+d} \delta_i = 0$

H1: HE does Granger cause GDP, or $\sum_{i=1}^{l+d} \delta_i \neq 0$

For equation (2):

H0: GDP does not Granger cause HE, or $\sum_{i=1}^{h+d} \alpha_i = 0$

H1: GDP does Granger cause HE, or $\sum_{i=1}^{h+d} \alpha_i \neq 0$

In the first step, Augmented Dickey-Fuller test (ADF) is used to test the existence of unit roots and to determine the order of integration of the variables. ADF test showed that both series are unstable at the level, so after the first differentiation, the series were stationary. At the first difference, the probabilities of the variables are less than 5% and it shows that all the variables become stationary by integrating Order I (1). Therefore, the maximum order of integration (d) is equal to 1 (Table 1).

Table 1. Results from ADF Unit - Root test

Series	t - statistics	Prob. (1st difference)	Order of integration
D (GDP)	-4,615078	0,0011	I (1)
D (HE)	-4,695338	0,0009	I (1)

(Source: Authors' calculations (based on Eviews))

The next step (Table 2) was to select the optimal lag length (h), based on the results of the synthesis of several methods, such as Akaike Information Criteria (AIC), Schwartz Bayesian Criteria (SC), Hannan-Quinn information criteria (HQ), Final prediction error (FPE) and Likelihood ratio test (LR). As it can be noticed from Table 2, the tests suggest that the optimal lag length is 1. Therefore, 2 lags (d + h) are used to evaluate the VAR model, i.e. to test the causality with TY approach.

Table 2. Criteria for determining optimal lag through the VAR Model

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-107,1937	/	21,32387	8,735496	8,833006	8,762541
1	-50,79650	99,25908*	0,323127*	4,543720*	4,836250*	4,624855*
2	-49,33267	2,342125	0,399233	4,746614	5,234164	4,881839
3	-45,10937	6,081556	0,400006	4,728749	5,411320	4,918065
4	-43,44209	2,134108	0,500152	4,915368	5,792958	5,158774

(Source: Authors' calculations (based on Eviews))

By performing the LM test for autocorrelation testing, from the following table it can be seen that with 2 lags the zero hypothesis (there is no serial correlation between the residuals in the model) cannot be rejected, which is a requirement for conducting the causality test.

Table 3. LM test for series correlation

Lags	LM-Stat	Prob
1	9.923.044	0.0417
2	6.119.534	0.1904

(Source: Authors' calculations (based on Eviews))

Figure 1 shows the result of stability test for the basic VAR model (2). All values lie in a circle and this means that the estimated model is dynamically stable.

Figure 1. VAR stability test
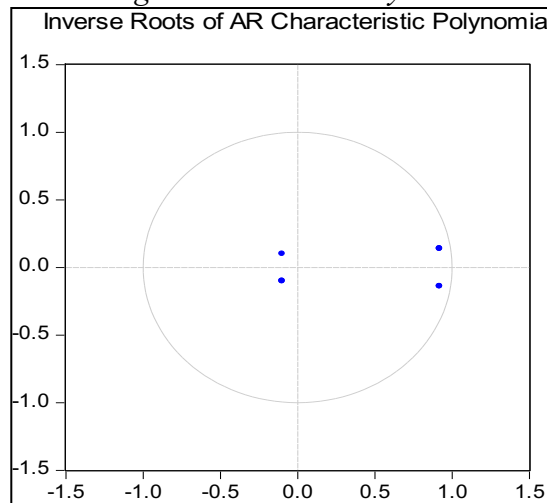
Source: Authors' calculations (based on Eviews)

The following table shows the results of TY approach for Granger causality test. The results presented in Table 4 show that at a significance level of 5%, with a p-value of 0.0143 (which is less than the significance level $\alpha = 0.05$) we have enough evidence to reject the null hypothesis and accept an alternative hypothesis (for equation 1). Or the results indicate that we can reject the null hypothesis that higher education does not cause gross domestic product but cannot reject the null hypothesis that gross domestic product does not cause higher education.

Table 4. Granger causality test results (Toda – Yamamoto approach)

Null hypothesis	Chi-sq	df	Probability
HE does not Granger cause GDP	8,49667*	2	0,0143
GDP does not Granger HE	2,763929	2	0,2511

(Source: Authors' calculations (based on Eviews))

Therefore, we can conclude that there is unidirectional causality between higher education and gross domestic product which runs from higher education to gross domestic product. According to the causality test, we can claim that higher education causes gross domestic product, i.e. economic growth in North Macedonia with a time delay of 2 years.

4. COVID-19 CHALLENGES AND RECOMMENDATIONS TO HIGHER EDUCATION

As of March 2020, universities and other tertiary education institutions are closed in North Macedonia and other countries, enrolled students have had their studies physically ended (it has been stopped face-to-face teaching) or significantly disordered due to COVID-19. Students, academic staff, and administrative officials deal with the implications of this pandemia for their learning, teaching, research, innovation and education outcomes, and financial stability, too. The road from here to resumption of operations will be long and difficult, and some of the changes that this crisis will bring to tertiary education systems around the world will not go away. It is expected that most systems will be sorely challenged to quickly return to the state they were in before the pandemic (World Bank, 2020).

Universities, as well as primary and secondary schools have made a shift from face-to-face toward online courses and seminars. Even though this was done in a very short period of time, there are divided opinions about the effects on teaching and learning. It is undoubtable that even universities which had online courses before the pandemia are struggling to adapt to the new environment. In other words, the crisis has provided an opportunity to all higher education institutions to quickly improve and maximize IT operations. However, the majority of them might not have the capacity to fully deliver whole study programmes online.

The change to online learning has been challenging for most higher education institutions as teaching has been adopting innovative methods to interact with the students. In this context it can be analyzed the challenges of online teaching and its limitations.

First of all, it is students' possibilities to access to internet connectivity. This especially for the students from rural areas, but also for urban areas in a matter of having good internet connectivity. Online courses and seminars are forced to focus more on the theoretical teaching of the subjects without actual use of the laboratory, or other technical tools. However, this challenge is reduced with the use of many online applications such as Google Hangout Meeting, Zoom, Easy Class, and many others.

Secondly, the experiences of COVID-19 disruption to tertiary education globally exposed other significant short-term challenges for higher education (World Bank, 2020):
- diminished resources for institutions;
- demand for improved infrastructure to support continued distance and blended learning models;
- maintaining instructional operations, including coursework, exams, and awarding of degrees – modification of assessment modalities;
- maintaining or closing research operations, including on facilities, field work, conferences, and external research collaborations.

On the side of long-term challenges, universities are confronting with reduced public and private funding for higher education (from household, firms and other third-party funding), permanent closures of programs and institutions - resulting in permanent loss of skills and

human capital in academic and administrative positions, permanent movement of more programs to online/remote platforms, reduced internal mobility - leading to increased local demand for higher education, socio-emotional impacts on students (and academic staff) of remote teaching and learning (World Bank, 2020).

The impacts of COVID-19 on higher education are documented in few reports, but it is unknown which of them will leave their mark in the medium or long term. Lack of background and therefore lessons from similar crises in the past makes it difficult to anticipate what may happen in the future. All countries are faced with the same problem which is related to the reluctance to cope with distance learning, as many students are not experienced as online listeners and learners. To be able to meet this challenge of distance learning, it is necessary for the countries to make essential changes. First, it is necessary to use the technological resources at their higher level, and mutual cooperation should be foster, too. Providing regular guidance and support to students and teaching staff on short term is important to keep stability in the process of learning and teaching. Most faculty members around the world are active online, but there are many of them who have not taught online before the COVID-19 crisis. As there is a lot of material online, and technical support is available, academic staff will need training for digital and online teaching skills. It is crucial for the future that academics, university administrators, policy creators, public authorities and community partners work together to find solutions and opportunities to overcome the challenges that higher education is faced.

5. CONCLUSION

Education is important for the priorities of Macedonian economic development, especially in terms of more productive citizens and the needs of the labor market. Investment in education remains one of the key challenges in the modern economy facing developing countries, such as North Macedonia. Education is a central part of most countries' development strategies. Accordingly, enrollment rates in schools have increased dramatically in most developing countries. But, despite significant progress in primary education and enrollment in high school, there are still several challenges that have to be overcome. Potentially, any type of education should improve employment skills and opportunities. Today's labor market requires highly skilled people at all levels to deal with rapidly changing environment. People who are neither educated nor employed are often excluded from the labor market and are at greater risk of not finding work, which can lead to poverty or social exclusion.

In the structure of the labor force in the EU and in North Macedonia, people with secondary education have the largest share. There is a significant difference between the percentage of employees who have completed primary and secondary education, on the one hand, and employees who have completed university education on the other. In addition, the highest percentage of employment is among those with higher education, which is over 70% within the age group of 20 to 64 years.

As it was found that economic growth can be predicted by higher education (Cvetanoska and Trpeski, 2019), this study has further provided an evidence of a unidirectional causality from higher education to economic growth in North Macedonia. Considering the test results for causality, higher education causes the economic growth in North Macedonia with a time delay of two years. This result is determined for the period from 1990 to 2018.

The results may improve the decisions of policymakers about education and its contribution to economic growth and some policy implications for the findings can be recommended. The government of North Macedonia should increase investments on education as there is simultaneous cause and effect between higher education and economic growth. Policy makers need to focus on creating appropriate policies that should improve education by increasing the quality of skills and knowledge in the workforce, which will meet the needs of employers on the labor market. Higher education is one of the key predictors for greater economic growth.

Or as Delbanco (2012) has found that completing a bachelor's degree is "good for the economic health of the nation and that going to college is good for the economic competitiveness of society". Such implications are particularly important for programs and strategies aimed at improving knowledge and education to achieve and meet priorities within action plans.

Responding to the COVID-19 crisis, many countries and tertiary education institutions have transformed their operations online relatively quickly. The experiences of COVID -19 disruption to higher education globally disclosed significant short-term and long-term challenges facing higher education institutions. In response to the COVID -19 pandemic, there is a danger that COVID -19 may destabilize this educational level, with serious consequences. Therefore, governments and higher education institutions should create coordination mechanisms in the face of this and future crises, whatever their nature may be or not like COVID -19. It is also essential to involve students, academic, teaching, and non-teaching staff in designing the responses that such crises demand. Moreover, governments should include higher education in the stimulus plans for economic and social recovery as there are several channels through which universities may affect growth and because universities are producers of human capital.

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POVERTY AND EMPLOYMENT STATUS: EMPIRICAL EVIDENCE FROM NORTH MACEDONIA

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ABSTRACT
Poverty and social exclusion are often associated with unemployment, but being employed is not always sufficient to provide decent living conditions for workers and their families. The 'low-wage' workers similarly as unemployed are often associated with an image of men and women struggling to support their families and living at risk of poverty and social exclusion. Dealing with the social stratification engendered from the employment status of workers in the post-transition countries represents a challenging task for the academics and policymakers. The aim of the paper is to assess the determinants of poverty in North Macedonia from the point of view of employment status, particularly the differences between low-paid and unemployed workers. We assess the factors affecting the probability of at-risk-of poverty status by estimating a logit model on cross-section data separately for employed and unemployed persons in 2015. The analysis draws from an examination of micro data from the Survey on Income and Living Conditions (SILC) whose main scope is to enable the compilation of statistics on income distribution, as well as indicators of monetary poverty. Besides other personal and household characteristics, being low-paid appears as the most important factor for at-risk-of poverty status among employed persons, while the low work intensity is the most responsible factor for at-risk-of poverty status among unemployed persons. In addition, our analysis reveals that the social transfers do not satisfactorily cover these categories, which assumes that we need a much broader arsenal of respective policy measures aiming to reduce poverty among the vulnerable labour market segments. The proposed policy recommendations cover the following areas: education and training, active labour market policies, unionisation and collective bargaining, wage subsidies and taxation and statutory minimum wage.

Keywords: Employment, Unemployment, In-work poverty.

JEL classification: I32

1. INTRODUCTION

Poverty and social exclusion are often associated with unemployment, but being employed is not always sufficient to provide decent living conditions for workers and their families. The 'low-wage' workers similarly as unemployed are often associated with an image of men and women struggling to support their families and living at risk of poverty and social exclusion. The Republic of North Macedonia is positioned among European countries with lowest level of workers' compensation and consequently on average scores much worse regarding the indicators of poverty and social exclusion *vis-à-vis* more developed EU countries. In these

circumstances, it is a challenging task to reveal the potential poverty implications of unemployment vis-à-vis low-paid employment, which in the case of North Macedonia is even more appealing due to the fact that wages on average are already low by international standards. Apart from creating hardship for workers and their families, unemployment as well as low-paid work impose a financial burden for countries' welfare systems. The costs for improving the living conditions of vulnerable segments encompass unemployment benefits, costs of activation programmes, social assistance and other cash transfers. In addition, the administration of all these programs requires a complex system of social assistance and it is associated with sizeable government spending. For instance, the current social assistance system in North Macedonia is fragmented consisting of many types of programmes rather than having a single comprehensive program, while the total spending on social assistance is about one percent of GDP.

Although most of the former socialist countries have substantially reduced the initially high unemployment, during the post-transitional development they still struggle in attaining satisfactory wage levels. Since wages represent the most prominent determinant of the households' wellbeing, the relatively stagnant real wages compared to more developed European countries have been considered as an important factor for high and sustainable rates of poverty and social exclusion in these countries. Therefore, the sub-optimal labour market outcomes in post-transition are generally result of the initially high unemployment followed by sharp decline of real wages which, remained stagnant despite subsequent unemployment reduction. In other words, the post-transition can be distinguished as a specific development period where transitional recession has had long lasting economic and social effects even after its formal termination

The aggregate compensation received by employees from their employers represents the most significant part of total household income. Personal earnings from work are important category in the economy since higher earnings mean higher consumption as well. If total consumption grows, this will boost sales throughout the industries, increasing productivity which, in turn is conducive to a further growth in earnings. According to the Keynesian multiplier assumption, income increase will be followed again by growth in consumption, giving rise to a positive feedback loop. Having in mind the importance of the wage share in total household income, we can assume that the wage level to great extent determines the level of living standard, poverty and social exclusion in the society.

In this context, the aim of this paper is to assess the determinants of poverty in North Macedonia from the point of view of employment status, particularly the differences between low-paid and unemployed workers. Despite the existence of a large body of works on wage determination, income inequality, various aspects of employment structure and labour market segmentation, no studies have so far specifically addressed the issue of poverty implications of the employment status in North Macedonia. Hence, the paper is structured as follows. In section 2, we outline the main context of research followed by presentation of data and sample used for this analysis in Section 3. Furthermore, in section 4 are presented the results from the empirical analyses. Finally, section 5 concludes and summarizes the main policy recommendations.

2. THE CONTEXT OF RESEARCH

One of the most important development goals of economic policy is the goal of full, productive and sustainable employment, *i.e.* employment for all those who are able to work, wish to be employed and actively looking for a job. This commitment becomes even more pronounced in the case of former transition economies where economic shocks have contracted the level of employment and redistributed wealth. Having in mind the social implications of persistent open unemployment manifested in rising poverty and social exclusion, all transition countries have placed unemployment reduction since the outset of transition among their most important

macroeconomic goals. However, the overall wellbeing of the population is determined not only by the level of employment, but also by the general level of compensations from work. Besides lacking a decent work opportunities, the relatively low real wages are considered as a source of poverty and social exclusion often referred as 'in-work poverty'[1]. Therefore, a comprehensive labour market analysis should take into consideration not only the official labour market indicators such as the rates of activity, employment and unemployment, but the dynamics of real wages as well.

Poverty is referred as a condition of "pronounced deprivation in well-being" where people's basic needs for food, clothing and shelter are not being met (Haughton and Khandker, 2009). We can generally distinguish two types of poverty: absolute and relative. Absolute poverty is often related to destitution and occurs when people cannot obtain adequate resources in terms of calories or nutrition to support a minimum level of physical health. The term 'absolute poverty' when used in this fashion, is usually synonymous with 'extreme poverty'. On the other hand, relative poverty occurs when people do not enjoy a certain minimum level of living standard as compared to the rest of the population of that country. Therefore, the threshold at which relative poverty is defined varies from one country to another. Usually, relative poverty is measured as the percentage of the population with income less than some fixed proportion of median income.

The unemployment is negatively associated with households' disposable income and their spending ability, which reduces the domestic demand and hamper the economic growth. In addition, the unemployment induces social impacts resulting in increased income inequality and poverty. However, the empirical evidence from post-transition countries shows that employment does not necessarily provide protection from poverty (Bernabè and Kolev, 2005). In addition, these changes have exacerbated the segmentation of transitional labour markets, creating several distinct segments characterised by very different pay, employment and status conditions, thus reinforcing social divisions. Particularly, the sectoral restructuring has caused a sharp segmentation between highly paid finance and other intermediary sectors and less secure and low-paid employment in lower status sectors. As a consequence of the labour market segmentation we have witnessed an erosion of employment security and the emergence of in-work poverty.

According to the theory of labour market segmentation, the labour market segments to some extent can operate independently because jobs and workers in each segment match according to particular conditions on the demand and supply side (Cain, 1976). On the supply side, the labour market segmentation occurs as a result of the differences among the workers such as: age, gender, level of education, skills, professional preferences etc. On the demand side, the segmentation refers to the characteristics of the jobs such as: stability, wage level, required skills and education etc. Furthermore, the labour market segmentation can be differentiated according to various attributes of the labour market. According to the dual labour market theory, the labour market segments are differentiated by stability characteristics. In this context, the primary sector is characterised by higher level of wages, health benefit, and pension as well as higher level of job security. On the other side, the secondary sector is characterised by low wages, lower level of job security whereas jobs require low skilled workers and relatively little training. Moreover, primary jobs are rationed which means that not all workers who are qualified for primary sector jobs and desire one can obtain one (Reich et al., 1973).

The existence of labour market segmentation in transition countries has already been a subject of empirical assessment. For example, Pailhé (2003) has found that allocation of labour in the Central European labour markets during the first years of transition has differed from one segment to another. According to this author, labour market segmentation results from the

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[1] The terms 'in-work poverty' and 'working poor' are used as synonyms.

growth of market uncertainty, a combination of new formal institutions and presence of old informal institutions. In addition, by using a flow analysis, Lehmann and Pignatti (2007) identified existence of a segmented labour market in Ukraine. They point out that most workers try to enter formal employment as most attractive and seem to use unemployment and informal employment as waiting stages for entry into formal employment. The peculiarities of transitional context contributed to specific features of poverty, including the existence of poverty even among households with employment (Brück et al., 2007).

This problem is not only a personal problem for the people who experience it, but it has become a problem for the economy as a whole since the labour market segmentation had adverse effects on the social stratification. Hence, dealing with the social stratification engendered from the employment status of workers in the post-transition countries represents a challenging task for the academics and policymakers. Most of the policy measures undertaken by the governments in these countries range from reduction of extensive payroll taxes, improvement of the social dialog, establishing balance between adjustment flexibility of employment and income security for workers as well as increased emphasis on the active labour market programmes (Cazes and Nesporova, 2003). However, not all post-transition countries have successfully coped with the problem of labour market segmentation. In this context, Western Balkan countries including North Macedonia also called 'lagging reformers' are still facing significant reform challenges. Although the unemployment rate in North Macedonia has marked continuous decrease during the last decade, it continues to be one of the most pressing social problems. In this context, the advocates for greater labour market flexibility consider the flexible wage setting as an opportunity for fighting the persistent unemployment but neglect the worsened conditions of those individuals located at the bottom end of wage distribution. In these circumstances, low-paid, low-skilled and less protected labour market segments generally bear most of the burden in terms of both lower wages and higher incidence of unemployment (World Bank, 2015). As a consequence, the Macedonian labour market is affected by strong segmentation, meaning that certain social groups such as youths, less skilled workers, and women, face a higher risk of unemployment and inactivity than the rest of the labour force. The high Macedonian unemployment rate has enormous social implications such as rising poverty, income inequality and social exclusion of deprived social segments (Nikoloski, 2011).

3. DATA AND SAMPLE

This analysis draws from an examination of micro data from the Survey on Income and Living Conditions (SILC) whose main scope is to enable the compilation of statistics on income distribution, as well as indicators of monetary poverty. This survey is conducted under the regulations of the European Parliament and the Council[2] that include definitions, rules for the frame of the survey, sample, rules for monitoring households, lists of main and secondary variables, variables in terms of housing conditions, social and financial exclusion, material deprivation and other rules applied by all European countries (Eurostat, 2010). The advantage of SILC as a household survey consists of its extensive coverage as it captures earnings in both the formal and informal sectors and it can account for the combined pay of individuals who have several jobs. However, since the data are collected directly from individuals in a household they have higher measurement error than survey based on company records (Lee and Sobeck, 2012). Namely, due to the self-reporting character of SILC, the survey data may be affected by serious underreporting.

The EU-SILC project was launched in 2003 on the basis of a 'gentlemen's agreement' in six Member States (Belgium, Denmark, Greece, Ireland, Luxembourg and Austria) and Norway. The start of the EU-SILC instrument was in 2004 for the EU-15 (except Germany, the

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[2] Regulation EC No.1177/2003.

Netherlands and United Kingdom) and Estonia, Norway and Iceland (Eurostat, 2007). The State Statistical Office in North Macedonia conducted SILC for the first time in 2010 as a new source of data on poverty and social exclusion. The survey has been carried out continuously each year, while in this research are used the results for the period 2012-2015. The primary focus of the survey is collecting data on income and living conditions of different types of households, which provide indicators of poverty and social exclusion comparable to the other European Union countries.

The survey is also conducted in accordance with international classification systems. The main classifications used are ISCED 2011 for levels of education, ISCO 08 and NACE Rev.2 for economic activity. The purpose of the survey is to establish a common framework for the systematic collection of data on income and living conditions. The survey is the basis for calculating the structural indicators for comparative analysis at the EU level and redistribution of income and manifestation of poverty and social exclusion. For instance, by using the SILC data, statistical officials produce the Laeken set of common European poverty indicators, called after they were established at the European Council of December 2001.

The target population in SILC consists of all persons in private households aged 16 years and over. The manner of conducting this survey makes it possible to monitor both the households and the individuals. Information on social exclusion and housing conditions is collected at household level, while labour, education and health related data are obtained in respect of persons aged 16 and over. Persons living in collective households and institutions are excluded from the target population. Some people with their income and living conditions are observed for 4 years in order to obtain data on certain long-term indicators. The reference period for earned income is 12 months of the previous calendar year.

The sampling design for this survey consists of stratified two-stage sample. In the first stage, it is drawn a simple random sample from the population of primary sampling units. In the second stage, it is drawn a simple random sample of secondary sampling units (households) by using a random number generation. Stratification is done by regions (8 regions - NUTS3) and degree of urbanization (urban or rural) resulting in a total of 16 strata. The sample size in 2015 was 5115 households, while in 2016 was increased to 5370 households. All regions by type of settlement are covered proportionally to the target population. Therefore, the entire territory of North Macedonia is with appropriate geographical representation in the survey.

All individuals aged 16 and above are categorised according to their most frequent activity status. The most frequent activity status is defined as the status that individuals declare to have occupied for more than half the number of months during the reference year. The categories of most frequent activity status are employed, self-employed, unemployed, retired and other inactive persons. The distribution of household members by most frequent activity status for 2015 is presented in Table 1.

Table 1. Distribution of household members by activity status

Activity status	Share (%)
Employed	25.0
Self-employed	8.3
Unemployed	16.3
Retired	9.3
Other inactive persons	23.0
Persons aged under 16	18.1

Source: State Statistical Office of the Republic of North Macedonia, SILC

In this context, employed are defined as persons who work for a public or private employer and who receive compensation in the form of wages, salaries, fees, gratuities, payment by results or

payment in kind. The employed persons in the sample are identified according to the self-defined current economic status. The self-defined current economic status captures the person's own perception of their main activity at present. It is in principle determined on the basis of how most time is spent, but no criteria have been specified explicitly. It differs from the ILO concept to the extent that people's own perception of their main status differs from the strict definition used by ILO. For instance, many people who would regard themselves as full-time students or homemakers may be classified as ILO-employed if they have a part-time job. Similarly, some people who consider themselves 'unemployed' may not meet the strict ILO criteria of taking active steps to find work and being immediately available.

The concept of 'current' implies that any definitive changes in the activity situation are taken into account. For instance, if a person has lost a job or has retired recently, or activity status has otherwise changed in a definitive manner, then the situation as of the time of the interview should be reported. In this sense, 'current' overrides any concept of averaging over any specific reference period. If the person combines different part-time jobs as an employee that result in the equivalent hours of full-time job, the person should consider his/herself as employee working full-time. In this context, 'work' means any work for pay or profit, while pay includes cash payments or payments in kind (goods and services rather than money).

4. EMPIRICAL ANALYSIS

The at-risk-of-poverty rate is the share of people with an equivalised disposable income (after social transfer) below the at-risk-of-poverty threshold, which is set at 60 percent of the national median equivalised disposable income after social transfers. This indicator does not measure wealth or poverty, but low income in comparison to other residents in that country, which does not necessarily imply a low standard of living. The at-risk-of-poverty rate before social transfers is calculated as the share of people having an equivalised disposable income before social transfers that is below the at-risk-of-poverty threshold calculated after social transfers. Pensions, such as old-age and survivors' (widows' and widowers') benefits, are counted as income (before social transfers) and not as social transfers. This indicator examines the hypothetical non-existence of social transfers.

The at-risk-of poverty rates in North Macedonia according to the individuals' most frequent activity status for the period 2012-2018 is presented on Table 2.

Table 2. The At-risk-of poverty rate by most frequent activity status in North Macedonia

	2012	2013	2014	2015	2016	2017	2018
Unemployed persons	46.5	43.7	40.5	39.7	41.1	38.7	41.9
Not employed persons	33.7	30.4	27.5	27.4	28.7	29.0	29.2
Other inactive persons	33.0	29.2	26.1	26.7	29.4	32.1	31.1
Retired persons	14.1	10.9	8.4	7.3	7.1	7.7	7.9
Employed persons	11.1	11.1	9.8	8.9	9.0	9.0	8.8
Population	**24.6**	**22.4**	**20.3**	**19.7**	**20.1**	**20.2**	**20.1**

Source: Eurostat, Survey on Income and Living Conditions (SILC)

From Table 2 we can notice that the highest risk of poverty face unemployed persons, while the lowest risk is encountered among employed persons. There is a broad consensus that the best means of reducing or avoiding poverty and social exclusion is employment. Fighting unemployment is therefore closely related to the fight against poverty. This is also supported by the previous analyses in Europe, which showed that in-work poverty is mainly an unemployment problem (Halleröd et al., 2015). However, having a job may not always be of sufficient quality to lift out an employed person and his/her family from poverty. In this context,

as 'working poor' are considered those individuals who work either full or part time and who live in households where the household income is below the poverty threshold. The presence of in-work poverty represents a crucial challenge and implies the need to reconsider our traditional view of the relationship between employment and poverty.

The level of real wages in a given society is a key factor with far reaching consequences on the wellbeing and living standard of its citizens. For instance, the risk of poverty among low-paid employed persons in North Macedonia in 2015 was 18.9 percent, while this rate among highly paid employed persons was only 5.2 percent. The relationship between the low pay and poverty is complex due to the fact that low pay is measured at individual level, while when we consider poverty we look at the household as a whole and its overall income through the year. Besides low hourly pay, there are several other key factors that may cause poverty for an individual employee such as: (i) stability of the work throughout the year; (ii) the presence of other earners in the household, their work intensity and their earnings; (iii) the number of dependents, usually children; and (iv) the impact of state taxes and social transfers (McKnight et al., 2016).

Generally, in-work poverty is driven by a combination of low pay, low work intensity at household level and household structure. The working poor indicators need to combine activity characteristics, which are individual, and a measure of income computed at the household level under the assumption of income pooling. Therefore, a given activity profile may or may not result in poverty depending on household configuration. As a consequence, there might be a case of workers working in stable and highly paid employment who are nevertheless at risk of poverty if he/she is only employed in the household. On the other hand, many unfavourable activity situations likely to result in low earnings are not associated with the risk of poverty as soon as low earnings are counterbalanced within the household.

The indicator persons living in households with very low work intensity is defined as the number of persons living in a household where the members of working age worked less than 20 % of their total potential during the previous 12 months. The work intensity of a household is the ratio of the total number of months that all working-age household members have worked during the income reference year and the total number of months the same household members theoretically could have worked in the same period. A working-age person is a person aged 18-59 years, with the exclusion of students in the age group between 18 and 24 years. Households composed only of children, of students aged less then 25 and/or people aged 60 or more are completely excluded from the indicator calculation.

Identifying the social implications of low-wage employment particularly its effects on poverty and social exclusion represents a challenging task. This arises from the need to combine activity characteristics, which are individual, and a measure of income at the household level which assume income pooling. Namely, the working poor poverty is not always clearly related to the individual activity status since an individual's activity profile may or may not result in poverty depending on household configuration. This, so called 'household factor' depends on several elements such as: composition of the household, including the individual activity, subsequent earnings of other members, social transfers determined at the household level as well as the equivalence scale which is applied (Ponthieux, 2008).

In order to respond to this challenge, we perform an analysis at the individual level based on 'poverty in earned income'. The poverty in earned income identifies individuals who would not escape poverty if they were living alone and could count only on their own earnings. However, since they do not necessarily live alone or only on their own earned income, we need to contrast this possible poverty risk with the actual poverty risk. In this way it is possible to assess to what extent transfers within the household offset or fail to offset this risk of poverty. The poverty threshold in this case is the same as in the usual approach to poverty i.e. 60% of the median equivalent income of all individuals.

In addition to personal characteristics of employed workers, social benefits received at household level play important role in alleviation of the in-work poverty (Ministry of Labour and Social Policy, 2010). Social benefits are defined as current transfers received during the income reference period by households intended to relieve them from the financial burden of a number of risks or needs. These benefits are usually provided through collectively organised schemes or outside such schemes by government units. It includes the value of any social contribution and income tax payable on the benefits by the beneficiary to social insurance schemes or to tax authorities. In order to be included as a social benefit, the transfer must meet one of the following two criteria: First, coverage is compulsory under law, regulation or a collective bargaining agreement for the group in question; and, second, it is based on the principle of social solidarity i.e. if it is an insurance-based pension, the premium an entitlements are not proportional to the individual's exposure to risk of the people protected.

The social benefits collected at the household level are the following: family/children-related allowance, housing allowance and social exclusion not elsewhere classified. Family/children-related allowance refers to benefits that provide financial support to households for bringing up children and/or provide financial assistance to people who support relatives other than children. Housing allowances refer to interventions by public authorities to help households meet the cost of housing. An essential criterion for defining the scope of housing allowances is the existence of a qualifying means-test for the benefit. Social exclusion not elsewhere classified refers to the socially excluded or to those at risk of social exclusion. Generally, the target groups may be identified as destitute people, migrants, refugees, drug addicts, alcoholics, victims of criminal violence etc. On the other hand, the social benefits exclude benefits paid from schemes into which the recipient has made voluntary payments only, independently of his/her employer or government.

According to SILC data, the coverage of social benefits in North Macedonia is quite modest. Among low-paid employees only 2.8 percent receive family/children-related allowance, 2.5 percent receive allowance for social exclusion, while housing allowance is almost not existent. On the other hand, among unemployed 2.9 percent receive family/children-related allowance and 9.9 percent receive allowance for social exclusion not elsewhere classified. According to the State Statistical Office data, the number of social assistance beneficiaries in North Macedonia during the past two decades marks continual decrease. Namely, the number of households covered by the social benefits has declined from more than 78000 in 2000 to just 28000 in 2015, while the population under consideration has declined from 277000 in 2000 to 106230 in 2015.

We further assess the factors affecting the probability of being working poor by estimating a logit model on cross-section data of employed persons in 2015. The specification of the logistic regression model is as follows:

$$logit(E[Y_i|\mathbf{X}_i]) = logit(p_i) = ln\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \beta_1 x_{1,i} + \cdots + \beta_m x_{m,i} \quad \text{... (1)}$$

where, the dependent variable takes value 1 if the employed has been classified as poor and 0 otherwise. In order to identify the possible effects of social benefits on poverty reduction, the model will be estimated first by taking into account the total disposable household income before social transfers and second, after the transfers (Lohmann, 2008). The total disposable household income is computed as the sum for all household members of gross personal income components plus gross income components at household level minus regular taxes on wealth, regular inter-household cash transfers and tax on income and social insurance contributions. On the other hand, total disposable household income before social transfers is calculated as total disposable income minus total transfers plus old-age benefits and survivor benefits.

As explanatory variables we first consider a set of personal characteristics of the employed worker such as: level of education, experience, sex, marital status, place of living and health in terms of general health condition and chronic illnesses. Furthermore, the set of household

characteristics taken into consideration are the following: household size, number of dependent children and whether the household is single adult or low work intensity household. Finally, the level of low-paid employment is modelled by introducing a dummy variable, which takes value 1 if the employed person is classified as low-paid and 0 otherwise. The details regarding the determination of the incidence of low-pay are presented in Appendix 1. The estimation results are presented in Table 3.

Table 3. Estimated logit model for at-risk-of poverty incidence among employed persons

Independent variables	Estimated model before transfers		Estimated model after transfers		The impact of transfers
	Coefficient	Diff. in odd ratio	Coefficient	Diff. in odd ratio	(percentage points)
Constant	-0.3894 (0.500)		-0.0045 (0.993)		
Secondary	-1.9317*** (0.000)	-85.5%	-2.1779*** (0.000)	-88.7%	-3.2
Tertiary	-2.6062*** (0.000)	-92.6%	-2.9648*** (0.000)	-94.8%	-2.2
Experience	-0.03972*** (0.001)	-3.9%	-0.0369*** (0.003)	-3.6%	0.3
Sex (1=female)	-0.3066 (0.112)	-26.4%	-0.4896** (0.012)	-38.7%	-12.3
Marital status (1=married)	-0.0647 (0.816)	-6.3%	-0.0883 (0.761)	-8.5%	-2.2
Place of living (1=rural)	0.4014** (0.026)	49.4%	0.3541* (0.052)	42.5%	-6.9
General health (1=bad or very bad)	0.8011 (0.100)	122.8%	0.4701 (0.357)	60.0%	-62.8
Chronic illness (1=yes)	-0.1471 (0.715)	-13.7%	-0.0749 (0.855)	-7.2%	6.5
Household size	-0.3168*** (0.000)	-27.2%	-0.3245*** (0.000)	-27.7%	-0.6
Single adult household (1=yes)	-0.2150 (0.784)	-19.3%	-0.1742 (0.825)	-16.0%	3.4
Number of dependent children	0.9664*** (0.000)	162.8%	0.9602*** (0.000)	161.2%	-1.6
Low work intensity household (1=yes)	0.74343*** (0.000)	110.3%	0.6316*** (0.003)	88.1%	-22.3
Low-pay (1=below 2/3 of median)	1.4820*** (0.000)	340.2%	1.4661*** (0.000)	333.2%	-6.9

*Note: */**/*** indicate significance at 10/5/1 percent level respectively.*

From Table 3 we can notice that having secondary education would decrease the probability of being working poor by 88.7 percent, while having tertiary education would decrease the probability of in-work poverty by 94.8 percent. An additional year of work experience would reduce the incidence of working poor by 3.6 percent, while female workers face 38.7 percent lower incidence to be poor compared to male workers. Living in rural areas would increase the probability of being working poor by 42.5 percent. Regarding the household characteristics, an additional dependent child increases the probability of in-work poverty by more than 1.5 times, while an additional household member decreases this probability by 27.7 percent. Hence, we can conclude that the income pooling and inter-household transfers play an important role in alleviation of poverty within the household particularly in the cases where more than one adult

is employed. In addition, the impact of social benefits with respect to both household characteristics is almost negligible. Furthermore, low work intensity significantly affects the household income by increasing the probability of in-work poverty of 110.3 percent. The indicator persons living in households with very low work intensity is defined as the number of persons living in a household where the members of working age worked less than 20% of their total potential during the previous 12 months. The impact of social benefits in this case is highest since they reduce the probability of in-work poverty after transfers by 22.3 percentage points and corroborates with the previous findings (Petreski and Mojsoska-Blazevski, 2017). Finally, being low-paid increases the incidence of in-work poverty by more than 3 times. This finding corroborates the previous evidence that low-pay and poverty are different but closely interrelated phenomena (Cabrero, 2010). Having in mind the relatively low coverage of social benefits, the reduction of this probability after transfers is only 6.9 percentage points.

Similarly as in the case of employed persons, we assess the factors affecting the probability of being unemployed at-risk-of poverty by estimating a logit model on cross-section data of unemployed persons in 2015. The estimation results are presented in Table 4.

Table 4. Estimated logit model for at-risk-of poverty incidence among unemployed persons

Independent variables	Estimated model before transfers		Estimated model after transfers		The impact of transfers (percentage points)
	Coefficient	Diff. in odd ratio	Coefficient	Diff. in odd ratio	
Constant	1.0902 (0.068)		1.0092 (0.082)		
Secondary	-1.6215*** (0.000)	-80.2%	-1.5832*** (0.000)	-79.5%	0.8
Tertiary	-2.4168*** (0.000)	-91.1%	-2.3156*** (0.000)	-90.1%	1.0
Experience	-0.06422*** (0.000)	-6.2%	-0.0623*** (0.003)	-6.0%	0.2
Sex (1=female)	-0.2500 (0.126)	-22.1%	-0.2998* (0.065)	-25.9%	-3.8
Marital status (1=married)	0.1323 (0.469)	14.1%	0.0779 (0.667)	8.1%	-6.0
Place of living (1=rural)	-0.0041 (0.979)	-0.4%	-0.0173 (0.908)	-1.7%	-1.3
General health (1=bad or very bad)	-0.2282 (0.574)	-20.4%	-0.6328 (0.108)	-46.9%	-26.5
Chronic illness (1=yes)	0.2716 (0.414)	31.2%	0.3879 (0.233)	47.4%	16.2
Household size	-0.2854*** (0.000)	-24.8%	-0.2306*** (0.000)	-20.6%	4.2
Single adult household (1=yes)	1.3119* (0.084)	271.3%	0.1136 (0.904)	12.0%	-259.3
Number of dependent children	0.6196*** (0.000)	85.8%	0.5106*** (0.000)	66.6%	-19.2
Low work intensity household (1=yes)	1.5931*** (0.000)	391.9%	1.6207*** (0.000)	405.7%	13.8

Note: */**/*** indicate significance at 10/5/1 percent level respectively.

From Table 4 we can notice that having secondary education would decrease the probability of being unemployed poor by 80.7 percent, while having tertiary education would decrease the probability of unemployment poverty by 91.1 percent. An additional year of work experience

would reduce the incidence of unemployment poverty by 6.2 percent, while female unemployed face 22.1 percent lower incidence to be poor compared to male unemployed. Living in rural areas would increase the probability of being unemployed poor by 0.4 percent. Regarding the household characteristics, an additional dependent child increases the probability of unemployment poverty by 85.8 percent, while an additional household member decreases this probability by 24.8 percent. The same conclusion regarding the importance of income pooling and inter-household transfers holds in this case as well when it comes to alleviation of poverty within the household. In this context, the role of inter-household transfers has been already identified with respect to alleviation of perceived level of stress among unemployed (Nikoloski and Pechijareski, 2017). Being unemployed in a single adult household would increase the probability of poverty by more than 2.5 times, whereas the social benefits significantly reduce this probability. In contrast, the impact of social benefits with respect to other household characteristics is almost negligible. Finally, low work intensity significantly affects the household income by increasing the probability of poverty among unemployed by almost 4 times.

5. CONCLUSIONS AND POLICY IMPLICATIONS

The achievement of a good combination between access to employment, adequate remuneration and sufficient social protection is a strategic goal of protection and active social inclusion policies. From a policy perspective, it is important to know the nature of the problem in order to formulate policies to combat poverty. In the case of employed persons for example, we need to know whether the working poor are poor because they receive too low wages, work too few hours or live in households with specific characteristics such as for example too many dependent members. Similarly, in the case of unemployed persons we consider a complex of different factors such as personal and household characteristics in order to reveal the nature of at-risk-of poverty status for this labour market category.

In this context, higher education and experience are statistically significant factors that reduce probability of poverty for both employed and unemployed persons with education being more valuable for employed, while experience more valuable for unemployed. For both categories of workers the gender, marital status and health conditions do not represent statistically significant factors of poverty. Living in rural areas is significant factor that increases the probability of poverty incidence among employed persons, but it does not appear as significant determinant of poverty among unemployed persons. Living in greater household would decrease the probability of being poor, while an additional dependent child would increase this probability, which is more emphasised among employed rather than unemployed persons. Finally, being low-paid appears as the most important factor for at-risk-of poverty status among employed persons, while the low work intensity is the most responsible factor for at-risk-of poverty status among unemployed persons. In addition, our analysis reveals that the social transfers do not satisfactorily cover these categories, which assumes that we need a much broader arsenal of respective policy measures aiming to reduce poverty among the vulnerable labour market segments. Most of the policies are both relevant for employed as well as for unemployed persons and particular attention is paid to the following: education and training, active labour market policies, unionisation and collective bargaining, wage subsidies and taxation and statutory minimum wage.

Education and training of workers is the most widely used supply-side strategy for improving their skills and competences as a precondition for better positioning in the labour market. Since increasing the productivity of low-paid employees is crucial to their wages, policy considerations should be given to increasing their human capital. In general, higher levels of skills acquired through education and training reduce the risk of low pay. The improvement of

training possibilities of low-paid workers could increase the skill endowment and possibility to move from low-paid to highly-paid contingent. This can be done by an appropriate design and greater funding of the education system including vocational education and training (VET) and higher education.

In the future reforms of vocational education and training the accent should be given to formation of professionals and service workers that will possess competitive skills and will be attractive on the labour market. In this context, we should emphasise that gathering practical skills is as important as acquiring theoretical knowledge that has so far received more attention by the policy makers. The future reforms of the VET curricula have to take into consideration the demand side of the labour market *i.e.* a careful analysis of the labour market needs has to be undertaken prior to any implementation of new or amend the existing curricula.

In addition, the Macedonian government has to consider the quality of higher education as top priority and intervene by rigorously implementing the quality standards at national level. The necessary preconditions for promotion of quality in the higher education are already provided by the adoption of the new Law for higher education.[3] Hopefully, the increased government awareness will further increase the investment in higher education and will contribute for gradually convergence of the higher education system toward the standards adopted in more developed countries. The skill imbalances due to disparities in the numbers of graduates have to be addressed by additional government stimuli for the students in technical and technological sciences.

The design of active labour market programmes (ALMP) can make an important contribution since a significant proportion of the labour force is concerned by the so called 'low-pay/no-pay' trap characterised by individuals cycling between unemployment and low paid precarious work, workers can become trapped in low paying jobs or scared by experiencing unemployment. With respect to this there is a challenging task for activation policies to focus not only on long term unemployed but to include a range of retention and advancement strategies for those cycling between low-pay and unemployment.

Even though the scope of the active labour market programmes in North Macedonia carried out by the Employment Service Agency is relatively large, their coverage is relatively modest. In our view the accent should be given to the apprenticeship programmes in order to increase the employability of the young unemployed persons and to prevent their lack of skills when they enter the labour market. Additionally, the preparatory programme for employment need to provide training for registered unemployed workers from disadvantaged segments in order to improve their competitiveness and employability on the labour market as well as improving the matching process between supply and demand of workers with appropriate skills. With respect to the targeting of disadvantaged labour market segment it has been identified a lack of coordination among the key institutions and social partners. Therefore, the future policy recommendations should focus on overcoming the lack of coordination among the institutions and social partners as well as encouraging their larger involvement in the process of anticipating skill demands.

The improvement of the workers' position can be done by providing more stable work arrangements. A potential strategy for this is by increasing the role of unionisation and its impact on wage levels in the process of collective bargaining. In the future, the role of trade unions should be particularly strengthened in the private sector. Namely, in most of the newly established firms which are generally smaller employees are not organised in trade unions, while in the big companies it is questionable whether trade unions operate completely independently from the company owners. Another issue is the fragmentation of trade unions and formation of new trade union federations and confederations which substantially

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[3] Official Gazette of the Republic of Macedonia No.82, May 2018.

diminishes their bargaining power. As a consequence, trade unions should take the initiative and play a crucial role in proposing changes in the existing labour code.

Wage subsidies to private employers have often been proposed by economist as a potentially flexible and efficient method to improve the earnings and employment of low-wage workers. In this case, the decisions about job creation and hiring remain in the hands of employers but labour cost is partly born by the government. As a consequence, firms are expected to increase the utilisation of labour force of the targeted population. Hence, the idea behind the wage subsidies is to reduce the costs of employers of employing the targeted group of workers thereby stimulating demand for these workers and rising their employment rates and earnings. In the case of North Macedonia, there exists a long debate regarding the required changes in the legislation that covers wage setting and its implementation. This includes tax subsidies for low-paid workers and reforms in the tax system such as introducing progressive tax rates.

Finally, the quality of life and workers' moral particularly among low-paid workers can be improved by increasing the minimum wage. In turn, the increase of the statutory minimum wage is expected to exert an upward pressure on wages throughout the wage distribution, extending benefits to workers earning more than the new minimum[4]. However, in the literature about the minimum wage there exists a debate regarding to when to increase it and how much to increase it to. The statutory minimum wage in North Macedonia has been continually increasing from 8050 MKD in 2012 to 12000 MKD in 2017. The latest increase of the statutory minimum wage which is above the standard 2/3 of the median threshold would potentially contribute to reduction of the incidence of low pay. However, in the case of North Macedonia we have to take into account the possible non-compliance with the statutory minimum wage due to the informal employment. In this context, further research is needed in order to determine the possible shift of workers from the formal to the informal economy due to the opportunity of non-compliance.

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[4] Also known as 'ripple' or 'spillover' effect;

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Appendix 1

Identification of the low-paid employed persons

In the context of SILC we get information about employee cash or near cash income instead of wages from companies' administrative records. Employee income is defined as the total remuneration in cash or in kind, payable by an employer to an employee in return for work done during the reference period. It can be expressed as gross or net income, where gross means that neither taxes nor social contributions have been deducted at source, while net refers to the case when taxes and social contributions are deducted. The data for both gross and net employee cash or near cash income are collected on a yearly basis. We express these variables in terms of average monthly amount by dividing the annual income with the number of months declared in the status of employment. Furthermore, in order to disentangle the influence of hours worked, a derived estimate of hourly earnings can be calculated by using the number of hours worked. The distribution of employees' net monthly income for 2015 is presented on the Figure 1.

Figure 1. Distribution of employees' net monthly income, 2015
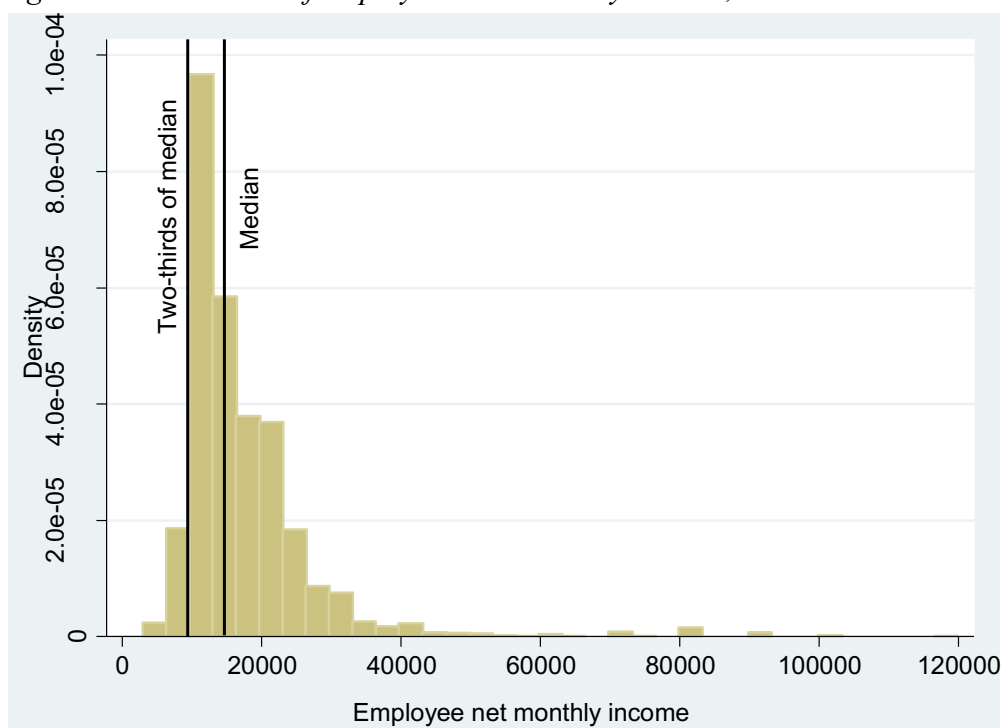
From Figure 1, we can notice that the distribution of earnings is right-skewed and the median employee income is 15000 MKD[5] (245 Euro). Although there is no generally accepted definition, according to the OECD criterion as a low-wage workers can be considered those who earn less than two-thirds of the median wage. According to this, the low pay threshold in North Macedonia in 2015 was 10.000 MKD, while the incidence of low pay calculated as a share of employees whose net monthly income is less than two-thirds of the median income was 12.3 percent.

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[5] MKD stands for Macedonian Denar;

THE LINK BETWEEN PRODUCTIVITY AND LABOUR SHARE – THE CASE OF NORTH MACEDONIA AND SLOVENIA

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ABSTRACT

The large divergence between productivity and workers' incomes has been becoming a reality in most countries, not just in the United States after 1980s, where labour productivity grew faster than real wages and employment. The breakdown according to Brynjolfsson and McAfee (2014) *is due to technological progress, according to Bivens and Mishel* (2015) *the growing inequality and according to Baker* (2007) *the declining labour share in GDP. The main goal of this paper is to find out if the global trend of "The Great Decoupling" between productivity and labour share is a real process in the case of the countries analyzed from the Southeast Europe region. Given that Slovenia is among the most developed countries, while North Macedonia belongs to the group of developing countries that in these stages of development rely on foreign capital and cheap labour, we examine whether the process of "The Great Decoupling" between productivity and labour share is a reality in both countries. From the analysis of the trend of the movement of the average labour productivity of these two countries, it can be concluded that in both countries there is a trajectory of the movement of the labour productivity. Also, from the trend of the movement of the share of labour income and labour productivity in the case of Slovenia and North Macedonia it can be concluded that they indicate the existence of a large gap, i.e. divergence in the trajectory of motion. Also, the gap between labour productivity and the share of labour income in GDP on the example of North Macedonia, if compared to the example of Slovenia is of lower intensity. Finally, based on the results obtained from the conducted econometric analysis, we determine whether there is a need for further research or the phenomenon is a temporary deviation in the dynamics of the gap between labour share and labour productivity.*

Keywords: *The Great Decoupling, Labour Productivity, Labour Share, Comparative Analysis, Regression Analysis.*

JEL classification: *C13, E24, J24.*

1. INTRODUCTION

One of the most significant trends that began to shape the world since the 1980s was the phenomenon of the declining labour share of income, i.e. the share of national income allocated to wages (labour). This meant that most of the benefits from productivity growth, especially in the mid-1990s, did not reflect the standard of living of most workers. This issue of "divergence between labour productivity and real wage growth/compensation", or as Brynjolfsson and McAfee (2014) prefer to say "The Great Decoupling", is the subject of growing academic and political debate in the United States of America (USA), where a large number of American workers experience wage stagnation (Stansburry & Summers, 2018). A numerous study in this topic show, the divergence between labour productivity and compensation is becoming a reality in much of Europe and other countries. But, very interesting part is that some of the papers show that this phenomenon occurs not only in capital-intensive industries and countries but also in labour-intensive countries such as China, India, Mexico, etc. (Karabarbounis & Neiman, 2013). In this paper, for the first time, an attempt is made to examine this phenomenon on the case of North Macedonia and Slovenia, two countries in the Southeast Europe (Balkans) that had belonged to the former Socialist Federal Republic of Yugoslavia (SFRY), **and have very close political and economic relations.** Given that Slovenia was the most developed Yugoslav republic, and is still the most developed country in the region of Southeast Europe, a member of the European Union (EU) while North Macedonia is a developing country aspiring to become an EU member. The aim in this paper is to examine whether the global trend of divergence between growth in labour productivity and compensation persists in the case of these countries and where that divergence is more explicit.

Some of the previous empirical research conducted to determine the relationship between labour productivity and real wages/compensation differ in their nature and conclusions. The fact that increased labour productivity is considered a key driver of economic growth has prompted researchers around the world to make great efforts to determine the relationship between labour productivity and worker' incomes (workers' compensation, wages or labour share), announcing the standard economic theory of labour productivity and workers' incomes. The theory is that labour markets tend to balance real wages and productivity. Productivity above real wages moves wages up (because firms demand more labour), and in times of low capacity utilization and low productivity, labour demand is expected to fall, pushing real wages down. In analyzing the differences between productivity and wages, factors such as low unionization rates, the shadow economy, informal labour markets and so on can be considered. Also, numerous methodological issues such as wage deflation procedures real wage indicators, labour productivity indicators, and labour and capital shares of national income can cause changes in the analysis (Škare & Škare, 2017).

The main goal of this paper is to find out if the global trend of "The Great Decoupling" between productivity and labour share is a real process in the case of the countries analyzed from the Southeast Europe region. Given that Slovenia is among the most developed countries, while North Macedonia belongs to the group of developing countries, we examine whether the process of "The Great Decoupling" between productivity and labour share is a reality in both countries. Finally, based on the results obtained from the conducted econometric analysis, we determine whether there is a need for further research or the phenomenon is a temporary deviation in the dynamics of the gap between labour share and labour productivity.

Specifically, this paper analyzes two issues. First, whether and to what extent the growth of the part of the income allocated to workers is systematically related to the growth in labour

productivity in the last 3-4 decades. Second, whether the gap between workers' incomes and productivity growth increases or decreases over time and what happens in the analyzed countries from the Southeast region. While, finding the answers to these questions will allow us to better understand the three currently prominent economic and political topics (Theodoropoulou, 2019): (1) What causes income inequality the most? (2) How can the fragile recovery and stagnant growth rates after the Great Recession of 2008 be strengthened in the analyzed countries and beyond in Europe?

This paper is structured as follows. After the introductory part, in the literature review section, we try to present the most significant papers in this area and determine whether they confirm the phenomenon of "The Great Decoupling" on the case of different countries or groups of countries. Then we analyze the dynamics between labour productivity and the labour share in selected countries. In the methodology section, we present the details of the methods of scientific research used to analyze the relationship between labour productivity and the income of workers on the case of the selected countries from the Southeast Europe region. In the last part of the paper, the obtained results from the analysis are commented on and discussed. While the conclusion part discusses the theoretical and practical implications of the study, the possibility for future research and recommendations for policy makers are given.

2. LITERATURE REVIEW

The link between labour productivity and workers' incomes is an essential part of the labour market and the economy as a whole. In the standard economic theory, the relationship between labour productivity and income is described as a positive relationship, which coverages and oscillates around unit elasticity. Technological progress increases productivity, which according to the theoretical postulates of the labour market leads to an increase in workers' incomes. The increase in marginal labour productivity as a result of technological development puts pressure on labour demand and ultimately causes an increase in labour income as a relative proportion of GDP and the general level of wages. On the other hand, workers' wages are the main source of income for an average household, growing incomes stimulate the average purchasing power and consumption of households, leading to future economic growth (Patra & Nayak, 2012). Furthermore, whenever labour productivity is above wage levels, firms increase their labour demand by raising wages and reducing productivity. Wage levels that rise above efficiency wages, that is, wages that grow faster in terms of productivity, slow down labour demand, 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 with 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 circle is to invest in technological improvement followed by increasing domestic investment and reviving productivity (Škare & Škare, 2017).

Stansbury and Summers (2018), summarize three possible broader explanations for the apparent divergence of workers' incomes from labour productivity. First, there is a complete disconnect between the growth of workers' incomes from labour productivity, which means that the growth of productivity no longer leads to further wage growth. Second, there is still a link between the two variables, but other structural factors such as reducing union power and the workforce have weakened this link by reducing to what extent productivity gains are transformed into higher wages. Third, the link between productivity and wages still exist, but other factors, such as technological change, have put downward pressure on wages.

Obtaining a clearer picture of whether the relationship between labour productivity growth and labour income growth as a relative proportion of GDP is still strong and significant, facilitates the process of assessing whether certain policy recommendations will bear fruit or not. For example, the European Commission's 2017 Annual Growth Survey highlights that "real wage growth as a result of increased productivity is important for reducing inequalities and maintaining high standards' of living" (European Commission, 2017a). Whereas, in its autumn forecasts for 2017, it suggested that "significant and structurally higher wage growth will require a trend reversal in low labour productivity growth" (European commission, 2017b). The assumption here is that, if successful, policies that promote faster labour productivity growth, for example by encouraging technological advancement, should be scaled down to produce labour wage gains.

Blanchard and Giavazzi (2003) argue that deregulation in product and labour markets decreased labour shares and increased unemployment in Europe in the 1980s. Bentolila and Saint-Paul (2003) also focus on the variability on labour shares over the medium run, including the large declines seen during the 1980s in Western Europe. Harrison (2002), using data from the United Nations (UN) finds a decreasing trend in the labour share of poor countries but an increasing trend in rich countries for 1960-1997. Karabarbounis and Neiman (2013), in their research prove that roughly half of the observed decline in the labour share can be explained by the declining relative price of investment goods due to advances in the information technology and the computer age. Previous studies on the relationship between income and labour productivity of Bivens and Mishel (2015), Lawrence (2016), and Stansburry and Summers (2018) have focused on the United States, the study of Pessoa and Van Reenen (2012) has focused on United Kingdom and the study of Pasimeni (2018) has focused on EU. Pasimeni (2018), examines this issue for 34 advanced economies, including the EU, through the use of macro-panel data analysis. As the author himself admits in the conclusion of his paper, however, is aggregate panel approach probably obscures the considerable heterogeneity between countries. The wide diversity of wage-setting institutions across the EU is one of the several factors that suggest that such heterogeneity is likely to be sufficiently important to warrant a country-by-country investigation. Stansburry and Summers (2018) extended their country-by-country analysis to individual G7 member states, including EU member states France, Germany and Italy.

A study of Trenovski, et al. (2019) conducted in 2019 in some EU countries concluded that the relationship between labour productivity and real compensation within high-income countries, which are also classified as the member states that joined the EU before 2004, on average there is an evident synchronized movement of labour productivity per working hour and real compensation per working hour of workers. However, it should be noted that this group of countries, in some cases there is a deviation in the trend of movement in labour productivity per hour worked and the real compensation per hour of workers. In the case of Germany, France, Luxembourg, and Sweden, e.g. the increase in real hourly workers' compensation is faster than the increase in hourly labour productivity. On the other hand, the case of Ireland should be mentioned, where starting from 2012, labour productivity has increased more intensively, while the real compensation of workers has stagnated, which is the most striking example of the existence of the phenomenon of "The Great Decoupling" in developed countries.

3. RESEARCH METHODOLOGY

The examined model is acceptable if the following test and evaluation results are obtained (Bucevska, 2016): (1) There is no indication that the model specification is wrong; (2) The regression is statistically significant; (3) All estimated parameters are statistically significant and

have an appropriate sign; (4) There should be no autocorrelation, heteroskedasticity in the model and the residuals should be normally distributed.

Once the model has been specified, the next step is to estimate the regression models between labour productivity and workers' incomes for both countries using the ordinary least squares (OLS) method. For the purposes of this analysis, the double logarithmic regression model is used. The theoretical regression function of the model with two variables is as follows:

$$Y_i = b_0 + b_1 X_i + \hat{u}_i, \quad (1)$$

where b_0 and b_1 are the estimated intercept and slope coefficients of the regression, respectively. For us, the coefficient b_1 is important, which shows how much the average share of GDP allocated for workers will increase as a result of productivity growth. After the estimation, we comment and compare the magnitudes and signs of the b_1-coefficients for the examined countries and their significance.

We also test he F-statistics in parallel to see if the overall model is (un)significant. We also check the coefficient of determination $- R^2$ which indicates how much of the variation in the model is explained by the variables of the model. To determine the degrees of linear dependencies between variables, we calculate the coefficients of simple correlations and comment on them. We are also testing multicollinearity because many people think that an absolute value of r higher than 0,80 is already sign of strong multicollinearity. Through the Breusch-Pagan-Godfrey test we test the heteroskedasticity, and to test the normal distribution of the residuals we use the Jarque-Bera test.

4. RESULTS

Although according to conventional economic thought the increase in labour productivity is followed by a proportional increase in workers' incomes, empirical results indicate that such an assumption is almost unrealistic. The trend of labour productivity and labour share of the example of Slovenia and North Macedonia is shown in Figure 1. The trends of labour share and labour productivity in the case of Slovenia indicate a large gap in their trend. Namely, the trend of the movement of the share of labour income in the GDP can be divided into two sub-periods. First, within the period 1995-2007, although a weak downward trend is observed, which reaches the lowest value in 2007, 86 index points. Second, within the period 2008-2017 it can be concluded that the trend of movement of this magnitude is not characterized by larger fluctuations, i.e. is characterized by a certain degree of stability and consistency in its movement, to reach 87.5 index points at the end of 2017. On the other hand, throughout this period, on average, labour productivity has increased. It should be noted that the period 2009-2010, under the influence of the financial crisis that affected most of the countries in the world, also in Slovenia economic activity begun to decline. On the other hand, from the trend of the case of North Macedonia it can be concluded that the existence of a gap, i.e. the so-called divergence in the trends of labour productivity and the labour income share is evident. It should be emphasized that this gap on the example of North Macedonia, if compared to the example of Slovenia is of lower intensity. By the same analogy, the trend of the movement of labour productivity and the income of workers on the example of North Macedonia can be divided into two periods. First, within the period 1995-2004 where the movement, although it has a downward trend, is of low intensity. Second, the time period 2005-2017 where there is a more intense decline in the labour income share.

Figure 1: Labour productivity and labour compensation of Slovenia and North Macedonia for a period 1995-2017 (1995=100)
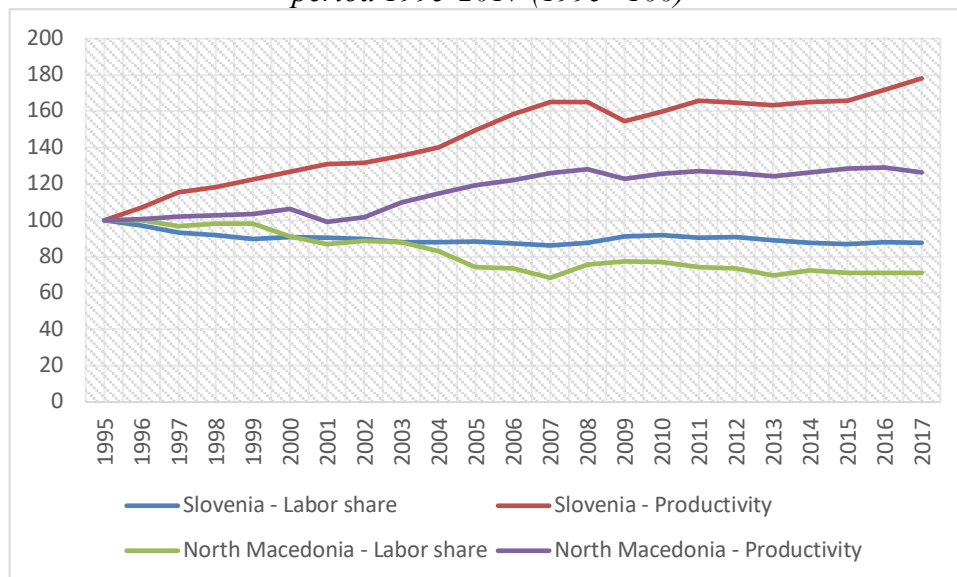

(*Source: Author's calculation based on Penn World Table data.*)

In the period from 1995 to 2000, the labour income share of the example of Slovenia and North Macedonia did not show significant differences. This proportion ranges from 69% in North Macedonia to 73% in the case of Slovenia. However, after 2000, the movement trends do not follow the same trajectory. The labour share of the example of North Macedonia decreased significantly in the period from 2001 to 2007. Namely, in 2001 this ratio was 60%, while in 2007 it was 47%, which indicates a decrease of 13 percentage points. After reaching the historically lowest value of the labour share in 2007 from 2008 to 2010, this proportion increased modestly, i.e. increased to 53% in 2010. In the period from 2011 to 2017, on average it recorded a downward trend and in 2017 it reached 49%. Compared to 2000, the labour share of the case of the Republic of North Macedonia decreased by 14 percentage points. Regarding the example of Slovenia, it can be concluded that in the period from 1995 to 2009 the movement of labour share is characterized by a downward trend and it decreased from 73% in 1995 to 63% in 2007. In the period from 2008 to 2017, on average, the trend of the movement can be concluded to be positive, and this proportion in 2017 reaches 64%.

The results of the descriptive analysis indicate that although for a long time the labour share was considered stable, the trend of the example of Slovenia and North Macedonia confirms the widespread fact that in the last few decades there has been a significant change in the functional distribution of income, recording a significant increase in capital income, and decrease of the labour income. In order to analyze the causal relationship between the labour share and labour productivity growth, a regression analysis was conducted, the results of which are shown in Table 1. Values of β coefficient indicate the relationship between labour productivity growth and movement on the labour share. On the example of Slovenia and the example of North Macedonia, the value of the coefficients is negative. The value of the β coefficient of -0.764105 on the example of North Macedonia indicates the fact that the increase of labour productivity by 1% results in a decrease of the labour share of 0.76%. On the other hand, in the example of Slovenia, the β coefficient is -0.111146, which indicates the fact that the increase in labour productivity by 1%, leads to a decrease in the labour share of 0.11%. The value of the coefficients in both countries

indicates a negative relationship between the increase in labour productivity and the share of labour income in GDP, however this relationship is much stronger on the example of North Macedonia compared to the case of Slovenia. From this it can be concluded that the increase in labour productivity leads to an increase in the gap in the distribution of total income between the factors of production, i.e. between labour and capital on the example of North Macedonia compared to Slovenia. In other words, on average, an increase in labour productivity, although it results in an increase in total national income, is not sufficiently transferred to workers in the form of wages, bonuses and compensations.

Figure 2. Labour Share in Slovenia and North Macedonia (1995 – 2017)
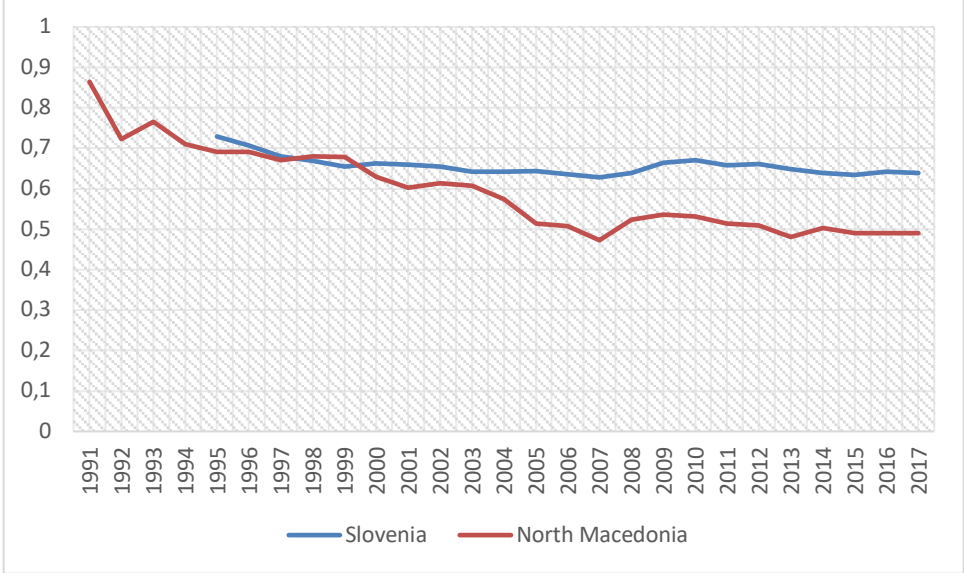
(Source: Penn World Table.)

On the other hand, in order to supplement the results of the analysis and determine the degree of robustness of the regression models, the table shows the coefficients of determination of the example of both countries. On the example of North Macedonia R^2 is 53%, which indicates a good fit of the model, i.e. indicates the fact that 53% of the changes in the labour share can be explained by changes in labour productivity. On the other hand, R^2 on the example of Slovenia is 60% which indicates the fact that 60% of the changes in the labour share are affected by changes in labour productivity, while the remaining 40% are influenced by other economic and non-economic factors. In this regard, it should be noted that workers' incomes, despite the economic component, they also contain a social component, i.e. despite market forces, other non-market factors have a certain influence in their formation (labour legislation with a focus on legal minimum wage, social transfers, benefits that workers enjoy as a result of employment health insurance, various allowances, bonuses and bonuses) that are a result of employment but are not recorded as income.

Country	β_1 coefficient	R2 – Coefficient of determination	Time period
North Macedonia	-0,764105*	0,534954	1992 - 2017
Slovenia	-0,111146*	0.601335	1995 – 2017

(*level of significance 1%, **level of significance 5%)

5. CONCLUSION

Debates and research related to labour productivity and workers' incomes in the last few decades have been a field of interest among the academic community around the world. Part of such research focuses on the relationship between labour productivity and workers' wages, the actual compensation transferred to workers, and labour income as a relative proportion of GDP.

Research analyzing the relationship between labour productivity and workers' incomes, conducted in developed and developing countries around the world, indicates that the empirical reality is to some extent inconsistent with standard economic theory of worker productivity and income. On the other hand, the phenomenon of the so-called "Great Decoupling" is becoming an objective reality in many countries, especially after 1980. This phenomenon is caused by the rapid rise in labour productivity, and the inability of workers' incomes to connect with it. Such tendencies have been the basis for growing inequality in income distribution and declining share of labour income in Gross Domestic Product.

In this paper, a comparative analysis of the relationship between labour productivity and the share of labour income in the Gross Domestic Product (GDP) of Slovenia and North Macedonia is made.

From the analysis of the trend of the movement of the average labour productivity of these two countries, it can be concluded that in both countries there is a trajectory of the movement of the labour productivity. Also, from the trend of the movement of the share of labour income and labour productivity in the case of Slovenia and North Macedonia it can be concluded that they indicate the existence of a large gap, i.e. divergence in the trajectory of motion. It should be noted here that the period 2009-2010, under the influence of the financial crisis that affected most of the countries in the world, economic activity and in the case of Slovenia saw a certain degree of decline. On the other hand, from the trend of the case of North Macedonia it can be concluded that the existence of a gap, i.e. the so-called divergence in the trends of labour productivity and the share of labour income in tasty income is evident. Also, the gap between labour productivity and the share of labour income in GDP on the example of North Macedonia, if compared to the example of Slovenia is of lower intensity.

In the period from 1995 to 2000, the share of labour income in the total income of the example of Slovenia and North Macedonia did not show significant differences. This proportion ranges from 69% in North Macedonia to 73% in the case of Slovenia. However, after 2000, the movement trends do not follow the same trajectory. The share of labour income in the total income of the example of North Macedonia decreased significantly in the period from 2001 to 2007. Namely, in 2001 this ratio was 60%, while in 2007 it was 47%, which indicates a decrease of 13 percentage points. In the period from 2011 to 2017, on average it recorded a downward trend and in 2017 it reached 49%. Compared to 2000, the share of labour income in the total income of the case of the Republic of North Macedonia decreased by 14 percentage points. Regarding the

example of Slovenia, it can be concluded that in the period from 1995 to 2009 the movement of Labour income in total income is characterized by a downward trend and it decreased from 73% in 1995 to 63% in 2007. In the period from 2008 to 2017, on average, the trend of the movement can be concluded to be positive. This proportion in 2017 reaches 64%.

The results of the econometric analysis, above all the value of the β coefficient of -0.764105 on the example of North Macedonia indicate the fact that the increase of labour productivity by 1% results in a reduction of the share of labour income in total income of 0.76 %. On the other hand, in the example of Slovenia, the β coefficient is -0.111146, which indicates the fact that the increase in labour productivity by 1%, leads to a decrease in the share of income in total income of 0.11%. In this regard, it should be noted that workers' incomes, in addition to having an economic component, they also contain a social component, i.e. in addition to market forces, other non-market factors have a certain influence in their formation (labour legislation with a focus on legal minimum wage, social transfers, benefits that workers enjoy as a result of employment (health insurance, various allowances, bonuses and bonuses) that are a result of employment but are not recorded as income.

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THE IMPACT OF COVID-19 ON LABOUR MARKET IN NORTH MACEDONIA

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ABSTRACT
An initial assessment of the impact of COVID-19 on the North Macedonian labour market is widely anticipated that will be severe, pushing thousands of people into unemployment, underemployment and working poverty. This paper aims to assess the impact of the COVID-19 outbreak on labour market by analysing the most affected sectors and government measured aimed to prevent job losses. Many small and medium businesses have already closed their operations or decreased the number of employees. The most affected industries due to the outbreak of the COVID-19 are the tourism industry and export-oriented industries, including the textile sector. To mitigate the consequences of COVID-19 the Government of North Macedonia has adopted measures for support of the firms which aim to keep jobs, maintain social stability, and help the citizens affected by the crisis. Specific local labour market characteristics should be considered when specifying eligibility criteria and undertaking crisis response measures.

Keywords: *COVID-19, labour market, job losses, response measures*

JEL classification: *J21*

1. INTRODUCTION

While it is not yet possible to fully predict the economic downturn from the coronavirus pandemic and the measures currently being taken to combat it, it is becoming increasingly clear that the effects on the world economy will be severe, probably far more severe than those we have seen during of the financial crisis from 2007 to 2009. As a result of COVID-19 25 million jobs are expected to be lost worldwide, says ILO, which will depend on how strongly economic activity is affected. If this crisis it has damaged developed economies, it is expected that developing and transition economies to be severely damaged.

In the first days of the pandemic, state institutions in North Macedonia acted with good speed and a lot of professionalism, closing schools and public places, but this also began to affect businesses and unemployment, and helped the multi-year economic crisis in the country to deepen. The economy of North Macedonia has been damaged like many other world economies, but it is difficult to say how much damage has been done. It is estimated that three-quarters of employees and companies in North Macedonia are hit by the economic crisis caused by the spread of COVID-19 (Finance Think, 2020). The situation among the self-employed and micro-businesses is a story and very critical. The many methods that employers have used during the crisis and because of adapting to the new and very difficult situation are the reduction of salaries and the prohibition of any kind of additional salaries. Unemployed people have almost lost hope of being employed in this difficult period, seeing that even employees are at risk of their jobs. While the best way to overcome the crisis is to reduce daily and monthly expenses, which seems very impossible because every family and every person has their own personal needs that must be met (Finance Think, 2020).

The recession in North Macedonia and in all Western Balkan countries in 2020 will be driven by a significant drop in both domestic and foreign demand because of pandemic crisis. Travel restrictions and social distancing measures have particularly affected tourism and services, the

latter accounting for around 50% of total employment in five[1] countries in the region including North Macedonia (World Bank, 2020). According to tourism association about 70,000 jobs are threatened in this sector in North Macedonia (Gjorgjioska, 2020). IMF estimates the unemployment rate of 17.3% in 2019 to increase to 20.4% in 2020 and decrease slightly to 19% in 2021. Revenues in March 2020 have declined from 40% to 65% as compared to 2019. A sharp decline is also observed in tax revenues by 11% in March 2020 compared to previous year. This is a result of 17% drop in VAT revenues, 11% in excise revenues and 11% in profit tax revenues (OECD, 2020).

In this paper the investigation focuses on the impact of the COVID-19 outbreak on labour market by analysing the most affected sectors and government measured aimed to prevent job losses. The analysis is organised as followed. Initially, losses of most affected sectors are analysed focusing on labour. Section 3 presents a review of Government measures of other states affected my COVID-19 and comparison with the measures undertaken by the Government of the Republic of North Macedonia. The final section summarises the key findings and explores their implications for policy recommendations.

2. MOST AFFECTED SECTORS BY COVID-19 IN NORTH MACEDONIA

The coronavirus pandemic is causing a notable slowdown in the economy, which is dependent on trade and investments from the EU (e.g. almost 50% of exports are directed to Germany) (OECD, 2020). Nine out of ten of its biggest export markets are countries in which the virus was rapidly spreading and which had also imposed high restrictions: Germany, Greece, Britain, Italy, China, Serbia, Bulgaria, Romania and Belgium (Gjorgjioska, 2020). As a result, exports of both services and goods are projected to go down-total exports growth in 2020 would drop by -0.2% in North Macedonia. In Q2, manufacturing, construction, tourism, trade and real estate, may contract by 11.5% (World Bank, 2020). Problems are also faced with imports caused by the high dependence on materials such as food, livestock, basic materials needed for industrial production processes which are usually imported also from the worst-hit markets in Europe (Gjorgjioska, 2020).

Within the domestic markets SMEs, manufacturing and tourism sectors are among the most affected. In recent years on average 40% of exports and 60% of imports have been conducted through small and medium enterprises, which have been the worst hit in the crisis (Gjorgjioska, 2020). Manufacturing output declined by 2%. A survey conducted by Finance Think (2020) asked if the company where they work was damaged by the current crisis, a large number said it was the result of state measures to shut down certain companies (for example, small companies operating in shopping malls) or because their sales have dropped significantly, 43.1% and 41.5%. It is obvious that the percentage of companies that have had problems placing their products most often refers to export-oriented companies, whose orders were cancelled by customers (including from mother companies) abroad and / or who were affected by transport problems. The aggravated functioning of companies because significant number of workers went on sick leave or childcare for children up to 10 years of age was not identified as significant factor of economic crisis that hit the company, though this answer may be biased because it was given by employee perspective (Finance Think, 2020).

In addition, we briefly review the situation and vulnerabilities of regional labour markets. In countries where the labour market is characterised with informal and temporary employment and with disproportionate self-employment, it is more likely for these countries to face greater job losses which will cause significant difficulties especially if the networks of social protection are inadequate. Until the end of 2019, the employment rate in the Western Balkans increased to 44.3% (the employment rate in 2018 was 42.7% and in 2012 it was 36.9%).

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[1] Albania, Bosnia and Herzegovina, Kosovo, North Macedonia, Serbia.

However, most of the jobs were in the low paid labour-intensive sectors in manufacturing and services. Low employment rate and high unemployment rate had significantly negative impact on inclusive growth in the Western Balkans (World Bank, 2020). A lot of jobs are temporary or informal. As a result of COVID-19 these jobs became very vulnerable reversing the employment growth from recent years. Most of these workers may not have access to social protection networks. As shown in Table 1 these problems are particularly acute in Kosovo (low employment, a large part of it temporary), Bosnia and Herzegovina (low employment rate and high rate of informal sector) and in Albania (high self-employment and informal employment) (World Bank, 2020).

Table 1. Labour market indicators in Western Balkan Countries, 2019

	Albania	**Bosnia and Herzegovina**	**Kosovo**	**Montenegro**	**North Macedonia**	**Serbia**
Self-employed (% of total employment)	34.7	17.6	21.3	19.4	14.3	22.4
Employees on temporary contracts (% of total employment)	9.7	17.5	79.5	34.6	16.1	22.6
Informal employment (% of total employment)	61	29.5		19.9		19.8
Employment rate (% of population over 15 years)	52	34.3	25.4	48.1	44.9	48.6

(Source: World Bank (2020). The Economic and Social Impact of COVID-19, Western Balkans Regular Economic Report, no.17.)

The job crisis will disproportionately affect certain groups, which could increase inequality. These include people in less protected and low-paid jobs, especially young and older workers as well as women and migrants. Migrants are a vulnerable group due to a lack of social protection and rights, and women are usually more present in low-paid jobs and in affected sectors (SSM, 2020). Young people face higher probability in losing their jobs in times of crisis because they are employed in jobs with lower wages and everything is unsafe for them. On the other hand, workers in IT sector are less affected by the crisis, are more flexible and working from home in this time of crisis. One in four people who have lost their jobs during the coronavirus pandemic in the country is under 29 years old. This was announced by the employment agency. According to their data, from March 11 to May 31 of this year, almost 12,000 people have lost their jobs, or approximately 3,300 of them are under 29 years old. This does not include those who work in the black market. ILO tracks declines in working hours resulting from both lay-offs and other temporary reductions in working hours. Application of this ration would imply a loss of approximately 85,550 full-time equivalent jobs (assuming a 40-hour working week) during quarter 2 in North Macedonia (ILO and European Bank, 2020).

3. GOVERNMENT MEASURES

The new economic crisis caused by the pandemic also did not leave aside the most developed countries of the world which having a larger number of private companies saw a huge decline and some micro-businesses were also closed. In response to the crisis, central banks in many countries, including the United Kingdom, lowered interest rates. This seems, in theory, to make borrowing cheaper and to encourage spending to boost the economy. Some world markets have managed the situation very well and have recovered from the aid received from the state. However, many analyses have predicted that these benefits from the state may be very unstable, and if a second and more powerful wave of pandemics comes, the market will find it very difficult to overcome the crisis even if it accepts the benefits from the state. Unemployment has also emerged as a very important thing even in the most powerful states. In the United States, for example, the unemployment rate has increased from 3.7% to 10.4%, according to the International Monetary Fund (IMF), signalling the end of a decade of expansion for one of the world's largest economies. Millions of people there have come to the aid of the state and can maintain their existence only through those aids, more precisely, they are workers in sectors such as tourism, and some jobs have even been closed. However, the data vary between countries. France, Germany, and Italy provide figures on applications, for example, while the United Kingdom counts workers currently enrolled in the scheme. However, in some cases improvements have been seen, such as China and France having employment increases in recent months. Most importantly, many experts think that there may be a longer-term damage to the employee process and many jobs will not be created for a long time (BBC, 2020).

Most of the measures introduced in the Western Balkans so far focus on supporting the cash flows of businesses to reduce bankruptcies and thus protect jobs in the next few months until COVID-19 containment restrictions can be lifted (World Bank, 2020). The crisis response measures undertaken in the Western Balkans are so far align with the policy responses of most EU countries, but initial conditions in these countries are different and therefore also the policy trade-offs. These measures are primarily dedicated to formal firms and workers. For example, wage subsidies as in most EU countries in North Macedonia and Serbia are conditional on keeping registered employees. However, given that Western Balkans labour markets have low employment rates, self-employment, part-time, and informal firms and workers are more common, they may receive little support from governments in this case (World Bank, 2020).

On the other hand, the Government of the Republic of North Macedonia has also taken measures to help the economy. Starting in April 2020 the Government has implemented a three-month fiscal package (0.2% of GDP) to help firms to address the liquidity problems and protect jobs, targeted to sectors such as transport, hotel, and restaurants. In addition, the Government introduced a tax deferral system for VAT returns. In May the Government also introduced a tax deferral system, for excise duties for selected excise goods (mainly auxiliary medicines and disinfectants) (OECD, 2020). The Government has introduced a support programme on salaries by subsidising contributions to employees of companies in tourism, transport and catering sectors as well as other affected companies, for the months of April, May and June of 2020. If the company does not reduce the number of employees below the number from February 2020 it is also entitled for subsidise of employee contributions up to 50% of the average salary paid in 2019 (OECD, 2020). Other measures include credit support mainly aimed at promoting more favourable credit standards for companies affected by the COVID-19 crisis. In addition, reduction of the instalment and reprogramming of loans to financial companies and leasing companies; state guarantee for commercial loans and customs debt; support for the development of domestic start-up products and services; and addition support to tourism, textile and agro-food sector should help firms to overcome losses

caused by COVID-19. Table 2 summarises short-term measures to mitigate the social and economic impact of COVID-19 in North Macedonia.

Table 2. Short-term Measures to Mitigate the Social and Economic Impact of COVID-19 in North Macedonia

Country	Fiscal and Trade-related	Monetary and financial	Social Assistance
North Macedonia	▪ Reduction of interest and parafiscal charges ▪ Temporary suspension of PIT payments and advance CIT payments for taxpayers who earn income from self-employment for the months of March, April and May 2020, specifically in catering, tourism, and transport but also applicable to other sectors affected ▪ Reduced interest rates on tax arrears and overpayments ▪ Support to protect jobs: direct cash transfers to companies that fulfil certain criteria, to be used to pay salaries and keep workers employed ▪ Temporary prohibition on initiating bankruptcy proceedings ▪ Salary reduction for all elected and appointed officials, who will be paid the minimum wage ▪ Abolition of remuneration for members of executive and supervisory boards and committees during crisis.	▪ Direct financial support for eligible MSMEs that become insolvent due to the coronavirus crisis ▪ Reduction of the base Central Bank (CB) interest rate from 2 to a historic low of 1.75 percent ▪ Temporary changes to loan terms ▪ Reduction of the penalty interest rates for companies and individuals ▪ Reintroduction of the non-standard reserve requirements ▪ Extended deadline for banks to submit their first internal Liquidity Assessment Reports ▪ Abolition of fees for withdrawing and returning cash to the CB central vault ▪ Temporary freeze of NPL reclassification ▪ Zero interest rate loans for SMEs provided through the Development Bank.	▪ Subsidies for social contributions to eligible companies in tourism, transport, catering, and other affected companies for April, May, and June. Up to 50 percent of the contributions of the average salary paid in 2019. ▪ Exemption from rent for the beneficiaries of social housing ▪ Cash benefit for citizens who have lost their jobs (50%of the average employee's salary) ▪ Temporary relaxation of the criteria for applying for social assistance.

(Source: World Bank, 2020. The Economic and Social Impact of COVID-19. Western Balkans Regular Economic Report, no.17.)

In September 2020, the Government introduced the fourth package of economic measures worth 350 million euros which is a continuation of the previous three packages and aims at supporting the most affected sectors and categories of citizens. The fourth package of economic measures includes support for payment of salaries for the last quarter of the year, payment cards for certain categories of citizens who need help the most, grants for the most affected sectors, reduction or abolition of parafiscal duties, increase of the grace period for interest-free loans from COVID-19 and additional postponement of loan repayment by companies. The fourth package of economic measures is evaluated by the members of the Economic and Social Council to be quite extensive and it is expected to have a positive impact on the labour market by preserving jobs.

4. CONCLUSION

The crisis has already turned into a shock to the economy and labour markets, affecting it not only on supply (production of goods and services), but also on demand side (consumption and investment). The COVID-19 crisis has already reduced some of the benefits for the workforce in the Western Balkans. The decline in employment in the Western Balkans is already obvious. Companies quickly began to take defensive measures: changes in working hours, temporary reductions in working hours, forced leave, unpaid leave, and even layoffs or forced closures to cope with the reduction in operations. Effective communication, social dialogue and clear government commitments are critical to limiting job losses.

The recovery in investment and activity in sectors such as services, tourism, construction, energy, will support job creation in 2021. The acceptance of North Macedonia in NATO and the invitation of EU Council to open negotiations for joining the EU should also help economic recovery. However if the pandemic crisis is prolonged combined with a deeper recession in EU could make the unfolding economic crisis difficult to handle in North Macedonia and on other Balkan countries (World Bank, 2020). It would further increase economic uncertainty and economic and social costs. Economic development in North Macedonia and in the region will depend on acceleration of structural reforms to boost productivity by reinforcing the state institutions that protect the rule of law; safeguarding private sector competition; addressing skills mismatches; and improving public services to boost human capital (World Bank, 2020). In addition, specific local labour market characteristics should be considered when specifying eligibility criteria and undertaking crisis response measures.

The deteriorating impact of COVID-19 on the labour market leaves policy makers to confront major policy challenges. They need to find the right balance and sequence of health and economic and social policy interventions to produce optimal sustainable labour market outcomes (ILO, 2020). Women, young people and informal workers are among those who have suffered the most consequences and hence, explicit attention should be paid to improving the position of the most disadvantaged and voulnerable groups. Governments need to work together with employers and workers in shaping effective, balanced and acceptable policy responses at the sectoral and national level (ILO, 2020). Responding to COVID-19 pandemic will require economic structural changes necessary to ensure adequate safety protection and workers to gain more power. The policy actions need to include lasting structural reforms to ensure that in the time of crisis, small businesses can access financial support easily and quickly in order to manage the crisis effectively and efficiently.

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THE ROLE OF SOCIAL CONNECTEDNESS IN THE CORONAVIRUS DISEASE (COVID-19) PANDEMIC OUTCOME

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ABSTRACT
The magnitude of the coronavirus disease (COVID-19) pandemic has an enormous impact on the social life and the economic activities in almost every country in the world. Besides the biological and epidemiological factors, a multitude of social and economic criteria also govern the extent of the coronavirus disease spread in the population. Consequently, there is an active debate regarding the critical socio-economic factors that contribute to the resulting pandemic. In this paper, we contribute towards the resolution of the debate by examining the role of an individual's social connectedness in the extent to which the coronavirus spread. To measure social connectedness we create a network in which nodes represent countries and the interactions between pairs of countries are given by the number of shared Facebook contacts, whereas the coronavirus outcome is simply quantified as the number of registered cases per million population in the country. We find that there exists a robust and stable relationship between the level social importance of a country as well as the degree to which its people mix, and the outcome of the coronavirus health crisis. Countries which take a more central role in the network of social connections are also more susceptible to the coronavirus, whereas countries where there is less social mixing are less affected by the induced disease. Our results are an empirical verification for standard theories, which suggest that social network structures play a critical role in disease spreading processes. More importantly, they serve as a validation that social distancing measures introduced by governments are essential policies for preventing a fatal coronavirus outcome, and can be implemented for developing appropriate social distancing measures.

Keywords: social connectedness, COVID-19, economic development, networks

JEL classification: C31, I15, I18

1. INTRODUCTION

A multitude of social and economic criteria have been attributed as potential determinants for the magnitude of the coronavirus disease (COVID-19) pandemic, for a recent discussion see Stojkoski et al. (2020). However, despite an abundance of research, the potential impact of cross-country social interactions has been neglected. In this paper we aim to provide a valuable insight on the role of this phenomena and examine the impact of the social interactions on the coronavirus disease spreading process by examining country level data. To measure social connectedness we create a network in which nodes represent countries and the interactions between pairs of countries are given by the number of shared Facebook contacts, whereas the coronavirus outcome is simply quantified as the number of registered cases per million population in the country. We find that there exists a robust and stable relationship between the level social importance of a country as well as the degree to which its people mix, and the outcome of the coronavirus health crisis. Countries which take a more

central role in the network of social connections are also more susceptible to the coronavirus. In turn, countries where there is less social mixing are less affected by the induced disease. This relationship is robust against both alternate specification of the model and the inclusion of other potentially significant contributors to the coronavirus outcome. As such, our findings serve as a verification for standard theories which emphasize the role of social networks in economic interactions.

The rest of the paper is organized as follows. Section 2 gives a short overview of the literature which motivated our research. In Section 3 we present the methods and data used to quantify the relationship between the coronavirus outcome and the social connectedness of a country. In Section 3 we present our findings, and in Section 4 we discuss their implications.

2. LITERATURE REVIEW

The primary contribution of this paper is empirical. It provides new information on the socio-economic determinants which helped shape the magnitude of the health crisis induced by the COVID-19 outbreak. As such it joins the growing literature on the role of social networks of the COVID-19 outbreak 2020 (Bailey et al., 2018; Kuschler et al. 2020; Klepac et al. 2020). It also joins the literature on the socio-economic determinants which governed the coronavirus outbreak (Stojkoski et al. 2020; Jinjarak et al. 2020; Ehlert, 2020; Szulczyk and Cheema 2020).

From a methodological perspective the paper contributes to the literature which investigates the impact of the shape of an empirical social network structure on a disease-spreading process, especially those that take into account the process behind COVID-19 (Basnarkov, 2020; Pastor and Vespignani, 2001). Usually such research relies on micro scale longitudinal data, which cannot be easily obtained. This paper presents a way to use a reliable existing macro data source and thus allows to easily expand the analysis done here in the future.

3. METHODS AND DATA

We follow the methodology implemented in Stojkoski et al. (2020) and assume that the log of the registered COVID-19 cases per million population (p.m.p.) is a result of a disease spreading process. Obviously, the extent to which a disease spreads depends on its various natural characteristics, such as its infectivity or the duration of infectiousness, and the social distancing measures imposed by the government. Also, it depends on a plethora on socio-economic factors that govern the behavioral interactions within a population. Here we focus on one specific factor – the social connectivity – which quantifies the intensity of online social interactions within a community and study its relationship with the coronavirus outcome within the linear regression framework. The linear regression framework is the simplest tool used for quantifying the relationship be- tween a given outcome and a set of potential determinants. Its advantage lies in the efficient and unbiased analytical inference of the strength of the linear relationship. In addition it allows us to use powerful statistical techniques to determine the explanatory power of each independent variable. As such it has been widely used in modeling of epidemiological phenomena (Fogli and Veldkamp, 2012).

Our model is specified as

$$log(Cases_i) = b_0 + b_1 log(SocialConnectedness_i) + b_2 log(GDP_i) + b_3 Controls + u_i,$$

where the dependent variable is the log of the accumulated number of registered COVID-19 cases p.m.p. in country i since the first observed case, up until the threshold chosen as an end date in each country. The threshold, which will be discussed in the following, is different for each country and represents an estimate for the date at which the critical health condition caused by the first wave of COVID-19 ended.

To test our hypothesis for the potential effect of the social connectedness in the same country we use the PageRank of the Social Connectedness Index (SCI). SCI measures the strength of connectedness between two geographic areas as represented by Facebook friendship ties.

$$\text{Formally it is quantified as} SCI_{ij} = \frac{FBConnections_{ij}}{FBUsers_i \times FBUsers_j},$$

where $FBConnecions_{ij}$ is the total number of Facebook connections between i and j and $FBUsers_i$ is the number of Facebook users in country l that were observed at the end of 2019. Thus, we end up with a weighted social network in which the countries represent nodes, and the edges are given by the number of Facebook friendships between people belonging to a pair of countries. The PageRank measures the centrality of a country in social interactions, with larger value implying that the country is socially more important (central) and has far more social mixing in comparison to other countries.

Since the social connectedness alone is not enough to explain the variations in the COVID-19 cases among the countries in each regression we include the level of economic development in the country. We measure this observable simply via the GDP per capita of the country in 2019 and expect it to have a significant impact on the coronavirus spread. Moreover, we include two additional control variables in the model. The first one is an aggregate stringency index for the country imposed social distancing measures during the coronavirus crisis. It is quantified as a weighted average from Oxford's daily COVID-19 stringency index, where the average is estimated from the day of the first registered coronavirus case in the country, up to the last date in which the daily index was at its maximum. We give earlier dates a larger weight in the overall stringency index. This is because, evidently, countries which imposed more stringent social distancing measures and at earlier dates, are also expected to have less cases p.m.p.. The second measure simply quantifies the duration of the crisis, and is estimated as the number of days since the first observed case in the country up to the last day at which the data for the number of COVID-19 cases p.m.p. in the country was gathered. This date coincides to the last day at which the daily stringency index was at its maximum. The threshold is chosen as a means to capture the moment when a country gains the ability to control and stabilize the propagation of the disease.

The data for the dependent variable are taken from Our World in Data coronavirus tracker[1]. The tracker offers daily coverage of country coronavirus statistics, by collecting data mainly from the European Centre for Disease Prevention and Control. As pointed out, the stringency data are taken from Oxford's COVID-19 tracker[2], and the SCI data is gathered from the Data For Good database[3]. To reduce the noise from the data we restrict to using only countries with population above 1 million thus ending up with a total of 106 observations. Table 1 Gives the summary statistics for all four variables whereas the list of countries can be found in (Stojkoski et al., 2020). In general, we observe that there is great variation between the countries in both the COVID-19 Cases and Social connectedness. This is also holds for the summary statistics of the control variables.

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[1] www.ourworldindata.org/coronavirus

[2] www.covidtracker.bsg.ox.ac.uk

[3] www.dataforgood.fb.com,

Table 1: Summary statistics.

Variable	Mean	Std. Dev.	Max.	Min.
log(Cases)	5.27	2.06	9.61	0.75
log(SocialConnectedness)	-0.79	1.30	1.84	-4.05
log(Stringency)	-1.10	0.56	-0.13	-2.74
Days since 1st Case	70.91	25.15	145.00	29.00
log(GDPpc)	9.54	1.09	11.53	6.97

(Source: Authors' calculations)

4. RESULTS

The results from the regression analysis are reported in Table 2. In order for adequate comparison between the estimated coefficients, each variable was first transformed to its z-score and afterwards the regression was estimated.

Column (I) gives the results form the baseline regression analysis in which the log of COVID-19 cases p.m.p. is regressed on the log of the Social Connectedness of the country, the log of the GDP per capita and the control variables. We observe that both the social connectedness and the level of economic development have a significant positive impact on the extent to which the coronavirus disease spreads within a country. An increase of one standard deviation in the PageRank of SCI is associated with an increase in the number of observed cases by 0.22%, whereas a same increase in the GDP per capita is associated with an increase of 0.68%. The magnitude of the marginal effect of social connectedness is only 3 times less than the impact of the level of economic development, thus suggesting that a such networked structure may play an important role in the disease outcome.

In order to validate our results in Columns (II) and (III) of the same table we conduct two robustness checks. With the first robustness check we examine whether the specification of our model is correct by adding an additional explanatory variable in it. In particular, we include a dummy variable characterizing whether the country includes a population which is predominantly Catholic or not (over 60% of the population is catholic). We opted for this variable since recent observations suggest that countries with dominant catholic religion were also the ones that were most hit by the initial wave of the coronavirus disease. In addition, it is widely acknowledged that religion drives a person's attitudes towards cooperation, government, legal rules, markets, and thriftiness, see Guiso et al. (2003). The results, as given in Column (II) suggest that indeed catholic countries had more COVID-19 cases p.m.p.. More importantly, the statistical significance of the social connectedness and economic development persist, and their marginal effect remains of similar size.

Lastly, in Column (III), we substitute the log of GDP per capita with an alternate measure for the economic development of the country – the log of the average government expenditure in health per capita between 2010 and 2019. Clearly, more developed countries are also the ones which are able to spend more money on improving the national health. In the case, the Social connectedness remains a significant explanatory variable of the coronavirus outcome, though with a slightly smaller marginal effect.

Table 2: Regression results.

Dependent Variable: log(Cases)	(I)	(II)	(III)
log(SocialConnectedness)	0.22*	0.23*	0.16*
	(0.08)	(0.07)	(0.07)
log(GDP)	0.68*	0.62*	
	(0.08)	(0.07)	
IsCatholic		0.31*	
		(0.07)	
log(GovExpenditure)			0.69*
			(0.07)
R^2	0.41	0.51	0.45
Observations	106	106	106

Notes: Standard error in brackets; * *denotes significance at 5% level;All regressions include the two control variables described in Section 2.*

(Source: Authors' calculations)

5. DISCUSSION

Our results suggest there exists a robust and stable relationship between the level social importance of a country as well as the degree to which its people mix, and the outcome of the coronavirus health crisis. Countries which take a more central role in the network of social connections are also more susceptible to the coronavirus, whereas countries where there is less social mixing are less affected by the induced disease. A plentiful of reasons can be used as a possible interpretation for these results. For instance, it is known that in structured populations, the degree of epidemic spread scales inversely with the level of social mixing, Draief et al. (2006). This is because, everything else considered, in more sparse populations it is easier to identify and target the critical individuals that are susceptible to the disease as described in Kitsak et al. (2010). It often turns out, that these are exactly the individuals which are more socially connected, Pastor and Vespignani (2001).

In short summary, the presented findings are an empirical verification for standard theories, which suggest that social network structures play a critical role in disease spreading processes. These theories have been widely used, both theoretically and empirically as a means to develop coherent social distancing measures for preventing a fatal epidemic outcome.

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MOBILE BANKING ADOPTION ANALYSIS IN NORTH MACEDONIA USING TAM

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ABSTRACT
Followed by the mobile technology development and high rate of mobile internet usage worldwide, mobile banking has become prominent technological innovation in the banking sector giving a competitive edge over traditional banking. Smartphones and mobile technologies are becoming increasingly available and affordable in North Macedonia in recent years, and many banks are providing banking services to customers via smartphones. The adoption of mobile banking in the country has not reached its full potential yet and has been at its early stage of adoption. However, not many studies investigate determinants of mobile banking adoption which may help banks to design more suitable mobile services for customers and increase the m-banking adoption in the country. This study is the first attempt to fill this gap by examining determinants that affect consumer intention to use mobile banking services in the country, as developing country. To get insights regarding the user adoption of m-banking services in the country, a survey was conducted among more than 150 mobile users. This study proposes a mobile banking user adoption research model based on the Technology Acceptance Model (TAM), and beside basic constructs (perceived ease of use, perceived usefulness and behavioral intention to use) it integrates social image, trust and risk that are specific for m-banking. The results of the empirical study are supporting the proposed basic constructs of the model and some specific relationships are unveiled. This research is a holistic approach representing a solid base for future studies on the adoption of new technologies in the country. Its originality and practical implications are reflected in determining the significance of additional constructs that are specific for m-banking. From practitioner's viewpoint, this research offers valuable insights for developing m-banking solutions.

Keywords: *Mobile Banking, Technology Acceptance Model, Republic of North Macedonia.*

JEL classification: *M15, C52, G20, O30.*

1. INTRODUCTION

Smartphones have become omnipresent devices and an integral part of citizens' living and doing business. The speed of the mobile technology innovation and pace of adoption is directly in relation to mobile banking. Mobile banking has become prominent technological innovation in

the banking sector giving a competitive edge over traditional banking. Banks are increasingly investing in mobile channels by providing new mobile banking services.

Various terms refer to mobile banking like m-banking, branchless banking, m-payments, m-transfers, m-finance, or pocket banking (Shaikh and Karjaluoto, 2015). M-banking refers to provision of banking and financial services with the help of mobile telecommunication devices such as a smartphone or tablet (Chandran, 2014), like viewing account balances, making transfers between accounts, or paying bills. The scope of offered services may differ, but generally includes facilities to conduct bank transactions, to administer accounts and to access customized information. Mobile banking provides customers with 24-hour access to account balances and transaction histories. One can use mobile banking to deposit checks anytime, pay bills, check payment history by date and description, transfer money directly to other people, and make loan payments. M-banking can take place through short message service (SMS), mobile web or application. It is developed to support the clients in using various banking services, by using their mobile phones, thus allowing them to overcome the barriers in terms of time and location (Pejic Bach et.al., 2020). M-banking users can perform almost the same transactions of internet banking by using a mobile device (Shaikh and Karjaluoto, 2015). M-banking and internet banking are commonly perceived as two similar alternative self-service channels for banks to deliver products and services for their customers (Thakur, Srivastava, 2014).

Mobile banking usage statistics over the years show that, banking trends have swung firmly in the direction of mobile banking now that more than half of the world's population own a smartphone. The mobile app market will generate a revenue of $581.9 billion in 2020 (Statista, 2020). Experts predict that mobile payments will grow at a CAGR of 80% throughout 2020, reaching an annual total of $503 billion (Business Insider, 2019). Mobile banking UK statistics reveal that this country is the European leader in mobile payments, with 74% of its population using mobile devices to manage their finances (Dataprot, 2020).

Despite this growing popularity, some countries still fall short on the demand for mobile tasks, like bill pay and reward redemption, causing them to push users to online banking. Mobile banking services have not been widely used by most bank customers in North Macedonia. Most bank customers continue to conduct most of their banking transactions using traditional methods. To understand the reasons behind the actual adoption of m-banking, in the country, this study identifies factors that affect customers' usage of mobile banking services. The type of research applied in this study is exploratory in nature. A research model was developed by integrating the constructs of Technology Acceptance Model (TAM) and some specific constructs for the m-banking domain. Sub objectives of this research assess the relationship of independent variables, Perceived Usefulness, Perceived Ease of Use, Social Image, Perceived Trust and Perceived Risk with dependent variable, behavioral intention. A total of 175 actual and potential users of m-banking services were used as a sample. A well-structured questionnaire was used to collect the relevant information administrated both online and offline. The data is analyzed using regression analysis. The results of this research provides insights on individual user attitude towards adoption phase of mobile banking. Understanding m-banking's consumer attitude may help both researchers and service providers to develop strategies to attract potential adopters and retain users. Banks in the country are well aware that smartphones are becoming the favorite personal devices and gadgets of the macedonian population in particular, thus, this research offers valuable insights for developing better m-banking solutions. This research is among the first in the country that investigate the determinants that affect mobile banking adoption in North Macedonia using TAM based model.

The structure of the paper is as follows. In the first section, theoretical background we describe available theories of technology adoption. We then present the research model and hypothesis. The next section define the research model and data collection, followed by data analysis and results. Finally, the conclusions and recommendations are made.

2. THEORETICAL BACKGROUND

Understanding of consumer behaviour is fundamental insight for decision making for every aspect of business. Consumer behavior can be broadly defined as the decisions and actions that determine the purchasing behavior of a consumer. The study of consumer behavior not only helps to understand the past but even predict the future. Since using certain technology represent ones behavioural act, models that originate from behavioural psychology are compatible when analyzing different factors that determine consumer behavior.

A number of theories are proposed to explain consumers' adoption of new technologies and their intention to use. Theories of adoption of new technologies are explanations (and discovery) of the factors that influence the decision making over adoption and usage of new technologies by the users (individuals or corporate). Adoption in the context of mobile banking means acceptance and being able to accept a new technology as it is introduced; acceptance of the service means a customer willing to use the service. Theories and models that investigates successful technology diffusion can be categorized in various ways. According to Hilmer (2009), common technology adoption theories, can be grouped as: Diffusion Theories, User Acceptance Theories, Decision Making Theory (including Problem Solving Theories), Personality Theories and Organisation Structure Theories (Hillmer, 2009). The most commonly used in the academic world are the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB), the Technology Acceptance Models (TAM), and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Hillmer, 2009).

There are several theories and subsequent models that are in broad use to measure end users' acceptance of a new technology since 1990s, but the most widely used are Technology Acceptance Model (TAM) (Davis, 1989) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis & Davis, 2003). Davis's Technology Acceptance Model (TAM) is one of the most renewed approaches to explain and predict user acceptance of information systems (Davis, 1989). According to Davis (1989), the goal of TAM is "to provide an explanation of the determinants of computer acceptance that is generally capable of explaining user behaviour across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified" (p. 985). This model is based on the assumption that the major factors influencing intention to use any technology are predicted by two so called constructs: perceived usefulness and perceived ease of use (Davis, Bagozzi and Warshaw, 1989). The goal of Davis' (1989) TAM is to explain the general determinants of computer acceptance that lead to explaining users' behaviour across a broad range of end-user computing technologies and user populations. The basic TAM model included and tested two specific beliefs: Perceived Usefulness (PU) and Perceived Ease of Use (PEU). Perceived Usefulness is defined as the potential user's subjective likelihood that the use of a certain system (single platform E-payment System) will improve his/her action and Perceived Ease of Use refers to the degree to which the potential user expects the target system to be effortless (Davis, 1989). The perceived usefulness of a technology increases with perceived ease of use. In the TAM related literature, four of the most important constructs that have been constantly used are the perceived ease of use, perceived usefulness, behavioural intention and

actual usage behavior as the outcome construct. The more ease of use a user thinks a new technology is, the stronger his or her intention to use the technology; furthermore, the stronger the usage intention, the greater the actual usage behaviour. TAM model is by no means a general model; and it is designed to be applied only to computer usage behavior (Davis, 1989). Therefore, the application of TAM model is appropriate for research purposes while studying adoption of mobile banking.

Venkatesh and Davis (2000) proposed the TAM 2. TAM 2 explains PU in terms of two external variables namely *'social influence processes'* and *'cognitive instrumental processes'* which has proven to be significantly influenced user acceptance (Venkatesh and Davis, 2000). The social influence processes include *subjective norms* (as in TRA), *voluntariness, social influence, images,* and *experience*, while the cognitive instrumental process includes *job relevance*, *output quality, result demonstrability,* and PEOU. The operational definitions of the variables constructing *'social influence processes'* are; (1)*'Subjective norms'* is defined as "person's perception that most people who are important to him think he should or should not perform the behavior in question" (2) *Voluntariness* is defined as "the extent to which potential adopters perceive the adoption decision to be non-mandatory", (3) *Social influence* is defined as "influence to accept information from another as evidence about reality", and (4) *Images* is defined as "the degree to which use of an innovation is perceived to enhance one'status in one's social system" (Venkatesh and Davis, 2000). Venkatesh and Bala (2008) combined TAM2 (Venkatesh and Davis, 2000) and the model of the determinants of perceived ease of use (Venkatesh, 2000), and developed an integrated model of technology acceptance known as TAM3. The authors developed the new model using four different determinants including the individual differences, system characteristics, social influence, and facilitating conditions which are determinants of perceived usefulness and perceived ease of use. Even though TAM has been tested widely with different samples in different situations and proved to be valid and reliable model explaining information system acceptance and use many extensions to the TAM have been proposed and tested (Venkatesh and Davis, 2000; Lai, 2018).

3. RESEARCH MODEL AND HYPOTHESIS

The research model in this survey is based on TAM2 (Venkatesh and Davis, 1996). This model provides a framework for explaining and predicting technology use. TAM is a generic model that can facilitate the explanation of the factors that influence technology adoption, or in our case mobile banking behavior. The final version of Technology Acceptance Model, formed by Venkatesh and Davis, after the main finding of both perceived usefulness and perceived ease of use were found to have a direct influence on behaviour intention, thus eliminating the need for the attitude construct. However, there are many extensions to the basic model and we are using some additional constructs that are proven to be essential for explaining mobile banking adoption. Basic constructs that we examined are: Perceived usefulness, Perceived ease of use and Behavioral Intention to use. As extensions of the original model, we added three more constructs: Perceived Risk, Perceived Trust and Social Image, proven to be determinants on mobile banking adoption.

Figure 1. Research model
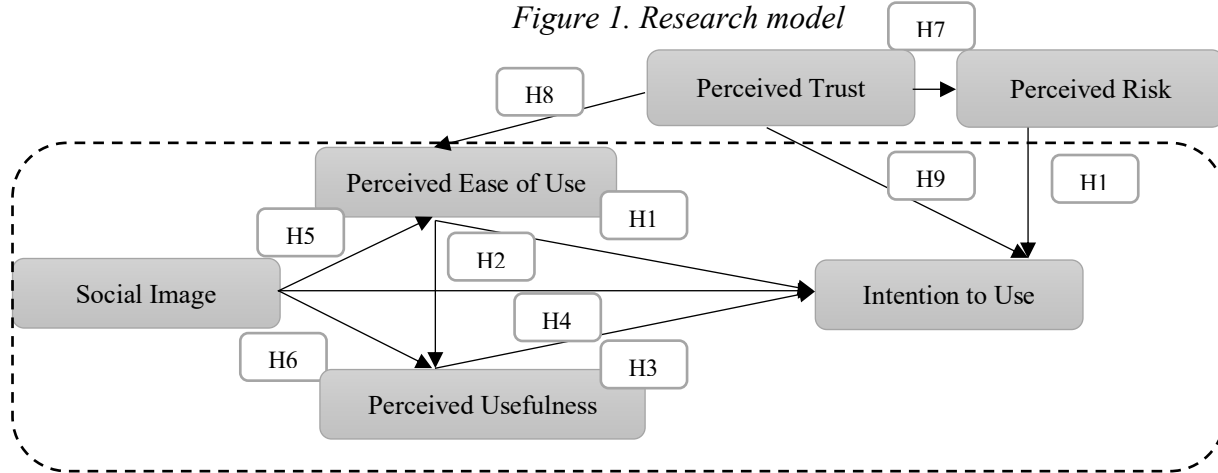
Perceived risk is the "uncertainty about the outcome of the use of the innovation" (Gerrard, and Cunningham, 2003). Because of the open nature of internet and the spatial and temporal separation between user and bank, mobile banking operation is under an uncertainty transaction infrastructure and this make the customer face the risk of financial loss and privacy threaten. (Song, 2015). Many authors have studied the impact of risk on the adoption of mobile banking building upon the premise that m-banking is perceived to be riskier than traditional banking (Gerrard, and Cunningham, 2003; Cunningham et al., 2005: Song, 2015). Luo, Li, Zhang, and Shim (2010) analyzed the impact of both trust and risk in m - banking adoption. Perceived Trust is an important catalyst in many transactional relationships, and it determines the nature of many businesses. According to Yousafzai et.al, (2003), trust is perhaps the most important component of electronic banking transaction. Perception of trust is likely to be important factors that influence consumers' behavior intention to adopt mobile banking.

It is considered that, innovation in general, can provide users with a sense of uncertainty about the consequences of consumption, pushing users to seek advice from others for opinions and personal experiences. Therefore, social image is considered important factor in technology adoption (Munoz-Leiva et.al., 2017). According to Song (2015), mobile banking is the combination of information system and self-service under wireless networks context. The mobile banking adoption intention of users may be influenced by the perceived usefulness and perceived ease of use as the other information systems, but the social image which may affect the customer's behavior intention (De Leon, 2019). Social image can be explained as the "extent to which users may derive respect and admiration from peers in their social network as a result of their IT usage" (Lin and Bhattacherjee, 2010). Social image is considered as capable of influencing the ease of use of advanced mobile services (Bouwman et al., 2008).

Based on the discussion above, in this empirical study, the proposed research model which is based on the technology acceptance model (TAM) as the basic theoretical model, is adjusted/extended with social image, perceived trust and perceived risk in order to predict the customers' adoption intention of mobile banking. This model includes ten hypotheses (Figure 1).

4. RESEARCH METHOD AND DATA COLLECTION

For the analysis in this paper, where attitudes of the current potential mobile banking users are examined, authors designed the research in two segments: the first step was to create a structured questionnaire entailing the TAM model characteristics, in order to create reliable constructs that

can be used in the second segment, the regression analysis. Similar approach was implemented in Luo, Li, Zhang, and Shim (2010), Aboelmaged and Gebba (2013), Song, H.L. (2015), Munoz-Leiva, F., Climent-Climent, S. and Liébana-Cabanillas, F. (2017), De Leon, M.V. (2019).

The design of this research can also be implemented by using exploratory and confirmatory factor analysis, followed by structural equation modeling. There is a research where multidimensional scaling and χ^2 tests are used to assess the difference between the variables (Cruz et al., 2010). TAM based models and their application are widely used by numerous authors in their research, with different combinations of research tools. Yet, authors decided to follow the examples of already published research where the combination of testing of construct reliability and regression analysis was used and confirmed to provide satisfactory results on the examined issue.

A questionnaire was developed to be the instrument for data collection, adopted from basic TAM and confirmed by significant research. The idea was to create a sample that will include different type of respondents according to age, gender, and education level and employment status that are online active. It has been recognized in general that youth are very representative sample of today's online population in the country. Population of interest in this research are different groups who are adopting and using mobile banking: young people (mostly students) aged 18-24, young employed people aged 25-35 and more mature employed professionals over 35 years of age. The data were collected at the university campus and from the different sectors of the business community. Thus, part of this anonymous survey was conducted online, and the other part was person to person with hard-copy questionnaires during December 2019 and May 2020 targeting around 200 mobile users.

The items that were chosen for measuring of each variable are as follows: *Perceived usefulness* (3 items): M-banking improves my work and life efficiency. M-banking allows me to easily acquire the information/service I need. Overall, m-banking is useful; *Perceived ease of use* (3 items): I think that it is easy to use m-banking to accomplish my banking tasks. Learning to use m-banking is easy for me. It is easy for me to become skillful at using m-banking; *Intention to use* (3 items): I intend to use m-banking in the future. I will regularly use m- banking in the future. I intend to increase my use of mobile services in the future; *Social image* (3 items): The people around me who use m-banking have more prestige than those who do not use it. The people around me who use m-banking have a higher status. Using m-banking is a status symbol in my environment; *Perceived risk (4 items):* When using m-banking, I believe my information is kept confidential. When using m-banking, I believe my transactions are secured. When using m-banking, I believe my privacy would not be divulged. I do not incur in the risk of financial losses using m-banking services.); *Perceived trust* (4 items): I do not trust using mobile device for m-banking. I am afraid of the inherent fraud and hacking associated with m-banking. I am worried other people may access my account when using m-banking. It's risky to store banking info on a mobile device. 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.

5. DATA ANALYSIS AND RESULTS

This study tries to examine different influences on mobile banking usage via extended TAM model. Data for this survey were collected at the University campus (students) and respondents employed at various sectors of the business community in the country. Population of interest are respondents from different age groups who are in process of adopting or using mobile banking.

The sample is comprised of 175 survey responses. Their demographic structure is presented in Table 1.

Table 1. Demographic structure of the respondents

VARIABLE	VARIABLE CATEGORIES	FREQUENCY	PERCENTAGE
Gender	Female	101	57.7
	Male	74	42.3
Age	18-24	78	44.6
	25-35	30	17.1
	Above 35	67	38.3
Education	High school degree	11	6.3
	Student	75	42.9
	University graduate	89	50.9
Employment status	Unemployed	100	57.1
	Employed	75	42.9
CONSTRUCTS	ITEMS (questions)	FREQUENCY	PERCENTAGE
Usage frequency of mobile banking	Every day	29	16.6
	At least once a week	69	39.4
	At least once a month	33	18.9
	Very little (at least once at six months)	26	14.8
	Have not use mobile banking	18	10.3
Usual access point for mobile banking	Via smartphone (mobile web)	47	26.9
	Via smartphone with mobile application	107	61.1
	Via Tablet	3	1.7
	Have not use mobile banking	18	10.3

(Source: Authors calculations)

The survey was fully completed, and there was no missing data and presence of outliers. Since Items (questions) are represented by ordinal data, interval data Variables are derived by calculation of an average score for appropriate group of items, for each respondent. Thus, new variables or constructs are created, consisted of the calculated scores. To use appropriate constructs as variables in the regression models, it was essential to first test the constructs for their reliability. Reliability, as defined by Field (2005), means that a scale should consistently reflect the construct it is measuring. Questionnaire was constructed to develop seven variables. To confirm their reliability, Cronbach's α was calculated by the following formula:

$$\alpha = \frac{k \times \bar{c}}{\bar{v} + (k-1)\bar{c}}$$

where k is the number of scale items, $\bar{c}$ is the average of all covariances between items and $\bar{v}$ is the average variance of each item. The results of the reliability analysis and the defined variables are presented in Table 2.

As the research model indicates, there are six constructs derived as variables for the regression model. All the variables can be included in regression models, as their reliability coefficients are greater than 0.7 which is acceptable value for reliable scale (Hair at al., 2005).

Table 2. Scale reliabilities for defined *variables*

VARIABLE	CRONBACH'S α
Perceived Usefulness	0.808
Perceived Ease Of Use	0.788
Intention To Use	0.848
Perceived Trust	0.864
Social Image	0.866
Perceived Risk	0.895

(Source: Authors calculations based on survey data)

To gain an insight of the variables, their descriptive statistics are calculated. Variables Perceived usefulness, Perceived ease of use and Intention to use have high average values, approximately 4.4, implying that they highly agree with most of the questions, or they perceive mobile banking useful, easy to use and their intent is to use mobile banking further. This is also confirmed by their skewness coefficients, which show negative skewness, meaning high frequency of the answers is concentrated on the right side of the histogram, or answers graded 4 and 5 (agree and strongly agree, respectively).

Perceived risk has lower mean value than previously mentioned variables, it is 3.7, and it also has negative skewness. Most of the answers of this variable are around 4 (agree) and 3 (neutral). This suggests that the respondents do not feel completely safe when using mobile banking, they still have certain reservations.

Variable Perceived trust has average value of 3.06 and skewness very close to 0, indicating that significant part of the answers is neutral. This implies that respondents still have trust issues, they are not completely certain that mobile banking is secure, they are afraid of frauds and unauthorized access of their accounts.

Social image proves to be not relevant for mobile banking. With low mean value of 2.59 and positive skewness, most of the respondents do not agree using mobile banking will provide them with prestige and higher status. Probably mobile banking is more practical than image issue.

Table 3. Descriptive statistics for the created variables

Variable	Mean	Standard deviation	Skewness	Kurtosis
Perceived usefulness	4.41	0.77	-1.979	4.878
Perceived ease of use	4.44	0.62	-1.189	1.358
Intention to use	4.47	0.76	-2.115	6.004
Trust	3.06	1.11	-0.015	-0.848
Social image	2.59	1.12	0.309	-0.649
Risk	3.70	0.88	-0.647	0.244

(Source: Authors calculations based on survey data)

5.1. Testing hypotheses of the research model

As presented in Figure 1, the research model entails number of hypotheses with different relations between variables as dependents or/and independents that follow the TAM model. These relations are defined as research hypotheses. Before performing the regression analysis, Pearson's correlation coefficients and two tailed tests of significance are calculated (Table 4). These coefficients are calculated in order to identify the statistically significant relationships between variables (constructs) that only follow and are in accordance with the TAM model:

H1: Perceived ease of use is linearly related to Intention to use – correlation coefficient of 0.521, statistically significant at 0.01 level;

H2: Perceived ease of use is linearly related to Perceived usefulness - correlation coefficient of 0.599, statistically significant at 0.01 level;

H3: Perceived usefulness is linearly related to Intention to use - correlation coefficient of 0.573, statistically significant at 0.01 level;

H4: Social image is linearly related to Intention to use - correlation coefficient of -0.036, statistically not significant;

H5: Social image is linearly related to Perceived ease of use - correlation coefficient of -0.145, statistically not significant;

H6: Social image is linearly related to Perceived usefulness - correlation coefficient of -0.130, statistically not significant;

H7: Perceived trust is linearly related to Perceived risk - correlation coefficient of -0.321, statistically significant at 0.01 level;

H8: Perceived trust is linearly related to Perceived ease of use - correlation coefficient of -0.0185, statistically significant at 0.05 level;

H9: Perceived trust is linearly related to Intention to use - correlation coefficient of -0.154, statistically significant at 0.05 level;

H10: Perceived risk is linearly related to Intention to use - correlation coefficient of -0.351, statistically significant at 0.01 level.

Table 4. Pearson's Correlation Analysis

Variables		Perceived usefulness	Perceived ease of use	Intention of use	Perceived trust	Social image	Perceived risk
Perceived usefulness	Pearson Correlation	1	0.599**	H3 0.573**	-0.033	-.0130	0.205**
	Sig. (2-tailed)		0.000	0.000	0.663	0.087	0.007
Perceived ease of use	Pearson Correlation	H2 0.599**	1	H1 0.521**	-0.185*	-0.145	0.313**
	Sig. (2-tailed)	0.000		0.000	0.014	0.055	0.000
Intention of use	Pearson Correlation	0.573**	0.521**	1	-0.154*	-0.036	0.351**
	Sig. (2-tailed)	0.000	0.000		0.042	0.635	0.000
Perceived trust	Pearson Correlation	-0.033	H8 -.0185*	H9 -0.154*	1	0.106	H7 -0.321**
	Sig. (2-tailed)	0.663	0.014	0.042		0.164	0.000
Social image	Pearson Correlation	H6 -0.130	H5 -0.145	H4 -0.036	0.106	1	-0.038
	Sig. (2-tailed)	0.087	0.055	0.635	0.164		0.617
Perceived risk	Pearson Correlation	0.205**	0.313**	H10 0.351**	-0.321**	-0.038	1
	Sig. (2-tailed)	0.007	0.000	0.000	0.000	0.617	

**Correlation is significant at the 0.01 level
*Correlation is significant at the 0.05 level
(Source: Authors calculations based on survey data)

Out of ten defined hypotheses, three (H4, H5 and H6) do not have significant correlation coefficients, implying that there is a low probability of statistically significant relationship in the regression model. These hypotheses stem from the variable Social image.

The results from the ten regression models testing the hypotheses are presented in Table 5. In accordance to the results from the correlation matrix, the hypotheses H4, H5 and H6 include relationships that are not statistically significant, or social image does not have an influence on

intention to use, perceived ease of use and perceived usefulness, respectively. As previously interpreted results from Table 3 say that mobile banking is not really influence by the social image, the regression only confirms these previous assumptions. Overall, social image does not have significant contribution in motivation of the consumers to use mobile banking, according to the data of this survey. Remaining seven hypotheses confirm existing relationships, as defined. Perceived ease of use has positive and statistically significant influence on intention to use and on perceived usefulness (H1 and H2). Perceived usefulness has statistically significant and direct impact on intention to use (H3). Perceived trust has statistically significant and inverse influence on the perceived risk, perceived ease of use and intention to use (H7, H8 and H9). Perceived risk has statistically significant direct impact on intention to use (H10).

Table 5. Single regression models for analyzed variables

Variable	Coef.	Std. Error	t-stat.	Sign.
H1: Perceived ease of use influences Intention to use	0.638	0.080	8.020	0.000**
H2: Perceived ease of use influences Perceived usefulness	0.745	0.076	9.842	0.000**
H3: Perceived usefulness influences Intention to use	0.564	0.061	9.189	0.000**
H4: Social image influences Intention to use	-0.025	0.052	-0.475	0.635
H5: Social image influences Perceived ease of use	-0.081	0.042	-1.934	0.055
H6: Social image influences Perceived usefulness	-0.089	0.052	-1.719	0.087
H7: Perceived trust influences Perceived risk	-0.255	0.057	-4.448	0.000**
H8: Perceived trust influences Perceived ease of use	-0.103	0.042	-2.475	0.014*
H9: Perceived trust influences Intention to use	-0.105	0.051	-2.050	0.042*
H10: Perceived risk influences Intention to use	0.303	0.062	4.914	0.000**

**Coefficient is significant at the 0.01 level
*Coefficient is significant at the 0.05 level
(Source: Authors calculations based on survey data)

5.2. Discussion

The research model includes number of interrelationships between variables, all in function to determine the main factors of intention to use mobile banking. As previous results confirm, Perceived ease of use and Perceived usefulness (H1 and H3) are variables that have statistically significant and positive influence on the Intention to use mobile banking. Respondents consider mobile banking to improve work and life efficiency, it allows easier access to necessary information or service, they find it easy to use, efficient and useful. Also, Perceived ease of use has statistically significant and positive impact on the Perceived usefulness (H2). Mobile banking is perceived useful because one of its benefits is perceived ease of use (it is easy to learn, efficient in accomplishing banking tasks and it does not require much effort to become skillful at it).

Interesting, Social image is not very important to the respondents of this survey, they do not think that it has any influence on the Intention to use (H4), or on the Perceived ease of use (H5) and on the Perceived usefulness (H6). Social image includes perceptions such as that mobile banking gives prestige and higher social status to people who use it. There is no confirmed statistically significant coefficient with Social image as independent variable if any of the estimated regressions that include it. Apparently, social image is not considered as important factor that determines the use of mobile banking, it simply does not motivate the consumers to use it, according to the data of this survey. Contrary to Social image, Perceived trust is important determinant of mobile banking usage. As described in H7, Perceived trust has statistically

significant influence on the perceived risk. The sign is negative because the questions for the variable Perceived trust are graded opposite to questions for other variables (in all variables grade 5 supports mobile banking, its ease of use, its usefulness, while in variable Perceived trust grade 5 means there is least confidence in mobile banking, thus the negative sign in the regression coefficients). Respondents find that having trust in the mobile device for mobile banking, feeling secure from fraud, hacking, or other unauthorized access reduces the Perceived risk of mobile banking usage (the information is kept confidential, transactions are secured, there are no risk of financial losses). Perceived trust influences Perceived ease of use (H8). With statistically significant coefficient in the regression, Perceived trust contributes to the perception of mobile banking as easy. Trust is just another component that encourages the users, current or new, to find mobile banking easy to use. Trust also influences the Intention to use (H9). When people are convinced that there is very low or no risk at all while governing their finances via mobile banking, they trust it, and are confident to use it further in the future. The regression confirmed statistically significant coefficient between these two variables.

Perceived risk has statistically significant direct impact on Intention to use (H10). Perceived risk and Perceived trust are probably two intertwined variables that influence the Intention to use mobile banking. If the risk is high, the trust is low, and there is no intention to use mobile banking, or, the risk is low, the trust is high, and there is an intent to use mobile banking. In this research the risk is considered low, so the respondents trust mobile banking and that contributes to their intention to use. When the information about personal finances remains confidential, privacy has not been breached, transactions are secured, and no financial losses occur, there is intent to use mobile banking in future.

5.3. Research limitations and future research

Some of the limitations of this study that could generate new lines of research for the future are mentioned further. We have to remain cautious when generalizing the results of this research since it uses a smaller sample. In order to overcome this limitation, the sample should be extended. Therefore, 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. Additionally, data collection was carried out using both online and offline channels, a future research could be improved by using a unique approach. Also, for future studies, with larger samples for example, it is planned to analyze the moderating effect of demographic characteristics. Variables related to gender, age, social status, experience or user involvement with m-banking would be good examples, as well as the influence of the type of device, differentiating between smartphones and tablets etc. Another possible line of research would be to validate the model taking into account the socio-demographic characteristic traits and cultural differences of the respondents. The essence and nature of consumers' behavior is dynamic and complex, and therefore further research can be focused on longitudinal studies to compare changes in consumers' behaviors and explain different predictors.

6. CONCLUSION

M-banking is inevitable in conducting banking services not only in developed countries, but is gaining popularity in developing countries as well, especially in today's pandemic situation. The goal of this research is to identify the key determinates of consumer intention to use mobile banking services, by extending the TAM model with specific constructs which are hypothesized to influence intention to use mobile banking. Research hypotheses were tested using a single

regression analysis. The results of the empirical study are supporting the proposed research model and some specific relationships are unveiled. Opposite of other related research, social image proves to be not relevant for mobile banking in our sample. Most of the respondents do not agree using mobile banking will provide them with prestige and higher status. Probably mobile banking is more practical than image issue. Social image does not have an influence on intention to use, perceived ease of use and perceived usefulness, respectively. Overall, social image does not have significant contribution in motivation of the consumers to use mobile banking, according to the data of this survey. Performing mobile payments is not considered a status symbol. All other variables in the model (perceived usefulness, perceived ease of use, perceived risk, and perceived trust) have statistically significant and positive influence on the intention to use mobile banking.

Finally, the results of the study shows the main managerial implications and provides indications for identification of certain strategies to reinforce this new banking model in the context of new technological advances.

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STUDENT'S PERCEPTIONS ON BENEFITS AND CHALLENGES OF USING GOOGLE CLOUD-BASED TOOLS FOR E-LEARNING

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ABSTRACT

The introduction of innovations in traditional education systems has imposed the need for adjustments and changes to the entire education system and its participants. The most important moment in the evolution of educational systems is the emergence of e-learning platforms as a result of the growing importance of lifelong learning and their integration into traditional educational environments. Especially nowadays, when the world is facing with the pandemic of Covid 19, the importance of the e-learning process and the use of distance learning platforms comes to the fore. The Faculty of Economics in Prilep is adapting to the new situation. For the realization of the process of distance learning were used the tools of Google, i.e. the G Suite cloud-based tools, such as Google Meet, Google Classroom, Gmail, Google Sheets, Google Docs, Google Drive etc.

In this paper we will explore the perceptions of students at the Faculty of Economics in Prilep in terms of the benefits provided by these tools and the challenges faced by students in such a new situation where teaching took place completely on-line. For that purpose, a survey was conducted in which students from all study years were included. In this paper will be presented a qualitative and quantitative analysis of the obtained answers through the survey. The questionnaire was created with Google Forms and was delivered to students through the e mail.

The main aim of this paper is to detect student's perceptions of the use of cloud-based e-learning tools. In the future, when creating and accrediting study programs, the recommendations contained in this paper could be taken into account in order to introduce e-learning as a one of the possible ways for realization of educational process.

Key words: education, e-learning, cloud computing, innovation

JEL classification: I23, D83, C88

1. INTRODUCTION

Education is a key strategic element in enabling sustainable economic growth in the country. A country's education system must actively respond to external challenges, demonstrating strong flexibility and openness to innovation. Now more than ever, the focus is on the student, his requirements and expectations, as a follow-up to his individual capabilities and capacities. On the other hand, the intensive development of information technologies means their inevitable use in all aspects of social life, as well as in the educational system of a country (Zivanovic R. and all., 2010). The inclusion of information technology in the teaching and learning process is important component in all areas of higher education (Usun S, (2005). These technologies do not define society only in terms of access to information, but dictate its transformation into a knowledge society. Such a transformation of society is achieved if an effective change of the education system is enabled and new concepts of education are introduced. In that context, information technology is not only a means for achieving educational goals but also an important factor in restructuring the education system (Means and Olson, 1995).

Higher education as one of the foundations of society encourages and supports the development of the information society, i.e. higher education should be a promoter of the information society. This means creating professionals who will be able to respond to the challenges and needs in all segments of society. Following the development of information and communication technologies, higher education means creating young and innovative peoples who would deal with the challenges. One of the answers to this need is the development of e-learning. This new way of teaching and delivering of information to students have a growing expansion in the world, but also in Republic of North Macedonia. Also, the new reality that imposed the pandemic of the Covid 19 virus put e-learning in the foreground as a new way of implementing study programs at all universities in the world (Wahab A., 2020). The universities in the Republic of North Macedonia had to adapt to such a new reality by applying appropriate distance learning tools for the realization of the curricula.

E-learning as a teaching medium differs significantly from direct (face-to-face) delivery of information and knowledge and requires new options for courses development, their evaluation and interaction. The transition to online learning in large scale is very difficult because it is very complex even in the best of circumstances (World Bank, 2020). Software packages designed to help professors to create quality online courses have the role of facilitators of communication between teachers in the role of mentors and coordinators and its students.

2. CONCEPTUAL FRAMEWROK OF E-LEARNING PROCESS

E-learning is a computer based educational tool or system that enables to learn anywhere and at any time and is mostly delivered through the Internet. Technology has advanced so much that the geographical gap is bridged with the use of tools that make you feel as if you are inside the classroom. E-learning offers the ability to share material in all kinds of formats and communication between participants of the process without barriers.

The term e-Learning dates back to the 1990s, when various applications began to take on a recognizable form. The first type of definition includes the following: "E-learning refers to the use of computer and network technology to acquire knowledge and skills" (Kenneth J. and Brown A. (2005). By the early 90s several schools had been set up that delivered courses online only and bringing education to people who wouldn't previously have been able to attend a college due to geographical or time constraints. Technological advancements also helped educational establishments reduce the costs of distance learning, a saving that would also be passed on to the students - helping bring education to a wider audience.

E-Learning, in comparison with traditional learning, significantly reduces the time needed to locate information. It also offers access to online resources, databases, periodicals, journals and other material that students wouldn't normally have access to from a library. If a student has trouble understanding part of the coursework, finding tips on the matter couldn't be easier than having immediate access to supplementary, unlimited and mostly free material online. Those characteristics can potentially maximize the time spent actually learning rather than looking for information. Universities already embrace the power of e-learning to deliver content to students all over the world, even for free. At a time in which universities are under great pressure to deliver education, combining technology with education is integral to coming up with a final product that will empower the educational institution, set it apart, and allow it to grow its student base worldwide.

The European Commission proposes a broad definition of e-learning: "using new multimedia technologies and the Internet to improve the quality of learning by providing access to resources and services, as well as distance exchange and collaboration" (quoted in Nerguizian V. and all., 2011).

In many organizations and institutions, e-learning has been completely adopted as part of the training strategy. The Internet and its related technologies have enabled the integration of many different learning resources and a wide range of ways, activities, and modules through which learning can be implemented. The most important activities and modules through which the e-learning process goes are Lectures (instructions, concept, demonstration, workshops), Collaboration, Practice (software simulations, interactive exercises, problem analysis, web projects, online laboratories) and Evaluation.

E-learning is a technology-supported type of education (Technology supported education / learning) where the medium of teaching is through computer technology, especially with the inclusion of digital technologies. Very often e-learning is called "pedagogy empowered by digital technology" (Titrade C. and all., 2009).

Today there are a number of e-learning systems and platforms. Some of them are open source, others have a protected source code and are made for commercial purposes, and also there are cloud computing platforms for e-learning. Some of them are free to use, some have minimal usage fee, and some are relatively expensive, and include maintenance, servicing and updates. Differentiation also can be made according to whether they are in one or more languages, especially because of the international dimension of the larger companies and institutions that apply them. To be used effectively, the selected e-learning platforms need an overall evaluation of the utility and usability specifications to be well exploited and used in the best conditions (Ouadoud M., 2016).

3. BASIC TOOLS OF G SUITE FOR EDUCATION

Perhaps the most well-known and commonly used e-learning tools for education are Google's distance learning tools. Those tools are united in a cloud e-learning platform called G Suite for Education (Google Apps for Education). To use this platform, educational institutions had to create a Google account as an institution that implies certain administrative responsibilities such as creating accounts for all users who are part of the institution (professors, administration and students). The University of St. Kliment Ohridski and thus the Faculty of Economics in Prilep meets this basic prerequisite for using G Suite for Education. This cloud platform was used also previously for distance learning but mostly in second and third cycle of studies. Especially during the pandemic with the Covid 19 virus, G Suite for Education was used for the realization of the teaching process through e-learning on all cycle of studies and on full capacity.

It is a cloud platform that has applications that are fully compatible with each other. This platform allows user-friendly oriented communication between students and professors and

enable performs a number of tasks that are specific for modern teaching and learning process. It's very useful that any of these applications is customizable by the client. The most often used cloud-based tools from G Suit for education platform are:

- **G-mail-** G-mail is a common e-mail tool that provides a simple way to create an account for each user. Each user has a 25 GB of storage space which is directly connected and provided by the data storage tool Google Drive. Google's e-mail tool also has an effective anti-spam filter. Each account can be customized depending on the user's needs.

- **Google Classroom-** Google classroom is platform on which teacher can organize material and assignment for students. All class materials can be stored on Google drive. This feature helps teachers to see weather student complete the work and give real time feedback and grade. In addition to providing communication between professors and students, this platform also provides communication between the students themselves. Teachers can grade assignments and return them to the students with feedback.

- **Google Hangouts and meet-** Google Hangout gives users the opportunity to hold virtual meetings, virtual training classes, remote interviews and many other benefits. It is directly related to Google Calendar, where meetings, trainings and interviews are scheduled. This tool allows mutual communication of a maximum of 250 participants.

- **Google Drive-** Google drive can be used for storing photos, videos, document files and folders. Google drive is a cloud storage platform and users can access to the resources through any devices, any time from any place. Also, these resources that are stored on Google Drive can be shared with some group or individuals. Very useful is possibility that offers to users to work on same files simultaneously. This feature allows to user collaboration and communication.

- **Google Calendar-** Time-management and scheduling calendar service that allows users to keep track of all their events and tasks. These tasks can be either shared with selective users or kept public for the class to subscribe.

- **Google Forms-** Google forms as a tool can be used for different needs of teachers. This tool is most commonly used to create quizzes or surveys but can also be used for managing assignments, collecting student feedback, writing book reviews, and collaborating on group projects. A useful feature of this tool is that it allows the collection of answers and provides basic analytical reviews of the obtained results. Then these results can be copied in another editor (Google Docs, Sheets) for further analysis.

- **Google Sites-** Google Site is a tool for creating websites and advantages of this tool is that the site created with Google Site is easily indexed in Google search. Also, forms and surveys can be added to the sites to collect needed data.

- **Google Docs, Sheets, Slides-** Google Docs is a tool that is very similar to Microsoft office and allows the use of basic text editors, spreadsheets and presentations. This tool is fully compatible with all tools in G suite for education.

Each of these cloud-based tools may be used individually but it is the joint use what makes the G Suite a unique and very useful set of tools. Google Suite for Education and "Google Universe" in general is a powerful group of integrated tools that it is worth to use.

Today's way of education requires the application of modern teaching methods enriched by the application of ICT, and this is especially expressed in higher education. In this way, all barriers for students are overcome, both in terms of geography, time and in terms of study costs. The tools that enable such a modern way of education are the G suite for education tools. Above all, it is important for every University to maintain a culture of using ICT in the teaching process if it wants to keep up with world trends. This will greatly contribute to

attracting more and more foreign students because the application of e-learning overcomes all barriers. The pandemic crisis with the Covid 19 virus has further highlighted the importance of e-learning and the use of G-suite tools for the teaching process.

4. EMPIRICAL RESEARCH OF THE PERCEPTIONS OF STUDENTS FOR BENEFITS AND CHALLENGES OF USING E-LEARNING TOOLS

To explore student's perceptions of the benefits and challenges of using G suite for education tools, was used the method of representative sample and were used combined questions of different types. The data was obtained through an on-line questionnaire that contained closed-ended questions and also was used Likert scale for certain specific questions. The questionnaire was created with Google Forms and was sent via e-mail to the students of the Faculty of Economics in Prilep from all study years.130 students answered the questionnaire, which is an appropriate and representative sample on the basis of which relevant conclusions can be drawn. Due to the limited size of this paper, only the description of the obtained results will be made, and this will be the basis for further research through the use of appropriate quantitative analysis.

The first group of questions referred to the status of students who were covered by the questionnaire. Table 1 shows that are covered students from all study years equally, while regarding the department of study, most of them are in the department of Banking and finance and Accounting and audit, which corresponds to the structure of students enrolled in Faculty of economics in Prilep. The structure of students by departments is shown in Table 2.

Table 1. Year of study

Year of study	Percent
First year	25.38%
Second year	23.85%
Third year	31.54%
Fourth year	19.23%

Table 2. Department of study

Department	Percent
Banking and finance	31.54%
E-business	7.69%
Marketing management	12.31%
International business	1.54%
Management	3.85%
Accounting and audit	43.08%

Also, most of the students were female or 70% while male was 30% of the students.

Very interesting is the situation with the use of e-learning tools before the pandemic with the Covid 19 virus. This is exactly what the question is: Did you use any on-line learning tool before the pandemic with the Covid 19 virus? The majority of respondents, or 64.34%, answered that they did not use any distance learning tools, while 35, 66% answered yes to this question. This confirms the fact that before the pandemic, e-learning was very little used as a modern and contemporary concept in higher education. Even where such methods were used for the realization of the teaching process, they were usually the second and third cycle of studies. This is shown in Figure 1.
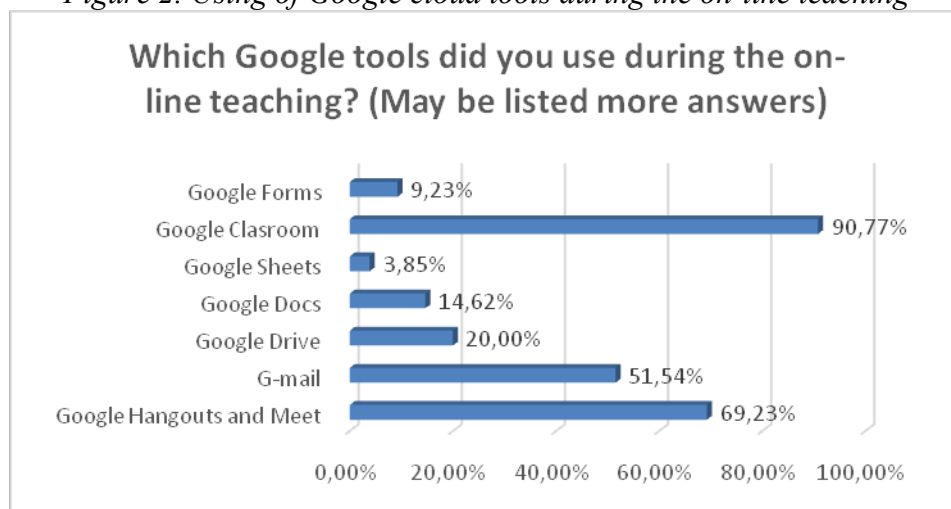
Figure 1. Using of on-line learning tool before the pandemic with the Covid 19 virus

Did you use any on-line learning tool before the Covid 19 pandemic?

64,34%

35,66%

80,00%
60,00%
40,00%
20,00%
0,00%

yes   no
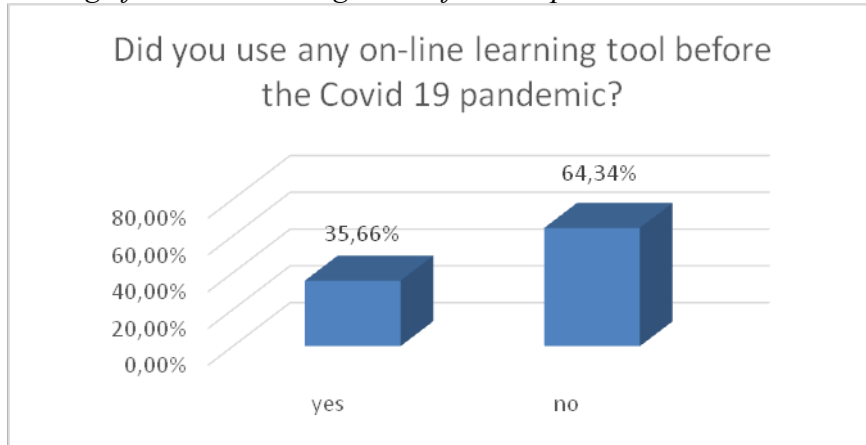
Universities should strive to make the most of the benefits that e-learning offers as a concept, as it has proven to be an effective tool for overcoming the barriers to the educational process. Especially in today's conditions, the pandemic with Covid 19 virus puts in the foreground all the advantages of e-learning that will be presented in this paper.

During the on-line teaching, professors and students were able to use a number of tools that are part of the Google cloud education platform, i.e. G Suite for education. The next question concerns which tools were most commonly used in teaching process by the professors and students at the Faculty of economics in Prilep. The results can be seen in Figure 2. Students may choose more answers to this question because more than one e-learning tool is used during the teaching process. In addition, these tools are fully compatible and are often used as a complement to each other. Almost all students used the Google classroom tool or 90.77%, while many students also used Google Hangouts and Meet for online learning or 69.23%. Respondents also frequently used G-mail for communication or 51.54% of respondents, while other tools from the G Suite platform were used relatively infrequently. Cloud tools that are less commonly used by students such as Google Drive, Google Forms, Google Docs and Sheets offer many opportunities. Using those opportunities would make the e-learning process easier.

Figure 2. Using of Google cloud tools during the on-line teaching

Which Google tools did you use during the on-line teaching? (May be listed more answers)

Tool	Percentage
Google Forms	9,23%
Google Clasroom	90,77%
Google Sheets	3,85%
Google Docs	14,62%
Google Drive	20,00%
G-mail	51,54%
Google Hangouts and Meet	69,23%

0,00%   20,00%   40,00%   60,00%   80,00%   100,00%

In this study, students were surveyed about the device they used to monitor online teaching. In addition, most of the students followed the lectures via laptop and smartphone. Also, this

question was offered the opportunity to choose more than one answer, and it can be concluded that the same respondents used different devices when monitoring e-learning.

The next question in the survey is how much students are agreeing to maintain on-line teaching. The answers offered for this question were according to the Likert scale and according to the obtained results 21.9% of the respondents strongly agree, while 36.7% agree. Accordingly, 58.6% of respondents agree to follow this type of teaching, which is a relatively small percentage of world trends. Students are having some difficulty following online teaching, so the percentage of respondents who agree with this type of learning is relatively small. In the following analysis, we will return to why there is such a mood among students. Obtained results are presented on Figure 3.

Figure 3. Students agreeing for on-line teaching
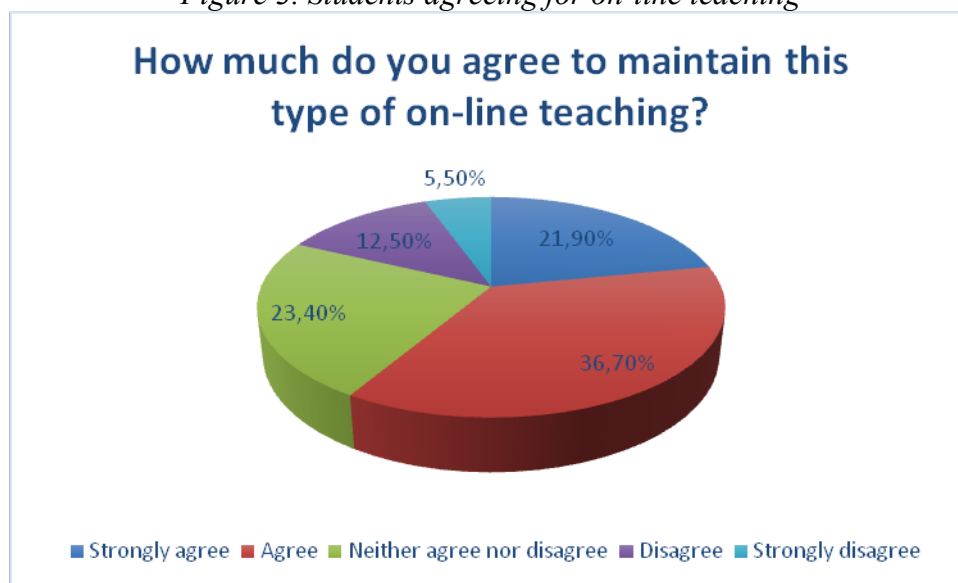
The most important part of this research concerns the student's perception of the benefits of using G Suit for education tools, but also the challenges that their users face. This is exactly what the next two questions in the survey are about.

Regarding the benefits in the survey this question were according to the Likert scale. Most respondents agree with the benefits of using the G Suite for education platform. The benefits of using these cloud tools were: the tools are easy and simple to use, interaction is possible between students and between students and professors, easy monitoring of events, easy access to the necessary learning materials, reduction of paper documents (papers, homework, quizzes),documents cannot be lost, facilitated on-line discussion, you are constantly informed, using these tools is free and save time. These results are shown on following figure.

Figure 4. Benefits of e-learning tools
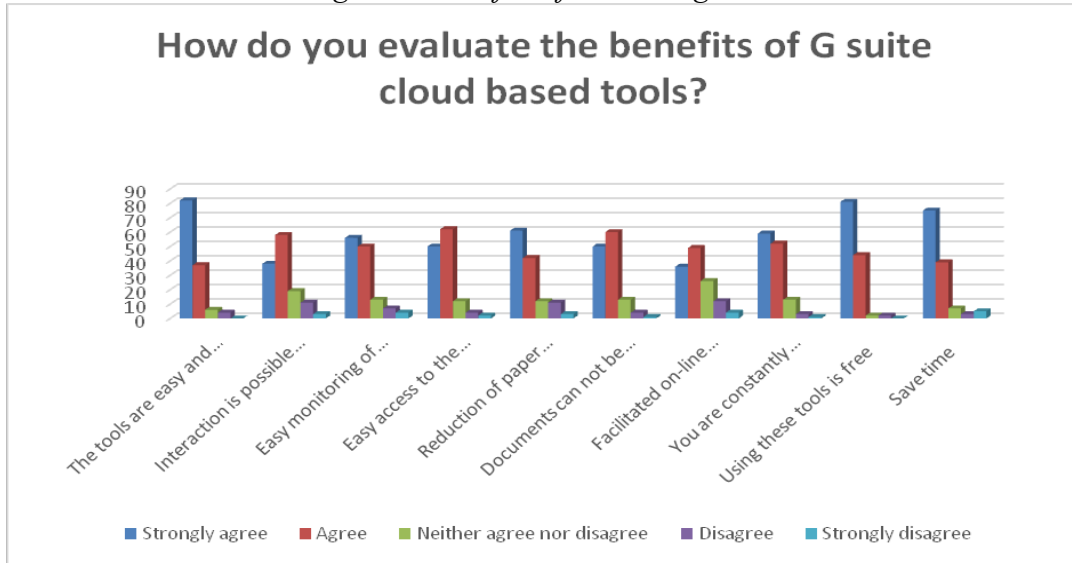
From the obtained results it can be seen that the respondents rank the benefits as the highest: the tools are easy and simple to use, using these tools is free and save time and after that are followed by the other benefits. However, the general conclusion is that students are satisfied with the use of G suit for education tools.

The next question concerns the problems and difficulties faced by users in the implementation of e-learning and the use of e-learning tools. From the analysis of the obtained answers we can conclude that the biggest problem of the students is not directly related to the use of G suite for education tools but to the access to broadband Internet. This problem faced by the respondents is directly related to their mood for the realization of online teaching which was analyzed in Figure 3. In that part of the paper it was presented that only half or 58.6% of the respondents agree to attend online teaching, which is a relatively small percentage.

As other problems that the students faced when using the G suite for education tools, that are problems primarily from the aspect of user registration (11,61%), language barriers (8,93%), upload and download of materials (11,61%) etc. The results are shown in the figure 5.

Figure 5. Challenges of using tools for on-line teaching
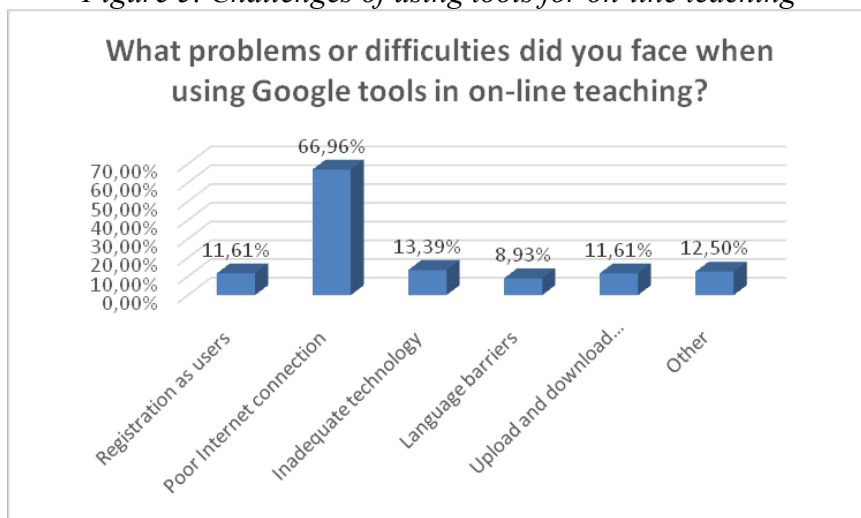
In this research, the results obtained in terms of preferences of the students for on-line teaching and conducting the exams in the future are especially interesting. First of all, when it
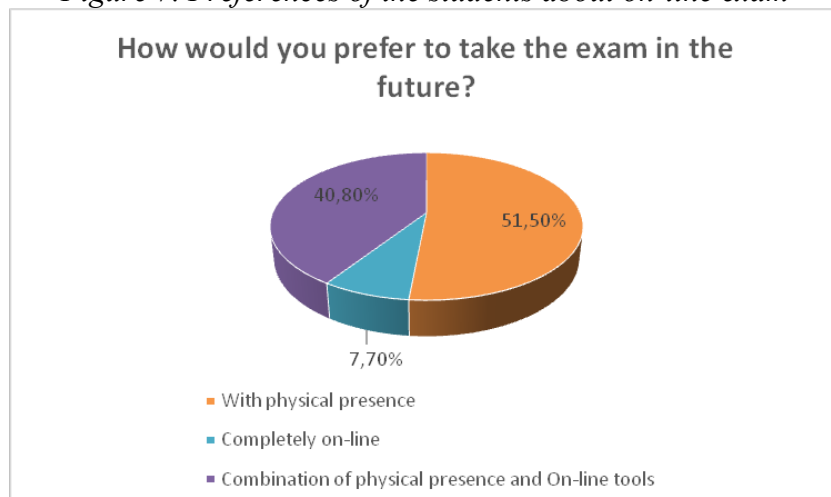
comes to student preferences for online teaching, most respondents said they prefer a combined type of teaching (physical presence and online teaching) or 56.9% of them. The percentage of students who are interested for fully on-line teaching is very small or only 16.9%, while 26.2% stated that they prefer classes only with physical presence. The results can be seen on the following figure.

Figure 6. Preferences of the students about e-learning in the future
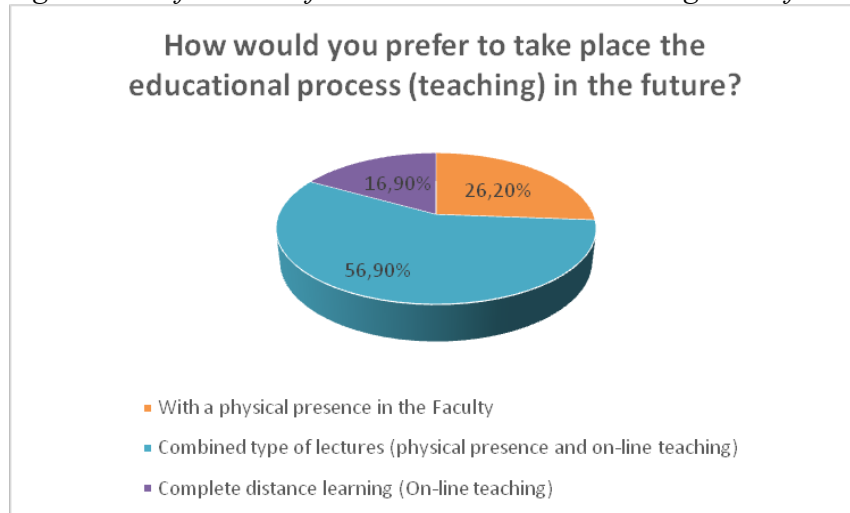
When it comes to on-line exams, most of the respondents stated that they want to take the exams with physical presence or 51.5% of them. The percentage of students who would like to take the full on-line exams is very small, or only 7.7% of them. A significant number of students, or 40.8%, prefer to take the exams through a combination of physical exams and online exams. These results show that students still do not have confidence in taking exams through on-line tools, but they still prefer to take exams through the traditional way of physical presence. These results are presented in Figure 7.

Figure 7. Preferences of the students about on-line exam

The data presented in terms of students' preferences for online teaching and take exam indicate the fact that most students prefer the realization of the teaching process and exams with physical presence or some combination of physical presence and on-line. These data

would be a good basis for research into the reasons for these situations and students' preferences for the future teaching process and exam realization.

4. CONCLUSION

Distance learning is a flexible and open approach in the educational process and offers many ways of doing things both on the professor's side and on the student's side. That is why the skills acquired through e-learning methods are much more numerous, more diversified and more applicable in reality, even though they are acquired in a virtual environment.

On the other hand, the realization of the e-learning process requires certain preconditions such as technical infrastructure, broadband Internet, computer for everyone involved in the process, but also appropriate legislation. This global trend and phenomenon are also applied in the Universities of the Republic of North Macedonia, although still modestly and with relatively low intensity. The need for such modern ways of implementing the teaching process further emphasized the pandemic with the Covid 19 virus. As a result of that, Macedonian Universities have had to adapt to these changes. The Faculty of Economics in Prilep has realized the teaching process on all three cycles of studies through the on-line tools, i.e. through the G suite for education platform. This is cloud platform especially for education and united many tools that are completely compatible themselves.

The need of implementation of distance learning is why we decided to conduct this research in terms of student's perceptions of the use of cloud-based e-learning tools. This paper gives many answers above all: Are students satisfied with this type of teaching? Are students satisfied with the tools used for e-learning (G Suite for education)? What were the benefits to them of e-learning? What problems did they face with? Their thoughts on how to teach and take exams in the future?

As a general conclusion from this research, it can be said that students are satisfied with this way of teaching, although some of them are still skeptical about the full on-line teaching process. Their skepticism probably stems from the problems they encountered during e-learning. According to the results, the biggest problem for students was the poor Internet connection, which is unacceptable in the 21st century. On the other hand, most students positively evaluate the benefits of using G Suite for education tools. Also, when analyzing the results obtained, it can be concluded that the benefits of using these tools are far greater than the problems faced by students. Regarding the problems when using the G Suite tools, those problems are insignificant and only a part of the students have faced them (user registration, language barriers, upload and download of materials).

Also, very interesting are the results of the research regarding the preferences of students for teaching and taking exams in the future. From these results it can be concluded that a very small part of the students prefers full on-line teaching, and an even smaller number of students prefer full on-line taking of exams. It means that it's necessary a lot of work to establish full on-line process for education, especially regarding the trust of students on this new modern way of teaching.

The results of this research can be the basis for further deeper analysis of all aspects of e-learning.

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AN OVERVIEW ON MANAGING CHANGES FOR BANK RISKS IN TIMES OF FINTECH (R)EVOLUTION: A CHALLENGE OR OPPORTUNITY?

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ABSTRACT

Most of the economic activities are becoming highly digital. In the past several years changes in the technological improvements and financial innovations had an enormous impact on the modern financial system. Worldwide, the banking industry has changed and integrated the financial technology (FinTech) in its everyday routine. Nowadays, for some financial members FinTech provides a big threat and a challenge for the traditional banking, while for some others it provides an opportunity for more flexibility, better service functionality and higher service quality. Overall, banks adopt innovations to satisfy customers' demands, despite the risks and challenges imposed from FinTech and new financial product development (NFPD). In general banks benefit from opportunities of the new product development in the aspect of allocating more efficiently the resources, reduction in transaction costs, promotion, revenue growth and profitability. The aim and objective of this paper is to identify and evaluate the main risks related to development of FinTech and financial innovations that banks are exposed to (on micro and macro level), and to provide recommendations on the reduction of those risks and controlling them. Based on literature review, researches proved that one of the major obstacle to firm`s innovativeness is the negative impact of the new financial product development on banking risks. It is recommended that in times of technological boom commercial banks should invest their available funds in suitable techniques for successfully accepting new financial product development.

Keywords: FinTech, Financial innovation, Managing changes, Commercial banks, New financial product development

JEL classification: G21, O33

1. INTRODUCTION

The banking industry worldwide has dramatically changed as a result of the growing use of technology on their every day basis. Financial technology (FinTech) along with the importance of innovations poses an important issue on the global economy. Nowadays, the banking industry is increasingly facing competition from nonfinancial institutions as a result of FinTech, making them think beyond traditional financial services, find more innovative solutions to survive during the technological boom and serve the demands of their customers. For the traditional banking FinTech is an evolution rather than revolution since it is diversifying and supplementing the existing system. So, rethinking to increase investment in FinTech is of a real high importance.

As a result of such revolution of the financial services because of the involvement of FinTech in the banking industry, many researchers believe that it imposes a big threat to the traditional banks facing different operational risks. Still some other researchers believe that FinTech poses a challenge which can be reflected as an opportunity for providing better service functionality and higher service quality, allocating more efficiently the resources and reduce the transaction costs of their services.

Overall, FinTech startups and banks have a lot to offer to each other. Fintech as new generations are quick adopters of changes and have more technical expertise, while banks on the other hand have stable assets, know-how expertise, stable infrastructure and large loyal customer base. Working together rather than competing against each other can be far more successful at improving the financial services and customer experience (Carey, 2018). In general, identifying the risks and opportunities of FinTech (r)evolution and new financial product development (NFPD) in this cosmopolitan economy seems of a high significance and importance.

Moreover, banks are better at monitoring and screening their clients like households and enterprises, making them better players in capital buffering, credit riskiness and deposit insurance. Clearly, in the world most of FinTech companies act as brokers, and in this case investors are left with higher insecurity and credit risk. Therefore, FinTech companies have riskier liabilities and asset portfolio then banks (Navaretti, et al., 2018).

The aim and objective of this paper is to identify and evaluate the main risks related to development of FinTech and financial innovations that banks are exposed to (on micro and macro level), and to provide recommendations on the reduction of those risks and controlling them. The scientific problem that is presented in this overview paper studies the fact that there is no clear evidence of risks imposed on the banking industry by the FinTech revolution through quantitative analysis methods. Therefore, the use of broader literature review, experts' evaluation (secondary data) and qualitative analysis are used to elaborate the problem of managing changes for banks in such revolutionary times.

2. LITERATURE REVIEW

Banks are institutions whose role is to collect deposits from the public and grant loans. Simultaneously, they are conducting three activities at the same time: transforming financial liabilities to assets, payment services and processing and collecting information (Freixas and Rochet, 2008). All of these are some kind of risks, and if they are not managed or controlled, bank runs can occur. Nowadays, banks are facing an increasing competition from FinTech companies, who are expanding their interference in the traditional services conducted by banks. But, it is a real threat or not is neither true nor false. All these depend on the steps that banks and FinTechs will undertake in the following years if they will want to compete or complete each other (Temelkov, 2018).

Since, in the last couple of years the traditional way of banking is marked with different challenges, financial services and activities have changed a lot. As a result, in the banking industry worldwide the importance of technological innovations is growing rapidly, they are expanding the range of their activities, making the link between banks and FinTech start-ups complementary. The following figure represents the evolution of financial technology in the financial sector through years:

Figure 1. FinTech – The digital (R)evolution in the financial sector
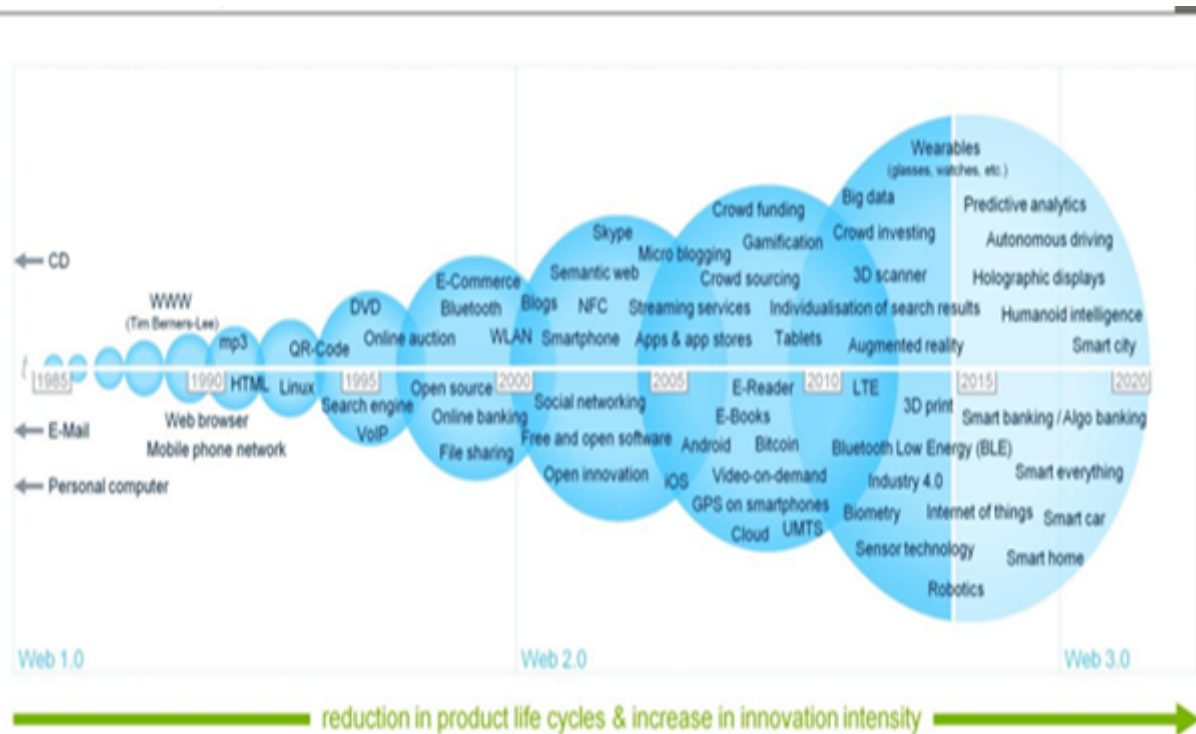
Another challenge is the regulatory compliance, and the adoption to constantly evolving regulations and the implementations for banks are expensive activities (Wong, 2017). In particular, for some categories of clients they experience an increase in regulations, especially those that are more risky. On the other hand, the new players such as FinTech companies have loosed regulatory framework in a way that they have a cost advantage over the banks in financing their clients (Temelkov, 2018). Consequently, the FinTech companies are entering the financial markets because of these underserved categories of clients who seek alternative ways of accessing financial funds and services, strengthening their position in the future (Wardrop et al., 2016). Also, traditional banks suffer from another weakness such as their complex bureaucracy and corporate structure, making costs even higher, while FinTech companies do not have such a complicated organizational structure for now.

Furthermore, in order banks to survive the big threat from technological innovations, they have to undergo the process of new financial product development (NFPD). Inventing a new financial product means to catch up with the latest trends, in a way of reducing growth instability, allocate more efficiently the resources and enable banks to have greater access to financial services (Dewati, 2015). But, the whole process of introducing NFPD has taken some steps accompanied with different psychological effects with time, as follows:

Figure 2. The five stages in an innovative technology's adoption life cycle
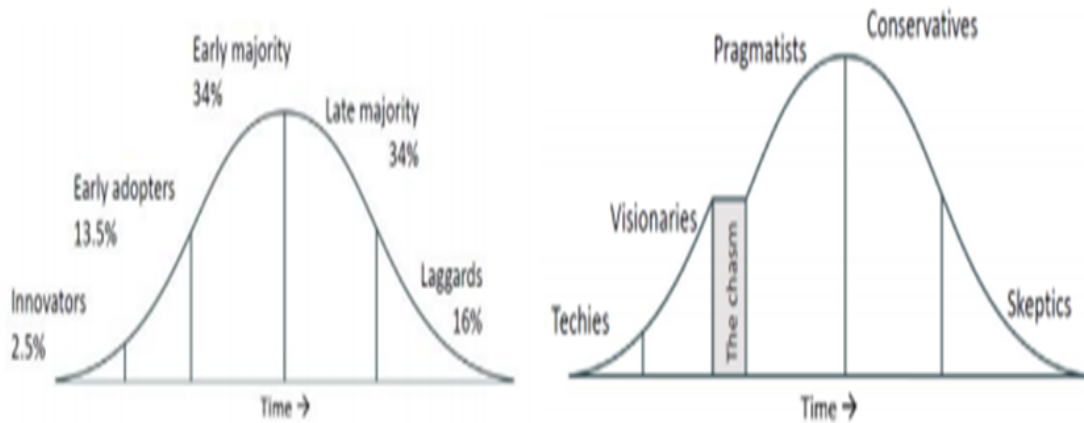
Source: (Aaron, et al., 2017)

According to Wadesango et al. (2017), there are benefits and challenges associated with the development of new financial products. Benefits like saving the market share and keeping the customer base high, providing services with higher quality and less resources, etc. As a challenge it can be taken into account the fact that NFPD has a negative effect on profitability and liquidity constrains.

3. THE IMPACT OF FINTECH AND NFPD ON TRADITIONAL BANKING

The rise of innovations and FinTech companies are posing high risks of various natures in the establishment of banking services. One of the very known is the liquidity risk that banks face in their everyday activities with the appearance of technological innovations. From researches' perspective an interesting question rises if FinTech companies do trigger liquidity issues in the financial system (Navaretti et al., 2018). Some of them say yes because they can act like a pool of funds when clients can make withdrawals whenever they need. While some others say no, because if FinTech companies issue loans and create less liquid assets in that way they will need a specific authorization to act like banks. In a way, banks are much more trustable institutions and relay under sticker regulations in emerging industries and developing countries.

Moreover, each new FinTech company in the future may offer only one service from the traditional banking, and the biggest danger of FinTech's impact on the banking industry is the fact that they will offer services at lower cost with higher accessibility. That is why because of the potential losses in revenues or benefits a lot of banks in the future will consider cooperation with FinTech companies, but each cooperation has pros and cons during its operation as follows:

Table 1. Risks and benefits associated from cooperation between banks and FinTechcomapnies

| Benefits	Risks
Strengthen the brand reputation	Differences in culture
Increase in mobile banking	Cybersecurity risks
Reduction in bank branches resulting in lower capital expenditures	Difficult to find qualified workers

Attract new customers from different places with less capital expenditures	Investing is risky
Involvement of younger generations	Legislation and regulatory complexity
	Technical issues in integrating banks' and FinTechs' functions.

Source: (Manatt, 2016)

According to Temelkov (2018) traditional banking with the introduction of financial technology will face decreasement in customer base and higher profit loss which will initiated the necessity for banks to make alliance with FinTech companies. Also, many researches seriously consider the fact that banks should start partnering with FinTech companies if they want to have stable profits, if not, with the development of highly efficient competitors banks will realize a decrease in their revenues approximately from 29 – 35%. On the other hand, if banks start the digitalization process and financial transformation on time, except from maintaining their position, they will also increase their profits.

Furthermore, with the implementation of the interaction between commercial banks and FinTech companies the analysis can be expended through different variables like costumer behavior, regulations, investments and technology trends. All of the taxonomy of the interaction can be very profitable in the future industry of banking. According to Vasiljeva and Lukanova (2016), in the below figure is presented a better taxonomy of the mentioned interaction:

Figure 3. The taxonomy of the interaction between FinTech and Banks with other variables
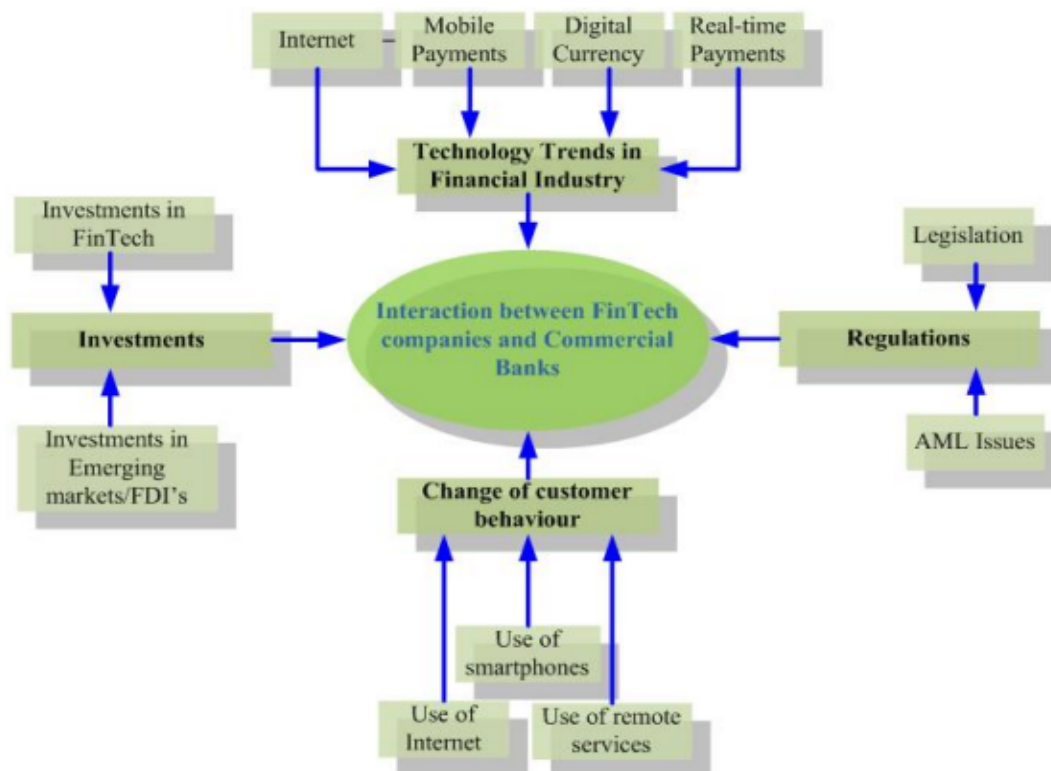
Source: (Vasiljeva&Lukanova, 2016)

In addition, if a new technology is indeed able to cross the financial system, the analysis then turns to whether the FinTech firm can secure a sustainable competitive advantage within the banking market. That is why despite the pros and cons of the cooperation between banks and FinTech start-up companies, banks should keep in mind the development of new financial techniques and the adoption of new financial product development (NFPD) as it is of a high significance and importance during the penetration in the digital world. Banks among themselves should consider the Porter's five forces when developing new financial products in order to catch up with the fast emerging financial technologies. The following table summarizes the Porter's approach:

Table 2. Porter's five forces

Force	Description	Attributes
Supplier bargaining power	The amount of pressure suppliers are able to place on a business	• Provider of funds[29] • Knowledge experts[30]
Customer bargaining power	The amount of pressure and/or influence customers are able to place on a business	• Customer vs. firm concentration • Switching costs • Substitutable products • Price sensitivity
Threat of new entrants	The ease with which new companies can enter the industry	• Cost advantages • Economies of scale • Barriers to entry • Capital requirements
Threat of substitutes	The likelihood that a customer will switch to a competitive product or service	• Relative price and/or performance • Propensity for substitution • Switching costs
Competitive rivalry	The intensity of competition among existing firms in an industry	• Competitor concentration • Capital intensity • Growth prospects • Exit barriers • Product differentiators

Source: (Aaron, et al., 2017)

Each of the competitive forces can help reveal the root causes of an industry's current profitability and losses over time, provide a framework for influencing and anticipating competition in the financial system. However, today there are a lot of challenges and uncertainties in the financial world and analyzing the impact and riskiness is of a high importance when considering new financial product developments in the banking industry (Bervas, 2008).

Based on different studies, I can realize that the technological era in the banking industry is identified through a range of applications and functions, such as: upgrading the current products and services while reducing their prices, introducing new products in the banking market, promoting competition and introducing new business models. Moreover, the function of the regulatory body is a mixture of allowing further the development of financial technology and protecting the financial sector from any possible risks. Since the new trend of penetrating the

market with technological innovations and FinTech companies is present worldwide, then the revenues of the banks by 2025 will be reduced by 10 to 30 percent.

4. CONCLUSIONS AND RECOMMENDATIONS

For many years banks enjoyed a comfort zone for conducting and offering their traditional financial services. Nowadays in the developing world, banks are facing major dangers from the technological innovations, including the potential entrance of FinTech companies. Thus, in order to survive, banks are willing to undergo several proactive activates to create values, save their market position and keep the customer base high. Therefore, the whole process of practicing to adopt new financial product development and information management technology innovations, together with the process of integration of banks and FinTechs in the future, refers to big opportunities and benefits for the financial market.

Based on researches, banks are working towards improving their efficiency in the process of automation, processing data and digitalization. Regardless of having strong market position while reliability and trust for FinTechs are not yet built, they continue to face challenges for conducting the traditional ways of banking. Even though FinTechs are not prone to strong regulations like banks, a future cooperation between these two financial forces can ease the access to financial sources and deliver perfect products and services for costumers. That is why it is recommended for commercial banks to emphasize their available funds and invest them in suitable techniques for successfully developing new financial products to apply the new era of customer preferences, penetrate successfully in the market and implement many new FinTech innovations or/and cooperation with the future availableFinTech companies.

Moreover, the rapid technological innovations and customers demand raise the need for employing skilled workforce, come up with new software and invent new financial products to maintain and reach the expectations of all the subjects of the economy. Many banks should involve themselves into innovations, especially in new financial products development (NFPD) to save themselves from any kind of difficulty or illiquidity. In such cases, all this requires banks to reorganize their product innovations in order to strengthen and keep their market share. Finally, banks have two choices. The first one is that they try to keep their market share though technological changes in their current business processes and the second choice is the possibility for a bank to enter into an agreement with a FinTech company. Instead of battling with the new competitors banks are initiating steps to enjoy the benefits offered by each other through technological innovations, increasing the profits and customer base.

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EFFICIENCY MEASUREMENT OF CUSTOMER SERVICE CALL CENTER

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ABSTRACT

Customer feedback has become an important policy instrument in the business company, and it is essential for the customer base and policy development. One of the evaluation methods of customer satisfaction and loyalty can be the reports that are created in the company's customer support center. Therefore, companies must maintain a high number of customers to be efficient and successful. Data Envelopment Analysis (DEA) is a linear programming based technique for measuring the relative efficiency of decision-making units (DMUs) where the presence of multiple inputs and outputs makes comparisons difficult. In this paper, the DEA method evaluates the efficiency rate of customer service in 29 call center companies. The study was conducted based on the obtained data for service performed through the telephone. DEA research is based on the data available for the period from September 2017 to April 2019. The main goal of this analysis is to determine which customer-suport call centers in the world are efficient and which are inefficient. Based on the results,, it was established that a small number of centers are efficient in the observed period. Furthermore, for inefficient centers, comparing those to efficient ones, the DEA method is giving us information why they are inefficient and could direct the future development policy.

Keywords: Data envelopment analysis, Customer' service, Call center, Relative efficiency.

JEL classification: C67, C80

1. INTRODUCTION

In today's business environment, companies mainly rely on the income that comes from customers (Tsai & Lu, 2009). Acquiring new and retaining customers is difficult and costly in term of marketing. Since the company tend to keep the current rather than to acquire the new customers, it needs to enable and promise that their customers will be satisfied and become loyal (Dučić, 2018). Besides the other components, customer satisfaction and loyalty also is related to the customer support system. Nowadays, customer support call centers become an integral part of the support system (Chicu *et al.*, 2016). Therefore, the agents in call centers must perform their assignments effectively to contribute to the efficiency of the whole customer support centre (Dučić, 2018).

Customers contact centre to get support before, during and after a purchase. They get immediate access to support, resolutions for any issues, buying possibilities and information from friendly and knowledgeable employees. Contact centers let a customer get advice and information about the range, services and shopping, get help before, during and after buying.

The customer's satisfaction is vital for one company. If we want our customers to be satisfied, then one contact centre has to be efficient. This means that employees have to provide customers with advice and answers, quick problem resolution and ensure the trust of the customer. Efficient customer support center needs efficient and knowledgeable employees if we want our customers to get advice from competent, skilled agents.

The efficiency of the agents and call centers may be evaluated using key performance indicators at the individual or companies level (Chicu *et al.*, 2016). But, efficiency could be measured by creating an index as a combination of different input and output performance indicators. For that purpose, we suggest using Data Envelopment Analysis (DEA) method. DEA measures relative efficiency using various incommensurate inputs and outputs in the absence of market prices (Charnes *et al.*, 1981). It provides a relative efficiency measure not relying on the application of a common weighting of the inputs and outputs (Tongzon, 2001). The field of DEA is growing steadily, bringing unabated interest from the management science and business communities, and continuing to be applied in practice to address new problems in policymaking and executives (Banker & Podinovski, 2017). DEA is a suitable method for service evaluation and management (Sherman & Zhu, 2006) since it provides parameters efficient projection and importance for each unit under evaluation. In this paper, we use DEA as a data-driven approach to give us information about customer support contact centers' efficiency and what is required to do in order to become efficient for each of them. The efficiency of 29 call centers, under one global, multinational company, in different countries all over the world, will be analyzed based on data in the period from September 2017 to April 2019. The results of the study showed that the call center could be effective only if it provides exceptional customer service; it means responding to challenging requests and solving within the shortest time possible.

The paper is composed as follows: Section 2 describes the DEA basics; Section 3 contains a study about the relative efficiency of customer service call centres, and finally, the main conclusions are summarized in the last section.

2. METHODOLOGY - DATA ENVELOPMENT ANALYSIS (DEA)

DEA is a nonparametric technique for measuring the efficiency of complex entities with various inputs and outputs (Charnes *et al.*, 1978). Based on the data on inputs and outputs, such an analysis can determine whether the individual decision-making unit (DMU) is going to be decided as inefficient, enveloped by oreffient one placed on the efficiency frontier.

There are numerous modifications of DEA models depending on whether inputs or outputs are deemed controllable or part thereof, whether constant or variable returns to scale are allowed, and so on (Banker & Podinovski, 2017). The basic output-oriented, a constant returns-to-scale (CRS) model (Charnes *et al.*, 1978) is as follows:

$$\min h_k = \sum_{r=1}^{s} u_r y_{rk} \tag{1}$$

$$\text{s. t.}$$

$$\sum_{i=1}^{m} v_i x_{ik} = 1 \tag{2}$$

$$\sum_{r=1}^{s} u_r y_{rj} - \sum_{i=1}^{m} v_i x_{ij} \geq 0, \ j = 1,2,\dots,n \tag{3}$$

$$u_r \geq \varepsilon, \ r = 1,2,\dots,s \tag{4}$$

$$v_i \geq \varepsilon, \ i = 1,2,\dots,m \tag{5}$$

where:
- x_{ik}– is the level of input ith of DMUkth;
- y_{rk}– is the level of input rth of DMU kth;
- h_k –relative efficiency of DMU$_k$ (obtained as maximum possible achievement in comparison with the other DMUs under the evaluation);
- u_r– are weights assigned to the rth outputs, $r = 1,..,s$;

- v_i –are weights assigned to the ith inputs, $i = 1,..,m;$
- ε small nonnegative number..

This basic CCR DEA model should be solved n times, once for each DMU_k. The efficiency score of the observed DMU_k is given as virtual outputs (sum of weighted outputs).

3. EFFICIENCY MEASUREMENT OF CUSTOMER SERVICE CALL CENTER

3.1. Customer support contact centre

Contact centers are widely used to allow an enterprise or business to efficiently handle customer enquiries, complaints and support, and to allow an enterprise to make contact with existing or potential customers.

Contact Center is one part of a company responsible for support to the customers' needs. It is a crucial element of being multi-channel since it connects all those channels (Aksin*et al.*, 2007). They are widely used to provide support throughout the whole process of buying in trying to increase or maintain customer satisfaction. Customers contact call centers via different methods. Having more contact methods ensures a higher possibility of serving more customers. The traditional name for the contact center was call center because they had only one contact method, and that was the phone. Even nowadays, the main contact method still is the phone. But today almost all contact centers provide other supportive contact methods like mail, chat, and social media. This is the reason why the name call center evaluated into the Contact Center (Dučić, 2018).

In one contact center agents answer to all customer questions, and they are mainly responsible for customer satisfaction. Since the issues might be different, contact center is divided into groups or teams responsible for the particular set of of customer's needs. If one team is too busy, the customer will be transferred to another less busy queue. Aim of creating different teams is serving customers as fast as possible to improve customer satisfaction related to waiting time.

On, the other hand, comparing to the traditional contact centers, today virtual centers enables their employee to work from home. This is a comfortable way of working because in this way employee feels more relax and become more productive. Also, this way of working affects lower costs for the company. Remote working presents a very popular form of working today. In some periods this should be very useful and essential for one company in pandemic periods too when only this way of working is possible. Therefore, Contact Centers are essential for companies because they present direct connections between one company and customers charge for handling customer enquiries, complaints and support and to provide existing or potential customers (Delaney, 2005). Through the Contact Center, companies know what they should change to improve their business and cover all customers' needs.

Efficiency evaluation can be done on the individual level of employees at the level of contact centers. In the rest of this section some we will discuss operating on each of those levels.

3.1. Contact Centers' Efficiency Measurement

Customer support efficiency depends on employees' efficiency. One way of evaluating their efficiency is through communication with customers in order to estimate if company values are respected or not. The customer support centre's Team Leader chooses randomly one conversation for one employee and evaluates if he/she presented the company in the best possible way and respected all company's values. The highest score that one employee can get is 100%. The form of evaluating is the same for all contacts methods. But this is only one way. Different tools for customer support resource evaluation have been developed. For

example, Anderson and Ramsey (2007) developed a system for peer group evaluation to compare expected and actual behaviour in real-time.

The determinants of one contact centre are divided into three groups of indicators: employee attitude, employee performance and company system's performance (Chicu*et al.*, 2016). Data on those indicators can be collected through a survey or captured from applications used by employees and later efficiency measurement. As an example, the customer service representative's performance is evaluating using DEA/network model (Poykayil Jayananda Panicker, 2002). Fuzzy Sets are used in paper to overcome the issue of data imprecision. Obviously, DEA method is proven to be an appropriate method of individual efficiency evaluation (Zbranek, P. 2013; Khodamoradi *et al.*, 2016).The DEA can be used even when the service quality needs to be measured for example in education (Popović *et al.*, 2020) or in sports industry (Ruiz *et al.*, 2013; Radovanović *et al.*, 2014). DEA is also used for measuring contact centres efficiency based on similar determinants (So, 2007; Mohammadi *et al.*, 2017).

3.2. Contact Center Technology

In this paper, the efficiency of the contact centers of one global manufacture company will be evaluated. . In the scope of this company are home products and services related to assembly and delivery. In this contact centre, one employee is familiar with 20 applications, simultaneously using more than two from time to time. One of the essential technologies for all customer support centres is IVR (Interactive Voice Response). All incoming contacts have to go thought IVR and possibly reach the responsible agent. Depending on questions, customers will be placed in queue specific for resolving those kinds of problems. Other applications needed for regular daily routine are a system for receiving calls, application for claims and sales, application for tagging the calls or chatting application (Dučić, 2018).

The system for receiving calls offers a complete scope of programs and services to the contact centre. For example, the application for claims and sales is a system for processing and handling requests. This system helps to take care of customers' demands from registration to problem solution. Through this system, the company can have a whole history of all claims and information about our customers' issues. Application for tagging calls is an application for tagging and recording why customers are calling the contact centre. The company uses those applications to collect the big data on services, products and the reasons for customer dissatisfaction. Having this big database, data-driven approaches can be used for determining and predict the most demanding services and products and most frequents customer complaints (Moazeni & Andrade, 2018). Chat applications allow reviving and answering on web pages during customer visitation.

3.3. Efficiency Indicators

Key performance indicators (KPI) help to clarify the most critical areas to drive customer experience, as well as the mission of the contact centre. To monitor performance, the contact centre has to define and measure KPIs. Based on KPIs, it is possible to evaluate performance and to make plans for improvements. The contact centre has to recognise performance which is instrumental in improving customer satisfaction and loyalty. All KPI are essential measures that give a good sign if the business is performing in line with overall business goals. KPIs are different for each of the contact methods.

In this paper, contact centers' efficiency will be evaluated only for one contact method / the call. All important KPIs are listed below covering all three determinants of service quality (Chicu *et al.*, 2016):

1. **Phone Service Level** – number of responses to customer calls within the service level. This KPI is measured as the ratio of the number of answered calls within 60

seconds to the total number of the incoming call. This KPI has to be continuously monitored in the real-time.

2. **Call Volume Offered to IVR** – the total volume of incoming calls to IVR system in a particular period.
3. **Call Volume Offered to Queue** – the ratio of the total number of calls in a particular period to the number of calls queuing for the agent. This KPI is commonly followed on a monthly level.
4. **Call Volume Answered by Co-Workers** – the total volume of inbound customer calls handled or answered by agents. This KPI should be monitored continuously and in real-time.
5. **Average Speed of Answer** – the average waiting time. The cancelled calls should be taking into calculation carefully.
6. **Average Handle Time** – the average time agents spend processing a transaction, including time spent in communication with end-users.
7. **Average Hold Time** – the average time customers were on hold.
8. **Average After Call Work** – the average unavailable time of agents necessary to finish additional activities after finishing the previous call.
9. **Call Volume Abandoned in Queue**–the number of calls that are disconnected by the caller or incorrectly answered.
10. **Inbound Noncustomer calls**– the number of calls coming from other sources than customers.
11. **Outbound Calls** – the number of calls directed from agents to customers. The purpose of this call is mostly informing customers about claims, the status of their order, or other reasons.
12. **Self-served indicator** – the share of calls completed using IVR Self-Serve Functionality out of the total offered calls to the IVR.
13. **IVR Abandonment Rate** – the percentage of callers who contact the IVR, perform no meaningful task and abandon.
14. **Transferred Calls Volume** – the total number of calls that are transferred from one queue to another queue.
15. **Hours of Service**are not part of the KPIs but also crucial since the number of hours depends on the number of served customers.

At the beginning of each month, Business Analysts in each of the call centers create standard monthly reports containing all those KPIs.

3.4. Efficiency Results– Case study
It is already mentioned that the main objective of this case study is to determine the relative efficiency index of 29 call centers in 29 countries all over the world operating inside the multinational company As we already mentioned, the contact centers' performance are monitored using the monthly reports containing multiple KPIs listed in the previous section. In order to ease performance monitoring, we are making one efficiency index using some of the essential KPIs as inputs and outputs and DEA model (1-5). The parameters (Malhotra & Mukherjee, 2004; Carlaw *et al.*, 2003) used for the solving CRS DEA model are as follows.
Inputs:
1. Number of employees
2. Average handling time (hh:mm:ss)
3. Number of offered calls (monthly)

Outputs:
1. Number of answered calls (monthly)

2. Number of calls answered within 60 seconds ("Service level")

Average handling time is one of the key measures for any contact center planning system because it tells how long a new item of work takes to be handled as well as the talk time. The number of calls answered depends on the services offered. If one call center has a higher number of offered calls, a higher number of employees follows it. If one call center has a higher number of employees, it probably would have higher performance and would achieve better results. Service level is a measurable number of services provided to a customer within a given period. In the context of this study, this parameter is used to measure the percentage of incoming calls that agents answer live during the 60 seconds. Descriptive statistics of those input and output parameters values overall observed period,, is given in Table 1.

Table 1. Descriptive Statistics

Parameters	Average handling time (in minutes)	Number of offered calls	Number of employees	"Service level" calls (calls answered in 60 seconds)	Number of answered calls
Max	16.307	5377321	12795.00	2048569	3833847
Min	3.145	72510	414.00	59653	66614
Mean	7.662	1189978	4425.81	511185	943756
Std. Dev.	3.086	1165987	3494.03	493380	884201
Correlation coefficients					
Number of employees	1				
Average handling time	0.385	1			
Number of offered calls	0.572	0.859	1		
Number of answered calls	0.157	0.798	0.920	1	
"Service level"	0.343	0.981	0.827	0.889	1

The first part of Table 1 shows the size of call centers varies in all parameters. Nevertheless, we decided to use CCR DEA model for efficiency evaluation since all call centers operate under the same company using the same policy. Therefore, we are expecting that increasing inputs should increase outputs in a similar proportion. The correlation analysis proved that there is an isotonicity between inputs and outputs.

The analysis covers the period from September 2017 to April 2019. Based on the input data, it can be noticed that the longest handle time of any call that the agent handled was in December 2017. It can be described by the fact that around the Christmas advertising period competition for customer's attention is high. The number of offered calls depends on the country where the call center is located. It can be noticed that the total number of calls is higher in the countries with a higher number of citizens. Germany and the USA have the largest number of offered as well as answered calls.
In September 2017, in Serbia the first store was opened, so the interest and the number of offered calls were very high compared to other months. Otherwise, the number of employees was the lowest in this month. Slovakia, Croatia, and Hungary are having the lowest number of employees compared with other countries.
According to the analysis of "Service level" calls, Romania has the best performance during the observed period with 99% of answered calls in 60 seconds followed by a call center in

Slovakia which has 93% of this rate. The Nederland and Hungary had the lowest rate of "Service level" calls in November 2018 when they reached only 7% of answered calls.

The second part of Table 2 shows the correlation between overall inputs and outputs. The number of offered and answered calls has a very strong positive correlation of 0.92 and this result is close to 1. This is logical because if one customer support center receives more calls with a higher number of employees than the number of answered calls will be higher. Service level and the number of answered calls with an average handling time have also a positive correlation but not strong. The reason is that if agents talks with customers too long then the possibility to answer to all customers is very low. For service level the logic is the same. If average handling time is higher this means that more customers are waiting in queue to be answered.

The EMS software (Efficiency measurement system) tool was used to solve the CRS DEA model, and the results obtained are shown in the Figure 1 and Table 2. More precisely, Figure 1 shows the number of relative efficient and inefficient call centers per each month during the observed period.

Figure 1: Number of efficient and inefficient countries per month
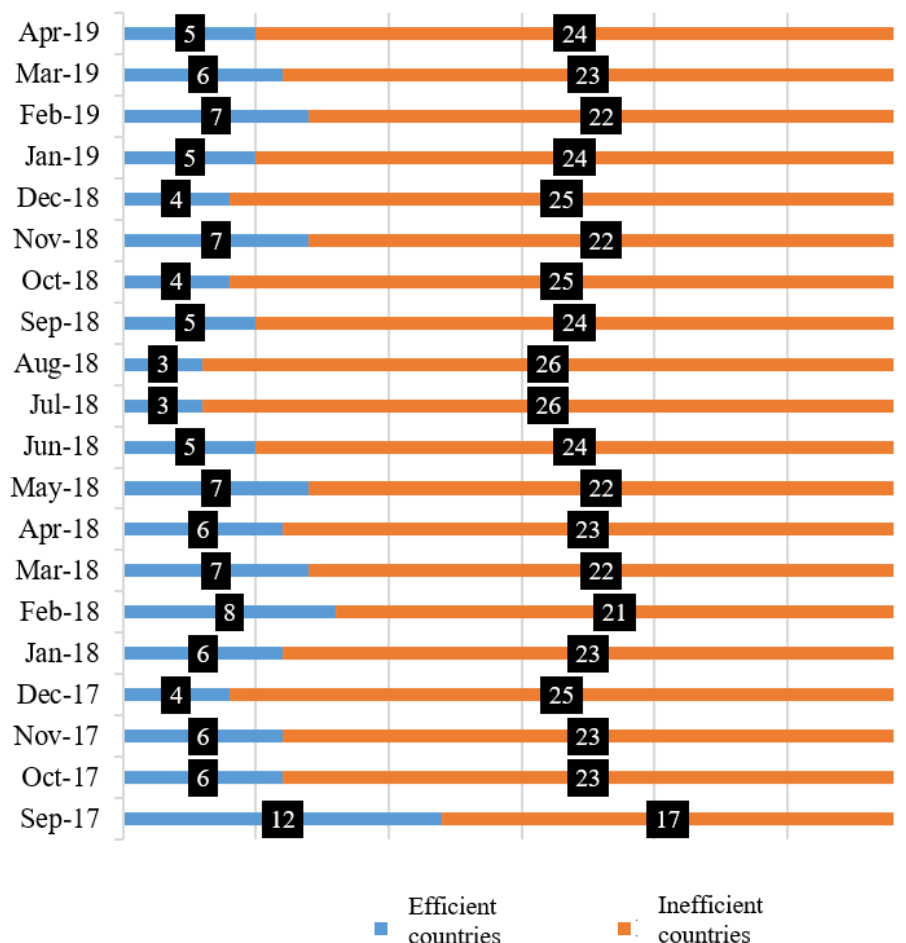
Based on the results, a few call centers are relatively efficient (Figure 1). The highest number of efficient call centers is in September 2017 while July 2018 and August 2018 are the months when it was the highest number of inefficient countries. It is assumed that one of the

reasons lay in the fact that most employees go to vacation in the period August to September. No one call center except Slovakia was efficient in all months which is visible in Table 2.

Table 2: Results of the measuring call centers efficiency

Call center	Efficiency rate																				Avg.	Rank
	2017				2018												2019					
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr		
Austria	0.84	1	1	1	1	1	1	1	0.93	0.89	0.83	0.78	0.76	0.87	0.89	0.92	1	1	0.98	0.91	0.930	11
Australia	0.95	0.89	0.86	0.69	0.88	0.91	0.75	0.88	0.75	0.62	0.56	0.77	0.77	0.7	0.66	0.57	0.69	0.73	0.83	0.84	0.765	22
Belgium	0.47	0.58	0.49	0.39	0.49	0.78	0.72	0.75	0.75	0.84	0.79	0.84	0.83	0.73	0.45	0.59	0.74	0.75	0.78	0.83	0.680	24
Canada	1	1	1	1	1	1	1	1	1	1	0.92	1	1	1	1	1	1	1	0.93	0.78	0.982	4
Switzerland	0.98	0.83	0.75	0.82	0.84	0.88	0.79	0.83	0.97	0.96	1	0.9	0.54	0.95	0.96	0.92	0.82	0.81	0.84	0.8	0.860	15
China	1	1	1	0.92	1	1	1	1	1	1	1	1	1	1	1	1	1	0.86	0.78	0.68	0.962	6
Czech Republic	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.98	1	1	1	1	0.999	2
Germany	0.37	0.29	0.27	0.22	0.36	0.4	0.46	0.55	0.57	0.44	0.36	0.49	0.48	0.44	0.38	0.26	0.43	0.41	0.29	0.31	0.389	29
Denmark	0.9	0.85	0.83	0.89	0.82	0.81	0.73	0.68	0.84	0.82	0.87	0.77	0.93	0.98	0.92	0.94	0.95	0.94	0.95	0.82	0.862	14
Spain	0.97	0.91	0.77	0.71	0.69	0.79	0.82	0.85	0.78	0.54	0.57	0.79	1	1	1	1	0.98	0.97	0.88	0.69	0.836	17
Finland	0.93	1	0.85	0.71	0.93	0.93	0.94	0.84	0.84	0.87	1	0.77	0.84	0.84	0.8	0.77	0.72	0.65	0.28	0.69	0.810	19
France	0.52	0.59	0.62	0.66	0.62	0.69	0.65	0.64	0.65	0.65	0.71	0.68	0.66	0.66	0.69	0.67	0.63	0.63	0.56	0.49	0.634	26
Croatia	1	1	1	0.96	0.98	0.98	1	1	1	0.76	0.93	1	1	0.94	1	0.97	0.85	0.81	0.85	0.67	0.935	10
Hungary	0.87	0.65	0.69	0.62	0.72	0.79	0.8	0.82	0.82	0.91	0.85	0.73	0.77	1	0.69	0.53	1	0.91	0.87	0.81	0.793	21
Ireland	0.95	1	0.97	0.78	0.79	1	1	0.98	1	1	1	0.83	0.81	1	1	1	1	1	1	1	0.956	7
Italia	0.94	0.65	0.66	0.72	0.71	0.68	0.61	0.67	0.78	0.78	0.86	0.62	0.71	0.68	0.6	0.59	0.5	0.55	0.52	0.55	0.669	25
Japan	0.9	0.45	0.43	0.42	0.49	0.56	0.5	0.45	0.54	0.52	0.48	0.53	0.61	0.58	0.59	0.63	0.54	0.54	0.53	0.51	0.540	28
South Korea	0.89	0.7	0.79	0.81	0.75	0.72	0.75	0.74	0.82	0.83	0.74	0.61	0.93	0.91	0.69	0.78	0.51	0.67	0.67	0.55	0.743	23
Nederland	0.52	0.44	0.77	0.71	0.62	0.67	0.57	0.55	0.65	0.61	0.71	0.63	0.53	0.54	0.56	0.65	0.51	0.52	0.48	0.57	0.591	27
Norway	0.87	0.92	0.84	0.82	0.86	0.87	0.88	0.88	0.93	1	1	0.94	1	1	0.99	0.96	0.92	0.89	0.93	0.85	0.918	12
Poland	0.69	0.74	0.72	0.59	0.75	0.85	0.79	0.86	0.96	0.99	0.79	0.52	0.61	1	0.97	1	0.84	0.9	0.84	0.82	0.812	18
Portugal	0.89	0.84	0.89	0.92	1	0.84	0.82	0.75	0.88	0.93	0.98	0.83	1	0.95	0.94	0.91	0.82	0.77	0.73	0.76	0.873	13
Romania	0.54	0.8	0.97	0.81	0.68	0.58	0.7	0.58	0.9	0.89	0.95	0.9	0.86	0.86	0.9	0.84	0.76	0.85	0.86	0.9	0.807	20
Serbia	1	1	1	1	1	1	1	1	1	1	1	1	0.98	1	1	1	1	1	1	0.92	0.995	3
Russia	0.85	0.97	1	1	1	1	1	1	0.88	0.75	0.75	0.87	0.77	0.86	0.91	0.69	0.72	0.83	0.7	0.64	0.860	15
Sweden	1	1	0.95	0.83	1	1	1	1	1	1	1	0.79	1	1	0.9	1	0.89	0.87	0.81	0.8	0.942	9
Slovakia	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1.000**	**1**
United Kingdom	1	1	1	1	0.89	1	0.96	0.86	0.95	0.93	0.85	0.8	0.82	1	1	1	1	1	1	1	0.953	8
USA	1	0.95	0.85	0.86	1	1	1	1	1	0.97	1	1	1	1	1	1	1	1	1	1	0.982	4
Min	0.370	0.290	0.270	0.220	0.360	0.400	0.460	0.450	0.540	0.440	0.360	0.490	0.480	0.440	0.380	0.260	0.430	0.410	0.280	0.310	0.220	
Avg.	0.857	0.829	0.827	0.788	0.823	0.853	0.836	0.833	0.869	0.845	0.845	0.807	0.835	0.879	0.844	0.833	0.821	0.823	0.789	0.765	0.830	
StDev	0.189	0.207	0.195	0.204	0.184	0.164	0.169	0.168	0.138	0.170	0.177	0.156	0.167	0.166	0.190	0.200	0.188	0.172	0.209	0.175	0.179	

Table 2 and Figure 2 preset comparison of call centers' efficiency per each month. The call center in Slovakia was relatively efficient during all months. Ten call centers (Romania, Nederland, South Korea, Japan, Italia, France, Denmark, Germany, Belgium and Australia)

were inefficient in all period of 20 months. These countries have to increase the number of answered calls for 45% at least. Canada, China, Czech Republic, Serbia, and the USA were relatively efficient for a 90% of observed period

Figure 2: Efficiency analysis per month
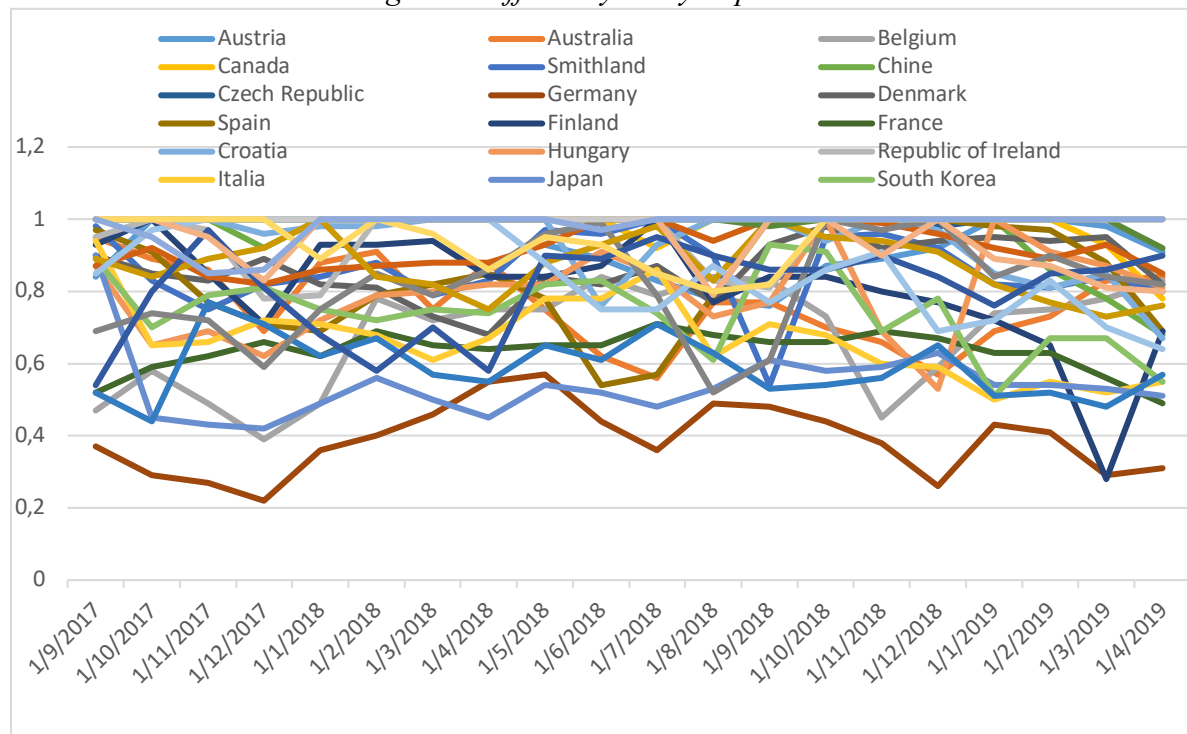
KPIs used in this study affect the efficiency dynamic. In months when call centers were an efficient, the number of answered was from 90% to 97% of offered calls which is an outstanding result. During those months, co-workers were organized in a right way since 97% of received calls were timely answered within a 60 seconds. Therefore, it can be concluded that the relative efficient call centre made a good task assignments and a well-planned schedule to cover peak hours in a better way than the inefficient ones.

Call centers with an efficiency rate above 0.9 are generally small call centers in small countries. On the other hand, call centers in Canada, China and USA are efficient despite a large number of potential customers. This is due to so in such centres, it is easy to planning, monitoring, and evaluation of the activities even in real-time. Call centers in Germany and Japan (with the lowest efficiency rates) have a large number of employees, and it is complicated to follow each agent. Still, it is mostly done on an annual basis when agents check their goals and new tasks.

4. CONCLUSION

Different call centers use different indicators to measure their performance, but each center has key responsibilities and KPIs used in its management. Therefore, call center KPIs analysis is imperative when assessing efficiency and effectiveness. The same goal is to put the customer first and if the call center works with limited technologies, teams, knowledge, then the overall performance and KPIs will be below the planned ones. Given that the world of customer needs and experiences is a quick target based on expectations, contact centers must anticipate future needs and make an appropriate forecast based on that. Only in this way, the contact centers will be ready for a competitive environment which will expand and

change in the future. In this study, we examined the efficiency of 29 customers supports call centers in different countries but within one multinational company. Assuming the same operating policy and same KPIs, we used DEA model under the constant to return to scale. Standard KPIs are selected to be the input and output parameters of the analysis. Namely, we used number of employees, average handling time and the number of offered calls as inputs and number of answered calls and service level as outputs. The results indicated that smaller countries such as Slovakia and the Chez Republic are more efficient on average since they could have enough time and other resources to answer the requests effectively. Their organizations and work plan could be a good benchmark for inefficient call centers in similar countries such as Netherland. On the other hand, there are efficient call centers in large countries such as Canada, China and USA. Their organization could be a good example for Germany or Japan. But, benchmark-setting should be done very carefully taking into account some intangible factors, such as culture and habits, besides efficiency.

Further research can be directed towards intangibles like knowledge and accuracy, responsiveness, assurance, and empathy, then procedures for employees' improving through the training, improving the assessment of service, taking into account other relevant criteria such as quality of the service provider, etc. The case study can also be directed to other fields, including measuring the satisfaction of service users, where the proposed methodology would represent the general paradigm for measuring efficiency according to all the relevant criteria.

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IMPACT OF BOARD CHARACTERISTICS ON FIRM PERFORMANCE: DYNAMIC PANEL EVIDENCE OF THE INSURANCE INDUSTRY IN THE REPUBLIC OF NORTH MACEDONIA

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ABSTRACT

Corporate governance is a crucial mechanism for the organizations' actions to maintain market successful adequate and targeted policies and long-term strategies that ensure the maximization of shareholders' benefits. The board of directors is appointed by organizations' shareholders and its main role is to be responsible and accountable and to ensure enforcement of the top management acts concerning the fulfillment of the shareholder's interests. For this to be achieved, it is important for the board to be efficient, effective, and focused on protecting the organization and shareholder's interests. Good corporate governance and more specifically, board characteristics play a central role in companies' management, coordination, and control mechanisms. The paper analyses various theoretical and empirical findings regarding the prominence of various board characteristics within companies and particularly evaluates the impact of board characteristics on the financial performance of listed companies in the insurance industry in the Republic of North Macedonia. The financial ratio ROA is used as a proxy and as a variable for firm performance while the board experience, CEO duality, board size, board composition, and gender diversity are set to be as independent variables. Based on the variables related to board characteristics, hypotheses are developed and their impact upon firm performance is examined with the use of Generalized Methods of Moments (GMM), a pairwise correlation matrix, as well as with multicollinearity VIF test. In that direction, this paper aims to determine the level of effectiveness of current governance mechanisms and based on the results, propose measures and actions for successfully handling agency costs while maximizing governance capability and performance in the insurance sector in the Republic of North Macedonia.

Keywords: Insurance industry, GMM, Financial performance, Corporate governance, Republic of North Macedonia.

JEL classification: G22, G30

1. INTRODUCTION

In recent years, numerous attempts have been made in direction of determining the impact of the level of efficiency and effectiveness of the board of directors and its characteristics on firms' market value and performance. Such analyses have been subject of scientific studies whereas the findings gained a lot of attention amongst academicians and the business sector. Pertinent corporate governance is a crucial mechanism for the organization to maintain adequate and targeted policies and long-term strategies that ensure the maximization of shareholders' benefits. The board of directors is elected by organizations' shareholders and its main role is to be responsible and ensure that the top management acts upon maximization of

shareholder's interests. For this to be achieved, the board needs to be efficient and effectively focused on protecting the shareholder's interests. Many studies and corporate practices suggest that larger board sizes may increase the capacity of additional experienced members who can disseminate and engage their knowledge and skills in the company. On the contrary, the cost of maintaining this structure could increase leading to harder and complex coordination between the professionals. However, the size of the board appears as one parameter in determining the management structure and its role in defining, developing, and upgrading the company's organizational culture and its market success. The corporate practice imposes vast examples of market failures as well as benchmarks concerning board members' education, professionalization, permanent education, and gender diversity. The role of the HCM is increasingly becoming important, while the competitive pressure is rising. These particular aspects are a matter of concern of the paper which is divided into several sections. First, we provide an overview of the relevant literature as a basis for developing hypotheses. Next, we define a statistical model alongside with the methods used for data collection in the insurance industry in the Republic of North Macedonia. We then proceed to the presentation of the results from the pairwise correlations, GMM tests, and the multicollinearity VIF test. Finally, the findings allow us to attempt to provide preliminary recommendations that companies may consider in establishing a consistent structure of the board of directors, leading to efficient management, increased financial performance, and higher firm value. The objectives of the study are set to identify the board characteristics' that have a significant impact on the financial performance, identify the relationship between these factors and the financial performance of the company, and as a result provide initial actions for the companies to consider in direction of enhancing the market share and value of the company.

2. LITERATURE OVERVIEW AND HYPOTHESES DEVELOPMENT

Good corporate governance strives to create long term and sustainable value and to provide a system of integrity-based management practices and principles that are of interest to the stakeholders. By following the concept of shareholders' responsibility, companies become resilient and build a strong reputation which increases internal reliability, cohesion, and integrity. To improve overall financial performance and consumer trust and confidence at the market, good governance practices are used to create and use the investment opportunities and to reduce overall risk for investors, resulting in recognizable and sustainable organizational culture and higher financial capacity. They may also be associated with reduced risk of fraud, corruption, unethical behavior, and actions as well. Many empirical studies investigate the correlation between good corporate governance and a firm's operational performance, the cost of the capital, and the reduced inherent risks. It is noticeable that the better the company's structure and corporate governance practices the greater the probability that the assets of the company are used in the interest of its shareholders and are not misused by managers. Therefore, besides the financial and accounting indicators, corporate governance has become one of the most significant criteria for the investor's investment decisions. The major responsibility of the board of directors is to appoint a qualified and competent CEO who will successfully lead and monitor the work of the management structure and check for its compliance with company standards and strategy. Board members must provide consistency in the business operations by interminably encouraging effective decision making and reinforcing sustainable firm values. The ultimate goal of corporate governance is unraveling the issue regarding agency problem which originally derives from the conflict of interest between principals (shareholders) and agents, namely managers (Liu and Fong, 2010). Concerning this issue, a wide variety of studies have been conducted. For instance, Vafeas (1999) investigates the impact of board meeting frequency on corporate governance and

ownership characteristics for 307 firms over the period of 1990 to 1994. The author suggests that the yearly meetings of the board are inversely correlated with firm value. These results are supported by Hanh et al. (2018) who use a sample of 94 firms listed on the Ho Chi Minh Stock Exchange in Vietnam from 2013 to 2015. On the contrary, Al-Daoud et al. (2016) examine firms listed on the Amman Stock Exchange from industry and service sectors for the 2009-2013 period with the use of the dynamic panel technique of Generalized Method of Moments (GMM). They find a positive relationship between the frequency of corporate board meetings and firm performance.

2.1. Board size

When analyzing the factor of the board size, the empirical studies report inconclusive and contradictory results. The larger board can lead to an increased level of competence, more knowledge-based structure and experience brought in the company, making it easier to apply the professional diversity, critical thinking as well as the brainstorming techniques which could improve the quality and accuracy of group thinking. It is noteworthy that boards with more diverse members can continuously re-examine facts, boost the innovation capacity, remain objective, and as a result solve difficult problems, particularly within crisis management. In that manner, numerous authors suggest that there is a positive relationship between board size and financial performance (Dowen, 1995; Dalton et al. 1999; Adam & Mehran, 2003; Coles et al. 2008). Coles et al. (2008) suggest that this implies only for larger and firms with complex structure, often related to the trans-national corporations with a high part of the international operations. On the contrary, larger boards can immanently cause higher cost, and more importantly, if a lack of coherence and openness exists within the group it can lead to miscommunication and poor coordination issues, which further can develop into structural distortion. In such terms, many studies show an inverse relationship between board size and firm value (Lipton & Lorsch, 1992; Yermack, 1996; Loderer and Peyer, 2002; Lasfer, 2004; Yoshikawa and Phan, 2004; Hardwick et al. 2004; Mak and Kusnadi, 2005, Pablo de Andres et al., 2005; Harris and Raviv, 2008; Cheng, 2008). In this regard, we can define the following hypothesis, as:

H1: There is a significant relationship between firm performance and board size.

2.2. Board independence (composition)

According to Carlsson (2001), the central issue of the Corporate Governance Code is the importance of an independent and competent board. Even though some researchers have not determined a statistically significant relationship between board independence and financial performance (Hermalin and Weisbach, 1991; Barnhart and Rosenstein, 1994; Mehran, 1995; Bathala and Rao, 1995; Klein, 1998), it is very common for this correlation to appear negative (Agrawal and Knoeber, 1996; Bhagat and Black, 2000; Shukeri et al., 2012). Dahya and McConnell (2007) for example, find diametrically opposing results, meaning that there is a statistically significant and positive relationship between the board's composition and firm performance. Results from other studies support this view (Rosenstein and Wyatt, 1990; Prevost et al., 2002; Limpaphayom & Sukchareonsin, 2003; Hasnah, 2009; Awan, 2012). Also, we should note the difference and yet the inter-connectivity between the boards' independence and competence, as the formality of the independence is linked to the substantial issue of the competence. Furthermore, we propose the second hypothesis as with the element of board composition, as in an attempt for merging the boards' independence and competence:

H2: There is a significant relationship between Firm performance and Board composition.

2.3. Gender diversity

By following the concept of board diversity, it is believed that companies overall governance will improve (Daily, Certo & Dalton, 1999; Singh & Vinicombe, 2004) and by adding multiple female members in the board it will help the company to gain a better understanding of the customer needs (Liu et al., 2013) while promoting social inclusion. Also, heterogenous board structure in the means of gender, ethnicity, occupation, will bring new ideas, creativity, and innovation within the organization and make the decision-making process easier with the use of greater problem-solving capabilities and critical and strategic thinking.

As the number of female members in the board increase, the greater the opportunities for innovation and presenting various standpoints, new perspectives and opinions can occur and be practiced, as noted in several kinds of research (Miller and Triana, 2009; Torchia et al., 2011; Lazzaretti et al., 2013; Torchia, Calabrò and Michèle, 2015). Numerous studies find a positive link between the number of women in the board and firm performance (Bonn, 2004; Smith et al., 2006; Campbell and Mínguez-Vera, 2008; Liu et al., 2013; Lückerath-Rovers, 2013; Isidro and Sobral, 2014; Low et al., 2015). However, other studies show an insignificant relationship between the number of women directors and firm performance (Ding and Charoenwong, 2004; Farrell and Hersch, 2005; Skimkins and Simpson,2010; Dobbin and Jung, 2011; Chapple and Humphrey, 2013; Gordini and Rancati, 2017). Negative impact has been reported in the study of Pathan and Faff (2013) in which they investigate the relationship between gender diversity and bank performance. In that manner, there is a possibility for this relationship to appear negative (Adams and Ferreira, 2009; Mínguez-Vera and Martin, 2011). Based on the presented relevant literature, we propose the following third hypotheses:

H3: There is a significant relationship between firm performance and gender diversity.

2.4. CEO duality

Results from a variety of studies prove that the separation of the chairman from the executive manager is insignificant (Daily & Dalton, 1997; Dalton et al., 1998; Valenti et al., 2011), meaning that CEO duality does not make difference in the efficiency of the board and firm performance. For instance, Chia-Wei Chen et al. (2008) collect data for firms in the S&P 1500 index, which consists the S&P 500, the S&P 400 mid-cap, and the S&P 600 over the period of 1999 to 2003. By using OLS regression, applied Heckman's self-selection model to control for endogeneity, and use fixed effect model to control for impacts of non-observable firm variables, no significant relationship was identified between CEO duality and firm performance. Oppositely, this separation has proved to have a positive impact on firm performance and has been reported by multiple scholars (Rechner and Dalton, 1991; Greenbury, 1995; Higgs, 2003; Peng et al., 2007). These findings have been supported by Mohammadi et al. (2015) who suggest that the positive effect varies across environmental dimensions of munificence, dynamism, and complexity. Some studies show that CEO duality has a negative impact on firm performance, consistent with the agency theory (Dogan et al., 2013; Shiu-Wan Huang et al., 2012). In this relation, we set the following hypothesis:

H4: There is a significant relationship between firm performance and CEO duality.

2.5. Board experience

Undoubtfully, providing expert advice helps companies to develop effective management principles and practices to ensure the permanence of the business. The presence of highly qualified and experienced board members will result in a combination of expertise which can stimulate a thoughtful exchange of suggestions within a company (Carpenter & Westphal,

2000). For instance, Berger et al. (2014) use data from the banking sector in Germany where they discover that portfolio risk declines when the board consists of more executives who have obtained Ph.D. degrees. Interestingly, Haniffa and Cooke (2002) find a positive relationship between general business and accounting education of board directors and disclosure of information that demonstrates the accountability and credibility of the top management team. Therefore, multiple studies have obtained statistically significant and positive results regarding the relationship between board members' competencies and firm performance (Hunt, 2000; Ljungquist, 2007). It is important for board members to obtain a variety of skills and demonstrate divergent standpoints concerning the decision-making process in an organization (Biggins, 1999). Hau and Thum (2010) conduct a study of Germany's largest 29 banks and investigate the competencies of 593 supervisory board members. The obtained results show that the lack of financial experience of the board members is directly correlated with the bank losses during the 2007/2008 financial crisis. Possessing and executing board members' higher formal education, professional experience, and empirical-based skills are integrated within the last hypothesis as:

H_5: *There is a positive relationship between firm performance and board experience*

3. METHODOLOGY
3.1. Sample selection and variable definitions
The sample consists of 13 insurance companies that operated in the Republic of North Macedonia from 2012 to 2018, both for the non-life and the life sector, which counted as 11 non-life companies and 4 life companies. Due to the incomplete data and lack of information available, frequent board changes, and corporate ownership, Triglav Life Insurance, Halk Insurance (previously Nova Insurance) and Grawe Non-Life Insurance (previously Eurosig Insurance) were excluded from the sample. Data is extracted from the public disclosed companies' annual financial reports, Insurance Supervisory Agency Annual reports, and the National Bank of the Republic of North Macedonia databases.

Over the years, researchers have developed various approaches and applied a wide range of methodologies to assess the impact of profitability determinants in the insurance industry. We have identified that the current profitability depends on its past realizations which is also strongly backed up by empirical and theoretical evidence. For this purpose, we apply the use of dynamic panel analysis. Unlike static panel data models, the system GMM estimator allows us to resolve the issue regarding the serial correlation, heteroskedasticity, and endogeneity of variables (Leitao, 2010). To achieve this, we have applied the methodology that Arellano and Bond (1991) proposed, and later Blundell and Bond (1998, 2000) improved. First, the use of pairwise correlation permits us to identify if multicollinearity between variables exists. Next, we apply the Hansen test to check the validity of the over-identifying restrictions. If the null hypothesis is rejected, the instruments in the model are invalid. To check if there is a first-order (m1) and second-order (m2) serial correlation in the residuals, we use Arellano and Bond test. If the null hypothesis is accepted, we can conclude the model is consistent.

Table 1. Description of variables

Variables	Abbreviation	Measurement	Expected sign
Dependent variable			
Return on assets	ROA	The ratio between EBIT and the firm's total assets	
Independent variables			
Board experience	BRD_EXP	Number of members with financial or accounting experience	+
CEO duality	CEO_DUAL	Dummy variable, '1' for firms with the CEO as Chair, '0' if positions are separated	+/-
Board size	BRD_SIZE	Number of directors' in board	+/-
Board composition	BRD_COMP	Number of independent directors to the total number of directors' in board	+/-
Gender diversity	GEN_DIV	Percentage of women on the board	+/-

Source: Authors calculation

Table 1 presents an overview of both dependent and independent variables along with their abbreviation, measurement, and expected sign. Return on assets (ROA) is used as a proxy to measure the firm's financial performance and is set to be a dependent variable. It is calculated as a ratio between earnings before interest and tax and the firm's total assets. In addition, Board experience, CEO duality, Board size, Board composition, and Gender diversity are independent variables.

3.2. Pairwise correlation matrix
In the direction of determining the existence of multicollinearity, a pairwise correlation is estimated between variables (Table 2). The low correlation coefficients or more specifically, the peak value of coefficients below 0.7 (Gujarati, 1995) imply absence of multicollinearity. In this case, the coefficient values are in desirable range and we can conclude that no multicollinearity exists between the variables.

Table 2. Pairwise correlation matrix

	ROA	BRD_EXP	CEO_DUAL	BRD_SIZE	BRD_COMP	GEN_DIV
ROA	1.0000					
BRD_EXP	0.6329	1.0000				
CEO_DUAL	0.0502	0.4821	1.0000			
BRD_SIZE	0.0564	0.2107	0.3234	1.0000		
BRD_COMP	0.3419	0.1281	-0.0146	0.5458	1.0000	
GEN_DIV	0.2876	0.5885	0.3005	0.4958	-0.0403	1.0000

Source: Authors calculation

3.3. Empirical specification

To determine the impact of boards' characteristics on firm performance of the insurance companies in the Republic of North Macedonia, and since the current profitability depends on its past realizations, we use dynamic panel analysis, or more specifically, two-step Generalized Methods of Moments (GMM) estimator developed by Arellano and Bond (1991) and Blundell and Bond (1998):

$$ROA_{it} = \alpha + \delta ROA_{i,t-1} + \sum_{f=1}^{F} \beta_f X_{it}^f + \varepsilon_{it}, \varepsilon_{it} = v_{it} + u_{it}$$

where ROA_{it} is the profitability of firm i at time t, with $i = 1, \ldots, N$, and $t = 1, \ldots, T$, α is a constant term, δ is the speed of adjustment to equilibrium, $ROA_{i,t-1}$ is the firm's lagged profitability for one-period, β_f represent vectors of coefficients to be estimated, X_{it}^f is a set of explanatory variables, ε_{it} is error term, v_{it} firm-specific time-invariant effect and u_{it} the idiosyncratic error.

4. RESULTS AND FINDINGS

The results of the generalized methods of moments (GMM) panel estimator of various determinants of profitability are presented in Table 3. The Arellano-Bond test for AR(1) in first differences has a value of 0.128 and the Arellano-Bond test for AR(2) in first differences 0.858 which shows an absence of second-order serial correlation in disturbances. Furthermore, the Hansen test shows a p-value of 0.584 which is greater than 5% (0.05) and indicates that we can accept the null hypothesis, that is over-identifying restrictions are valid.

Table 3. Dynamic panel data estimation results

Dependent variable: ROA		
Explanatory variables	**Coefficients (Standard errors)**	**p-value**
Constant	-.08918 (.0345585)	0.000
L.ROA	.3100796** (.1329046)	0.012

BRD_EXP	.0445894***	0.000
	(.0088761)	
CEO_DUAL	- .0350462	0.121
	(.0235806)	
BRD_SIZE	-.0283626*	0.070
	(.0133107)	
BRD_COMP	.0441751***	0.000
	(.013186)	
GEN_DIV	.0142028	0.246
	(.0124453)	
Number of observations	78	
Number of instruments	13	
Arellano-Bond test for AR (1) (p-value)	z = -1.52 PR > z = 0.128	
Arellano-Bond test for AR (2) (p-value)	z = 0.18 PR > z = 0.858	
Hansen test of overid. restrictions χ^2 (3) = 1.94	Prob > χ^2 = 0.584	

***statistically significant at 1% level, **statistically significant at 5% level, *statistically significant at 10% level.

Notes: Companies included: Winner Life, Winner Non-Life, Uniqa Life, Uniqa Non-Life, Triglav Non-Life, Osiguritelna Polisa, Croatia Life, Croatia Non-Life, Euroins, Makedonija Insurance, Eurolink, Grawe Life, Sava.

Source: Authors calculations

The significant coefficient of the lagged profitability (L.ROA) at 5% significance level proves that the dynamic model specification is appropriate for the research. The obtained results show a statistically significant and positive effect of the board experience, that is compatible to the findings of the vast relevant studies concluded (Carpenter and Westphal, 2000; Hunt, 2000; Haniffa and Cooke, 2002; Ljungquist, 2007; Berger et al., 2014). The importance of the board members' professional qualification based on formal education and professional expertise appears as crucial for the comprehensive understanding and managing the complex and in particular highly regulated insurance industry, especially when competitive pressure is rising. Furthermore, the statistically significant and positive effect of the board composition on the profitability, as determined at some studies (Rosenstein and Wyatt, 1990; Prevost et al., 2002; Limpaphayom & Sukchareonsin, 2003; Hasnah, 2009; Awan, 2012), even though inconclusive at other studies, defines the importance of the management structure, understood in wider terms, that underlines the significance of the professionals and empirical knowledge based managers that would undertake adequate and market-orientated and sustainable policies and actions. Furthermore, evident significant and negative relationship between board size and financial performance of insurance companies, could be linked to the prevalent one-level management model within the Macedonian insurance companies and focus on medium-size boards. However, the negative correlation should be a matter of further analysis and in-depth focus for determining the alterations and attempting to achieve more conclusive and qualitative backed findings concerning the previous studies and findings (Lipton & Lorsch, 1992;

Yermack, 1996; Loderer and Peyer, 2002; Lasfer, 2004; Yoshikawa and Phan, 2004; Hardwick et al. 2004; Mak and Kusnadi, 2005, Pablo de Andres et al., 2005; Harris and Raviv, 2008; Cheng, 2008).

The obtained results according to which an insignificant relationship between CEO duality and financial performance was determined, are supported by numerous studies (Daily and Dalton, 1997; Dalton et al., 1998; Chia-Wei Chen et al. 2008; Valenti et al., 2011). The circumstances in which this variable take effect, are similar in regards to the insignificance of the gender diversity and firm's performance and are in congruence with a majority of existing research in means of insignificant link between the two variables (Ding and Charoenwong, 2004; Farrell and Hersch, 2005; Skimkins and Simpson, 2010; Dobbin and Jung, 2011; Chapple and Humphrey, 2013; Gordini and Rancati, 2017). Albeit the yielded insignificant impact of these variables on companies' financial performance, these correlations ought to encourage a focused scientific discourse and should be under further investigation and a matter of diligent analysis.

4.3. Multi-collinearity VIF tests

After successfully carrying out the GMM tests, the variance inflation factor (VIF) test is used to check if multicollinearity in the model exist. As the level of multicollinearity increases, the coefficients and the standard errors of the model become unsteady and unreliable. This problem appears when the VIF values are greater than 10. In this regard, VIF values for BRD_SIZE (1.91), BRD_COMP (1.59), BRD_EXP (1.45), CEO_DUAL (1.40) and GEN_DIV (1.21) are below 10 (Table 4), bringing the mean VIF value to 1.45. Furthermore, the result can be interpreted as no perfect linear relationship exist between two or more variables in the model. On another note, 1/VIF or tolerance shows us the level of collinearity of variables. An issue appears when the values of 1/VIF are lower than 0.1, meaning that the variable can be in linear combination with other variables. All things considered, the tolerance coefficients for BRD_SIZE (0.52), BRD_COMP (0.62), BRD_EXP (0.68), CEO_DUAL (0.71) and GEN_DIV (0.82) have acceptable values and no multicollinearity among variables is detected.

Table 4. Multi-collinearity test between board characteristics variables

Variable	VIF	1/VIF
BRD_SIZE	1.91	0.524373
BRD_COMP	1.59	0.629670
BRD_EXP	1.45	0.688386
CEO_DUAL	1.40	0.714221
GEN_DIV	1.21	0.823916
Mean VIF	**1.45**	

Source: Authors calculations

The VIF values in the model are below 10 and in an acceptable range, therefore they indicate that the measures selected for assessing independent variables do not reach levels of multicollinearity.

5. CONCLUSION

This research has yielded significant results in understanding and explaining the link between organizational and board attributes such as board experience, CEO duality, board size, board composition, and gender diversity on the financial performance of insurance companies in the Republic of North Macedonia. Results show that the board experience has a statistically significant (1% level) and a positive impact on profitability. This confirms the hypotheses developed from the empirical and theoretical findings that as the number of highly qualified and experienced board members increases, the expertise and a wide variety of skills are obtained which better the decision-making process in an organization. Furthermore, the positive and statistically significant relationship between board composition and profitability at 10% level can be explained by the importance of an independent and competent board or the increased need of incorporating the expertise of independent and external members in the board that is a rare corporate practice, mostly defined within the supervisory board members and has limited influence to the forms' operative management practices and results. The negative effect of board size on insurers' profitability should be a matter of further analysis, as the companies do not appear with large boards. Regardless of the findings that larger boards tend to have a higher cost, we underline the issues of lack of coherence and openness, as well as lack of operational management practices that exist within the group and can lead to miscommunication and coordination issues as more influential for the structural distortion. Our findings are expected to challenge scholars in extending current literature and developing critical scientific discourse and motivate companies to emphasize the need and importance of corporate governance for the organizational growth, development, and market performance of the companies. The existing regulatory and supervisory regime of Solvency I, is preventing more substantial investment and evolution of the management bodies for the companies' change and transformation, thus prolonging the transformational qualitative influence at the general insurance industry. The expected implementation of the Solvency II regime is expected to exercise profound intervention and influence to the corporate governance by enhanced and advanced standards as key principles of good corporate governance. The established standards and criteria, in addition, should be imanently upgraded by the implementation of the valuable and effective factors such as Competence and Capacity, Innovation and Openness to Change, Sustainability and Long-term Orientation, Human rights, Cultural Diversity and Social Cohesion, that would be eventually matter of further scientific exploration by the authors.

Finally, the significance of the board characteristics would be additionaly emphisized during the burdened operational management of the insurance companies during the current 2020 pandemic year and especially in determining strategical change of the business and the insurance companies' internal adaptation to the external changes.

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INVESTIGATING THE VOLUNTARY EMPLOYEE TURNOVER IN IT COMPANIES IN THE REPUBLIC OF NORTH MACEDONIA: A DELPHI APPROACH

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ABSTRACT

Globally, the voluntary turnover of labor is an inevitable reality which every organization must face. The voluntary mobilization means that a person leaves the organization as a result of a personal decision, whereas for the organization it is a loss of a specific knowledge, skills and abilities. Therefore, to keep the talents inside the organization, the human resources specialists have to be proactive instead of reactive. Bearing in mind the high level of turnover and deficit of labor in the IT sector in the Republic of North Macedonia, being able to keep the quality employees is a challenge for the domestic companies in this sector. The human resource management is requested to apply specific measures that will affect the process of keeping the talents in the organization and will keep the organizational performance on a long term. The purpose of this paper is to identify the key factors that lead to a voluntary turnover of the IT employees in the country and to show how in modern conditions the human resource management manages the labor turnover. An empirical research has been made with the qualitative method for forecasting - Delphi where the analysis sample is constructed by human resource managers of IT companies in the Republic of North Macedonia. The obtained results are presented and analyzed and they show valuable insights for the management of the IT companies in North Macedonia.

Keywords: *voluntary turnover, employee retention, IT sector, human resource management, Delphi method*

JEL classification: J24

1. INTRODUCTION

When discussing the workforce turnover as a widely researched organizational phenomenon, it is necessary to point out that it presents a serious problem for any organization, while retaining employees is an important task of the human resource management. The focus of this paper is the voluntary turnover that occurs when an employee, for personal or professional reasons, decides to terminate his employment with the employer on his own. Starting from the topicality of the global phenomenon, this paper highlights its serious implication on the information technology (IT) sector in the Republic of North Macedonia. By analyzing the information technology sector in the country in recent years and the behavior of the workforce in it, it is learned that it has a high rate of turnover and maintaining a high level of commitment and dedication of the staff is a real challenge for any IT company in the domestic market. Hence, the main research question is the identification of those key factors that cause voluntary turnover in the IT staff in the country. In

addition, insight will be gained into what domestic IT companies do in order to retain its employees. The originality of this paper is seen in the application of the method for qualitative forecasting – Delphi for examine the voluntary turnover of the IT staff in the country. For the first time in our country, this qualitative method for forecasting has been applied to the research of the mentioned phenomenon.

Besides the introduction part, in Section 2 the focus is on the voluntary employee turnover with emphasize on the factors that affect it. In Section 3 the voluntary employee turnover in IT companies is described, so that, as a case, one country is considered, i.e., the Republic of North Macedonia. In Section 4, the methodology and data are described. In Section 5 are presented and analyzed the results, whereas in Section 6 is given the discussion. In Section 7 is presented the conclusion.

2. VOLUNTARY EMPLOYEE TURNOVER

The beginnings of research aimed towards voluntary workforce turnover date back to 1917, when it was the beginning of the analysis of the costs incurred in the organization as a result of the turnover of employees with the attention focused on how to reduce the costs (Fisher, 1917). According to Armstrong (2006), workforce turnover is defined as the inflow and outflow of intellectual capital into and out of the organization over a certain period of time. From an organizational point of view, employee outflow is a loss of specific knowledge, skills and abilities that have been acquired in the organization over time (Lee and Whitford, 2013). In practice, workforce turnover can be described as the ratio of how and how quickly an employer recruits and loses its employees (Chikwe, 2009). According to Price (1977), when calculating the turnover rate, companies observe the ratio between the number of members of the organization who left and the average number of people who remain in that organization during the observation period. According to Mondy (2010), this rate for the organization, in addition to being an indicator of the effectiveness of the employment, is also an indicator of its overall organizational performance. Furthermore, the workforce turnover is treated differently depending on whether it is a voluntary or involuntary withdrawal of the employee from the organization. Voluntary departure can be explained as departure initiated by employees and involuntary by the organization (Choi, Musibau, Khalil and Ebi, 2012). This definition emphasizes the difference between voluntary and involuntary turnover.

As most common reasons for leaving the current job voluntarily are the possibilities of better working conditions in another company or a desire to change the career path. In the literature, there are significant theoretical models related to the phenomenon of voluntary turnover. According to the March and Simon model (1958), the voluntary turnover of the individual from the organization depends on his desire for a change, but also on the ease with which he/she can move in and out of the organization. Before making a decision to leave the organization, the individual analyzes the internal and external possibilities for turnover. The existence of attractive alternatives or opportunities in the external environment allows the individual to leave the organization in an easier way. This model is considered as one of the first theoretical findings in the study of voluntary turnover. In their model, Porter and Steers (1973) emphasize the set against the fulfilled expectations of the individual and the connection of the same with his intention to leave the organization. When an individual's personal expectations are not met, his or her tendency to leave the organization will increase as much as possible. According to the Mobley (1977) model, behavior that leads to turnover is influenced by a number of decisions and cognitive phases that begin when an individual evaluates his or her current work and is often accompanied by an

emotional state of dissatisfaction. In contrast, Lee and Mitchell (1994) argue that employees in an organization do not evaluate their work until situations arise that give them a reason to do so. The mentioned situations are called "shocks" in their model, which are described as negative events that affect the employee to leave his current job.

2.1. Factors affecting the employees voluntary turnover intention

Over the years, the authors investigating this phenomenon have paid close attention to discover the factors that influence people to voluntarily leave their jobs. Research shows that discrepancies between personal and organizational goals (Medlin and Green, 2009); the lack of opportunity for advancement (Hamel and Breen, 2007) and job dissatisfaction (Palazzo and Kleiner 2008, Garcia and Kleiner, 2001, Hannay and Northam, 2000) have the greatest impact on employees' decision to leave the organization. According to Hissom (2009) the most common reason for employees to leave the organization is the salary amount, as they are in constant search of a high-paying job position. The negative relationship between job satisfaction and the intention to leave the organization has been proven in literature (Saeed et al., 2014). When job satisfaction is higher; the intention to leave will be lower and vice versa. In this regard, the management of each organization should pay attention to the satisfaction with the work that employees feel in order to reduce the potential outflow of their staff.

Factors that affect voluntary turnover can be categorized into three groups: (1) demographic factors, (2) factors related to the individual's work, and (3) psychometric factors (Kane-Sellers, 2017). Factors of influence can also be distinguished to internal factors, i.e. factors related to the current work and the satisfaction of the individual from it and to external factors, such as the workforce market situation and identified job alternatives.

There is no standard framework in the literature for understanding the process of employee turnover as a whole, but authors around the world present a wide range of factors that are useful for interpreting this phenomenon.

3. VOLUNTARY EMPLOYEE TURNOVER IN IT COMPANIES

Globally, the labor market in the IT industry is a dynamic and competitive environment. IT companies are constantly looking for new talents that will successfully meet their organizational needs. Hence, the retention of hired workers becomes especially important for organizational success in conditions when the demand in the labor market exceeds the supply. The turnover of skilled labor from IT companies is causing instability, high costs and a loss of future business opportunities.

There are numerous studies in the literature, the subject of which is the voluntary turnover of professionals in the IT industry. A study by Igbaria and Greenhaus (1992) involving 464 IT industry employees found that the intention to leave the organization was influenced by job satisfaction and organizational commitment. Namely, how much satisfaction they will feel from their work and how much they will be dedicated to the job depends on their attitudes towards work, and especially on how much they feel exhausted from their work (Moore and Burke, 2002). The psychological phenomenon called burnout is a state of physical and mental exhaustion associated with workplace activities. Empirical studies on this issue show that this category of employees is particularly vulnerable to exhaustion from work and stress, which of course leads to the decision to leave their job voluntarily. According to Levy (2003), a key element in the decision-making process whether an IT professional stays in the organization or leaves it is job satisfaction. According to Purohit (2016), the biggest impact on turnovers in the IT sector has a compensatory

package. There are many opportunities for qualified IT staff in the market, so for that reason, they can go to another organization at any time where they will be paid more. The most common reasons why IT professionals would leave their company are: the need for a higher salary, the need to improve their IT skills, and the need to work in a company where IT function is a priority (Spiceworks, 2017). In the next part, special attention is given to the voluntary turnover of employees in IT companies in one developing country, i.e., the Republic of North Macedonia.

3.1 Voluntary employee turnover in IT companies in the Rebublic of North Macedonia

The Information Technology Industry is one of the key drivers for growth in the domestic economy, as well as an important source of innovation in the Republic of North Macedonia. Due to the large selection of domestic and foreign IT companies that are constantly looking for new talent, employees have great self-confidence and easily decide to change their job even though they usually work in convincingly favorable and attractive working conditions. Hence, this sector has a high rate of turnover and maintaining a high level of commitment and dedication to staff is a real challenge for any IT company in the domestic market.

The internet portal for information technology IT.mk has conducted a research "Mapping the IT industry in North Macedonia - 2019" and it is based on 4 surveys where as respondents were 1135 IT professionals from North Macedonia[1]. The survey was conducted in a period of one month. The surveys were divided into the following areas: programming / development / IT administration, graphic design, digital marketing and other IT industries. Based on the obtained results from 856 IT professionals involved in programming, development and IT administration, the most important factor during employment for the IT staff in the country is the possibility to learn and grow. The main disadvantages that this profile of employees often identify in their workplace are: poor internal organization, inadequate project management, poorly defined job responsibilities, work pressure, poorly written documentation, lack of teamwork and incorrect deadline for assigned job responsibilities. They express their dissatisfaction in direct conversation with their supervisor, find another job and then resign, work with minimal effort, do not recommend the company to others, resign and then look for a new job, refuse to work on projects, publicly express dissatisfaction on social media, etc.

In the research in this paper we want to investigate the factors of key importance that affect voluntary turnover of IT employees in companies of this sector in North Macedonia, and to gain insights what the human resource management do in order to manage the voluntary turnover. Next section describes the methodology used in the research and how the data is obtained.

4. METHODOLOGY AND DATA

The overall objectives of the research in this paper are the following:

- to identify the key factors that lead to a voluntary turnover of the IT employees in the country; and
- to show how the human resource managers that in the IT companies in Republic of North Macedonia, manage the voluntary turnover of the IT employees.

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[1] Mapping the IT industry in North Macedonia 2019, available at: https://www.it.mk/mapiranje-na-it-industrijata-vo-mk/, (accessed 10 June 2020).

In order to achieve the objectives, an empirical research has been conducted with the qualitative method for forecasting - Delphi where the sample for analysis consist of human resource managers in the IT companies in Republic of North Macedonia.

The Delphi method is used to study and forecast uncertain or possible situations for which we are unable to perform objective statistical regularities, set a model, or apply a formal method. These are phenomena that are difficult to quantify, because they are of a qualitative nature, i.e. there are not enough statistical data on the basis of which the study would be performed. This method is a tool for consensus in situations where a wide range of panel views can be used - experts, as well as their creativity in opinions about similar situations. Before using the Delphi method, the problem for which forecasts are expected should be defined. Then the group is defined, i.e. the experts who will participate in the process are selected. A prerequisite that the selected experts must meet in order to be included in the forecasts is to have the necessary knowledge, experience and expertise for the specific problem (Cvetkoska and Dimoska, 2019). An important feature of this method is the implementation of several rounds of questionnaires, whereby the selected experts remain anonymous and have the opportunity in each subsequent round to see the answers of others and decide whether to keep or change their answer, and it is necessary to provide an explanation if they make a change.

The empirical research in this paper is performed through three consecutive rounds. The opinion and experience of the experts will be used to find out the key factors that affect voluntary turnover in the IT staff in the country. In addition, the most common reasons for employees leaving IT companies will be identified. Additionally, it will be determined what the human resource management in domestic IT companies do about reducing the voluntary turnover of IT staff.

In the first round based on the Delphi method, the experts will need to answered three open-ended questions and one closed-ended question, which required the respondents to assess on a scale of 1-5 (1 - least important, 5 most important) according to their opinion, the importance of the given nine factors that affect voluntary turnovers of the IT staff in the country. Also, they will be given an opportunity to add factors that according to them are important, but not listed, and to assess their importance by using the same scale.

In the second round to the respondents will be send the same list with nine factors, and they could see their answer (grade of importance), as well the answer to the other respondents (they will be gives as respondent, 1, 2, 3 etc., and to each respondent separately will be assign a number and he/she will know its own number) and they could change their grade but with an explanation of it. In case of added new factors, from few or all of the participants, they will be given the list with the same 9 factors and the added factors (with their grades) and they will need to assess the new factors (if they were not done that in the previous round), but also, they will be given the opportunity to change grades with an explanation.

In the third round, they will be given the list with all factors (separate grades from each participant and the mean for each factor) and be asked to check and to change a grade if they think that is needed with an explanation. If some changes are made to the factors, than again, the list will be send to them (with the changes), otherwise this will be the last round.

For all Delphi rounds, the questionnaire was made by using the online software – Typeform[2], that is specialized for building online surveys. The questionnaire was available only via generated survey link (a custom URL) that the respondents received on their email address. In addition to

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[2] https://www.typeform.com/

the questionnaire, in the rounds that follow after round one, to the respondents was sent a list with all answers (grades and average grades for each factor) obtained by all of them from the previous round of the Delphi method.

The empirical research was conducted over a period of 2 months. The first round was conducted from 8th to the 30th of March, 2020. The period to fulfill the questionnaire from the second round was from March 30 to April 22, 2020. The last round was conducted from April 22 to May 8, 2020.

5. RESULTS AND ANALYSIS

The sample of respondents who participated in this research was composed of 26 experts, i.e., human resource managers of IT companies in the Republic of North Macedonia. The identities of those surveyed were not disclosed. In addition to the main research questions, information was obtained on demographic data on the group of respondents and the characteristics of IT companies such as: location and time of existence, number of employees and type of employer in the IT sector (domestic or foreign IT Company).

In terms of gender, 77% of respondents are women, 23% are men. Most of them are between the age of 25 and 45 (96%), while only one respondent (4%) is between the age of 18 and 24. According to the level of education, 46% have completed a second cycle of studies in the field of human resources or other related field, 46% have higher education and 8% have completed secondary education. In terms of work experience, 39% of respondents have work experience less than 5 years, 42% more or equal to 5 years, and only 19% more than 10 years (Figure 1).

Figure 1: Characteristics of the sample of analysis
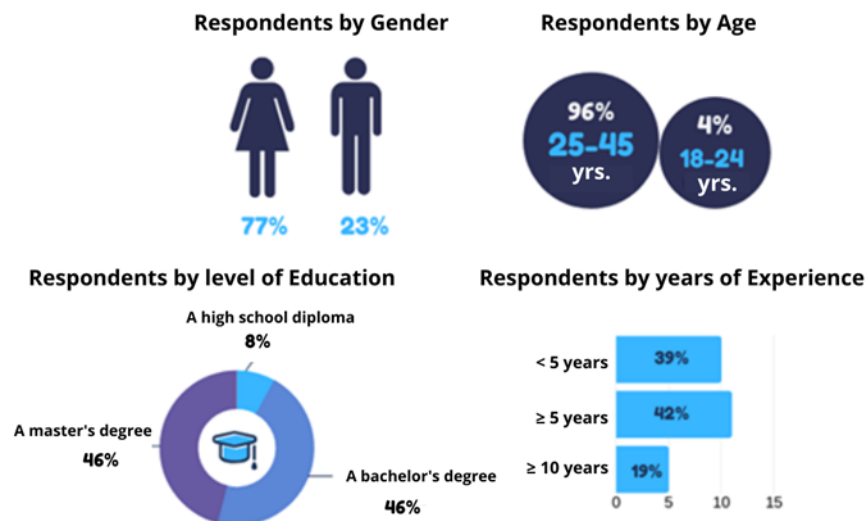
(Source: Authors own calculations (Data visualization has been done using the web-based design software -Canva))

As for the location of IT companies, 25 are based in Skopje, while only one IT company is located in Bitola. In terms of period of existence, the youngest IT Company involved in the survey is 2 years old, and the oldest is 25 years old. According to the number of employees, 39% were small companies with 10 to 49 employees, 42% were medium-sized companies with 50 to 249 employees and 5 large companies with 250 or more employees. Based on the answers received for

the type of employer, most of the experts or 62% work in foreign IT companies that have an open representative office in the country, 23% work in domestic IT companies, while 15% work in companies with mixed capital (domestic and foreign).

In 5.1 are presented the results from round one, while in 5.2 the results from round two and three.

5.1 Delphi Method – round one

Regarding the first question, which concerned the reasons given by the employees for leaving the IT companies, the obtained answers are given in Table 1. For repetitive responses; the frequency is also indicated. Respondents cited more than one reason in their responses. A total of 10 reasons were provided, and the highest frequency is observed in emigration from the country in search for a better standard of living, which was stated by 13 respondents. Other common reasons, according to respondents, are: the possibility of greater financial compensation (9 respondents) and the search for a challenge and a change in work (7 respondents).

Table 1: Causes of voluntary employee turnover in IT companies in the Republic of North Macedonia

No.	Causes	Frequency
1.	Emigration from the country in search of a better standard of living.	13
2.	Opportunity for greater financial compensation.	9
3.	Search for challenge and change at work.	7
4.	Possibility for better working conditions.	3
5.	Opportunity for a higher job position and greater responsibility	2
6.	Dissatisfaction with labor relations and management.	2
7.	Engaging in another field of interest.	1
8.	Feeling stagnant and oversaturated from the current job	1
9.	Problems with fitting into organizational culture.	1
10.	Work overload.	1

(Source: Authors own calculations)

The answers to the second question were the grades of importance from the respondents for the nine factors that affect the voluntary turnover of the IT staff in the country. Based on their individual grades, the average grade of importance is calculated for each factor and these grades are shown in Table 2. From the presented results in Table 2 it can be seen that the factor that affects the most of the voluntary turnover from IT companies in the country is the need for bigger challenge at work ($\bar{x} = 3.6$) followed by the need to improve the IT skills of the employee ($\bar{x} = 3.2$), the need for greater financial compensation ($\bar{x} = 3.0$), etc.

Table 2: The importance of factors affecting employee turnover in IT companies in North Macedonia

No.	Factors	The average grade of importance
1.	Need for a bigger challenge at work.	3.6
2.	Need to improve the IT skills of the employee.	3.2
3.	Need for greater financial compensation.	3.0
4.	Need for a better work environment and interpersonal relationships.	2.7
5.	Desire to work in an IT company with a higher market reputation.	2.7
6.	Need for a better benefit package.	2.6
7.	Need for balance between private and business life.	2.6

| 8. | Due to experienced "burnout" syndrome. | 2.4 |
| 9. | Desire to work with a more talented IT team. | 2.3 |

<div align="center">(Source: Authors own calculations)</div>

The third question, which was opened, gave to the respondents an opportunity to add new factors to the list of factors given to them in the second question. The respondents listed other seven factors in total that were not given, and according to them are important, i.e. they affect the decision for the voluntary turnover of the IT staff in North Macedonia. The new factors are: the need for flexibility in operation, absence of work with challenging technologies, current political, economic and social factors, intention to emigrate from the country, absence of employee opinion evaluation, lack of effective communication and transparency and absence of career plan for employee development. They were assessed by the respondents who listed them by using the same scale from 1 to 5 according to the level of importance. Additional factors, their frequency and the average grade of importance are shown in Table 3

Table 3: The importance of additional factors affecting employee turnover in IT organizations

No.	Additional factors	Frequency of listing the factor	The average grade of importance
1.	Need for flexibility in operation.	6	5
2.	Absence of work with challenging technologies.	5	5
3.	Due to current political, economic and social factors.	4	4,6
4.	Intention to emigrate from the country.	5	4
5.	Absence of employee opinion evaluation.	1	4
6.	Lack of effective communication and transparency.	1	4
7.	Absence of career plan for employee development.	1	3

<div align="center">(Source: Authors own calculations)</div>

The fourth question referred to what the human resource management in domestic IT companies do to reduce the rate of staff turnover. The answers obtained from the respondents are shown in Table 4. Respondents cited more than one activity in their responses. From the 22 retention activities, the highest frequency has the continuous improvement of the benefit package, which was stated by 7 responds. The other most common activities that are used are: continuous improvement of working conditions (6 respondents), work on challenging projects (4 respondents), etc.

Table 4: Implemented retention activities in IT organizations

No.	Implemented retention activities	Frequency
1.	Constantly improving the benefit package.	7
2.	Continuous improvement of working conditions.	6
3.	Working on challenging projects.	4
4.	Flexible work and the opportunity to work from home.	3
5.	Assign work tasks that require the application of the latest technologies.	3
6.	Increasing the amount of financial compensation.	3
7.	Timely direct communication and transparency.	3
8.	Undertake activities to improve organizational culture.	3
9.	Opportunity to work with a foreign market.	2
10.	Additional benefits such as: private insurance, free telephone and subscription, food, and free sports activities.	2
11.	Payment of bonuses.	2
12.	Opportunities for improving knowledge and skills.	2

13.	Implement a work-life balance program.	1
14.	Opportunities for traveling abroad.	1
15.	Implement an employee retention and loyalty program.	1
16.	Educating the human resources team on how to increase employee loyalty.	1
17.	Regular evaluation of employee satisfaction.	1
18.	Carrying out activities aimed at improving employee motivation.	1
19.	Finding the source of manifested employee dissatisfaction.	1
20.	Providing a work environment that offers good professional progress.	1
21.	Increasing employee involvement in decision making.	1
22.	Set clear and transparent goals for the company and employees.	1

(Source: Authors own calculations)

5.2 Delphi Method – round two and three

Because new factors that affect the voluntary turnover in the IT staff in the country were added by some of the participants, in this round the list was given to them with the same 9 factors (from round one, with the grades of importance), and the added factors (also, from round one, with their grades) and they assessed the new factors (if they were not assessed them in the previous round), but also, they were given the opportunity to change grades from the previous round with an explanation.

The results (average grade of importance) obtained from the second round of the Delphi method are shown in Table 5. According to the respondents, the most important factors influencing the departure of IT staff are: the need for greater financial compensation ($\overline{x}$ = 4.0) , the need for a better benefit package ($\overline{x}$ = 4.0), the need for greater work challenge ($\overline{x}$ = 3.9), the intention to emigrate from the country ($\overline{x}$ = 3.7), and the absence of work with challenging technologies ($\overline{x}$ = 3.6).

Table 5: The importance of factors affecting voluntary turnover in IT organizations - results from the second round of applied Delphi method

No.	Factors	The average grade of importance
1.	Need for greater financial compensation.	4.0
2.	Need for a better benefit package.	4.0
3.	Need for a bigger challenge at work.	3.9
4.	Intention to emigrate from the country.	3.7
5.	Absence of work with challenging technologies.	3.6
6.	Need to improve the IT skills of the employee.	3.4
7.	Due to current political, economic and social factors.	3.3
8.	Need for flexibility in operation.	3.2
9.	Lack of effective communication and transparency.	3.2
10.	Desire to work in an IT company with a higher market reputation.	3.1
11.	Absence of career plan for employee development.	3.0
12.	Absence of employee opinion evaluation.	2.9
13.	Need for a better work environment and interpersonal relationships.	2.9
14.	Desire to work with a more talented IT team.	2.8
15.	Need for balance between private and business life.	2.8
16.	Due to experienced "burnout" syndrome.	2.7

(Source: Authors own calculations)

In the third round, the list with the sixteen factors (Table 5) was sent to the respondents with grades from the respondents obtained in the second round along with the average grade of

importance for each factor, and based on their responses there were no changes, so the results remain the same as in round two.

6. DISCUSSION

Palvia, Ghosh, Jacks, and Serenko (2020) in their book present studies where research is conducted on the global problems in IT in 37 countries around the world. In 2013, an international team of researchers started to develop a standard instrument for research in order to obtain information about the global IT environment, thereby taking reasonable accountability of the difference of the countries, more precisely, their national culture, economic growth, political systems, social and religious beliefs, as well as the nature of the organizations themselves and the professional IT culture in all of the included countries. In the research, over of 11,000 records and 1.7 million data items were obtained. According to the set research framework of the project, the problems that IT employees faced are classified in three categories such as organizational, technological and individual problems (Palvia, Ghosh, Jacks, Serenko, and Turan, 2020). What follows are obtained information from some of the countries involved in the research such as: the United States of America, China, Russia, Turkey, Iran, Pakistan, Italy, France, the United Kingdom, Greece and North Macedonia.

In the United States of America (USA), there were 308 workers in the IT staff involved. Based on the recieved answers, listed as the most important organizational problems are: IT reliability and efficiency, security and privacy, and attracting and retaining IT professionals. Technological problems refer to: networks/telecommunications, enterprise application integration, and collaborative and workflow tools. IT profesionals in the USA show a high level of satisfaction in their work, success and a moderate quality of work pressure, little worry for the balance between their professional and private life, little worry for the safety in their job and a strong desire to stay in their work place in the next years (Jacks and Palvia, 2020).

The research conducted in China obtained answers from 310 IT employees. As main organizational problems are listed: IT reliability and efficiency, security and privacy, and IT strategic planning. The main technological problems are: networks/telecommunications, big data systems, data mining, software as a service, and business intelligence/analytics. In addition, more than half of the respondents were satisfied in their work place, that is, they feel safe and will not change their work place in a short term (Yu et al., 2020).

In Russia, because of its political and economic history, there are a few notible problems appearing that are not common in the Western countires. Here, the main organizational problems are: IT reliability and efficiency, security and privacy, and revenue-generating IT innovations. Technological problems are relying on business intelligence/analytics, business process management systems, and enterprise application integration. Unlike China, the networks/telecommunications are on the bottom of the result list. The individual problems are similar like the other countries, identified with little proffessional self-efficiency and intentions of leaving (Jacks et al., 2020).

According to the recieved results from Turkey, IT reliability and efficiency, security and privacy and outsourcing services are among the most important organizational problems. In the technological sense, the biggest concern is seen in business intelligence and analytics, enterprise application integration and networks and telecommunications. The IT staff in Turkey is satisfied with their work, they feel safe in their work place and they emphasize moderate level of leaving (Turan et al., 2020).

In Iran, in the last few years, IT and telecommunications infrastructure are developing and enhancing rapidly. The three main organizational questions connected with the IT sector in Iran are: revenue-generating IT innovations, business agility and speed to market, and alignment between IT and business. The main technological problems are: enterprise application integration, networks and telecommunications, and ERP systems. The employees in the IT sector point out that they are moderately satisfied of their work even though they come across significant pressure (Ghosh et al., 2020).

Revenue-generating IT innovations, IT strategic planning, and business productivity and costs are the organizational IT problems who are ranked the highest in the research conducted in Pakistan. Between the top tehnological problems are: business intelligence/ analytics, customer relationship management (CRM) systems, and mobile and wireless applications. The workers of the IT industry in Pakistan are satisfied of their work, with moderate levels of burnout, pressure and assigned workload. Most of the IT labor in Pakistan is motivated to stay in the domestic IT industry in the futute (Qureshi et al. 2020).

In the part that follows, the focus is on some of the European countries which are part of Palvia, Ghosh, Jacks, and Serenko (2020) book.

According to the Italian IT workers, IT strategic planning, IT service management, knowledge management, alignment between IT and business point out as the most significant IT questions. The main technological problems include enterprise application integration, business intelligence/analytics, collaborative and workflow tools and networks/telecommunications. The IT workers in Italy are satisfied of their work and feel safe with a small level of leaving noted (Frigerio et al., 2020).

According to the employees of the IT staff in France, the main three organizational IT problems are: generating IT innovations, security and privacy, and project management. The three main technological problems are: business intelligence and analytics, customer relationship management systems and mobile and wireless systems. Generaly, the IT employees are satisfied with their work place and profession and plan to remain with their current employer in the next period (Kefi et al., 2020).

Because of the big number of technological inovations, the United Kingdom is ranked as the most enterprenural country in Europe. In the research, there were 95 IT workers involved. According to the respondents, the three most important organizational problems are: IT reliability and efficiency, security and privacy, and alignment between IT and business. The three main technological problems consist of: mobile and wireless application, business intelligence/ analytics, and software as a service (SaaS). The workers in the IT sector in the United Kingdom are in a large extend satisfied of their work and believe they add worth to their company. The participants are not worried about their work places and are expected to stay in the IT industry in the future (Powell et al., 2020).

In Greece there were 106 workers of the IT staff included. The main organizational problems that were identified of the IT workers are: IT reliability and efficiency, security and privacy and IT strategic planning. Business intelligence/analytics is the highest ranked technological problem, whereas the social networking/media are considered as the least important. IT workers in Greece are generaly satisfied of their work places and experience moderate work pressure (Serenko and Bhandari, 2020).

According to Levkov et al. (2020), the IT industry is a key sector in North Macedonia especially if its taken under consideration the big potential for export of IT services and the number of newly opened companies. The questionnaire was created online by using SurveyMonkey and the research

was conducted in the period from March to July 2016. In the research 294 IT workers have participated. In relation of the demographic characteristics of the respondents, 65% owned a bachelor's degree. Furthermore, most of the respondents (83%) had an IT work experience from 0 to 9 years in the field. 83% of the respondents were in a full-time employement and more than half (60%) in the organizations worked as part of the IT sector. In relations of their work position in the company, a small number of the respondents (13,6%) were part of the senior management. In accordance of the analysis of the recieved answers, as the most important organizational problems which the North Macedonian IT sector faces are: knowledge management, lack of IT staff, and very high IT employee turnover rate. On the other side, business intelligence/analytics and software as a service (SaaS) are identified as the most important technological and infrastrucural problems. In relation to the individual problems, it is important to note that most of the IT professionals in North Macedonia are satisfied and like their current job. In that way, employement in the IT industry in North Macedonia continues to be compilling for younger population. The top ranked organizational problem, refered to knowledge management, is a result of the fact that a lot of the IT sectors in big organizations in North Macedonia are faced with lack of IT staff and a high rate on the IT employee turnover. When the knowledge of a certain IT system or project for software development resides only in the framework of a certain IT professional, the knowledge is lost when that same IT professional leaves the organization. Therefore, building systems based on the knowledge are considered as a priority for the Macedonian companies and a way for them to be secured when the employees leave the organization. Based on the presented results, an insight is obtained that the high demand for IT professionals on the global market affects the dynamicity on the IT market in North Macedonia, and, consequently, causes a high turnover rate, which is mostly driven by the emigration process (Levkov et al., 2020).

According to the results presented in our research study, the highest ranked reason why the IT staff voluntarily leaves their work place is that exact intention for leaving the country in search for a better life standard (Ivanovska and Cvetkoska, 2020). Hence, if we connect the two North Macedonia studies, we can conclude that: despite the high net income in the IT sector, because of current political, economic and social factors, the IT staff decides to leave the work place and continue their career path outside the country.

7. CONCLUSION

The performed empirical research within this paper provides valuable information about the key factors and reasons that influence the voluntary turnover of the IT staff in the IT companies in North Macedonia. The research was conducted with the aid of the qualitative method for forecasting – Delphi.

Based on the obtained results, the three most common reasons why IT staff leave their jobs voluntarily are: 1) intention to emigrate from the country in search of a better standard of living; 2) the possibility of higher financial compensation in another competing company and 3) the search for a change of job.

According to the human resources management of the IT companies included in the analysis, the most important factors influencing the voluntary turnover of IT staff are: the need for higher financial compensation, the need for a better benefit package, the need for greater work challenge, the intention to emigrate from the country and the absence of working with challenging technologies. The most common activities that domestic IT companies undertake in order to reduce the rate of IT staff turnover are: continuous improvement of the benefit package, continuous

improvement of working conditions and assignment of work to challenging projects. The results from the conducted research show that domestic IT companies are aware that retaining their best employees is extremely important for achieving success in the global competitive environment. Therefore, to retain key employees, the HR management in the IT companies should continuously monitor the work environment, in order to identify the issues due to which IT employees would voluntarily leave and consequently take the corrective measures for prevention and early solving of the potential problem.

When using the Delphi method, the respondents are known for their expertise for the problem of interest and the questionnaire is only addressed to this group. However their number is not high, i.e. it might be a group of panel experts of 5 respondents. This is not a case when we are using a standard questionnaire where is required a larger number of respondents (minimum of 30 in order to make general conclusions). In our research the sample of respondents was composed of HR managers who work in IT companies in the territory of North Macedonia, and we have analyzed their points of view for the problem of interest. In order to obtain a broader picture and insight for the reasons why the IT staff voluntarily leaves the companies, in our next research the standard questionnaire will be created and addressed to the IT employees in IT companies.

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UNTANGLING THE CORPORATE SOCIAL RESPONSIBILITY-FINANCIAL PERFORMANCE PARADOX: THE ROLE OF COMPETITIVE ACTIVITY

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ABSTRACT
A central debate in corporate social responsibility (CSR) research is whether CSR hurt or help shareholders. Our study suggests that this paradoxical tension between social and competitive activities of firms is a manageable resource-allocation decision. By disaggregating competitive activity into its different forms – intensity and complexity – we develop a model that explains how firms can alleviate the resource allocation tension to improve performance. High CSR firms can enhance short-term performance by reconfiguring its resource base and reducing competitive intensity – the frequency of competitive actions. Alternatively, they can increase long-term performance by transforming its resource base and increasing competitive complexity – the variety and novelty of competitive actions. Overall, our empirical findings suggest that the positive effect of CSR on firm performance is conditional on firms' ability to adjust the intensity and complexity of their competitive activity. Our results are robust across competitive environments with different levels of competitive pressure.

Key words: corporate social responsibility, competitive dynamics, paradox, dynamic capabilities, competitive action, competitive complexity, competitive intensity

1. INTRODUCTION

A key debate in corporate social responsibility (CSR) research is whether a firm's operations, strategy, and goals should primarily reflect the financial interests of shareholders or adopt a pluralistic orientation that is responsive to a variety of stakeholders. The shareholder view suggests that CSR activities undermine the ability of firms to be competitive and maximize corporate financial performance (CFP) because those resources are being used to benefit other stakeholders at the expense of shareholders (Friedman, 1970; Jensen 2001). Conversely, the stakeholder view proposes that responding to all stakeholders—including shareholders—enhances a firm's ability to increase its competitive advantage and CFP (Donaldson & Preston, 1995; Freeman, 1984). These contrasting explanations of how CSR influences CFP have been described as a paradoxical

tension between social and profit responsibility of firms (Margolis & Walsh, 2003; Smith & Lewis, 2011).

Some scholars emphasize that the primary source of this paradoxical tension is resource scarcity—particularly regarding time and funding (Hahn, Pinkse, Preuss, & Figge, 2015; Miron-Spektor, Ingram, Keller, Schad, Lewis, Raisch, & Smith, 2016; Preston & O'Bannon, 1997; Smith & Lewis, 2011). Owing to a finite pool of resources, firms necessarily face a resource allocation tension because engaging in CSR activities diverts managerial attention and critical resources away from competitive activities which, consequentially, can harm CFP (Aupperle, Carroll, & Hatfield, 1985; Harrison & Wicks, 2013; Jensen, 2001). However, other scholars deemphasize the resource allocation tension and instead posit that CSR activities will facilitate the firm's development of new resources, capabilities, and competitive activities which can enhance CFP. For example, CSR activities can help firms develop new resources and capabilities (Hart, 1995; McWilliams, Siegel, & Wright, 2006; Orlitzky, Schmidt, & Rynes, 2003; Russo & Fouts, 1997), "innovate through using new technologies, operating methods, and management approaches," and "increase their productivity and expand their markets" (Porter & Kramer, 2011: 65), each of which can improve CFP.

These contrasting views suggest that our understanding about the when and how CSR can improve CFP remains incomplete. Our main premise is that CSR can improve CFP when firms are able to mitigate the resource allocation tension. Thus, in this study, we explore: How can firms manage and alleviate the resource allocation tension between CSR and competitive activities to improve CFP? To answer this question, we argue it is critical to account for the heterogeneous nature of competitive activity and its interdependency with CSR.

Competitive dynamics research distinguishes between two types of competitive activity: *competitive intensity*—the frequency of competitive actions—and *competitive complexity*—the variety and novelty of competitive actions (Andrevski, Brass, & Ferrier, 2016; Connelly, Tihanyi, Ketchen, Carnes, & Ferrier, 2017; Derfus, Maggitti, Grimm, & Smith, 2008; Ferrier, 2001; Ndofor, Sirmon, & He, 2011).[1] For each type of competitive activity, firms can reduce the resource allocation tension through different mechanisms. Drawing from dynamic capabilities research (Helfat, Finkelstein, Mitchell, Peteraf, Singh, Teece, & Winter, 2007; Helfat, Schilke, Hu, & Helfat, 2018), we advance two such mechanisms: resource reconfiguration and resource transformation.

On the one hand, a high level of competitive intensity exacerbates the resource allocation tension because carrying out a greater number of competitive actions requires more resources for competitive activities and fewer resources for CSR activities. Firms can mitigate this tension by reducing competitive intensity and reallocating resources to CSR activities which reconfigures a firm's resource base. Thus, through a *resource reconfiguration* process, firms can compensate for the reduced competitive intensity to improve short-term CFP. On the other hand, firms can alleviate the resource allocation tension by increasing competitive complexity. The presence of high CSR activity and increased competitive complexity indicates that the firm possesses dynamic capabilities for transforming its resource base and using it to develop new and different types of

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[1] Since prior research in competitive dynamics has largely not considered CSR activities (or actions) and examined traditional competitive actions such as new product, pricing, marketing, etc., we distinguish CSR activities from traditional competitive actions in order to examine how CSR and competitive activity interact to influence CFP. Also, we refer to CSR activities to include environmental, social, and governance (ESG) activities identified in prior research (e.g., Ioannou & Serafeim, 2015) which corresponds with the dataset used in this study.

competitive actions. Thus, through a *resource transformation* process, firms can simultaneously increase CSR and competitive complexity which, in turn, can improve long-term CFP. Put simply, we argue that firms can benefit from CSR activities to improve CFP when they either decrease competitive intensity or increase competitive complexity through the processes of resource configuration and resource transformation, respectively. In addition, we examine how competitive pressure—a key environmental factor in competitive dynamics research (D'Aveni, 2002; Chen & Miller, 2010; Chen, Su, & Tsai, 2007; Derfus et al., 2008; Young, Smith, & Grimm, 1996)—affects the interactions between CSR and competitive intensity or complexity in explaining CFP. Figure 1 depicts our conceptual model.
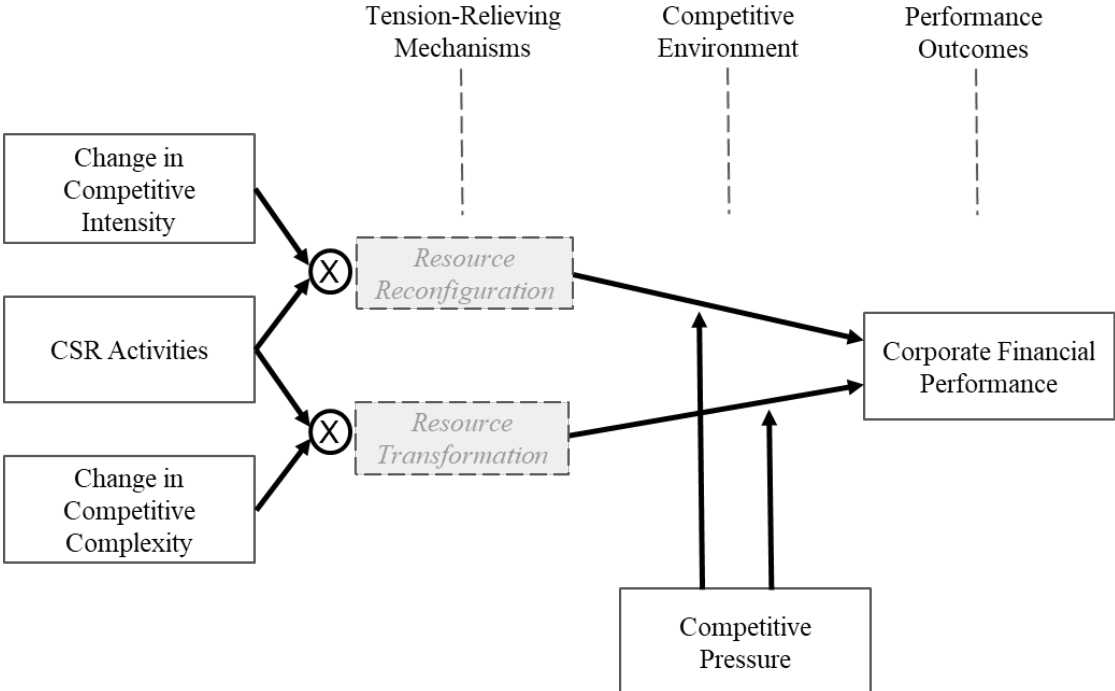

Figure 1: A Conceptual Model

We test our theory and hypotheses using datasets from MSCI ESG KLD STATS for CSR scores and RavenPack News Analytics for competitive activity of firms. Consistent with our arguments on the resource reconfiguration effect, we find empirical support that despite a reduction in competitive intensity, firms can improve short-term CFP when they engage in CSR. Also consistent with our arguments on the resource transformation effect, we find that firms improve long-term CFP when they simultaneously engage in CSR and increase competitive complexity in ensuing time periods. In other words, CSR activities can both compensate for a decrease in competitive intensity and facilitate an increase in competitive complexity to improve short- and long-term CFP, respectively. Contrary to expectations, we also find that the interaction effects of CSR with competitive intensity and competitive complexity on CFP are robust across different levels of competitive pressure.

Our study makes two primary contributions. First, we provide a broader, yet more nuanced perspective of the paradoxical tension between CSR and CFP. We move beyond the received wisdom associated with the tradeoff between social and profit objectives by examining the interdependencies between CSR and competitive activities of firms. In doing so, we contribute to

the CSR literature by showing that the paradoxical tension between CSR and CFP relaxes when we consider the heterogeneous nature and role of the firm's competitive activity. We also contribute to competitive dynamics research by exploring how CSR activities and competitive behavior interact to influence short- and long-term CFP. Second, whereas the preponderance of CSR research has explored *whether* CSR influences CFP, we respond to the call for additional research on *when* and *how* CSR influences CFP (Aguinis & Glavas, 2012; Margolis, Elfenbein, & Walsh, 2009, Zhao & Murrell, 2016). By adopting a more fine-grained conceptualization of a firm's competitive strategy and by deconstructing how CSR relates to dynamic capabilities for resource reconfiguration and resource transformation, we provide deeper insights into the mechanisms and the conditions under which CSR will enhance CFP. Taken together, our study advances our understanding of the paradoxical tension between CSR and CFP identified in prior research (Lewis, 2000; Smith & Lewis, 2011).

In the following sections, we present the theory and hypotheses, discuss the methods and results, and conclude with a discussion of the research and managerial implications.

2. THEORY AND HYPOTHESES
2.1. Linking Competitive Dynamics and Dynamic Capabilities to the Paradoxical Tension between CSR and CFP

The concept of paradox refers to "contradictory yet interrelated elements that exist simultaneously and persist over time" (Smith & Lewis, 2011: 382). As a social construction, a paradox simplifies reality "into polarized either/or distinctions that conceal complex interrelationships" (Lewis, 2000: 761). It typically involves contradictory elements that "seem logical in isolation but absurd and irrational when appearing simultaneously" (Lewis, 2000: 760). Indeed, prior research has identified a number of organizational contradictions as paradoxical tensions such as exploration and exploitation in innovations (e.g., Smith, 2014), control and collaboration in corporate governance (e.g., Sundaramurthy & Lewis, 2003), competition and cooperation in alliances (e.g., Das & Teng, 2000), and automation and augmentation in artificial intelligence (e.g., Raisch & Krakowski, forthcoming).

Naturally, the competing demands of social and profit objectives of firms have also been identified as a paradoxical tension (Margolis & Walsh, 2003; Smith & Lewis, 2011). Tensions become salient when the elements involve incompatible goals, scarce resources, and short- versus long-term competing needs (Miron-Spektor et al., 2018; Smith & Lewis, 2011). These elements are at the center of the tension between the shareholder and stakeholder perspectives and, by extension, between CSR and CFP. However, seemingly contradictory elements at one level can be synergistic and mutually advantageous at another level (Hargrave & Van de Ven, 2017; Smith & Lewis, 2011). Specifically, the elements that comprise the tension between social and competitive activities can be contradictory if considered at a broader, course-grained level (i.e., competitive activity in general), yet synergistic at a detailed, fine-grained level (i.e., specific types of competitive activity) (Cameron & Quinn, 1988). In line with these views, we argue that the effect of CSR on CFP will depend on the distinct types of competitive activity. Thus, we integrate competitive dynamics research with the CSR research to undertake a fine-grained examination of the resource allocation tension between CSR and two types of competitive activity: *competitive intensity* and *competitive complexity*.

At its core, competitive dynamics provides a theoretical logic and empirical framework to understand "what specific firms do when they compete with specific rivals" and to study "measurable actions" of firms (Chen & Miller, 2012: 136). Given its focus on observed

competitive actions carried out by firms, prior research has studied competitive activity by examining the firm's entire repertoire of competitive actions—composed of new products, pricing, marketing, market entry and exit, acquisitions, strategic alliances, and others—carried out over a given time period (Grimm, Lee, & Smith, 2006; Ketchen, Snow, & Hoover, 2004, Smith, Ferrier, & Ndofor, 2001). The two most extensively studied attributes of a firm's competitive action repertoire are: competitive intensity—the frequency of competitive actions—and competitive complexity—the variety and novelty of competitive actions (Andrevski et al., 2016; Connelly et al., 2017; Derfus et al., 2008; Ferrier, 2001; Ndofor et al., 2011). We argue that these two types of competitive activity are particularly relevant for clarifying the sources of the resource allocation tension and the interdependencies between CSR and competitive activity. In other words, although resources are being redirected away from competitive activity to engage in CSR (the contradiction), CSR can serve to compensate for or augment competitive activity (the synergistic). We also argue that each type of competitive activity works through distinct mechanisms—*resource reconfiguration* and *resource transformation*—to mitigate the resource allocation tension with CSR. Here, we draw from dynamic capabilities research to illuminate these distinct mechanisms. Given its focus on change in resource base of firms (Eisenhardt & Martin, 2000; Helfat & Peteraf, 2003), research on dynamic capabilities provides a firm theoretical foundation to explain the mechanisms by which CSR influences CFP through changes in competitive intensity and competitive complexity. The concept of dynamic capabilities in general refers to the "capacity of an organization to purposefully create, extend, or modify its resource base" (Helfat et al., 2007:1) and is reflected in the firm's "ability to achieve new and innovative forms of competitive advantage" (Teece et al., 1997: 516). Broadly speaking, dynamic capabilities involve reconfiguration of existing resources and transformation that brings about new resources that create competitive advantage and capture value by way of strategic change (Helfat & Peteraf, 2003; Schilke et al., 2018). Prior research has identified that certain types of resources such as technological and slack are beneficial to dynamic capabilities (Anand, Oriani, & Vassolo, 2010; Danneels, 2008). Similarly, prior research has suggested that CSR activities can help firms develop new resources and capabilities (Hart, 1995; McWilliams, Siegel, & Wright, 2006; Orlitzky, Schmidt, & Rynes, 2003; Porter & Kramer, 2011; Russo & Fouts, 1997).

In light of these studies, we argue that CSR and competitive activities interact to influence CFP through a hierarchy of capabilities: ordinary and higher-order (Collis, 1994, Schilke et al., 2018; Zollo & Winter, 2002).[2] Ordinary capabilities involve reconfiguring a firm's resource base and are employed to improve operational efficiency and effectiveness of competitive actions. These capabilities explain how CSR interacts with competitive intensity to influence CFP. Higher-order capabilities involve transforming a firm's resource base and are deployed to achieve new and innovative forms of competitive actions. These capabilities explain how CSR interact with competitive complexity to influence CFP. We next present our arguments and hypotheses.

2.2.   Moderating Role of Competitive Intensity and Resource Reconfiguration

Competitive intensity is reflective of organizational capabilities associated with the speed and effectiveness with which the firm develops and executes out a set or series of competitive actions as it strives to create a series of temporary advantages (D'Aveni, Dagnino, & Smith, 2010; Dykes, Hughes-Morgan, Kolev, & Ferrier, 2019; Ferrier, 2001; Ferrier et al., 1999; Nadkarni, Chen, &

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[2] Scholars in dynamic capabilities have used other terminology to characterize the hierarchy of capabilities such as regular, lower-order, zero-order, and first-order for ordinary capabilities and second-order for higher-order capabilities (Schilke et al., 2018).

Chen, 2016; Young et al., 2006). Firms with the capabilities that support a high level of competitive intensity can overwhelm rivals with a flurry of multiple competitive actions, thus keeping them off balance and delaying their responses which, in turn, improves CFP (D'Aveni, 1994; Ferrier, 2001). Thus, to compete intensively firms need to invest in, leverage, and maintain a significant stock of resources for frequently carrying out competitive actions.

CSR also requires a substantial investment in organizational, managerial, and financial resources to address the range of environmental, social, and/or governance standards expressed by various stakeholders. Since firms have finite resources, those allocated to CSR activities will certainly reduce the resources available for maintaining competitive intensity (Harrison & Wicks, 2013). In this sense, some scholars suggest that CSR misallocates resources and managerial attention from more important core activities of the firm which could put a firm at a competitive disadvantage relative to rivals (Aupperle et al., 1985; Friedman, 1970; Jensen, 2001). In fact, prior research has characterized misallocation as a central concern of CSR (Margolis & Walsh, 2003).

We argue, however, that the reallocation of resources from competitive intensity to CSR is not necessarily a misallocation of resources. Firms can reduce competitive intensity to free up resources for CSR, yet still improve CFP. Certainly, firms cannot survive without some level of competitive intensity since it is a core element of strategy. However, by reallocating and reconfiguring their limited resources, firms can decrease competitive intensity to a point where the benefits of CSR will exceed the costs of reduced competitive intensity. Moreover, as firms shift their resources to CSR, they can reconfigure their existing resource base that can lead to the development of ordinary capabilities that can mitigate the resource allocation tension. Thus, firms can compete successfully through fewer competitive actions in the short-term as CSR activities stimulate ordinary capabilities which generate improvements in operational efficiency and effectiveness (Collis, 1994; Daneels, 2008; Wibbens, 2019; Winter, 2003; Zollo & Winter, 2002). This CSR-stimulated resource reconfiguration process can improve operational efficiency and effectiveness in several ways. First, high frequency of actions reduces the time required to develop and execute new actions. The shorter time between successive actions creates operational inefficiencies and leads to self-cannibalization, which in turn generate diminishing returns (Andrevski & Ferrier, 2019; Pacheco-de-Almeida, 2010). Redirecting some resources towards CSR will decelerate the frequency of competitive actions and thus reduce the operational costs. Second, by redirecting resources toward CSR, firms can reduce their aggressiveness toward rivals which can deter retaliation and de-escalate rivalry (Derfus et al., 2008). Given that a high level of competitive intensity requires a significant resource commitment, firms that carry out less intense attacks and counterattacks against its rivals could experience a significant decrease in costs. Third, previous research suggests that CSR activities can decrease costs and increase productivity by reducing turnover and training costs and by increasing employee involvement in developing socially responsible solutions (Harrison, Bosse, & Phillips, 2010; Porter & Kramer, 2011; Surroca, Tribo, & Waddock, 2010). Finally, a firm's reputation for CSR can also enhance the effectiveness of competitive actions as customers perceive greater value of the products of firms they believe are committed to CSR (Harrison et al., 2010; Harrison & Wicks, 2013). For example, owing to increased goodwill and improved relations with stakeholders such as investors, suppliers, and distributors, firms can reduce operational costs and offer more competitive prices and sales promotions. New product introductions and market entries can also be more successful when potential customers are aware of a firm's enhanced image with suppliers and customers (Orlitzky, Schmidt, & Rynes, 2003). The increased effectiveness of each competitive action can partially compensate for a reduction in the total number of competitive actions carried out.

Taken together, we argue that when firms decrease competitive intensity and reallocate resources to CSR, the interaction effect of CSR and competitive intensity will increase CFP. Conversely, owing to a heightened resource allocation tension, CFP will likely decrease when firms attempt to increase competitive intensity while maintaining its current level of CSR. Put simply, while there exists a resource allocation tension between CSR and competitive intensity, CSR can compensate for declining competitive intensity to improve CFP. Thus, we offer the following hypothesis:

H1a: CSR and change in competitive intensity will interact in explaining CFP such that the relationship between CSR and CFP will be positive when firms decrease competitive intensity.

We also argue that the interactive effect of CSR and decreased competitive intensity will primarily affect short-term CFP. Decreasing competitive intensity will reduce operational inefficiencies and the overall costs of developing new actions which can directly improve CFP. This prediction concurs with previous competitive dynamics research that finds competitive intensity to affect mainly short-term CFP (Andrevski & Ferrier, 2019; Andrevski et al., 2014; Derfus et al., 2008; Ferrier et al., 1999). In the long-term, however, although high CSR can prevent declining CFP, it cannot fully compensate for decreased competitive intensity. The ordinary capabilities that arise from reconfiguring the resource base and shifting resources from competitive intensity to CSR can allow firms to benefit in the short-term, but less so in the long-term (Helfat et al., 2007; Rahmandad, 2012; Winter, 2003). Thus, we hypothesize the following:

H1b: The interaction between CSR and change in competitive intensity will be stronger for short-term than long-term CFP.

2.3. Moderating Role of Competitive Complexity and Resource Transformation

Previous research finds that firms can outcompete rivals when they increase competitive complexity (Connelly et al. 2017; Ferrier et al., 1999; Ndofor et al., 2011; Yu, Subramaniam, & Cannella, 2009). However, increasing competitive complexity does not require a firm to carry out a greater number of competitive actions. For example, a firm can carry out a fewer number of competitive actions from one year to the next, but carry out a more novel, diverse repertoire of competitive actions in ensuing years. Thus, in principle, a firm can simultaneously decrease intensity and increase complexity of its action repertoire. In addition, these two types of competitive activities differ in the type of resources they need for their execution. Whereas increasing competitive intensity requires *more* resources of the same kind, increasing competitive complexity requires *different* resources. An increase in competitive complexity indicates that the firm possesses higher order dynamic capabilities for transforming its resource base by developing and leveraging new knowledge and competencies (Collis, 1994; Daneels, 2008; Wibbens, 2019; Winter; 2003; Zollo & Winter, 2002). Therefore, a high CSR firm that increases competitive complexity is capable of not only meeting the stakeholder demands for more CSR, but also transforming its resource base for competitive advantage and financial gain.

This resource transformation process, which is initiated by CSR activities, can enhance a firm's ability to carry out new and innovative types of competitive actions in several ways. Prior research suggests that a firm's commitment to CSR can improve its competitiveness by developing and leveraging new capabilities (Baron, 2001; Cohen & Levinthal, 1990; McWilliams & Siegel, 2011). For example, firms can integrate employees with various social, environmental, and competitive expertise to find green solutions or reduce operational waste and thus differentiate their products. Firms can also form new alliance ties with various stakeholders to develop diverse knowledge and resources that facilitate the creation of new action types, and a more complex repertoire (Gnyawali,

Madhavan, & He 2016). Transforming and exploiting acquired external knowledge is critical for improving a firm's competitive position and CFP (Zahra & George, 2002). For example, CSR can stimulate product and process innovations and facilitate new market expansions (Harrison et al., 2010; Porter & Kramer, 2011; Surroca et al., 2010). Finally, developing, replicating, and transferring successful CSR practices across the firm's departments and business units can also generate innovative ways to outcompete rivals (Eisenhardt & Martin, 2000). Conversely, when firms decrease competitive complexity despite high investments in CSR activities, they fail to use and exploit their investments in CSR for competitive advantage.

The mutually reinforcing effects of CSR and increased competitive complexity can improve CFP through three mechanisms: adaptation, learning, and signaling (Connelly et al., 2017). A broad range of actions enables firms to meet various competitive challenges and adapt to changing environmental conditions. Firms can "surprise" rivals with new and different types of competitive moves and, thus, hinder their ability to counterattack in timely fashion (Ferrier, 2001; Ferrier, Smith & Grimm, 1999). In addition, firms can learn faster from both positive and negative experiences with various new action types, thereby broadening their knowledge base critical for future competitive actions (Connelly et al., 2017; Easterby-Smith, Crossan, & Nicolini, 2000). Finally, the ability to carry out complex action repertoires signals to customers, investors, suppliers, and other stakeholders that the firm possesses a wide range of management skills and organizational capabilities that contribute to favorable customer perceptions and evaluations of the firm's products and services (Basdeo, Smith, Grimm, Rindova, & Derfus, 2006; Ferrier, et al., 1999).

In addition, the signaling and reputational benefits of CSR can reduce the costs of developing diverse and novel set of competitive actions. "If a firm changes its repertoire too quickly, external stakeholders may question whether the firm has a coherent pattern of actions, and thus wonder if it lacks a cohesive strategy" (Connelly et al., 2017: 1155). Firms with high CSR reputation can temper these concerns because those firms are expected to diverge, to some extent, from the firm's core activities by developing and adopting new technologies, organizational practices, and management approaches (Porter & Kramer, 2011). As noted earlier, CSR reputation can enhance the effectiveness of each competitive action by creating favorable perceptions about a firm's expertise in developing and delivering products and services (Brown & Dacin, 1997). CSR investments can also facilitate new advertising campaigns, attract cheaper sources of capital, or form alliances with new partners (Fernández-Kranz & Santalo, 2010; McWilliams, Siegel, & Wright, 2006).

In summary, the effect of CSR on CFP is conditioned by the firm's ability to increase competitive complexity. CSR investments can improve CFP when firms can transform and leverage a newly expanded resource base to develop and carry out a novel and more diverse repertoire of competitive actions. Increased competitive complexity indicates that the firm possesses dynamic capabilities for sensing and seizing opportunities for new competitive actions (Teece, 2007). Additionally, reputational and signaling benefits of CSR can decrease the costs of increased competitive complexity. Put simply, we expect a synergistic relationship between CSR and competitive complexity: CSR will exhibit a positive relationship with CFP when firms increase competitive complexity, and a negative relationship when they decrease competitive complexity. Conversely, when firms are unwilling or incapable of carrying out a more diverse and novel set of competitive actions, they have limited capacity to explore and leverage ideas and insights from CSR in their action repertoires. Thus, we offer the following hypothesis:

H2a: CSR and change in competitive complexity will interact in explaining CFP such that the relationship between CSR and CFP will be positive when firms increase competitive complexity.

The benefits of increased competitive complexity and high CSR are more likely to be realized over the long-term. The key mechanisms through which competitive complexity generates benefits for firms—learning, signaling, and adaptation—take time to realize and improve CFP (Connelly et al., 2017). Additionally, integrating CSR with the core resources and transforming them to produce complex actions take longer time to impact CFP (Bridoux, Smith, & Grimm, 2013; Sirmon, Hitt, & Ireland, 2007). Likewise, the reputational and signaling benefits of CSR are more likely to have prolonged effect on future CFP. Finally, the processes associated with resource transformation and the change in competitive activities they bring about take time to affect CFP (Rahmandad, 2012; Helfat & Martin, 2015; Schilke et al., 2018). Thus, we expect that the synergistic effects of CSR and competitive complexity will be stronger for long-term CFP than short-term CFP. Thus, we hypothesize that:

H2b: The interaction between CSR and change in competitive complexity will be stronger for long-term than short-term CFP.

2.4.   The Moderating Role of Competitive Pressure: Three-Way Interactions

A defining feature of competitive dynamics research is *relativity* or "the notion that a firm's strategy and market position must be examined within the context of and vis-à-vis its competitors' strategies and positions" (Chen & Miller, 2010: 6). When competitive pressure is high, an individual firm's actions will escalate rivalry by provoking aggressive reactions from rivals that leads to successive waves of actions and counteractions (Derfus et al., 2008 Young et al., 1996). The level of competitive pressure—the average number of rivals' competitive attacks in a given industry—strongly affects a firm's strategic choices between CSR and competitive activities. Given that firm profitability is negatively associated with the level of competitive pressure (Young et al., 1996), escalating industry-wide rivalry generates frequent and unpredictable environmental changes, thereby increasing managers' psychological stress and anxiety. In threatening situations, managers tend to restrict their attention to dominant rather than peripheral cues and focus on their well-learned rather than novel actions (Staw, Sandelands, & Dutton, 1981). Research shows that survival threats draw most of the managerial attention and organizational resources, so managers primarily focus on financial rather than social or other organizational goals (Greve, 2008; Labianca, Fairbank, Andrevski, & Parzen, 2009). In contrast, when firms do not face a survival threat, managers tend to shift their attention from competitive to social goals (Labianca et al., 2009).

Competitive pressure and resource reconfiguration. We expect that high levels of competitive pressure will make the resource reconfiguration process more important, but more costly. Typically, competitive pressure requires firms to spend increasingly more resources just to maintain competitive parity (Derfus et al., 2008; Barnett, 1997). Yet, resources are quickly depleted in such environments as firms frequently develop and launch new competitive actions without gaining competitive advantage. To keep up with the intense competitive pressure, firms must disproportionally invest resources that support carrying out more competitive actions. Firms that do not match the aggressiveness of rivals will experience declining CFP (Andrevski & Ferrier, 2019). Thus, when firms experience strong competitive pressure, they will primarily use their

limited resources in support of competitive activities, consequently constraining the resources available for engaging in CSR activities.

As competitive pressure increases, a decrease in the focal firm's level of competitive intensity and the reallocating those resources towards CSR will likely result in a quick and significant decline in CFP. Even if decreasing competitive intensity could yield benefits, as we highlighted above, it is unlikely to compensate for the fast erosion of a firm's market and financial position. In addition, the reputational and signaling benefits of CSR are not likely to compensate for the immediate financial losses caused by the frequent rival attacks. Finally, as industry-level rivalry escalates, a decrease in the focal firm's competitive intensity will not likely signal to or incentivize rivals to pull back on their own levels of competitive intensity. Indeed, a focal firm's decision to decrease competitive intensity is likely to be seen by rivals as a signal of weakness, thereby motivating rivals to escalate their attacks.

High levels of competitive pressure generates survival threats that increase managers' anxiety and restricts their attention to the dominant financial goals. Hence, declining competitive intensity and reallocating resources toward CSR activities will be very costly. Thus, we expect that the costs of declining competitive intensity in environments characterized as having high levels of competitive pressure will exceed the benefits, thereby reducing CFP. In contrast, when competitive pressure is low, firms are less likely to suffer substantial decline in CFP from reducing competitive intensity. As a result, the benefits of declining competitive intensity will exceed the costs, enhancing the effect of CSR on CFP.

H3a: There is a three-way interaction between CSR, change in competitive intensity, and competitive pressure in explaining short-term CFP. That is, the effect of the interaction between CSR and change in competitive intensity on short-term CFP will be weaker when competitive pressure is high and stronger when competitive pressure is low.

Competitive pressure and resource transformation. As noted above, environments that exhibit a high level of competitive pressure increase the resource allocation tension (Barnett, 1997). Rivals respond and try to neutralize the focal firm's competitive actions quickly, thereby increasing the costs of competition while constraining resources available for CSR. Such competitive conditions increase the resource allocation tension. We argue, however, that competitive pressure will have weaker moderating effect on the interaction between CSR and competitive complexity than on the interaction between CSR and competitive intensity on CFP. As noted earlier, competitive complexity requires the development of different types of resources, but not necessarily more resources of the same general type. Thus, when firms invest in CSR activities and are able to transform their resource base they can compete with rivals by carrying out nonmatching and dissimilar action types and avoid direct competitive confrontations with rivals which, consequently, reduces rivals' motivation and capability to retaliate (Brandenburger & Nalebuff, 1996; Connelly et al., 2019). A repertoire that consists of novel and diverse range of action types can delay rival responses which can also improve CFP. Thus, through increased competitive complexity, firms can escape the intense and progressive cycle of profit-killing head-to-head rivalry (Derfus et al., 2008).

In summary, although competitive pressure is likely to have an overall negative affect on industry profitability, an increase in competitive complexity and CSR might prevent, or at least slow, a decline in CFP. Hence, compared to the effect of competitive pressure on the interaction between CSR and increased competitive intensity, competitive pressure will have weaker moderating effect on the interaction between CSR and increased competitive complexity.

H3b: Competitive pressure will have stronger effect on the interaction between CSR and competitive intensity than on the interaction between CSR and competitive complexity.

3. METHOD
3.1. Sample
Our sample includes all firms for which data were available across three databases: (1) MSCI ESG KLD STATS (referred to as KLD) for CSR activity; (2) RavenPack News Analytics – PR edition (referred to as RavenPack) for competitive activity; and (3) Compustat for financial data. For our CSR measures, we use the Universe D dataset from KLD which has been widely used in prior studies (e.g., Ioannou & Serafeim, 2015; Zhao & Murrell, 2016), for. This database covers the largest 3,000 publicly traded firms in the U.S over the period 2003-2015. We start with this period because KLD first expanded its coverage in 2003 to approximately the largest 3,000 publicly traded U.S. firms in market value. KLD has seven broad CSR categories: community, human rights, employee relations, diversity, product, environment, and governance. Within each of the seven broad categories there are numerous other sub-categories separated into strengths (positive performance indicators) and concerns (negative performance indicators). For instance, within the social category, "community engagement" is a *strength* sub-category while "impact on local communities" is a *concern* sub-category.

We followed recent competitive dynamics research (Connelly et al., 2017; Connelly, Lee, Tihanyi, Certo, & Johnson, 2019) to use RavenPack for identifying competitive actions or competitive moves initiated by a firm to improve or defend its market position against rivals. RavenPack includes data on firms and events extracted from credible news sources such as Dow Jones Newswires and the Wall Street Journal, and daily press releases and regulatory disclosures from numerous newswires. The dataset reports the first mention of a competitive action in any news article (see Connelly et al., 2017 for more details). Following Connelly et al. (2017) and prior competitive dynamics research, we included eight types of competitive actions: new product, capacity, pricing, marketing, acquisitions, strategic alliances, market expansions and legal actions in our analysis. The PR edition of RavenPack used in this study includes data sources from 2004 to 2015. Previous research has confirmed the validity of RavenPack's data at an estimated coding reliability of 0.93 (Connelly et al., 2019).

We merged RavenPack data with KLD and Compustat North America annual data using each company's unique CUSIP number. The final sample includes 918 firms from 252 industries over 11 years (2005-2015). Our sample is broadly distributed across industries, and no industry represented more than 7.04% of the total observations. 39% of the observations were from S&P 500 companies and 54% from S&P 1500 companies. The panel data is unbalanced. The years of data for firms varied from minimum 3 years to maximum of 11 years. Firms with less than two years of data are automatically excluded when estimating panel data models. We lost additional observations when we lagged our independent variables.

3.2. Dependent Variable
Corporate financial performance. We computed short-term CFP in time *t+1* as return on assets (ROA): net income divided by total assets (Derfus et al., 2008; Nadkarni et al., 2015; Thomas & D'Aveni, 2009). Long-term CFP was three-year average of ROA computed as ($ROA_{t+1} + ROA_{t+2} + ROA_{t+3}$)/3 (Connelly et al., 2017). Higher values in both measures indicate higher CFP. We multiplied both variables by 10 to interpret the regression coefficients within two decimals. We also removed outliers from both variables using 1% and 99% cutoff because previous research that

has examined the relationship between CSR and CFP suggests that extreme values of ROA can bias the estimated coefficients (Zhao & Murrell, 2016).

3.3. Independent Variables

CSR. We consider CSR activities broadly and use the sum of KLD strengths minus the sum of KLD concerns across all categories of environmental, social, and governance (ESG) issues for each firm. This net approach to measure CSR has been used in prior research and reflects the firm's ability to manage environmental, social, and governance risks and opportunities in year *t*. (Gupta, Briscoe, & Hambrick, 2017; Hubbard, Christensen, & Graffin, 2017). One hundred and forty KLD research analysts evaluate a large research data collected from academic, government, and NGO datasets along with 1,600 media sources and company reports (e.g., 10-K and sustainability reports). The analysts assess whether each firm meets criteria based on the strengths and concerns using a binary system: "1" (presence of or meets the assessment criteria) and "0" (absence of or does not meet the assessment criteria). This variable ranges from -10 to 19 (mean 0.23; SD 3.28). The higher values of this variable indicate higher ability of a firm to meet ESG standards, indicating a high level of CSR activity in year *t*.

Change in competitive intensity: We computed this variable as the number of competitive actions in year *t* minus the number of competitive actions in year *t-1*. Higher positive values indicate increasing competitive intensity relative to the previous year. A standard measure of competitive intensity in competitive dynamics research is the total number of actions in a given year (not the *change* in competitive intensity) (e.g., Young et al., 1996). However, in our study we do not theorize or empirically examine whether the relationship between CSR and CFP is stronger for firms with *low levels* of competitive intensity (action volume) than for firms with *high levels* of competitive intensity. Rather, we examine whether CSR-CFP relationship becomes stronger when firms *decrease competitive intensity* (confronted with resource-allocation tradeoffs) while controlling for the total number of competitive actions (action volume) carried out by the firm.

Change in competitive complexity: We followed Connelly et al. (2017) to compute a composite measure of competitive complexity that includes three components: Competitive repertoire variability, novelty and diversity. *Variability* refers to the changes of a firm's competitive repertoire over time. We computed variability as Euclidean distance between a firm's action repertoire in year *t* and year *t-1*: $ED_{t\,(t-1)} = SQRT\,[(\,A1_t - A1_{(t-1)})^2 + \ldots (\,A8_t - A8_{(t-1)})^2]$, where **A1…A8** indicate the number of actions in categories 1 through 8 in years *t* and *t-1*. *Novelty* was the number of action types in time *t* that were not used in time *t-1*. *Diversity* refers to the range of action types in a firm's action repertoire. We computed diversity using Shannon diversity index: $SH = -\sum p_i \ln p_i$, where p_i is the proportion of competitive actions in the i_{th} category. Change in diversity was $SH_t - SH_{(t-1)}$. Finally, we standardized and added the three components—variability, novelty and diversity—to arrive at a composite measure of change in competitive complexity. Higher values indicate the firm's increase in competitive complexity from one year to the next.

Discriminant validity. The measures of competitive intensity and competitive complexity are distinct and vary independently from the measure of CSR. As described above, competitive intensity and complexity are computed as the number and variety/novelty of competitive actions in a given year. In contrast, our measure of CSR is based on the assessments of experienced research analysts from KLD on a set of positive and negative performance indicators for each year in our sample. Thus, CSR indicates the firm's ability to meet ESG standards in year *t*, but it reflects a firm's investments intended to meet ESG standards in year *t* and the previous years. Thus, it is a measure of the overall CSR value of a firm in a given year. Our competitive activity variables are computed as change in competitive intensity and complexity from year *t-1* and year *t*. We examine

how increase or decrease in competitive intensity/complexity affects the relationship between CSR and CFP.

CSR indicators can be unrelated or related to particular competitive moves. For example, initiatives such as establishing relations with indigenous people (listed as strength) and cooperating with repressive governments that violate human rights (listed as concern) can be unrelated to specific competitive moves, like price cuts, new product introductions, and so on. Other CSR indicators can operate within the same general domain with some specific competitive moves. For example, indicators as to whether the firm makes use of environmentally friendly materials or whether the manufacturing process cause toxic emissions and waste could conceivably be associated with the new products. However, even in those cases, CSR and competitive activity are conceptually orthogonal and empirically independent: CSR captures *outsiders' assessments of the environmental impact* of the firm's activities related to its use of environmentally friendly materials, whereas competitive activity captures the frequency and complexity of *specific, observable competitive moves* perhaps associated with the introduction of a new product composed of environmentally friendly materials.

3.4. Moderating Variable

Competitive pressure. We collected industry level data on competitive actions which included competitive actions of *all* firms in an industry regardless of whether or not they were represented in our sample. Informed by prior research (Young et al., 1996), we computed competitive pressure as: (Total number of competitive actions in the industry$_{i,t}$ minus the focal firm's number of competitive actions$_{i,t}$)/(number of firms in the industry$_{i,t}$). This measure indicates rivals' average competitive aggressiveness in a focal firm's industry. Higher values indicate greater competitive pressure.

Control Variables

Following previous competitive dynamics research, we controlled for several typical industry-level and firm-level factors that can influence competitive intensity, competitive complexity, and CFP (Andrevski & Ferrier, 2019; Connelly et al., 2017; Ferrier et al., 1999; Young et al., 1996).

Industry-level controls. We controlled for environmental munificence, industry concentration, and number of rivals in a focal firm's industry because they can affect the intensity of rivalry and inter-firm CFP differences (Porter, 1980). We measured environmental munificence as *industry growth rate* calculated as (industry revenues$_{i,t}$ minus industry revenues$_{i,t-1}$)/(industry revenues$_{i,t-1}$), and *industry concentration* using Herfindahl-Hirschman Index: $HHI = 1 - \Sigma_i p_i^2$, where p_i is the market share of firm i (Ferrier et al., 1999). *Number of rivals* was total number of firms in a given four-digit SIC industry (Andrevski & Ferrier, 2019). In addition, we included our moderator—*competitive pressure*—as a control variable in all models.

Firm-level controls. We controlled for several firm-specific factors that can be associated with CFP and CSR/competitive activities. *Market share* was firm revenues divided by total industry revenues, *firm size* computed as log of total assets, *slack resources* as quick ratio, *financial leverage* as debt-to-equity ratio, and *R&D intensity* as research and development expenses divided by total sales (Andrevski & Ferrier, 2019). In addition, we controlled for a firm's action volume: total number of competitive actions carried out by a focal firm in a given year (Derfus et al., 2008). Firms with high and low action volume might differ in their ability or inclination to increase or decrease competitive intensity in the next year. Finally, we control for a lagged dependent variable (i.e., lagged ROA) in all models to increase the confidence in the causality of the hypothesized relationships (Makadok, 1998).

Statistical Model

Our sample included a panel of 918 firms that were clustered within 252 industries over 11 years. Firms' actions in the same industry are interdependent and influenced by common industry factors. To fit clustered, hierarchical, and short-panel data, we applied a multilevel mixed-effects model (xtmixed in Stata) with two levels: firms and industries (by 4-digit SIC codes). This model accounts for the cluster-level interdependency of observations and for modeling and estimating within-cluster correlations (Rabe-Hesketh & Skrondal, 2012). In addition, all models include year dummies to control for time-specific factors that can influence CFP.

4. RESULTS

Table 1 presents the descriptive statistics of the main variables. Table 2 reports the regression coefficients of the independent and control variables which are lagged one year. The year dummies are collectively significant ($p < 0.031$).

	Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	Short-term performance (ROA)	0.54	0.74	1.00																		
2	Long-term performance (3-year avg. ROA)	0.56	0.72	0.72	1.00																	
3	CSR	0.50	3.41	0.17	0.19	1.00																
4	Change in competitive complexity (CC)	0.13	1.89	0.03	0.05	0.14	1.00															
5	Change in competitive intensity (CI)	-0.04	5.27	-0.02	-0.02	-0.07	0.17	1.00														
6	Competitive pressure (CP)	2.06	1.81	-0.07	-0.07	0.10	0.13	0.05	1.00													
7	CSR x CI	-0.10	2.12	-0.05	-0.03	-0.09	-0.15	0.43	-0.02	1.00												
8	CSR x CC	0.20	1.63	0.07	0.10	0.35	0.25	-0.18	0.10	-0.21	1.00											
9	CSR x CI x CP	-0.10	4.03	-0.02	0.00	-0.05	-0.14	0.33	0.02	0.66	-0.17	1.00										
10	CSR x CC x CP	0.27	2.63	0.05	0.06	0.27	0.23	-0.19	0.24	-0.19	0.58	-0.19	1.00									
11	Environmental munificence	0.05	0.15	0.02	0.00	-0.02	-0.01	0.01	-0.01	0.00	0.01	-0.01	0.00	1.00								
12	Industry concentration	0.25	0.20	0.00	-0.01	0.02	-0.03	0.00	0.18	0.01	-0.05	0.03	0.01	-0.02	1.00							
13	Number of rivals	87.94	110.12	-0.02	0.04	0.03	0.02	-0.02	0.11	-0.03	0.10	-0.01	0.02	0.07	-0.42	1.00						
14	Market share	0.14	0.22	0.09	0.08	0.18	0.07	-0.02	0.06	-0.03	0.05	0.00	0.09	-0.03	0.65	-0.37	1.00					
15	Firm size	7.89	1.78	0.16	0.15	0.38	0.24	-0.03	0.01	-0.08	0.18	-0.05	0.17	0.00	0.04	-0.14	0.40	1.00				
16	Slack resources	2.09	2.05	-0.02	-0.10	-0.09	-0.08	-0.02	0.07	-0.01	-0.01	-0.01	-0.01	0.01	-0.12	0.18	-0.22	-0.37	1.00			
17	Financial leverage	0.85	44.73	-0.04	0.00	0.01	0.03	0.00	0.01	-0.01	-0.01	-0.02	0.01	-0.02	0.03	-0.01	0.01	0.03	-0.01	1.00		
18	R&D intensity	0.07	0.24	-0.15	-0.19	-0.01	-0.02	-0.01	0.08	0.00	0.01	-0.01	0.01	0.00	-0.07	0.21	-0.13	-0.16	0.19	0.00	1.00	
19	Action volume	7.90	13.55	0.08	0.09	0.30	0.42	0.10	0.39	-0.15	0.42	-0.10	0.42	0.02	-0.05	0.14	0.10	0.36	-0.05	0.00	0.03	1.00

Note: Coefficients higher than 0.03 or lower than -0.03 are statistically significant at $p < 0.05$.

Table 1: Descriptive Statistics

	Short-term Performance (ROA)				Long-term Performance (3-year Avg ROA)			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Lagged DV	0.222**	0.222**	0.221**	0.221**	0.675**	0.677**	0.675**	0.678**
	(0.032)	(0.033)	(0.032)	(0.032)	(0.044)	(0.044)	(0.044)	(0.044)
CSR	0.034*	0.033*	0.033*	0.031*	0.020*	0.021*	0.018*	0.019*
	(0.014)	(0.014)	(0.013)	(0.013)	(0.009)	(0.009)	(0.009)	(0.008)
Change in competitive intensity (CI)		-0.009	-0.002	0.012		0.005	0.007	0.013
		(0.007)	(0.009)	(0.011)		(0.004)	(0.006)	(0.009)
Change in competitive complexity (CC)		0.004	0.001	0.001		0.002	0.000	0.001
		(0.009)	(0.009)	(0.011)		(0.008)	(0.008)	(0.010)
Competitive pressure (CP)	-0.041**	-0.041**	-0.041**	-0.045**	-0.020+	-0.020+	-0.020+	-0.020
	(0.012)	(0.012)	(0.013)	(0.013)	(0.011)	(0.011)	(0.011)	(0.013)
CSR x CI			-0.009**	-0.016**			-0.001	-0.003
			(0.003)	(0.004)			(0.004)	(0.004)
CSR x CC			0.000	0.000			0.007*	0.008+
			(0.006)	(0.007)			(0.004)	(0.004)
CSR x CP				0.006				0.001
				(0.006)				(0.006)
CI x CP				-0.011*				-0.004
				(0.005)				(0.004)
CSR x CI x CP				0.006**				0.003
				(0.002)				(0.003)
CC x CP				0.003				-0.001
				(0.006)				(0.007)
CSR x CC x CP				-0.002				-0.002
				(0.002)				(0.002)
Environmental Munificence	0.012	0.012	0.012	0.012	-0.008	-0.008	-0.008	-0.007
	(0.010)	(0.009)	(0.009)	(0.010)	(0.007)	(0.007)	(0.007)	(0.007)
Industry concentration	-0.004	-0.003	-0.003	-0.003	0.015	0.015	0.016	0.011
	(0.023)	(0.023)	(0.023)	(0.023)	(0.016)	(0.015)	(0.015)	(0.016)
Number of rivals	-0.053	-0.054	-0.054	-0.052	0.036	0.036	0.036	0.031
	(0.035)	(0.035)	(0.035)	(0.036)	(0.042)	(0.042)	(0.042)	(0.041)
Market share	0.018	0.018	0.018	0.016	-0.003	-0.003	-0.003	-0.003
	(0.022)	(0.022)	(0.022)	(0.022)	(0.015)	(0.015)	(0.015)	(0.015)
Firm size	0.038	0.036	0.036	0.037	-0.007	-0.006	-0.005	-0.007
	(0.030)	(0.030)	(0.030)	(0.030)	(0.019)	(0.018)	(0.019)	(0.019)
Slack resources	-0.012	-0.012	-0.013	-0.012	-0.063**	-0.062**	-0.063**	-0.061**
	(0.019)	(0.019)	(0.019)	(0.019)	(0.022)	(0.022)	(0.022)	(0.022)
Financial leverage	-0.020*	-0.020*	-0.020*	-0.020*	0.004+	0.004+	0.005+	0.005+
	(0.008)	(0.008)	(0.008)	(0.008)	(0.002)	(0.002)	(0.002)	(0.002)
R&D intensity	-2.153**	-2.159**	-2.162**	-2.168**	0.668	0.717	0.694	0.638
	(0.708)	(0.713)	(0.714)	(0.710)	(1.404)	(1.414)	(1.419)	(1.383)
Action volume	0.029	0.032+	0.033+	0.031+	0.022*	0.020+	0.017	0.023*
	(0.018)	(0.018)	(0.018)	(0.018)	(0.010)	(0.011)	(0.011)	(0.011)
_cons	0.234**	0.233**	0.233**	0.234**	0.159**	0.161**	0.161**	0.157**
	(0.048)	(0.048)	(0.048)	(0.047)	(0.055)	(0.055)	(0.054)	(0.054)
N	3,795	3,795	3,795	3,795	2,148	2,148	2,148	2,148
Wald Chi2	683.13	686.37	733.9	738.59	2052.44	2186.34	2197.00	2428.93
All models include year dummies								
Robust standard errors in parantheses								
+p< 0.10; *p<0.05; **p<0.01								

Table 2: Mixed Effects Panel Data Model for CFP

Hypothesis 1a predicted a positive relationship between CSR and CFP when firms decreased the level of competitive intensity. Model 3 shows that the coefficient of the interaction between CSR

and change in competitive intensity (CSR x CI) is negative and statistically significant ($b = -0.009$; $p < 0.003$). Figure 2 depicts the form of the interaction. The effect of CSR on short-term CFP is stronger when firms decrease their competitive intensity. Moreover, the slope of decreased competitive intensity (blue solid line) is statistically significant (*t-value* $= 3.007$; $p = 0.003$), whereas the slope of increased competitive intensity is not (*t-value* $= 1.525$; $p = 0.127$), suggesting that CSR affects short-term CFP *only* when firms reduce competitive intensity, thus providing support for H1a. We also find support for H1b which predicts that the negative interaction effect will be stronger for short-term than long-term CFP. Whereas the coefficient for the interaction between CSR and change in competitive intensity (CSR x CI) is significant in predicting short-term CFP (Model 3), it is not so in Model 7 when predicting long-term CFP ($b = -0.001$; $p < 0.842$).
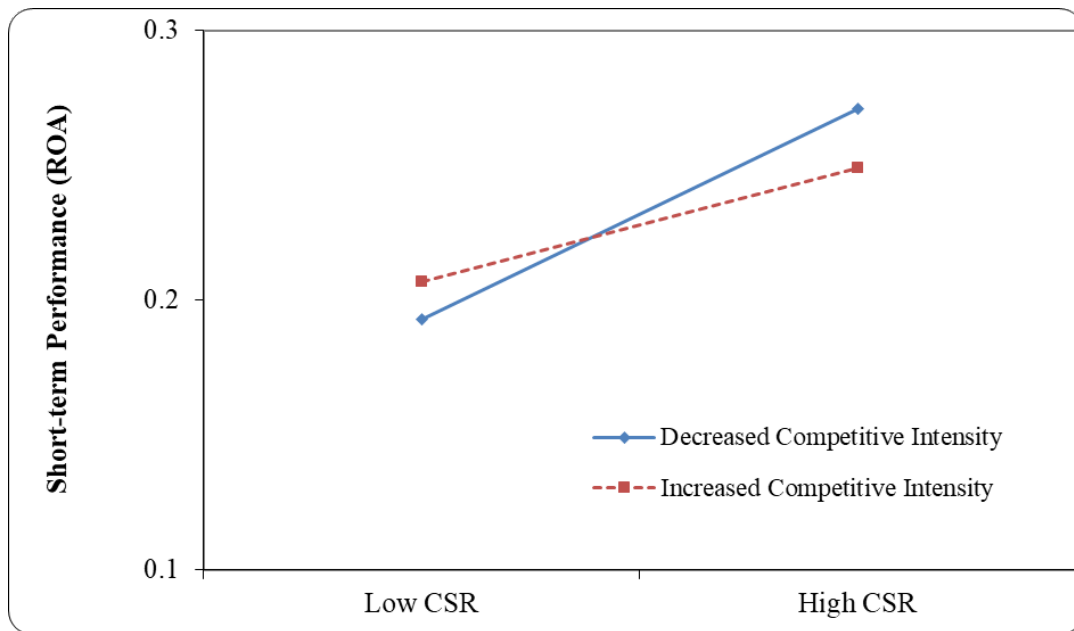
Figure 2: Interaction Effect of CSR and Change in Competitive Intensity
on Short-Term CFP

Hypothesis 2a predicts a positive interaction between CSR and change in competitive complexity on CFP. The coefficient of CSR x CC in Model 7 is positive and statistically significant ($b = 0.007$; $p < 0.047$). Figure 3 illustrates this interaction; the positive effect of CSR on long-term CF is stronger for firms that increase competitive complexity. The slope of increased competitive complexity (dashed line) is significant (*t-value* $= 2.791$; $p = 0.005$), whereas the slope of decreased competitive complexity is not (*t-value* $= 1.106$; $p = 0.269$), providing support for H2a.
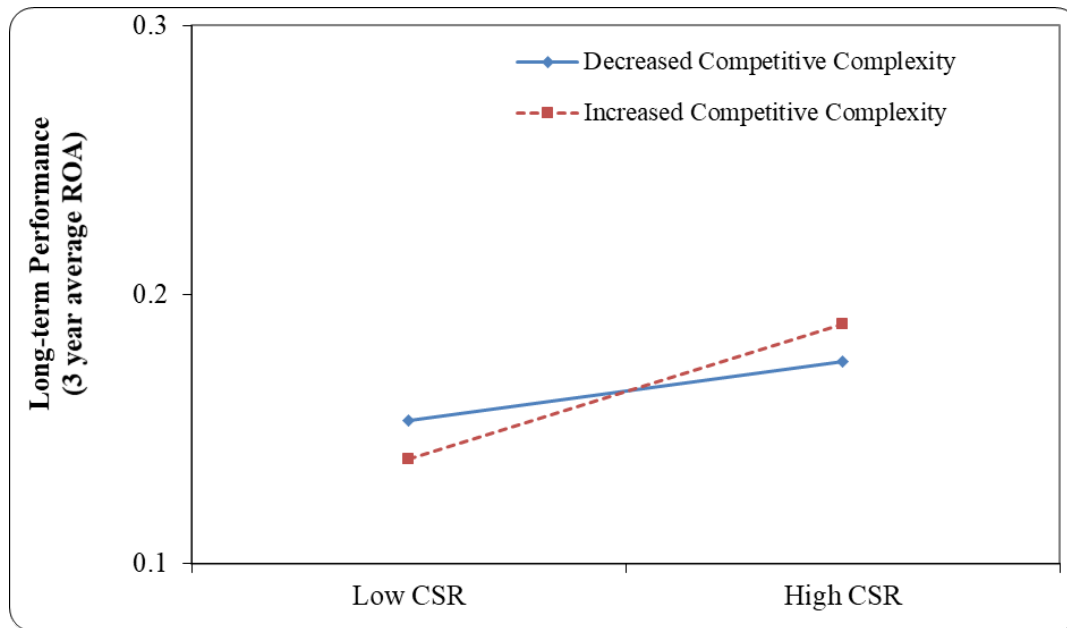
Figure 3: Interaction effect of CSR and Change in Competitive Complexity on Long-Term CFP

Furthermore, the same interaction effect (CSR x CC) in Model 3 is not significant ($b = 0.000$; $p < 0.977$) for short-term CFP, providing support for Hypothesis 2b, that is, the positive interaction effect of CSR and change in competitive complexity is stronger for long-term than for short-term CFP.

The moderating effect of competitive pressure. Hypothesis 3a predicts that the interaction between CSR and change in competitive intensity will be weaker at high levels of competitive pressure and stronger at low levels of competitive pressure. The coefficient of the three-way interaction term between CSR, change in competitive intensity, and competitive pressure (CSR x CI x CP) in Model 4 (Table 2) is statistically significant ($b = 0.006$; $p < 0.003$). However, Figure 4 below shows that the slope of this interaction effect is similar in both high- and low-pressure competitive environments. The slope difference between line 3 and 4 (dashed lines) in Figure 4 is not statistically significant (*t-value* for slope difference = 0.000; $p < 0.999$), suggesting that decreased competitive intensity increase the effect of CSR on short-term CFP in both high and low pressure environments, thus failing to support Hypothesis 3a.
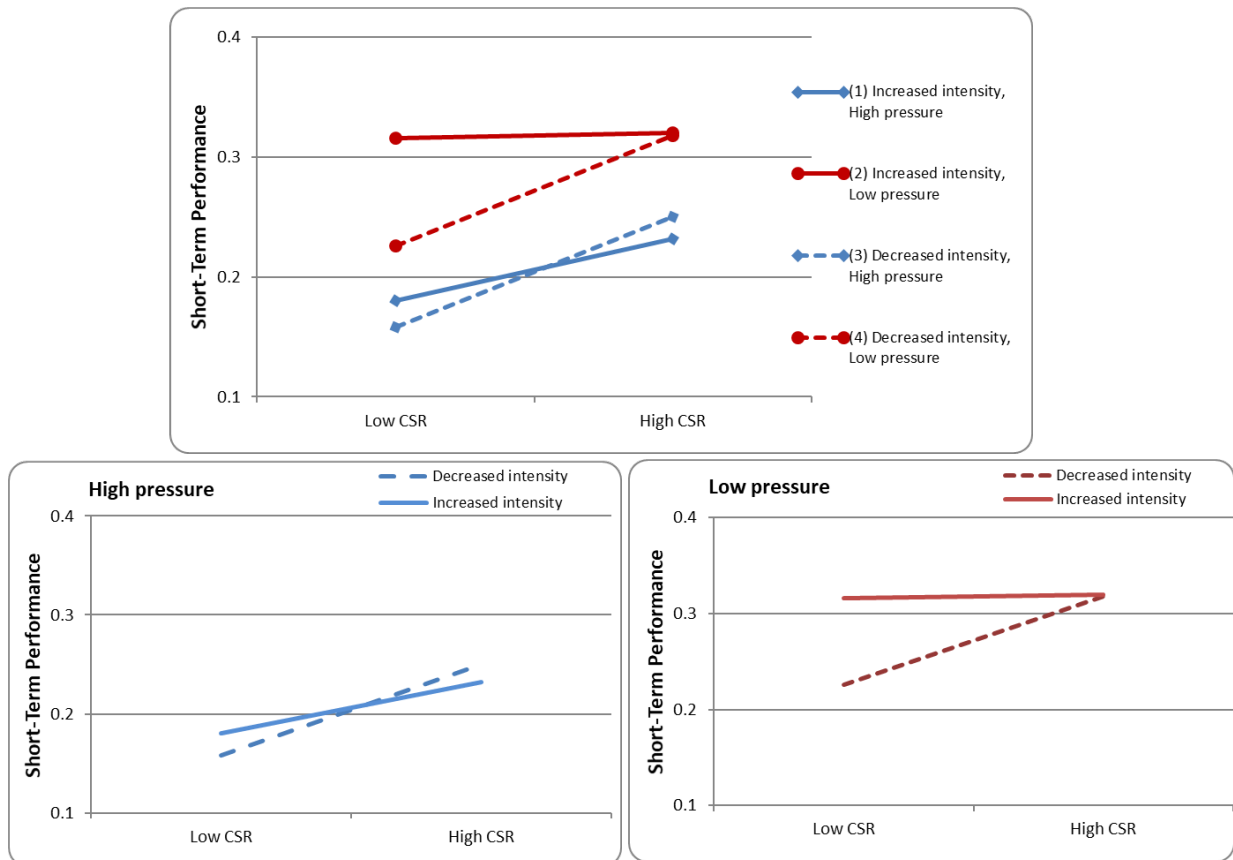
Figure 4: Three-Way Interaction of CSR, Change in Competitive Intensity, and Competitive Pressure on Short-Term CPF

Although the slopes of the dashed lines 3 and 4 (for decreased competitive intensity in the top chart) are statistically significant (*t-value* 3.450; *p* < 0.001 and *t-value* 3.014; *p* < 0.003 respectively), whereas the slopes of the solid lines 1 and 2 (for increased competitive intensity) are not (*t-value* -0.098; *p* < 0.329 and *t-value* -1.308; *p* < 0.191 respectively). These findings provide further support for H1a that CSR firms can increase short-term CFP when they *decrease* competitive intensity. Furthermore, the slope differences between line 1 and 3 (increased vs. decreased competitive intensity in high-pressure environments) and between line 2 and 4 (increased vs. decreased competitive intensity in low-pressure environments) are statistically significant (*t-value* -3.683; *p* < 0.000; *t-value* -4.155; *p* < 0.000 respectively). These results provide robust support for H1a: CSR enhances CFP when firms *decrease* their competitive intensity irrespective of the level of competitive pressure. Note also that firms exhibit higher profitability when competitive pressure is low than when it is high which is consistent with previous research (Young et al., 1996).

Finally, the three-way interaction between CSR, change in competitive complexity and competitive pressure (CSR x CC x CP) in explaining long-term CFP (Model 8) is not significant (*b* = -0.002; *p* < 0.518). However, given that we did not find support for H3a, H3b is also not supported or at the least inconclusive.

Supplementary Analysis

Reverse causality. We theorize that CSR and change in competitive intensity/complexity will interact in explaining future CFP. However, the reverse causation is also possible where CFP can

affect managers' decisions to increase future investments in CSR and competitive activity. To address reverse causality concerns, we applied Granger-Sims test because "a causal relationship between two variables exists only if the coefficient is statistically significant when a lagged-dependent variable is also included as an independent variable in the regression" (Makadok, 1998; 688). Thus, we estimated all models with lagged values of ROA to control for a potential shared variance between past CFP and our independent variables.

Confounding variables. An alternative explanation of our findings might be that the observed relationships could be an outcome of a confounding variable that is highly correlated with both our dependent and independent variables. Including lagged dependent variable in a model can reduce, but not remove the influence of confounding variables. The key question, however, is not *whether* the confounding factor is correlated with both DV and IV, but "how large must be the correlations" to invalidate our statistical inference (Frank, 2000: 169). Here, it is suggested that calculating an impact threshold for a confounding variable (ITCV) to estimate the level at which it could negate the causal inference. In our study, the ITCV for the interaction term CSR x CI is 0.143 (Rosenberg, Xu, & Frank 2018). Thus, the effect of CSR x CI on ROA will become statistically insignificant when an unobserved covariate is correlated 0.143 (or higher) with both ROA and CSR x CI. To get a sense of how strong such a correlation is, we can compare it with the zero-order correlations between our control variables and both ROA (our dependent variable) and CSR x CI (independent variable) in Table 1. For example, of all control variables, firm size has the strongest correlation with ROA (– 0.16). However, firm size is correlated only -0.08 with CSR x CI. To invalidate the statistical inference, the covariate must be correlated 0.143 with both CSR x CI and ROA. However, Frank (2000) suggests it is more appropriate to compare ITCV with the partial correlation coefficients because firm size (or a possible confounding variable) will likely share variance with some of the other control variables in our model. Table 3A shows that the partial correlation of firm size is 0.04, far below the ITCV of 0.143. The partial correlations of the other control variables are lower than 0.06. This analysis suggests that it is unlikely that an unobserved confounding factor could correlate 0.143 with both ROA and CSR x CI. Note also that the partial correlation coefficient for lagged ROA is 0.51 which provides further justification for including lagged ROA in our model. Past ROA largely controls for the effect of other factors on future ROA.

Furthermore, the ITCV for the three-way interaction (CSR x CI x CP) is 0.132 which is far above the highest partial correlation of any control variable in Table 3A. Finally, the ITCV for the effect of the interaction between CSR and competitive complexity (CSR x CC) on long-term CFP (3-year avg. ROA) is 0.066. The highest partial correlation coefficient in Table 3B is 0.07 for slack resources in predicting long-term CFP. However, the same partial coefficient in predicting the interaction term (CSR x CC) is only 0.02 as presented in Table 3C. Overall, the ITCV analysis suggests that omitted confounding variables are not very likely to invalidate our statistical inferences. We note, however, that the ITCV for competitive intensity is higher than that of competitive complexity.

A	DV: ROA	
Control Variables	**Partial Correlation**	**Semipartial Correlation**
Past Short-term performance (ROA)	0.51	0.50
Competitive pressure (CP)	-0.06	-0.05
Environmental munificence	-0.02	-0.01
Industry concentration	-0.02	-0.01
Number of rivals	0.01	0.01
Market share	0.03	0.03
Firm size	0.04	0.04
Slack resources	0.02	0.02
Financial leverage	-0.05	-0.04
R&D intensity	-0.06	-0.05
Action volume	0.05	0.04

B	DV: Avg 3-year ROA	
Control Variables	**Partial Correlation**	**Semipartial Correlation**
Past Long-term performance	0.80	0.77
Competitive pressure (CP)	-0.05	-0.03
Environmental munificence	-0.02	-0.01
Industry concentration	0.03	0.02
Number of rivals	0.02	0.01
Market share	-0.02	-0.01
Firm size	0.03	0.02
Slack resources	-0.07	-0.04
Financial leverage	0.00	0.00
R&D intensity	0.06	0.03
Action volume	0.03	0.02

C	DV: CSR x CC	
Control Variables	**Partial Correlation**	**Semipartial Correlation**
Past Long-term performance	0.02	0.02
Competitive pressure (CP)	-0.07	-0.06
Environmental munificence	0.00	0.00
Industry concentration	-0.02	-0.02
Number of rivals	0.04	0.04
Market share	0.02	0.02
Firm size	0.03	0.03
Slack resources	0.02	0.02
Financial leverage	-0.01	-0.01
R&D intensity	0.01	0.00
Action volume	0.37	0.35

Table 3: Partial and Semi partial Correlations for Short-term CFP

Finally, to check for the influence of unobserved factors that do not vary over time, we also estimated all coefficients using *fixed effects model* with robust standard errors. The fixed effects results were similar to those reported in Table 2, providing support for our findings. However, because fixed-effects model removes both between-firm and higher-level variance, it explains only 8% of the within-firm variance in ROA and 0.04% of the overall variance in ROA (weighted average of within and between variance). For comparison, the random effects model captures 52% of the between-firm variance and 5% within-firm variance in ROA which accounts for 31% overall variance in ROA. Thus, compared to the fixed effects model, the multilevel mixed effects model is a better fit for our data.

Multicollinearity. Multiplicative terms in regression models can cause mutlicollinearity. We tested the impact of multicollinearity on our results using variance inflation factors (VIFs). The mean VIF was 2.23; VIFs for all variables were lower than 3.97, except for R&D intensity, which was 7.44. We tested all models without R&D intensity and the estimated coefficients remained unchanged, ruling out possible multicollinearity issues.

5.   DISCUSSION

Prior research has provided contrasting explanations about how CSR activities influence competitive (or core) activities of firms. Some scholars argue that CSR activities divert managerial attention and critical resources away from competitive activities of firms which can hurt CFP (Aupperle et al., 1985; Harrison & Wicks, 2013; Jensen, 2001). Conversely, other scholars argue that CSR activities will enable the development of new resources, capabilities, and competitive activities which can help CFP (Hart, 1995; McWilliams et al., 2006; Orlitzky et al., 2003; Porter & Kramer, 2011; Russo & Fouts, 1997). These contrasting views have been described as a paradoxical tension: Does CSR hurt shareholders by reducing CFP or help them by enhancing CFP? (Hahn et al., 2015; Margolis & Walsh, 2003; Miron-Spektor et al., 2016; Preston & O'Bannon, 1997; Smith & Lewis, 2011, 2018).

Our study suggests that prior considerations of the paradoxical tension between CSR-CFP is logically and empirically confined to an explanation of the resource allocation tension as it relates to the firm's overall competitive activity. However, when we disaggregate competitive activity into its different forms (i.e., the distinction between competitive intensity and competitive complexity), the paradoxical tension does not appear to be contradictory at all. Indeed, we view these different forms of competitive activity—supported by the reconfiguration or transformation of the firm's resource base—as pathways to manage the resource-allocation tension. Firms can reduce competitive intensity and reallocate some resources toward CSR, thus increasing the benefits of investing in CSR activities while reducing the costs of competitive intensity. This CSR-stimulated resource reconfiguration process allows firms to compensate for the reduced competitive intensity to improve short-term CFP. Firms can also use CSR to transform its resource base and increase competitive complexity which leverages the benefits of CSR and reduce the costs associated with competitive complexity. This resource transformation process allows firms to develop different kinds of resources and develop novel and diverse competitive actions, thus improving long-term CFP. Hence, CSR firms can improve short-term CFP through the resource-reconfiguration process and long-term CFP through the resource-transformation process.

Overall, our study provides deeper insights into the conditions under which CSR will improve CFP and the underlying processes that explain how CSR impacts CFP. Firms that engage in CSR can increase CFP *when* they decrease competitive intensity and/or increase competitive complexity. The resource reconfiguration and resource transformation processes explain *how* CSR firms

achieve higher long-term and short-term CFP. Those conditions and processes seem to hold regardless of the level of competitive pressure; that is, even when firms compete in highly competitive environments, investing in CSR can improve CFP when firms decrease competitive intensity or increase competitive complexity.

The impact of the resource allocation tension and the choice of pathway to alleviate it on the firm's CFP are substantial. To estimate those effects, we tested a quadratic polynomial multilevel panel data model: $Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2 + e$, where X and Y are independent variables and XY is their interaction in predicting a dependent variable Z (Edwards, 2007; Shanock, Baran, Gentry, & Pattison, 2010). Table 4 reports the results of the quadratic polynomial regression analysis and Figures 5 and 6 include the corresponding response surface plots (Edwards & Parry, 1993). The x-axis and y-axes denote standard deviations (range from -2.0 to 2.0) of the

variables of interest.

	Short-term Performance (ROA)			Long-term Performance (3-year Avg ROA)		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Lagged DV	0.222**	0.222**	0.221**	0.675**	0.677**	0.674**
	(0.032)	(0.033)	(0.033)	(0.044)	(0.044)	(0.045)
CSR	0.034*	0.033*	0.041*	0.020*	0.021*	0.021*
	(0.014)	(0.014)	(0.016)	(0.009)	(0.009)	(0.010)
Change in competitive intensity (CI)		-0.009	0.001		0.005	0.007
		(0.007)	(0.010)		(0.004)	(0.008)
Change in competitive complexity (CC)		0.004	0.005		0.002	-0.001
		(0.009)	(0.010)		(0.008)	(0.009)
CSR x CI			-0.009**			-0.001
			(0.003)			(0.004)
CSR x CC			0.002			0.008*
			(0.007)			(0.004)
CSR squared			-0.006			-0.002
			(0.004)			(0.002)
CI squared			0.002			-0.001
			(0.002)			(0.001)
CC squared			-0.007			0.002
			(0.006)			(0.003)
Competitive pressure	-0.041**	-0.041**	-0.043**	-0.020+	-0.020+	-0.020+
	(0.012)	(0.012)	(0.013)	(0.011)	(0.011)	(0.011)
Environmental Munificence	0.012	0.012	0.012	-0.008	-0.008	-0.008
	(0.010)	(0.009)	(0.009)	(0.007)	(0.007)	(0.007)
Industry concentration	-0.004	-0.003	-0.003	0.015	0.015	0.014
	(0.023)	(0.023)	(0.023)	(0.016)	(0.015)	(0.016)
Number of rivals	-0.053	-0.054	-0.055	0.036	0.036	0.041
	(0.035)	(0.035)	(0.035)	(0.042)	(0.042)	(0.044)
Market share	0.018	0.018	0.018	-0.003	-0.003	-0.002
	(0.022)	(0.022)	(0.022)	(0.015)	(0.015)	(0.015)
Firm size	0.038	0.036	0.038	-0.007	-0.006	-0.010
	(0.030)	(0.030)	(0.030)	(0.019)	(0.018)	(0.019)
Slack resources	-0.012	-0.012	-0.013	-0.063**	-0.062**	-0.067**
	(0.019)	(0.019)	(0.019)	(0.022)	(0.022)	(0.023)
Financial leverage	-0.020*	-0.020*	-0.020*	0.004+	0.004+	0.005+
	(0.008)	(0.008)	(0.008)	(0.002)	(0.002)	(0.003)
R&D intensity	-2.153**	-2.159**	-2.167**	0.668	0.717	0.618
	(0.708)	(0.713)	(0.711)	(1.404)	(1.414)	(1.421)
Action volume	0.029	0.032+	0.033+	0.022*	0.020+	0.018+
	(0.018)	(0.018)	(0.018)	(0.010)	(0.011)	(0.011)
_cons	0.234**	0.233**	0.237**	0.159**	0.161**	0.161**
	(0.048)	(0.048)	(0.047)	(0.055)	(0.055)	(0.054)
N	3,795	3,795	3,795	2,148	2,148	2,148
Wald Chi2	716	724.28	836.49	1751.93	2009.07	2279.76
All models include year dummies						
Robust standard errors in parantheses						
* p<0.05; ** p<0.01						

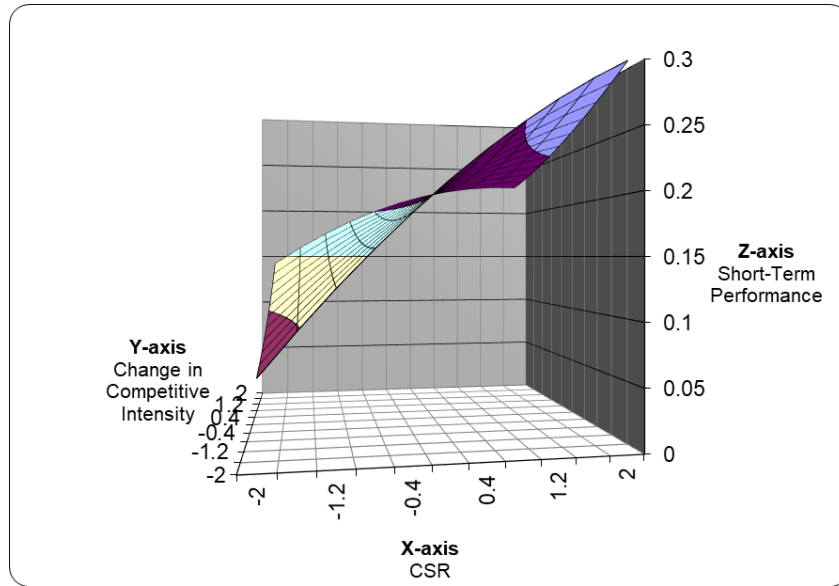*Table 4: Mixed Effects Panel Data Polynomial Model for CFP*

Figure 5: Surface Plot for the Interaction Effect of CSR and Change in Competitive Intensity on Short-Term CFP
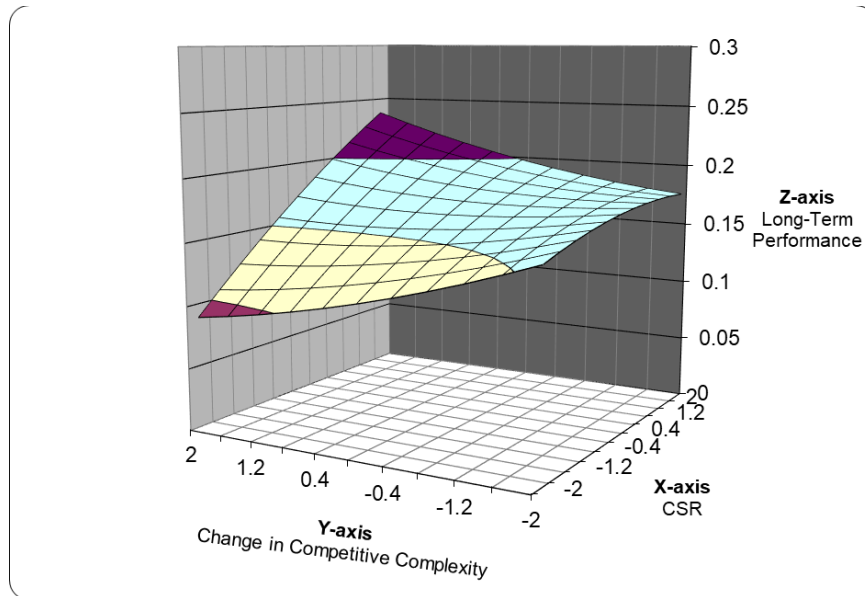

Figure 6: Surface Plot of the Interaction Effect of CSR and Change in Competitive Complexity on Long-Term CFP

Figure 5 illustrates a surface constructed of combinations of high (2.0) vs. low (-2.0) CSR and high (2.0) vs. low (-2.0) levels of change in competitive intensity across all levels of these variables. At the extremes, high CSR firms (2.0) that decrease competitive intensity (-2.0) enjoy a 14.09% gain in short-term performance compared to high CSR firms (2.0) that do not change competitive intensity (0). Figure 6 illustrates the surface constructed from combinations of CSR and increases in competitive complexity. Compared to high CSR firms (2) that do not change competitive

complexity relative to the previous year (0), high CSR firms (2) that increase competitive complexity (2) earn 16.03% higher 3-year average ROA.

Although our theory and analysis do not address curvilinear relationships, the quadratic terms in our polynomial models in Table 4 not only provide some interesting details about the form of the interaction effects that support our hypotheses (Figures 5 and 6), but also provide a different perspective of prior competitive dynamics research on the curvilinear relationships between competitive intensity and CFP and competitive complexity and CFP. Given that previous research has suggested inverted U-shaped relationships between, specifically, competitive intensity (or aggressiveness) and CFP (Andrevski & Ferrier, 2019) and competitive complexity (or variety) and CFP (Ferrier & Lyon, 2004; Miller & Chen, 1993; Connelly et al., 2016), it does appear that taking CSR into account serves to straighten or flatten out the inverted U. In other words, whereas prior research supports an inverted U-shaped logic, the surface plots in Figures 5 and 6 associated with both decreasing competitive intensity and increasing competitive complexity illustrate decidedly upwards slopes (better CFP) as CSR increases. This suggests that owing to CSR and the corresponding changes to the firm's resource profile, the diminishing or declining returns associated with too much or too little competitive intensity or competitive complexity may not be realized as commonly thought.

Finally, as noted, the moderating role of change in competitive intensity and complexity on the CSR-CFP relationship holds even in environments with high competitive pressure. Figure 4 and the significant coefficient of the three-way interaction term (CSR x CI x CP) in Table 2 (Model 4) indicate that competitive pressure decreases CFP. Firms gain higher CFP when competitive pressure is low (red lines 2 and 4), and lower CFP when competitive pressure is high (blue lines 1 and 3). However, the form of the interaction effect between CSR and competitive intensity remains the same: CSR has positive effect on CFP when competitive intensity is decreased. Those findings provide a robust support for our theoretical arguments that a firm's internal resource-allocation decisions and the resource reconfiguration and transformation processes are critical for enhancing the effect of CSR on CFP.

5.1.   Research Implications

Our study makes several contributions to CSR and competitive dynamics research. First, we show that the paradoxical tension between CSR and CFP can alleviate when we consider the heterogeneous nature and role of the firm's competitive activity. This is a notable contribution to the CSR literature as some scholars like Jensen (2001: 14) have lamented that "[s]takeholder theory…contains no conceptual specification of how to make tradeoffs among stakeholders." By integrating theory and methods from competitive dynamics and dynamic capabilities, our study provides both a conceptual and empirical specification to show that firms can manage the tension between CSR and competitive activities to improve competitive advantage and CFP. Thus, we demonstrate that firms can manage and mitigate the resource allocation tension between CSR and competitive activities. Taken together, we shed insights into how firms can profit by serving multiple stakeholders (Margolis & Walsh, 2003; Porter & Kramer, 2011) and effectively manage the paradoxical tension between social and profit objectives identified (Lewis, 2000, Smith & Lewis, 2011), and respond to the call for more research beyond *whether*, but *when* and *how* CSR influences CFP (Aguinis & Glavas, 2012; Margolis, Elfenbein, & Walsh, 2009, Zhao & Murrell, 2016).

We also contribute to competitive dynamics research by revealing conditions under which competitive intensity and competitive complexity can affect CFP. Our findings suggest that CSR can help firms increase short-term CFP even when they avoid direct confrontation with rivals by

either reducing competitive intensity or increasing competitive complexity. Following recent research (Kim, Kim, and Qian, 2018), we demonstrate that competitive activity is an important contingency to consider in explaining the relationship between CSR and CFP. Finally, by deconstructing how CSR relates to dynamic capabilities through a process of reconfiguration and resource transformation, we consider another source for dynamic capabilities and shed light on the potential mechanism of resource base change and how resource change can theoretically transpire (Schilke et al., 2018).

Limitations and future research. Although our theory leverages resource reconfiguration and resource transformation as mechanisms to explain alternative pathways to mitigate the resource allocation tension, we do not directly measure the tension. Indeed, our theoretical and empirical focus is on the competitive action- and performance-related *consequences* of firms having alleviated (or not) the tension through changes in the firm's resource profile. Future research could attempt to measure the resource allocation tension more directly by obtaining data for the amount of financial resources spent on CSR relative to those spent on competitive activities. Thus, researchers can measure tension as a ratio of social-to-competitive resources expended by firms. Such a measure would allow studying optimal allocations of resources for particular firms and industries.

In addition, future research could explore and tease out the individual, team, and organization-level micro dynamics that constrain or facilitate the resource reconfiguration and transformation processes. Future research could also examine how, exactly, complementarities among CSR and competitive activity come about. Scholars in decision making, for example, could tease out how managers interpret, reconcile, and enact the apparent paradox between CSR and competitive activities using one mode of decision making versus another. Future research could also explore how CSR and competitive activities jointly influence, for example, the firm's CSR-related reputation or status and the degree to which audiences—e.g., investors, social justice watchdog groups, government agencies, rivals, etc.—view reputation as a Gestalt or partition it into social and competitive components. Further, some prior research in competitive dynamics suggests that combinations of competitive actions—like a "one-two punch" combination in boxing—and the sequence with which they are carried out can influence firm performance (Ferrier, 2001; Rindova, Ferrier, & Wiltbank, 2010). Here, an interesting line of inquiry could explore whether CFP is most strongly associated with combinations of a particular type of CSR activity (like an environmental sustainability initiative) coupled with a particular type of competitive action (like a new product launch).

5.2.   Managerial Implications

A commonly shared view among some scholars and managers in the past has been that CSR is a necessary, profit-killing evil that often distracts from and often disrupts the firm's competitive game plan (Friedman, 1970; Jensen, 2001). More recently, scholars have acknowledged that firms can respond to the interests of *all* stakeholders pursuing both social and financial goals (Harrison, Bosse, & Phillips, 2010; Margolis & Walsh, 2003; Porter & Kramer, 2011). Likewise, managers have become increasingly aware that CSR activities can not only contribute to society, but also strengthen their ability to compete effectively (Bonini & Bové, 2014; Keys, Malnight, & van der Graaf, 2009).[3] Our findings provide further support for this shifting and optimistic view of CSR for firms. As noted by Porter and Kramer (2011: 64-65), "the presumed tradeoffs between economic efficiency and social progress have been institutionalized in decades of policy choices"

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[3] See also https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter on the increasing importance and value of CSR in practice.

and that firms must "move beyond the tradeoffs" and embrace the concept of shared value that can "[expand] the total pool of economic and social value." Individuals who embrace tensions have a greater propensity to proactively confront them and become comfortable with the disquiet they provoke (Rothenberg, 1979; Smith & Berg, 1986). For instance, individuals with a paradox mindset may synthesize learning and performing goals and flexibly maneuver between them (Miron-Spektor & Beenen, 2015). Indeed, instead of being threatened by the tension, managers would do well to actively facilitate and leverage the complementarities among CSR and competitive activity. In addition, if CSR related responsibilities within the firm have been limited to a group of individuals or an organizational unit formed solely to enhance the firm's reputation and boost its CSR scorecard, our findings suggest that the firm should consider establishing CSR as a pan-organizational priority. By giving CSR and competitive strategy equal priority, all organizational units have the responsibility to collaboratively conceive of, develop, and carry out CSR *and* competitive activity, thereby enhancing both social and profit objectives of firms.

6.   CONCLUSION

The relationship between CSR and CFP has been presented as paradoxical tension because of the resource allocation tension between the social and profit responsibility of firms. In this study, we examine the moderating role of competitive intensity and competitive complexity on the relationship between CSR and CFP. We find that CSR compensates for a reduction in competitive intensity to improve short-term CFP through a resource reconfiguration process. We also find that CSR augments competitive complexity to improve long-term CFP by way of a resource transformation process. Finally, we find that the interaction effects of CSR with competitive intensity and competitive complexity on CFP are robust across different levels of competitive pressure. In taking a more nuanced perspective and examining the interdependencies between CSR and competitive activities, we submit that firms can manage and mitigate the resource allocation tension between CSR and competitive activities to improve CFP and achieve both social and profit objectives.

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QUANTITATIVE ANALYSIS OF THE OPERATIONAL PERFORMANCE OF THE SELECTED NON-LIFE INSURANCE COMPANIES IN THE INSURANCE MARKET OF REPUBLIC OF NORTH MACEDONIA

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ABSTRACT
The aim of this paper is to analyze the operational performance of the 5 dominant companies on the non-life insurance market in Republic of North Macedonia. As input in the analysis, the quarterly data for the 2009-2019 period is included for the key indicators such as the gross written premium (GWP), the gross liquidated damages, the number of insurance contracts and settled claims as well as the operating costs of the companies. These variables are observed through OLS (Ordinary Least Squares) regression analysis and VAR (Vector Autoregressive) model which demonstrates the dependence of the GWP to the rest of the indicators and their responsiveness to shocks. The findings of the study offers valuable insight and opportunities for short term recommendations and further exploration.
The companies are missing the sustainability and viability of their management models and define the "shortcism" as more important for the market and operational performance. In these regard, the business models must introduce contemporary and comprehensive tools and techniques, dominantly based on IT solutions and adequate HCM changes, for risk identification and actions for lowering the claims ratio and their volume. Moreover, all the companies should evaluate the elements of the operating costs, both for sales as well as of the administrative ones, as critical components for the companies' profitability. Very importantly, significant changes at the ALM models and higher rate of returns should inevitably create additional advantage for dynamic and sustainable models for consumer acquisition and new products and services development.

Keywords: *operational performance, non-life insurance, GWP.*
JEL classification: *C32, G22, C53*

1. INTRODUCTION

Maximization of the utility function and the profits is the ultimate purpose of the management and the equityholders of every private company. One of the most researched topics in the literature regarding the financial and insurance markets is the companies' profitability analysis and the determinants that lead to successful and sustainable business strategy. It is therefore crucial for the management to progress towards enhancement in the operative efficiency, advancement in the products and services and the channels for distribuions, technology and human capital developments as main pillars for achieving the expected financial results. This affects the companies' competitiveness and market share position as well as the overall market developments.

The aim of this paper is to analyze the operational efficiency of the non-life insurance companies on the North Macedonian insurance market. Focus is set to the gross written premium (GWP) as a main indicator of performance and dominant source of income from the

core activities, for which several variables are assigned to determine the extent to which they explain the variations in the profitability. Among these are the gross liquidated damages, the number of insurance contracts and claims settled as well as the operative costs of the companies. The study is conducted for the 5 dominant players in the non-life insurance business.

Initially an overview of the consulted literature and the overall market developments is presented, followed by description of the methodology of the analysis and the model implemented. The results for the companies studied are presented consequently. Finally, the main findings are summarized in the concluding part with further recommendation for the stakeholders and interested parties.

2. LITERATURE OVERVIEW

Crucial aspect of the prospective market developments and the companies' growth is their operative success. Main indicator of the business performance and the profitability of providing the insurance services is the GWP. Therefore, the determination of the factors that have influence on it is of high importance. There are varios papers that focus on performance analysis of the insurance companies on the market and employ models that incorporate the effects of microeconomic and macroeconomic factors that might affect its growth trends.

Usually, most of the studies include the financial leverage and liquidity, the ROA/ROI coefficients, companies' size, and various internal factors such as human capital and technological improvements and examine the effects on the profitability through the GWP, leading to the conclusion of needed sustainability of the business models for enhancement in the performance. (Almajali *et al.*, 2012; Charumathi, 2012) In some developing countries where the market still has relatively small contribution to the overall financial system activity, indicators such as the technical provisions, solvency and loss coefficient i.e. the ratio of the liquidated claims in the total revenue, explain the changes in the companies' profitability. (Mehari, Aemiro, 2013; Hailegebreal, 2016; Adams, Buckle, 2003; Ahmed *et al.*, 2010; Pervan *et al.*, 2012)

In some cases the companies' profitability is negatively correlated with the increase in the GWP which is explained with higher risk for proper estimation of the costs related to the liquidation of the claims, leading to higher levels of technical reserves. (Burcă, Bătrînca, 2014) Furthermore, this reflects into higher loss ratio which eventually negatively affects the stability and sustainability of the companies. However, except for the costs for claims liquidation also the operative costs of the companies for networking, marketing and advertisements, sales agents and provisions seriously affect their position and competitiveness on the market. Consequently, the companies need to focus on discipline in concluding insurance contracts and to have higher control over the costs for liquidation of the damages in order to achieve better business results. (Venkateswarlu, Bhishma Rao, 2016) Some studies observed the impact of the macroeconomic and microeconomic indicators to the insurance companies' performance in the process of EU integration and found that the cost efficiency and profitability improved owing to the inflow of foreign capital, the increase in GWP and decline in the operating costs, as well as imrpovements in the economic activity as measured with the GDP indicator. (Kozak, 2011)

In this study the companies' performance is measured in a setting where the market is still developing and with a significantly lower contribution of the total GWP in the economic activity as measured with the GDP indicator, compared to the regional markets. Through modelling of the gross liquidated damages, the number of insurance contracts and liquidated

claims, as well as the operating costs as determinants that have potential significant influence on the GWP, the success of the companies in achieving the goal of enhanced business performance and long term stability is aimed to be confirmed.

3. ANALYSIS OF THE NON-LIFE INSURANCE MARKET

The overall insurance industry in Republic of North Macedonia is a developing and growing market, with prevalent domination of the non-life insurance. The market witnessed rapid growth over the last decade, that is associated with several dominant factors such as: (i) establishment of new foreign owned companies, at both market segments, life and non-life; (ii) introduction of adequate regulation and supervision, still under the Solvency I regime and (iii) increase of the demand, due to the offer of new insurance products and development of vast intermediary network. Despite those facts, the overall industry capacity and development remains low compared to the growing and developed markets with long term ration od 1,5% insurance penetration (ISA, 2020) and dominant position of non-life market that accounts to 83% of the GWP by 2019 (ISA, 2020).

Furthermore, when analyzing the market, we should note the most significant fact related to the market evolution and its inherent risk, namely, almost half of the non-life insurance activity and GWP is dedicated to the single class of auto insurance, as the mandatory insurance, heavily administratively regulated and still lagging the immanent market model of liberalization and free competition. In concrete, the proportion of the auto insurance GWP by 2019 resulted at 53 % of the non-life GWP, thus remaining the main catalyst and additionally inherent risk based insurance within the industry.

The non-life industry is consisted of 11 companies, with dominant foreign ownership. The market is low concentrated, defined by both Herfindal and CR5 indices and is highly competitive. The relative growth of the non-life market, that is main focus of his paper, even though lower than the previous years, remains still high with rate of 9,43% (18/17) and 5,99% (19/18), while the semiannual growth rate at the crisis pandemic year is set up to the negative decline of 10% in comparison to the first half of 2019, as an expected indicator in relation to the countries and regional lockdown's and close of the economic activities. In addition the main engine of the non-life market growth is related to the growth of the auto insurance growth that constantly appears above 5% annually.

However, we should analyses the non-life companies growth and in particular the profitability in contextual manner and in relation to the factors of: (i) their non-insurance activities, i.e. investments and (ii) their core business costs, measured primarily by the acquisition costs and the claims costs, determined by the combined ratio.

In this context, the non-life insurance companies are struggling to improve their activities for acquiring higher investment returns as key component for adjusting the financial results and achieving higher profitability, while the competitive pressure determines higher acquisition costs, both for direct and especially for the intermediary sales. The later, represent one of the key milestones for the national non-life market and represent the long term burden for the company's profitability, prevailing at the dominant auto insurance class. In general, the growth of the industry is not consequently followed by the development and improvement of the basic and advanced managerial models for core and non-core insurance business. Heavy reliance to the single mandatory class of auto insurance, less diversified insurance supply and low focus on creating new demand, determines severe competition among the companies and managerial approach for retaining the market share by "sales at any cost" that determines the high level of costs. Inherent risks of the industry are additionally linked to the limited management of claims

settlement and poor, missing or non-effective strategies for lowering the risk throughout use of the IT mechanisms and tools, as well as by more diversified risk portfolios. In these regard, the combined ratios are seldom above 100, thus endangering severely companies' prospects for sustainable profitability. Namely, the net combined ratios of the non-life market, excluding the effects of the reinsurance, are calculated at the critical level of 103,96% (2019) and is raising from the level of 99,5% (2018). Moreover, the internal composition of the ratio for 2019 is set by 52,50% of claims coefficient and 51,46% of premium acquisition coefficient (ISA, 2020). The later, defines the critical importance of the need for significant changes of the non-life industry.

As previously stated, the financial results of the non-life companies are worsening, due additionally to the limited and declining results at the ALM policies. Namely, the 2019 year resulted with critical results of overall industry loss, thus the losses of four companies was higher than the low surplus of the remaining 7 companies. These trends are worrying and should be matter of urgent reshape of doing the insurance business. Additionally, the non-life companies' actions for investments resulted in declining rate of 1,42% of ROI that is almost 100% drop compared to the 2,46% of ROI for 2018 at the overall non-life market level. Consequently, the ROA rate for the non-life industry was negative at the level of -0,8% (2019) that is significant decline from the level of 1,8% of ROA for 2018. In relation to that, the overall operational performance of the companies defines the crucial component of the company's profitability, as the investment activities are limited, less diversified and define the spill-over effect to the limited profitability of the sector. We should not that the main non-life companies investment instruments are the bank deposits and state bond, representing over 88% of the total investments of the technical reserves.

While the overall insurance industry solvency is stable and the solvency margin is 3,9 times higher than the minimal level, mainly due to the increased regulatory and supervisory measures and previous companies' capital reserves, yet, the lack of higher profitability, as a result of the limited operational performance of the companies deprives the more intense and sustainable development of the industry itself.

In conclusion to this part of the paper, the need of empirical analyses for determining the operational management of the companies, and the particular influence of the selected variables defines the importance for creating necessary conclusions for companies managerial and business mode changes as key for their future internal and specific transformation and market development.

4. METHODOLOGY AND RESULTS

For the purpose of detecting how the companies' main operational parameters affect the performance, the model includes several variables such as the number of insurance contracts, the number and the gross liquidated claims as well as the operative costs and provisions which arise from the process of selling the insurance policies. These parameters are observed through OLS (Ordinary Least Squares) regression analysis, for which the database consists of the quarterly data for each variable for the 2009-2019 period including the 5 dominant companies which constitute around 60% of the Macedonian non-life insurance market. The data is obtained from the quarterly reports of the North Macedonian Insurance Supervision Agency with extrapolation, since originaly they are aggregated on quarterly level, and monthly data is not available. For the purpose of conducting regression analysis, the time series are tested for stationarity with the Augmented Dickey-Fuller test. Non-stationary time-series are prone to shocks and their variance grows exponentially as time progresses. Therefore it is crucial that

the variables are stationary and that the effects of potential shocks diminish quickly as the time horizon expands. Therefore, the series which are non-stationary are differentiated through generating logarithmic sequences of the original data.[1]

Consequently, the regression analysis is performed where the GWP (Gross Written Premium) variable is analyzed as dependent from the rest of the indicators. Or represented mathematically:

$$yt = \beta_1 + \beta_2 x_2 t + \beta_3 x_3 t + \cdots + \beta_k x_k t + ut, t = 1,2,\dots,T.,$$

, where $x_1 t, x_2 t, \dots, x_k t$ stands for the independent variables, and $\beta_1, \beta_2, \dots, \beta_k$ are parameters that quantify the magnitude of the effect which each of the independent variables imposes on the GWP as dependent. Through this, for each independent variable under the null hypothesis we test whether there is no significant influence on the dependent variable:

$$H_0: \beta_1 = \beta_2 = \cdots = \beta_k = 0$$
$$H_1: \text{At least one of } \beta_1 = \beta_2 = \cdots = \beta_k \neq 0$$

Rejecting the null hypothesis supports the hypothesis that at least one of the predictor variables has a significant linear relationship with the response variable. At the significance level of 5%, if the p-value of the F-test statistics is lower than 0.05, then the zero hypothesis is rejected. Since the series are differentiated and the values are logarithmic, the coefficients of the regression represent the elasticity of the dependent variable in percentage change of the independent factors.

Furthermore, VAR (Vector Autoregressive) analysis is deployed to observe the impulse response and variance decomposition aimed to detect how the variables are correlated and thus respond to possible shocks. All the variables in the VAR models are treated as endogenous (independent) so that the interconnections between them are examined and the system includes 2 lags according to the Schwartz criteria. The impulse response demonstrates how the distortions in one of the variables influences the stability of the rest, whether the shocks are positive or negative and to what extent their impact persist during the period observed. If the shocks decline promptly then it can be assumed that the system is stable and the shocks do not cause serious deviations in the rest of the determinants.

Finally, the variance decomposition is suitable for observing the proportion of the deviations which are explained by the variance of the rest of the variables in the system. This concept is applied to each of the analyzed companies separately and the results are presented subsequently.

4.1. Performance analysis of 'Triglav Insurance'

Triglav Insurance has 16,3% market share according to the 2019 non-life insurance market analysis, observed from the aspect of the total GWP contribution, which makes the company a market leader. Over the course of 10 years the company achieved average quarterly growth of 2% in the total GWP followed by 5% increase in the number and gross value of liquidated claims as well as the number of insurance contracts concluded. The operating costs grew with average quarterly rate of 6%.

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[1] Cheung, Y., W., and Lai, K., S. (1995) Lag Order and Critical Values of a Modified Dickey-Fuller Test, Oxford Bulletin of Economics and Statistics, Vol. 57, pp. 411-418
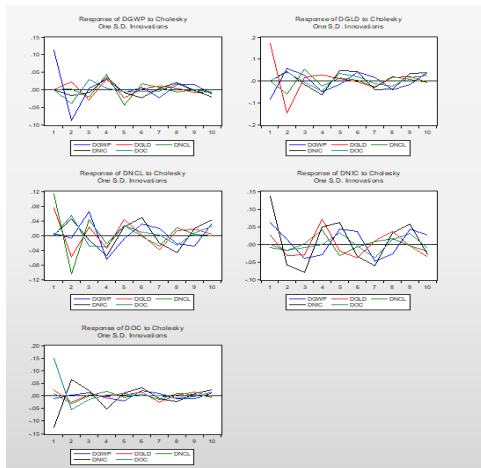
Table 1. OLS Regression Analysis for Triglav Insurance

DGWP = f(DGLD,DNCL,DNIC,DOC)				
Variable	Coefficient	Stand. Eror	t-Statistic	Probability
Constant	-0.00355	0.022691	-0.1564	0.8765
DGLD	-0.27169	0.101037	-2.68904	0.0106
DNCL	-0.16469	0.116828	-1.40965	0.1668
DNIC	0.229667	0.07647	3.003364	0.0047
DOC	0.160274	0.116326	1.377799	0.1763
R^2 = 46%				

Source: ISA quarterly reports, authors' estimations

From the OLS regression analysis it can be noted that 46% of the total variations of the GWP variable is explained with the factors indicated in the model. At the 5% level of significance it is confirmed that the gross liquidated claims have negative correlation with the dependent variable, implying that the increase in the value of covered damages leads do decline in the total GWP of the company. On the other hand, the increase in the number of insurance contracts leads to increase in the GWP, with highly significant connection even at 1% level.

Graph 1. Impulse Response   *Graph 2. Variance Decomposition*
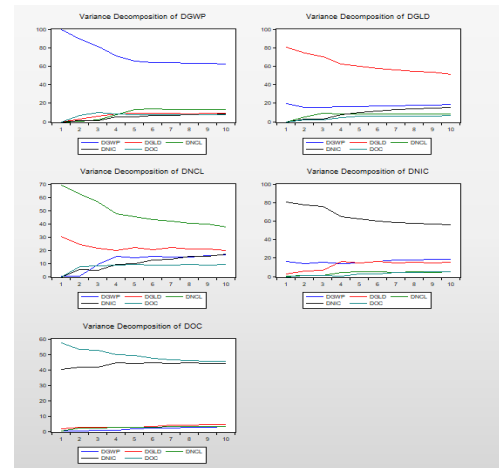
Source: Authors' estimation

When the GWP is analysed, the shocks immane nt to the number of insurance contracts cause fluctuations in the forecasted period, whereas the rest of the variables do not have significant influence on the dependent, since they mark decline after their highest magnitude - from the 4th period onwards. On the contrary, the gross liquidated damages are prone to shocks which are more persistent and are influenced by the fluctuations in the number of insurance contracts and the GWP. More serious distorsions are evident for the number of claims settled where the shocks that affect the rest of the determinants have impact on the stability of the system, even though the standard errors are in the +/- 0.04 interval. This holds also true for the number of insurance contracts where there are shocks caused from the changes in the gross liquidated claims and operating costs even though they decline more promptly than the GWP which follows the path of the number of insurance contracts but with a delay and higher persistence in the observed period. (Graph 1) 40% of the variance of the total GWP of the company can be explained with the variations in the rest of the components which contribute equally with 10% each. The variance of the gross liquidated damages declines at the expense of the increase in the variations of the number of insurance contracts, and vice versa. On the other hand, the fluctuations in the GWP, gross liquidated damages and the number of insurance contracts account for 60% of the variance of the number of claims settled. Finally, the variance of the

operating costs can be predominantly explained with the distorsions in the number of insurance contracts. (Graph 2)

4.2. Performance analysis of 'Eurolink Insurance'

Eurolink Insurance marked 11,6% market share in 2019 as a second dominant company on the non-life insurance market observed from the aspect of the total GWP contribution. In the 2009-2019 period the company achieved average quarterly growth of 7% in the total GWP and the number of claims settled. These indicators are followed with 4% increase in the gross liquidated claims, 10% average quarterly growth of the number of insurance contracts and 20% in the operating costs.

*Table 2. OLS Regression Analysis for Eurolink Insurance*

DGWP = f(DGLD,DNCL,DNIC,DOC)				
Variable	Coefficient	Stand. Eror	t-Statistic	Probability
Constant	0.003696	0.043094	0.085776	0.9321
DGLD	0.497547	0.186412	2.669076	0.0111
DNCL	-0.19308	0.154723	-1.24791	0.2197
DNIC	0.013143	0.080326	0.163625	0.8709
DOC	0.235118	0.081276	2.892816	0.0063
$R^2 = 31\%$				

*Source: ISA quarterly reports, authors' estimation*

The model estimations demonstrate positive correlation between the GWP and the gross liquidated damages implying that the increase in the amount paid for claim settlement increases the gross premium earned, and this relationship is evident at 5% level of significance. At the significance level of 1%, it can be concluded that there is positive impact of the increase in the operating cost to the dependent variable. The independent determinants in the model explain 31% of the changes in the GWP of the company.

For the GWP the fluctuations are stabilize after the 4th period with slightly higher influence of the changes in the gross liquidated damages. This also holds true for the rest of the variables with the exception of the number of insurance contracts which is highly dependent on the distorsions that affect the number and amount of liquidated claims, even though the effect declines as time progresses. (Graph 3) Around 40% of the GWP variance can be explained with the variations in the gross settled damages and vice versa. The latter are also dependent on the variance of the operating costs. As the time horizon expands, the shocks that are immanent for the numer of claims settled decline at the expense of the gross liquidated damages. Fluctuations in the number of covered claims explain half of the variance in the number of insurance contracts. Finally, the distorsions in the rest of the determinants explain 60% of the total variance of the operating costs. (Graph 4)

Graph 3. Impulse Response

Graph 3. Impulse Response
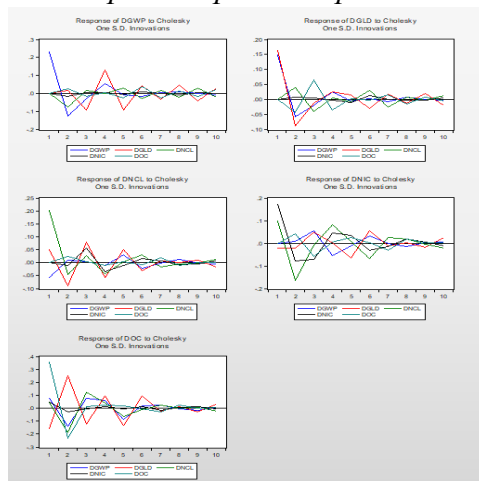
Graph 4. Variance Decomposition
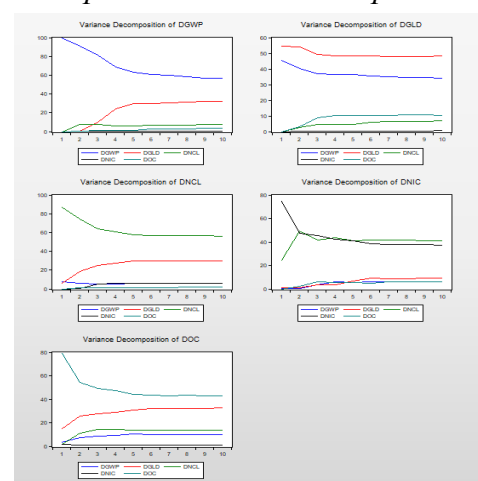
Source: Authors' estimation

4.3. Performance analysis of 'Insurance Macedonia'

Insurance Macedonia has 10,6% market share according to the 2019 non-life insurance market analysis, observed from the aspect of the total GWP contribution. According to the performance observations in the analyzed period, the company marked 3% average quarterly growth of the GWP, followed by 2% growth in the number of insurance contracts and the gross covered damages. A 5% average quarterly increase is noted for the number of liquidated claims, whereas the operating costs grew with 7%.

Table 3. OLS Regression Analysis for Insurance Macedonia

| DGWP = f(DNCL,DGLD,DOC)				
Variable	Coefficient	Stand. Eror	t-Statistic	Probability
Constant	-0.012239	0.040011	-0.305889	0.7613
DNCL	-0.225592	0.13	-1.735327	0.0906
DGLD	-0.103276	0.149138	-0.692483	0.4927
DOC	0.030249	0.112853	0.268039	0.7901
R^2 = 8%				

Source: ISA quarterly reports, authors' estimation

Compared to the rest of the companies, here the variable number of insurance contracts is excluded from the model for causing high insignificance in the rest of the coefficients and adding none to the coefficient of determination, which even after these modifications is still at very low level of 8% implying that the variables in the model do not explain the dependent significantly. It can be concluded that only the number of claims liquidated are negatively correlated with the dependent meaning that their increase will cause decline in the GWP, but only at 10% significance level.
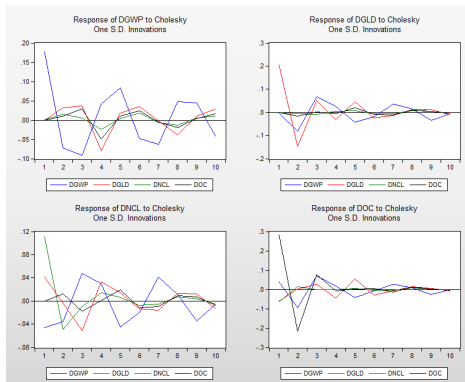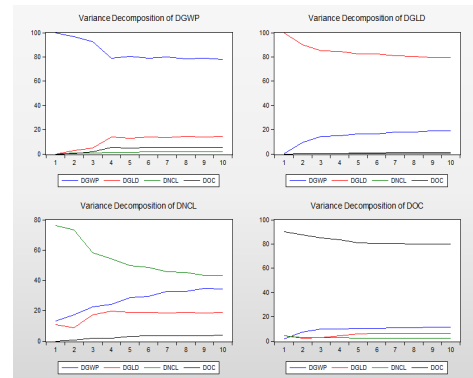
Source: Authors' estimations

Responses to shocks and the interconnection between the determinants are demonstrated on graph 5. For the GWP, gross liquidated damages and the operating costs it is evident that the distorsions caused by the rest of the determinants decline shortly after the 4th period meaning that they do not affect the fluctuations in the variables in question. The only exeption are the number of claims liquidated which are influenced by the distorsions in the GWP and these shock persist for longer time period, even though the standard error width is between +/- 0.04.

If the variance is decomposed it can be concluded that 20% of the GWP variance can be explained with the deviations in the gross liquidated claims and vice versa. 80% of the changes in the gross liquidated damages are due to the fluctuations in the GWP. This also holds true for the number of insurance contracts and the number of liquidated claims. The deviations in the costs are equaly due to the shocks attributed to the variable itself as well as those which are immanent for the GWP, with around 10% contribution of the fluctuations in the number of contracts as well. Around 60% of the variance in the number of liquidated claims is attributed to the changes in the amount of paid claims and the GWP which marks increased contribution as time progresses. (Graph 6)

4.4. Performance analysis of Sava Insurance

With a 10,3% market share according to the 2019 non-life insurance market analysis, Sava Insurance takes over the 4th position viewed from the total GWP share indicator perspective. In the ten year period the company achieved 7% average quarterly GWP growth and 8% growth in the gross liquidated damages, the number of insurance contracts and the operating costs. These indicators are followed with a 3% quarterly increase in the number of settled claims.

Table 4. OLS Regression Analysis for Sava Insurance

| DGWP = f(DGLD,DNCL,DNIC,DOC)				
Variable	Coefficient	Stand. Eror	t-Statistic	Probability
Constant	-0.0047	0.04637	-0.1013	0.9198
DGLD	-0.1874	0.14303	-1.3102	0.198
DNCL	0.80954	0.33914	2.38705	0.0221
DNIC	0.35448	0.13332	2.6588	0.0114
DOC	0.03616	0.15082	0.23975	0.8118
$R^2 = 26\%$				

Source: ISA quarterly reports, authors' estimation

According to the OLS regression model, only 25% of the deviations in the GWP can be explained with the independent variables. Both the number of insurance contracts and the number of liquidated claims have positive correlation with the dependent, meaning that the increase of the number of insurance contracts conducted or the number of claims settled affects positively the performance of the company analysed through the GWP indicator.

Graph 7. Impulse response	Graph 8. Variance decomposition
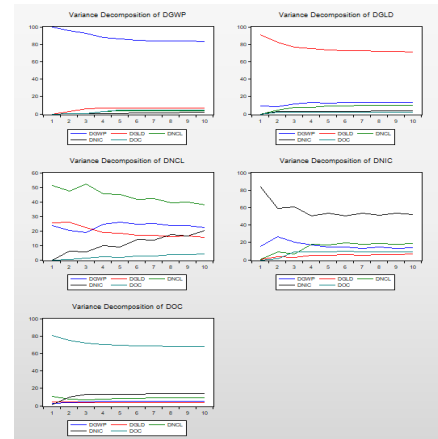
Source: Authors' estimation

The responsiveness of the GWP, the gross liquidated damages and the operating costs to the shocks that impact the rest of the variable is low and the systems stabilize after the 3rd period. (Graph 7). On the contrary, both the number of insurance contracts and the claims settled are interconnected and also dependent on the shocks that are immanent to the GWP and the amount of liquidated damages, even though the range of the standard deviation is between +/- 0.10 and lower compared to the rest of the variables.

If analysed through the variance perspective only the fluctuations in the gross liquidated damages have more significant impact on the GWP and vice versa. The variance structure of the determinant number of claims settled can be explained with the deviations in the GWP, the amount of liquidated damages and the number of insurance contracts with around 60%. On the other hand, these same variables have 40% impact on the number of insurance contracts variance. Compared to the rest of the determinants, the variance of the operating costs has only minor influence of the shocks in the number of insurance contracts. (Graph 8)

4.5. Performance analysis of 'Winner Insurance'

Winner Insurance has 9,2% contribution in the total GWP according to the 2019 non-life insurance market analysis. Even though it does not belong to the group of 5 dominant companies on the market, it is included in this analysis as a representative of the non-life companies in the medium segment for which the market contribution is approximately equal and fluctuates as time progresses. The position of Vienna Insurance Group in the CEE market is significant and therefore we believe that it is important that this study elaborates on the factors that lead towards changes in its performance as one of the key players in the domestic insurance market. Observed through the main performance determinants, the company marked 10% average quarterly GWP growth for the period in question, followed by 6% increase in the number of liquidated claims and 8% in the number of insurance contracts. An average quarterly increase of 20% is noted for the gross liquidated damages, whereas the operating costs grew with 27%.

Table 5. OLS Regression analysis for Winner Insurance

| DGWP = f(DGLD,DNCL,DNIC,DOC)				
Variable	Coefficient	Stand. Eror	t-Statistic	Probability
Constant	0.05038	0.04578	1.10051	0.278
DGLD	-0.1569	0.09496	-1.6519	0.1068
DNCL	-0.8427	0.19131	-4.4051	0.0001
DNIC	0.12831	0.1671	0.76787	0.4473
DOC	-0.0144	0.07627	-0.1893	0.8509
$R^2 = 40\%$				

Source: ISA quarterly reports, authors' estimation

It can be stated that the independent variables determine 40% of the changes in the GWP, according to the OLS regression estimates. Solely the relationship between the number of claims settled and the GWP is highly significant at 1% significance level, implying that the increase in the total number of covered claims would result in increase in the gross written premium. At 10% significance level, it can be noted that the gross liquidated damages also have negative correlation with the dependent variable.

Graph 9. Impulse response   *Graph 10. Variance decomposition*
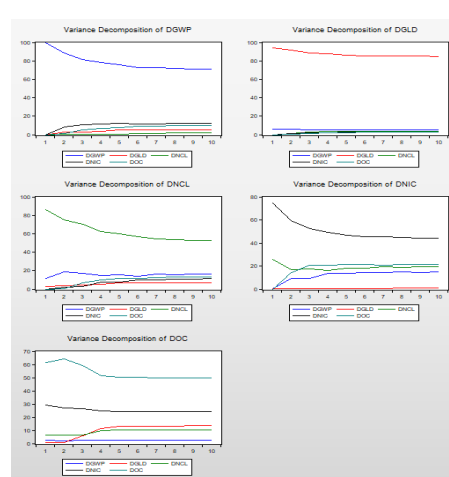
Source: Authors' estimations

Whereas for the gross liquidated damages the fluctuations are stable around zero, the GWP has higher responsiveness to shocks caused by changes in the operating costs and the value of settled claims. (Graph 9) The variations in the number of liquidated claims are affected by the changes in all of the variables and they persist for a longer time period even though the interval of the standard deviations is low at +/- 0.05. Higher intensity of deviations is evident for the number of insurance contracts owning to the shocks immanent for the operating costs followed by the GWP. For the operating costs, the shocks are evident until the 4th period after which the system stabilizes around zero. Approximately 20% of the variations in the GWP can be explained with the variations in the number of insurance contracts and the operating costs. On the other hand, the GWP has influence on the variance of the gross liquidated claims. The shocks to the rest of the variables in the system account for 40% of the changes in the number of liquidated claims and 60% of the fluctuations in the number of insurance contracts. Finally, the operating costs are predominantly influenced by the changes in the number of insurance contacts with around 30% of the total variance. (Graph 10)

5. CONCLUSION

The operational performance of the insurance companies is highly dependable to the companies' core business activities as well as to the inherent companies' risks and general market conditions. The increasing competitive pressure at the insurance markets and declining investment revenues due to the low interest rates, imposes the significance of improved managerial models and changes of the business models for retaining and improving the companies' market position and competitiveness.

The results from the OLS regression demonstrate that in each of the cases, at least one of the independent variables has significant impact on the dependent variable, the GWP, which leads to rejection of the null hypothesis in favor of the alternative. In general, these variables are the number of claims and liquidated damages.There is evident positive influence of increase in the number of contracts to the gross revenue of the companies, however accompanied with higher costs for liquidating the claims which negatively impacts the GWP, leading to eventual inefficiency in the core operative processes and depriving further their profitability.

The findings are in line with the expectations as well as with the results from vast studies that are focusing of the determinants of operational performance of the insurance companies. The national non-life insurance market, that is highly competitive and limited in depth and maturity, is heavily dependent on limited number of insurance classes and products as the prevalence of the auto insurance remains high. In addition, the high level of combined ratio and low rates of ROA and ROI again determines the limited profitability of the companies. In that context, the volatility of the observed variables confirmed the influence to the GWP as it is highly linked to the companies' managerial concepts for retaining and acquiring new consumers. Primarily, we can determine the companies' orientation for acquiring new consumers regardless of the high operating costs for the process and its influence to the profitability. Secondly, the role of the claim management could be understood as "swinging" instrument either for improving the most critical process for the industry and the consumer satisfaction or for the balance sheets improvements on a short run that causes lower retention rates and increase of the reputational risks.

The companies are missing the sustainability and viability of their management models and define the "shortcism" as more important for the market and operational performance. In these regard, the business models must introduce contemporary and comprehensive tools and techniques, dominantly based on IT solutions and adequate HCM changes, for risk identification and actions for lowering the claims ratio and their volume. Moreover, all the companies should evaluate the elements of the operating costs, both for sales as well as of the administrative ones, as critical components for the companies' profitability. Very importantly, significant changes at the ALM models and higher rate of returns should inevitably create additional advantage for dynamic and sustainable models for consumer acquisition and new products and services development.

Finally, the observed period is linked to the relatively high rates of non-life insurance activity and yet, limited companies' profitability. The growth of the GWP is linked to the significant variations of the operating, acquisition and claims/damages costs. In this relation, the companies as part of the non-life market are below the internal and external (market) potential and transformational changes are expected. The authors would closely examine the recent industry developments, in particular in light of the crisis caused by the Pandemic, and would continue work on the evidence for operational performance of the companies in correlation to the analyzed factors, as well as the analyses would be broaden with additional inherent companies and market factors.

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BUILDING UP THE BASE FOR ENTREPRENEURSHIP: THE MEANING OF UNIVERSITY IN THE ENTREPRENEURIAL ECOSYSTEM

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ABSTRACT

In our research, we aim to extend the debate about the new role of universities as an entrepreneurial ecosystem, by examining some underlying and fundamental, but very important dimensions for further and deeper examinations of this subject such as university ownership, field of study and the entrepreneurial education concentration within, as well as the university environment and learning programs. The research considers an analysis based on major implications proposed by the GUESSS Project (Global University Entrepreneurial Spirit Students' Survey) to generate in-depth insights into students' entrepreneurial intentions. A hierarchical multiple regression was run to determine the effect of different variables related to university ecosystem on entrepreneurial intention of student population. The data comes from the GUESSS survey 2018, conducted at state and private universities in North Macedonia, with undergraduate and postgraduate students. A sample of 398 respondents was collected. The study contributes to the existing literature on nascent entrepreneurship and start-up behaviour in understanding the impact of key elements of an entrepreneurial ecosystem within a university on student start-up activity.

Keywords: *entrepreneurship, university ecosystem, entrepreneurial university, entrepreneurial intention, GUESSS*

JEL classification: *L26*

1. INTRODUCTION

Entrepreneurship has been widely recognized as the engine of countries' economic growth (Davidsson et al. 2006; Acs, et al., 2005). Being an entrepreneur as well as gaining entrepreneurial skills has develop a whole new meaning. The immense need to discover the pathway towards entrepreneurship has pushed the boundaries of scholars, but also practitioners all struggling to find the answers towards becoming an entrepreneur.

Conceptualizing solid grounds for the development of entrepreneurs and nurturing entrepreneurship, great discussion has been evolving regarding ecosystems, since the term gained popularity in fields other than biology. The entrepreneurial ecosystem as a highly complex multi-level construct needs to be analysed around various levels (Mina et al., 2015; Simatupang et al.,

2015). In this context, most research on the entrepreneurial ecosystem uses a macroeconomic view by establishing comparative studies between different countries (Kantis and Federico, 2012; Voelker, 2012). However, scholar have not set for a consensus of whether and how to approach ecosystems, firstly represented as business ecosystems, then entrepreneurial and the university ecosystems. In this manner

The entrepreneurial university is emerging as a new archetype of higher education institution that fosters knowledge generation and transfer, contributes to local development, and empowers individuals in fast changing markets (Minola, et al., 2016). The university context might impact whether something gets initiated, hence It has been disputed that the university environment could be potentially considered as entrepreneurial ecosystem (Fetters et al., 2010). In this context, universities are considered as a much wider context than providing entrepreneurial education. In such a setting key components can include entrepreneurship course and degree offerings, engagement of alumni entrepreneurs, student incubators, prototype development services, seed funding to university start-ups, technology transfer services, and scholarly research, among others (Rideout, Gray, 2013).

In our research, we aim to extend this debate by examining some dimensions related to the entrepreneurial universities that are important to understand their specific characteristics as a very important determinant of future entrepreneurial activities of university students and their overall impact on the entrepreneurship processes. In this context we have examined the following underlying and fundamental, but very important dimensions for further and deeper examinations of this subject: university ownership, field of study and the entrepreneurial education concentration within, as well as the university environment and learning programs. The research considers an analysis based on major implications proposed by the GUESSS Project (Global University Entrepreneurial Spirit Students' Survey) to generate in-depth insights into students' entrepreneurial intentions. Our study adopts a two-level approach, including micro and meso-level contingencies. This approach allows a comprehensive understanding of the effects on entrepreneurial intentions. The study contributes to the existing literature on nascent entrepreneurship and start-up behaviour in understanding the impact of key elements of an entrepreneurial ecosystem within a university on student start-up activity. In this sense, the relationships between the university context and entrepreneurial intentions has been set as crucial within our analysis seeing university as one of the main drivers of entrepreneurial ecosystems.

2. LITERATURE REVIEW

2.1. Theoretical background

2.1.1 The entrepreneurial ecosystem
Entrepreneurship has been considered on many different streams of research, however there is still a certain gap of understanding the specific nature of entrepreneurship. One of the streams has indicated that the systemic nature of entrepreneurial activity is still underdeveloped (Acs et al. 2014; Qian et al. 2012), which has initiated the emergence of a new systemic view of entrepreneurship known as the Entrepreneurial Ecosystem (EE) (Audretsch, Belitski, 2016). Meanwhile, entrepreneurial ecosystem research has been emerging recently but still is considered a "underdeveloped and undertheorized research field" asking for further exploration, aimed to avoid the existing uncertainty about its nature and boundaries (Adner et al., 2013; Spigel, 2017).

The entrepreneurial ecosystem as a highly complex multi-level construct needs to be studied using various levels of analysis (Minaet al., 2015; Simatupang et al., 2015). Entrepreneurial ecosystems

are combinations of a social, political, economic, and cultural elements within a certain area that support the development and growth of innovative startups and encourage nascent entrepreneurs and other actors to take the risks of starting, funding, and otherwise assisting high-risk ventures (Spigel, 2017). There have been discussions from relevant authors, but also entities like the World Economic Forum (2013) arguing that accessible local and international markets, available human capital and financing, mentorship and support systems, robust regulatory frameworks, and major universities are the most important pillars of an ecosystem.

2.2. University-based ecosystems and entrepreneurial education

Genuinely the concept related to ecosystems offers a base for a vast number of ecosystem types (Theodoraki, Messeghem 2017), among which are university-based ecosystems (Rice et al. 2014). These include the presence of entrepreneurs, workers, investors, and mentors; favourable government policies; research universities and other sources of innovative knowledge; availability of local customers; and an entrepreneurial culture that encourages risk taking. These attributes provide resources that new local ventures could not otherwise access such as managerial experience or a skilled workforce.

Entrepreneurship education is a complex process and imparting entrepreneurship into education has prompted much enthusiasm in recent times, with associated outcomes such as economic growth, innovation commercialization and job creation (Lackeus, 2015). Universities have extensively included entrepreneurial education in their curricula (Fayolle 2013). Entrepreneurship education has been discussed for a few decades in the aim to find the path towards generating entrepreneurship, and interest even bloomed since it has been acknowledged that entrepreneurial knowledge is not simple genetically endowed but suggested that people develop it as an outcome of the entrepreneurial learning process (Cope 2005). Hence the context in which individuals develop entrepreneurial knowledge has been proven to be somewhat replicable in an educational setting (Pittaway, Cope 2007b).

Universities play a central role as they generate and transfer new knowledge, develop qualified human capital, and foster the development of an entrepreneurial society (Audretsch 2014). Entrepreneurial learning can be experienced by individuals in different setting for instance through education (Unger et al. 2011) proposed that could be formal or unformal setting (Debarliev et al, 2020). Entrepreneurship education consists of "any pedagogical program or process of education for entrepreneurial attitudes and skills" (Fayolle, Gailly, & Lassas-Clerc, 2006b, p. 702). In this context the outcome of the entrepreneurial learning process at universities is supposed to increase student's stock of entrepreneurial knowledge (Haase and Lautenschldger 2011).

2.3. Conceptual development and hypothesis

Until recently, most of the research has examined entrepreneurial education and entrepreneurial universities as interchangeable terms, analysing the universities only or mostly through the entrepreneurial education perspectives. Recently, this debate has been upgraded to the level where universities are considered as a much wider context than providing entrepreneurial education, such as entrepreneurship course, networking with alumni entrepreneurs, student incubators, seed funding technology transfer services, and many other supporting and facilitating activates (Rideout, Gray, 2013). Hence, we aim to extend this debate by examining some dimensions related to the entrepreneurial universities such as university ownership, field of study and the entrepreneurial education concentration within, as well as the university environment and learning programs

2.3.1 State vs private universities and entrepreneurial intention

There have been considerations related to the nature of the suggested university setting, as the environment of public and private university is quite different, it is expected that the entrepreneurial intention of students also differs. Public universities usually include a larger number of professors dedicated to research (Hilu, Gisi, 2011, Speller et al., 2012) compared to the private university. Even more most of the public staffs holds the PhD degrees, are involved in scientific research and in teaching in post-graduation programs (Pontes, 2015), so these institutions are the largest and best qualified base for scientific investigation in the country (Diniz-Filho et al., 2016). Professors engaged in scientific research have access to scholarships and public funding for research, in which undergraduate and graduate students are also engaged. In this sense it could be expected that in this university environment there is low stimuli to motivate entrepreneurial intention in the students at the account on the scientific research projects.

There are also some studies that sought to compare the level of entrepreneurial intention of the public and private universities (Perim, 2012, Silva and Teixeira, 2013) reported that students from the private universities perceive their institutions as more dedicated to the entrepreneurial education than their counterparts perceives the public universities. Perim (2012) draws attention to the fact that public institution students perceived greater need for practical entrepreneurship classes, since their education is more focused on theory. All these factors suggest that private institutions are better able to impact positively students' entrepreneurial intention than public institutions. Therefore, the basic proposition of this study is that the private university environment is more favorable to entrepreneurship than the public university environment. Also, in private universities the majority of the staff (teachers and professors) are part-time workers, as many are not exclusively employed by the university. We expect that these multiple occupations bring motivating experiences to the classroom and help to create a more entrepreneurial environment than that in a more market isolated environment observed in the public university.

> **Hypothesis 1:** Private universities are better able to impact positively students' entrepreneurial intention than public universities.

2.4. *Field of study and the entrepreneurial education concentration within*

Research has been proposing various streams in respect to entrepreneurial education. In this respect it has been discussed in various studies that the strength of the impact of entrepreneurial education may differ between business students and science and engineering students (Maresch et al.,2016). Authors like Souitaris et al. (2007) tested the effect of entrepreneurial education programs on entrepreneurial attitudes and entrepreneurial intentions, suggesting that science and engineering programs increase overall entrepreneurial intention. It could be also argued that graduates from science and engineering are providing recently the gross flow of new, high-quality firms—over and above those of other academic entrepreneurs (Åstebro et al., 2012). Business students place more emphasis on learning about entrepreneurship (Shinnar, et al., 2009) but immensely is increasing the significance of entrepreneurial education in university departments focused on Social Sciences and Science/Engineering (Walter, et al.,2013). Although there is a long history of academic research evolving around intentions, still studies predominantly consider samples mainly based on business students (Bae et al., 2014, Nabi et al. 2017). Since business schools teach more "about" entrepreneurship it is often suggested that business education supports students to work at established companies instead of creating their own businesses (Grey, 2002).

There have been raised a lot of discussions about the effects of entrepreneurship education often questioning even their purpose. However, it is obvious that there are some implications that the process of going through education, and in this sense entrepreneurial education itself, offers the possibility to initiate interest at a student level for business in general and even more for increasing

their curiosity about starting a business. (Moberg et al. 2014). Various studies have been indicating, through an empirical approach, that there is certain causality between the level or type of education of the entrepreneur and his ability to properly evaluate business opportunities, taking into account that education provides, at a very early age, access to different information. Entrepreneurship can be fostered among students in many ways; one of them may be through compulsory, core or elective courses in a more formal or informal format (Mohamad et al., 2015). Some studies (Rauch and Hulsink 2015) have proposed that future research should consider distinguishing among the various options and the choices made among mandatory and elective entrepreneurship courses. It has been even suggested that mandatory entrepreneurship courses cannot motivate students to start a business, but their aim is rather to increase awareness about entrepreneurship (von Graevenitz, Harhoff, & Weber, 2010). However, it should be noted that mandatory programs usually have different goals than voluntary programs, whereas mandatory programs are usually not trying to create entrepreneurs per se but rather to teach participants what entrepreneurship is about. In their review, focusing dominantly on the current entrepreneurial education and training (EET) literature, Martin et al. (2013) found that most of the research supports positive relations between different level of EET (such as students' attendance of core, compulsory or elective courses as well as extra-curricular activities) and entrepreneurship-related human capital assets (such as building up entrepreneurial knowledge and skills, positive perceptions of entrepreneurship and intentions to start a business among students).

Hence, we propose the following two hypotheses:

> **Hypothesis 2.** Technical study programs are better able to impact positively students' entrepreneurial intention than economic/business and social sciences study programs.
> **Hypothesis 3.** The level of entrepreneurial education concentration (students' attendance of different curricular activates) positively influences the students' entrepreneurial intention.

2.5. University environment and learning programs

It has been argued that the university environment can be conceptualized as a potential entrepreneurial ecosystem (Fetters et al., 2010). The university context would appear to be a rich potential reservoir of the knowledge and skills, networking possibilities, opportunities for deliberate practice, and even financial capital that are critical to entrepreneurial success (Guenther, Wagner, 2008; Zhao et al., 2005). Evidence also suggests the decision to pursue an entrepreneurial path can be facilitated by supportive environments (Toledano, Urbano, 2008).Considering the internal level bounded with the spirit of the educational environment, it evokes around shared values and norms, leadership, the internal infrastructure important factors in developing and nurturing student entrepreneurial potential (Rideout and Gray, 2013) However still the university environment can serve to both constrain and enable entrepreneurial behaviors (Welter, Smallbone, 2011). Morris et al.,2017 in their study provide insights regarding the role of the prior experiences in moderating the impact of the university environment on start-up behaviour The educational environment can help students develop their self-efficacy and provide them with appropriate knowledge, skills and related resources to turn ideas into entrepreneurial actions (Pittaway, Cope, 2007).

In order to examine the university environment as a very important factor that builds the foundations of a university-based ecosystem and to measure its influence on the students' entrepreneurial intention, we selected two variables: general university environment and entrepreneurial learning programs. The university environment variable is measured on the base of the research of Franke & Lüthje (2004) and Geissler (2013), in which the supportive

entrepreneurial environment is associate with inspiration for developing ideas for new businesses, encouragement for engaging in entrepreneurial activities, and ultimately as a favourable climate for becoming an entrepreneur. Concerning the second variable, we focused our attention on the universities' learning programs and their influence on building students' entrepreneurial skills. For this variable, we use the methodology of the research of Souitaris et al. (2007), where the courses provided at the universities are examined in correlation with attitudes, values and motivations for entrepreneurship; actions someone has to take to start a business; practical management skills to start a business; ability to develop networks and so forth.

Hence, we propose the following two hypotheses:

Hypothesis 4. Supporting university environment positively influences the students' entrepreneurial intention

Hypothesis 5. Entrepreneurial learning programmes positively influence the students' entrepreneurial intention

3. METHODOLOGY

3.1. Sampling
The data comes from the GUESSS survey of 2018 ('Global University Entrepreneurial Spirit Students' Survey'). The GUESSS project is coordinated at global level by the Swiss Research Institute of Small Business and Entrepreneurship at the University of St. Gallen (KMU-HSG) in Switzerland. For each participating country a representative is responsible to engage and coordinate the research amongst the universities of that country. Students who answered the survey were reached through a non-random process in which universities were autonomous in defining the breadth of classes and schools involved in the survey. Students are invited to answer the questionnaire through different channels, such as in social networks, via email, or in the classroom. The students reached by the survey belong to different fields of study (i.e., business and economics, natural and social sciences) and different education levels (e.g., undergraduate, graduate)
The survey was conducted at state and private universities in North Macedonia, with undergraduate and postgraduate students. A sample of 398 respondents was collected. For the purpose of this study, we considered only the responses of students who have not started their own business yet.

3.2. Measures

3.2.1 Dependent variable
The entrepreneurial intention is calculated as a mean of the values appointed for each of the following 6 items measured on a 7-point scale: I am prepared to do everything in order to be entrepreneur; I will put a great effort for starting and running my one business; I doubt that I will ever start a own business; I am decided to start a new business in the future; My professional goal is to become an entrepreneur; I have small intention to start a new business in my live.

3.2.2 Independent variables
For the type of university, dummy variable was created, and the respondents are divided into two groups: 0-state universities and 1-private universities. For the field of study, two dummy variables were created. For the first dummy variable the respondents were divided into two groups: 1 for schools of economics and business and 0 for technical and social sciences, and the second dummy variable: 1 for technical sciences, and 0 for schools of economics and business and social sciences.

The entrepreneurial education concentration is calculated as a sum of the values appointed for each of the following 5-items measured: I have not attended a course on entrepreneurship so far; I have attended at least one entrepreneurship course as elective; I have attended at least one entrepreneurship course as compulsory part of my studies; I am studying in a specific program on entrepreneurship; I chose to study at this university mainly because of its strong entrepreneurial reputation.

The university environment is calculated as a mean of the values appointed for each of the following 3 items measured on a 7-point scale: The atmosphere at my university inspires me to develop ideas for new businesses; There is a favourable climate for becoming an entrepreneur at my university; At my university, students are encouraged to engage in entrepreneurial activities.

The learning skills is calculated as a mean of the values appointed for each of the following 5 items measured on a 7-point scale: The courses and offerings I attended…increased my understanding of the attitudes, values and motivations of entrepreneurs; …increased my understanding of the actions someone has to take to start a business; …enhanced my practical management skills to start a business; …enhanced my ability to develop networks; …enhanced my ability to identify an opportunity.

4. RESULTS

A hierarchical multiple regression was run to determine the effect of different variables related to university ecosystem on entrepreneurial intention of student population.

In Table 1 bivariate correlations among the variables included in the study are presented

Table 1 Summary of correlations

	Intention	Type of university	Economics and business	Technical sciences	Entrepr. education	University environment	Learning skills
Intention	1,000						
Type of university	-0,130	1,000					
Economics and business	0,282	0,359	1,000				
Technical sciences	-0,094	0,134	0,523	1,000			
Entrepreneurial education concentration	0,160	0,1760	0,191	-0,052	1,000		
University environment	0,206	0,212	0,123	-0,136	0,092	1,000	
Learning skills	0,352	0,042	0,297	-0,187	0,179	0,694	1,000

(Source: Authors calculations)

There was linearity as assessed by partial regression plots and a plot of studentized residuals against the predicted values. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.801. There was homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. There were no studentized deleted residuals greater

than ±3 standard deviations, no leverage values greater than 0.2, and values for Cook's distance above 1. There assumption of normality was met, as assessed by Q-Q Plot.

The full model of type of university, filed of study, entrepreneurial education concentration, university environment and learning skills on entrepreneurial intention (Model 2) was statistically significant, R^2=0.173, F (6, 237)=8.262, p <0.005; adjusted R^2=0.152. The addition of entrepreneurial education concentration, university environment and learning skills to the prediction of on entrepreneurial intention (Model 2) led to a statistically significant increase in R^2 of 0,089 F (3, 237) = 8.476, p < 0.005.

Table 2. Results from hierarchical regression

VARIABLE	Model 1		Model 2	
	B	β	B	β
STEP 1				
Type of university	-0,096	-0,029	-0,232	-0,070
Field of study (economics and business)	1,220***	0,309	0,771*	0,195
Field of study (technical sciences)	0,452	0,072	0,486	0,077
STEP 2				
Entrepreneurial education concentration			0,059	0,060
University environment			-0,014	-0,013
Learning skills			0,377***	0,310
R^2	0,084		0,173	
Change in R^2	0,084		0,089	
Adjusted R^2	0,073		0,152	
ANOVA (F-statistics)	7,360		8,262	
Durbin-Watson			1.801	

***p < 0.01; **p < 0.05; *p < 0.1.
(Source: Authors calculations)

The results summarised in Table 2 indicate that school of economics and business have a significant positive effect on the entrepreneurial intention and the results are consistent across both models (Model 1: β = 0.309, p < 0.01; Model 2: β = 0.195, p < 0.1). Technical sciences have statistically non-significant effect on the entrepreneurial intention. From the second group of university variables, only learning skills have a significant positive effect on the entrepreneurial intention (Model 2: β = 0.310, p < 0.01). The other two variables related to entrepreneurial education concentration and university environment indicate statistically non-significant influence on the entrepreneurial intention.

5. DISCUSSION

The starting point is various at various research attempt, some starting bottom-up or other starting their discussion top-down. Though, most commonly the ecosystem approach is very much top-down oriented, still multilevel models allow a broad understanding of entrepreneurial learning in

an educational setting as the examiners can control for the features of the individual considering social context, as well as the way the individual learns (Fletcher 2007)

The results indicate some interesting insights related contingencies or often referred as situational factors that explain the specifics of certain context. Analysis has potentially considered the university contexts. Hence the initial model has indicated to be statistically significant meaning that the university context could potentially influence entrepreneurial intention and potential to pursue further our investigation. Adding entrepreneurial education concentration, university environment and learning skills to the prediction of on entrepreneurial intention has been proposing some significant relationship as well. Students vary considerably in terms of their backgrounds, levels and types of experiences, and their relative self-efficacy when it comes to an entrepreneurial career.

The type of university i.e. being part from the public or private university setting has been not indicating a viable difference in this research, even though it has been suggested so by various researchers. Commonly it is considered that private universities have greater number of partnerships with private companies (medium and small) and a higher percentage of their students are already involved in the labour market during the university period (Endeavor, 2014).

The results implicate that schoolc of economics and business have a significant positive effect on the entrepreneurial intention and the results are consistent across both models, whereas technical sciences have statistically non-significant effect on the entrepreneurial intention. This result is basically opposite to the findings of Souitaris et al. (2007), which indicated that entrepreneurial education can impact positively on pro-entrepreneurial attitudes of science and engineering students, a finding that was later confirmed by Kuckertz and Wagner (2010).

From the second group of university variables, only learning skills have a significant positive effect on the entrepreneurial intention. The other two variables related to entrepreneurial education concentration and university environment indicate statistically non-significant influence on the entrepreneurial intention. The cognitive abilities on an individual level are of primary importance in understanding the extent to which the individual is capable to accumulate human capital assets from investments such as experience and education (Martin,et al.2013; Unger et al. 2011).

6. CONCLUSION

The aim of this study is to consider the aspect of the entrepreneurial ecosystems transcending in the university context. With the proposed research agenda, it highlights the significance of the university context in affecting student engagement in entrepreneurial activity. It helps advance the limited empirical research on the impact of university entrepreneurship engagement. In addition, we contribute to the research by following the agenda of many authors suggested, to consider various contingencies influencing entrepreneurial activities at a student level. This provides a new pathway for researchers in the field of entrepreneurial education and student entrepreneurship. The findings of this study suggest caution as universities continue to grow the mix of elements that constitute their entrepreneurial ecosystems. Results propose that business students have a stronger relationship with entrepreneurial intention, coping to the paradigm that education can make a difference in the agenda in building a entrepreneurial ecosystem. On the other hand, the learning skills which clearly cope to the ability to learn being in significant correlation to entrepreneurial intentions, also offer an individual perspective of the entrepreneurial process

To summarize our finding, with no doubt university ecosystems can have an important influence on the entrepreneurial behaviours of students but must reflect the learning needs and styles of students. For example experiential learning characterizes a critical piece of the ecosystem, but is not an exclusive element, as its potential may be enhanced when it is coupled with other learning

vehicles, in this regard stetting the importance on lectures, core content and opportunities to build social capital. Still the field of entrepreneurship research is complex with many aspects to consider in understanding the entrepreneurial process and the many elements evolving. The growing body of literature related to the field of entrepreneurial education and ecosystems has been raising new and important questions which should offer also solid bases for future research.

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A ROUTE EFFICIENCY ANALYSIS BASED ON DATA ENVELOPMENT ANALYSIS: AN APPLICATION TO AGRICULTURE

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ABSTRACT

This study employs data envelopment analysis (DEA) approach to evaluate the performance of agricultural aircraft routes. In the context of agricultural aircraft usage, not enough attention has been paid to the efficiency study of the routes in agricultural operations. Aircraft are used in agriculture to perform various treatments on agricultural land. Presumptions in this study are that a land is divided into parcels and one type of treatment must be performed on these parcels. Also, the considered operation is performed by the agricultural aircraft and the size of the analyzed land implies that all parcels cannot be treated in one route, so there are multiple routes which have to be completed. Here, we propose application of output oriented CCR DEA model on one set of routes in order to determine relatively efficient routes. Proposed inputs for the application of the DEA method are: tank capacity of an aircraft and total cost of parcel treatment in one route. Proposed outputs are: total treated land area (total area of all parcels in route) in one route and percentage share of effective flight in the total distance traveled in one route. In this way relatively efficient routes can be selected, and some further analysis of relatively inefficient routes can be made in order to see what changes can be done in inputs and / or outputs of these inefficient routes to improve their performance.

Keywords: Data envelopment analysis, Route efficiency, Agriculture

JEL classification: Q15, C67, O18

1. INTRODUCTION

When measuring the efficiency of systems with more diverse products (outputs) produced with more diverse materials (inputs), it is impossible to draw a conclusion regarding the level of success, i.e. efficiency, based on only a few (partial) indicators. Farrell (1957) defines a measure of technical efficiency (Farrell's measure) that allows the inclusion of multiple inputs (or multiple outputs) in an analysis. However, until the development of DEA (Data Envelopment Analysis) method, it was not possible to include multiple inputs (or multiple outputs) in the analysis at the same time as a methodology for evaluating efficiency.

Authors Charnes, Cooper, and Rhodes (1978) defined a basic model of data envelope analysis, which was primarily used to measure the efficiency of schools and hospitals (nonprofit sector). Later, the DEA method began to be used to measure efficiency in all areas

where more inputs were used for production, and more diverse outputs were obtained as output.

The efficiency measure obtained for decision making units (DMU) is relative, because the efficiency of each unit is measured in relation to the others (all decision units in the observed set) and thus the value of the efficiency index depends on the number of inputs and its structure, and from the number of outputs and the structure of outputs, and of course from the number of decision-making units themselves. From the early 1990s, the DEA method, along with other techniques, began to be used in public transport research to compare outcomes (Singh *et al.*, 2018). The efficiency of routes in public transport is evaluated in the large number of published papers, for example, the authors in the paper (Singh *et al.*, 2018) use the DEA method to assess performance as the efficiency of bus routes. In this way, the authors determined which routes are efficient and which are inefficient and how inefficient ones can be transformed into efficient routes in accordance with the places of social priority.

Successful operational policy and planning of individual routes depends on a thorough understanding of route performance and economic characteristics. A great number of airline routes performance studies have considered companies as DMUs rather than individual routes; therefore, these studies may lack insight into the operation problems of each route. Only few studies treat each individual route as a DMU, like authors in (Chiou and Chen, 2006).

2. ROUTE EFFICIENCY ANALYSIS USING DEA METHOD

The subject of this research is the agricultural land treatment, i.e. selection of efficient routes (from the set of existing routes) in the treatment of agricultural land. The problem that is analyzed consists of performing one type of operation on a parceled agricultural land using agricultural aviation. The characteristics of the problem are: the land is divided into parcels; the surface of the whole land cannot be processed by a single plane over flight; a non-homogeneous fleet of aircraft is used; processing of several parcels can be done with one over flight (depending on the capacity of the aircraft).

The application of solving methods (exact or heuristics) are not the subject of this paper, but application of these method(s) result in processing plans - that is, a set of routes the agricultural aircraft will take and process all the parcels on one agricultural land (Andrić Gušavac *et al.*, 2019). When a processing plan (a set of routes) is determined, DEA method can be applied to determine relatively efficient routes within one processing plan.

For successful application of DEA method it is necessary to follow the DEA procedure steps. The first phase in this procedure is selection of the DMU, according to Martić (1999), followed by selection of input and output criteria, solving the DEA model and analysis and results interpretation. In COOPER framework defined by authors Emrouznejad and Witte (2010), implementation of DEA method is divided into six phases (Savić, 2012), where the first two phases represent preparation for efficiency assessment, and relate to defining the objectives of the analysis and understanding the way decisions are made. Only after the preparation of data, the selection of an adequate model for efficiency assessment is made, and within this phase, all inputs and all outputs are defined. After applying the model over real data, it is necessary to prepare reports that will understandably help decision makers to improve their business.

Selection of relatively efficient routes using DEA within a single plan leads to implementation of the efficient routes first in practice. It is also possible to analyze relatively inefficient routes and notice what can change in their inputs and / or outputs so the inefficient routes become relatively efficient. Regarding the previously stated, it is very important to choose the appropriate variables. The appropriate selection of input and output variables can provide excellent problem insight regarding the relatively inefficient routes. Using the part of

the solution called projection it is possible to single out inputs and/or outputs which can be changed in order to make an inefficient route efficient.

2.1. Selection of input and output criteria

Most published papers in this area analyze routes in public urban transport, while routes in air transport are covered in only two papers (Shao and Sun, 2016; Chiou and Chen, 2006). The input and output variables that are chosen in these papers are presented in Table 1.

Regarding the input factors in public urban transport, the route length is most often used (Singh *et al.*, 2018; Güner *et al.*, 2016; Deng and Yan, 2019; Lin *et al.*, 2010), as well as fuel costs (Melo *et al.*, 2018; Güner *et al.*, 2016; Adhikari *et al.*, 2018; Zhu *et al.*, 2016; Yu and Chen, 2011; Chiou and Chen, 2006).

Table 1: Selected input and output variables for air transport

	Input of allocation stage: Number of flights Interphase measures: Available seats Available tonnage	Output of passenger transport function: Passenger throughput Output of freight transport function: Cargo and mail throughput
Shao and Sun, 2016		
Chiou and Chen, 2006	Fuel costs Staff costs Aircraft cost (maintenance costs, depreciation costs, interest)	Cost efficiency: Number of flights Number of miles traveled per seat on the aircraft Service efficiency: Number of miles traveled per passenger Number of passengers per boarding

Based on the selected input and output variables in the published papers and based on the specifics of the analyzed problem in this paper, proposed inputs for the application of the DEA method in agricultural land treatment are aircraft capacity and total cost of treatment of plots in the route. The capacity of the aircraft represents the total available fuel tank capacity of one aircraft and determines the total distance that the aircraft can fly. The total cost of treating parcels in one route represents the total cost of aircraft flying from / to the airport, the cost of flying between all parcels in the route, as well as the cost of treatment of each parcel in the route. Proposed outputs are total treated area of all parcels in the route and percentage share of effective flight in the total distance traveled. The total treated area of all parcels in one route represents the sum of the surface area of each parcel in one route. During the treatment of the parcels in one route, the aircraft must fly from / to the airport as well as fly the distance between each parcel in the route. It is important to note that only part of the flight (from the total flight in one route) related to parcel treatment in one route is an effective flight. In accordance with the above, the percentage share of effective flight in the total distance traveled is proposed as output variable.

Research that is planned consists of solving the examples for instances of the maximum dimensions: 100 plots and 21 aircraft. The solution will consist of the processing plan that will include routes that cover (treat) all plots in the example.

4. CONCLUSION

A part of the research that comprise of route efficiency analysis based on data envelopment analysis and applied to agriculture is presented in this paper. When it comes to practical benefits of this research, it is important to highlight that, based on efficient routes selected using DEA method, can be first implemented in practice. After the analysis of relatively inefficient routes, some changes in their inputs and / or outputs can be done and the inefficient

routes can become efficient. Research in progress that is presented in this paper consists of selection of DMUs and selection of input and output variables. Future work will consist of selection of the DEA model which will be applied to solve the problem and the software that will be used is DEA-Solver-LV 8.0 (DEA Solver LV 8.0, 2019). The proposed approach will be tested on examples of different dimensions. One important analysis that will be conducted is projection which is important for relatively inefficient routes and based on the indicators and their values given in this analysis it can be perceived which inputs and / or outputs can be increased / decreased and by how much for each inefficient route so that the route becomes relatively effective. DEA method can help to explore the influence of different parameters to the efficiency of routes.

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MOTIVATION OF HUMAN RESOURCES IN MODERN ORGANIZATIONS

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ABSTRACT
Human Resources, along with material resources, directly influence the company's activity in its attempt to achieve its objectives. Their quantity and quality, which an enterprise has at its disposal, decisively influence the productivity of the company. Ensuring, maintaining and developing the Human Resources of companies are major concerns in modern management. The way Human Resources work can make a difference when material resources are the same. The choice of high quality Human Resources is a necessary condition for improving the company's performance. However, emphasizing the role of Human Resources does not mean an underestimation of other resources. The systematic design of the company involves the interdependent approach of resources starting from the fundamental objectives to whose achievement they compete together, from the essential connections that exist between them. Motivation is one of the traditional problems of studying organizational behavior and for years has aroused the interest of managers and researchers. In modern organizations, motivation has become even more important. This is due to the need for high productivity in order to become globally competitive. Knowing how to capture the creative and productive energy of the people who make up the enterprise is, in fact, the deep essence of the management of the Human Resources of the enterprise. The basic problem of a leader, in this context, should be how to succeed in influencing the performance of the people who work in the enterprise he leads. The main purpose of this article is to identify the main actions and decisions that determine the nature and content of the relationship between the organization and its employees.

Keywords: *Human Resources, modern organizations, performance, decisions*

JEL classification: *O15*

1. INTRODUCTION

The analysis of economic activity starts from man and his needs. The notion of human need or necessity designates, in the most general sense, the feeling of deprivation accompanied by the desire to make it disappear. Human needs are preferences, desires, feelings, expectations of people to have, to be, to know and to believe, respectively to own goods, all these being conditioned and becoming effective by the level of economic and social development, conditioning objective, and the level of development of the individual - subjective conditioning (Brăileanu, 2004).

Motivation is the sum of the forces, internal and external energies that initiate and direct human behavior towards a certain goal, which once achieved will determine the concern for satisfying another need. In the literature the area of defining motivation is extended; the definitions proposed by various authors concern various aspects, considered essential; thus, some definitions are focused on the motivational process, while others consider the description of the motivational structure (Luţ, 2010).

In 1890, the first theory of motivation appeared, promoted by Freud, James and McDouglas. Contradicting the hedonistic hypothesis regarding human behavior, the three theorists stated that a large part of this behavior is not determined by rational, conscious, but by instinct; instinct includes curiosity, love, fear, jealousy, sympathy, being the main factors influencing motivation. Over time, the theory of instincts has been attacked for various reasons. There have been psychologists who have also argued that instincts are not inherited, but are actually learned behaviors. It was this current that founded the theory of reinforcement (Nicolescu, 2004).

Motivation for work is the influence that certain factors exert on employees and that leads them to positive or negative actions to perform work tasks. Unlike the material and financial means necessary for productive activity, people represent more than a source of costs or consumption. Their system of needs, values, motivation and satisfaction will determine individual and organizational performance. The concept of motivation is defined by all actions, carried out over time, to stimulate the participation of people interested in the fate of the institution or company, to contribute directly or indirectly, consciously or not, to achieving the organization's performance based on common interests and aspirations.

The complex motivations, which belong to the psychological man, start from the fact that he is an organism that develops, goes through certain psychological and physiological stages of evolution, has connections with his environment; at the same time, man is not only complex, but also eminently variable, he having hierarchical motives according to their importance. The hierarchy of these pieces of furniture changes over time and also in space, depending on certain situations, which means that, in reality, the same person may have different interests in relation to the time at which the act of leadership and work formation refers, the workshop, section, work compartment to which the worker belongs. Man acquires new motivations through his experience in that economic unit and thus there are differences between initial and newly registered aspirations (Philip, 1997).

Motivations for mobilization and involvement are observed especially in the case of workers in high-performing enterprises. However, the employment, the involvement of the staff appears as a main motivation of everyone's behavior, because it starts from the fact that the achievement of each worker depends on the success of the enterprise. Every worker feels that he or she is essential to achieving the company's goals and so his or her place is in the unit and in customer service and innovation. The staff cannot work at full capacity without being stimulated in any way by the management of the company. The most used types of rewards include: money, benefits, gratuities, prizes and employee participation plans for company benefits.

Rewards management is the process of developing and implementing strategies, policies and reward systems, which allows organizations to achieve their goals by recruiting and retaining the necessary employees, as well as by properly motivating them. Rewards management consists, first of all, in the design, implementation and maintenance of the employees' rewards system that must be adapted to the continuous improvement of organizational performance. Traditionally, this field of management activity is called payroll administration, a concept considered or considered, more and more, as limited, if we consider the issues addressed.

In the management literature that addresses the issue of rewarding human resources, as well as in the practice of companies in various countries around the world, a series of terms are used such as: reward, compensation, salary, remuneration, remuneration, payment, bonuses, rewards, incentives, bonuses, commissions, indemnities, benefits, facilities, insurance, indexations. Managers cannot order their employees to be motivated; but what they can do is create an atmosphere through which to cultivate responsibility, dedication and improvement in the workplace. Some managers choose a shorter path, but not at all effective - they try to motivate through fear. However, this method quickly loses its effect. True managers motivate by their personality and authority, not by fear. Only motivation through authority is lasting.

In a narrow sense, the motivation consists in correlating the needs, aspirations and interests of the staff within the organization with the achievement of the objectives and the exercise of the tasks, competencies and responsibilities assigned within the organization. In the context of human resource management, motivation can be defined as an internal, individual, introspective process that energizes, directs and supports a certain behavior.

The main objective of the research study is to evaluate the main strategies practiced by managers regarding the motivation of human resources.

2. RELEVANT LITERATURE

The place of Human Resources Management is well specified in the context of General Management. Thus, in the literature, published so far, the emphasis is on aspects related to relationships, the report, starting with recruitment, selection, employment, improvement and stimulation throughout employment and ending with cessation of activity (Rotaru and Prodan, 2005). In other words, Human Resource Management could be defined as a complex of measures designed interdisciplinary, regarding staff recruitment, selection, placement, use by ergonomic work organization, material and moral stimulation until the termination of the employment contract (Postavaru, 2005). This definition corresponds to the man-demands system, where man occupies the central place, being forced to respond to the demands of all factors (Lefter and Manolescu, 1995).

The size and quality of human resources depend on the following factors (Panisoara, 2005):
• Economic factors: income size and job supply;
• Demographic factors: number and structure of the population in the area of activity of the enterprise;
• Psychosocial factors: social aspirations, intense publicity and the spirit of skills.

The quantity and quality of human resources that an enterprise has at its disposal is an essential factor in achieving the objectives, for at least two reasons (Panaite and Iftimescu, 2004):
1) human resources are creators of values on a spiritual, conceptual, scientific level;
2) the efficiency with which all the other resources of the enterprise are used (material, financial) depends on the human resources, on the way they act.

Human Resource Management is the set of general and specific activities related to ensuring, maintaining and efficient use of resources within the organization and involves continuous

improvement of all employees in order to achieve the mission and organizational objectives (Philip, 1997).

Regardless of the way of organization, the activity of personnel in an enterprise has two categories of objectives (Puiu, 2012):

• long-term strategic objectives that take into account the organization and planning of human resources;

• operational objectives, of a tactical and administrative nature, which take into account the activities aimed at the daily management of the work groups.

The responsibility lies with both senior managers and the specialized department. Senior managers have a duty to know the specific activities of the HR, stimulating effective cooperation between the company's departments and the HR department. The manager of the HR department has the responsibility to promote a correct conception on the content of the activities of the managed field (Ursu, 2001).

Activities in the field of Human Resource Management include (Rotaru and Prodan, 2005):

A. HR strategic planning is the responsibility of senior managers. The strategic planning process aims to anticipate demographic changes in society and their effects on the organization. By correctly and objectively anticipating staffing needs, an appropriate number of employees and an appropriate structure by specialties, by levels of training, by ages can be ensured.

B. Equal employment opportunities: organizations and managers are required to comply with certain legal regulations on the need to ensure equal employment opportunities for different categories of staff. There are issues related to discrimination based on sex, age, nationality. The requirements of equal employment must be met by all managers in the case of HR recruitment, selection, training and development.

C. Job / function analysis: is one of the basic activities of the HR department. Based on the information provided by the job analysis, the job description and specification are made, documents that are used for actions regarding staff selection, orientation of new employees within the organization. Also, the information from the function analysis is used to substantiate the reward system, performance evaluation, professional training.

D.Staffing: represents the activities of ensuring an economic unit and refers to the recruitment and selection of staff. The recruitment of staff precedes the selection and represents the totality of the actions undertaken to attract a sufficiently large number of candidates to fill a vacancy within the organization. Staff selection means choosing from a number of candidates the most suitable person for a particular position. Selection involves the use of data sources such as: application form, interview, tests, physical examination.

E. Vocational training and staff development: includes the orientation of new employees to the conditions and requirements of the position, as well as the stimulation of the development and increase of the professional training of the employees. Establishing training needs, evaluating training results, career planning and management development are activities that are amplified, leading to an increase in expenses. Given the increase in training costs, it is necessary to estimate the costs and analyze the efficiency of training that can be expressed by benefits obtained per unit of money spent, increase labor productivity.

F. Performance evaluation: means determining how well each employee fulfills the duties of the position they hold. Such evaluations are used to make decisions on rewards and incentives, to establish areas where staff training and development measures are needed, to make decisions on staff placement and promotion, and to improve the content of the position.

G. Rewarding staff: through salaries, incentives and aid must be done in correlation with the performance of work tasks. Each company must develop, develop and improve its reward systems according to the financial results obtained.

H. Staff health and safety: employees' physical and mental health and safety are vital concerns. Occupational safety concerns must be complemented by those related to the health of employees. These concerns have arisen in connection with the risks and dangers of disease as a result of chemicals and novices used in production processes.

I. Employee relations: relations between employees and employers must be organized and conducted in the interests of both parties. In order to facilitate employee relations, it is important to make them aware of HR policies and regulations.

J. Trade union relations: trade union relations activities are of interest because they concern and affect employees, managers. Contact between unions and employers occurs on two levels. At the formal level, the union is the agent that represents the interests of a group of employees within the company. At another level are the ongoing union-organization relations focused on the dissatisfaction and individual demands of employees.

K. Information systems and evaluation of the HR: they are vital for the management and coordination of activities in the field of HR. The design, development, maintenance and use of HR information systems are needed to better record, use and research data on this activity.

As it grows in size, any organization faces problems related to the need for human resources. If the organization is growing, methods must be established to find and hire people who possess the required skills (Ursu, 2001). This is usually reflected in a form of human resource planning.

Analyzing the future projects and trends of the organization, it is estimated the number of people needed and the type of skills and competencies needed. After developing a human resources plan, a number of steps necessary to implement the plan must be followed (Stanciu *et al.,* 2003):

1. The first essential part of implementation is determining people;

2. The next step is recruitment which is a procedure used to attract qualified people to apply for vacancies within the organization;

3. After people have been attracted to apply for the job, the selection procedure is used to determine the people who will actually perform the tasks in the organization and who will be employed;

4. Newly hired people need to be taught the rules and standards, and a type of integration or guidance program is used for this;

5. After people have been integrated into the system, it is usually necessary to help them to update their general abilities, attitudes and skills, bringing them to the level considered appropriate in the organization through employee training and development;

6. Once people have started to function within the organization at the right level the problem arises:

a) the appropriate performance appraisal procedure by which the management can make correct decisions for awarding the rewards offered in the form of salary or promotion

b) their adequate remuneration, the salaries considered correct for the people with certain abilities and responsibilities of the position are established.

The content of motivational theories is not recipes for motivation in organizations, because none of them is optimal; each of them has limits. But the fact that they were built on experiments, effective studies over several years forces managers to know them and to make decisions about motivating informed employees.

3. RESEARCH METHODOLOGY

In the field carried out in the field of human resources management, 232 managers from Romania from various fields of activity were involved: *construction, IT, trade, production.* The research took place between December 2019 ÷ February 2020. The research was based

on the use of the questionnaire that was sent by e-mail and the size of the sample in this study was a simple random sample.

The aim of the research is to evaluate the main strategies practiced regarding the motivation of human resources. In the process of analyzing the strategies regarding the motivation of human resources, the following elements were researched:

✓ analysis of motivational theories;

✓ studying the strategic objectives of the company;

✓ elaboration of variants of motivational strategies;

✓ conducting consultations at all levels of management, as well as between management and subordinates, in order to make the necessary adaptations for the elaborated motivational strategy and the choice of the variant that will be implemented;

✓ permanent application and re-evaluation of the motivational strategy.

In the socio-economic universe, the economic decision assisting problems are generated by the multi-criteria decision processes; this is why we used the *maximum global utility method* in the study.

The model tries to use, at maximum, in a scientific way, the informational base, and the procedures for imitating the rational mode of decision making is, in more or less elaborate forms, the conceptual essence of the models. The steps of the global utility method are as follows:

Step 1. We build the utilities matrix with the elements x_{ij}, i = 1,..., r and j = 1,..., n.
(1)

Each matrix element is calculated for the maximum criterion with the expression:

$$x_{ij} = u_{ij} = \frac{x_{ij} - x_{i\,min}}{x_{i\,max} - x_{i\,min}},$$

(2)

and each minimum criterion with the expression:

$$x_{ij} = u_{ij} = \frac{x_{i\,max} - x_{ij}}{x_{i\,max} - x_{i\,min}},$$

(3)

where:

x_{ij} = value of the i indicator associated to the j indicator;

$x_{i\,max}$ = minimum value of the *i* indicator;

$x_{i\,min}$ = maximum value of the *i* indicator.

Step 2. We calculate the global utility for each project, as the sum of the products between the utility matrix elements (the column vector corresponding to the project) and the importance coefficient given for each indicator.

$$UG_j = \sum_{i=1}^{r} \alpha_i u_{ij}, unde \sum_{i=1}^{r} \alpha_i = 1$$

(4)

Step 3. We choose the project to which the V_j maximum global utility corresponds.

$$\max\{UG_j\} \Rightarrow V_j \quad j = 1,...,n$$

(5)

For differentiating a decisional Vi variant (given n variants), and for selecting the best offer by simultaneously considering various assessment criteria (Cj, j = 1, ..., n) we use the

maximum global utility method. Finding the best combinations of attributes (characteristic of a variant) forms the object of the multi-attribute problem. This involves the transformation of all number values a_{ij} (expressed in the associated measure units) and qualitative characteristics in utilities u_{ij}, i.e. numerical values (adimensional) located in the range [0, 1]. The basic hypothesis in the correct functioning of the weighted sum method is the criteria independence. The greatest of the synthesis utilities shows the best variant.

In the research were analyzed the main strategies for human resources motivation strategies:

S.1-Payment as rewards: the issue of money has always been raised as a motivator, starting from the question of whether people work better in the situation where they are paid better;

S.2-Personal relationships: respect for a person or a duty to that person can be strong enough motivations to cause someone to act on demand. The aspect of interpersonal exchanges is interesting: as if requesting or doing a service is an entry or exit operated in a person's interpersonal account;

S.3-Competition: a strategy commonly used in certain areas of organizations involves placing individuals or units on competitive positions. It starts from the idea that people will be motivated to increase their performance in the situation where they will be given the opportunity to win;

S.4-Involvement / participation: one way to change the work environment is to increase participation in the planning process, setting goals and making decisions. One such system is goal management;

S.5-Reward / punishment: probably no other method is better understood and put into practice than the type: improving performance will determine the granting of rewards (salary increases, bonuses, promotions); if this does not happen, penalties will be applied (dismissals, transfers, refusal of salary increases or promotions).

In Table 1 presents information base to study the weighting importance they attach to each strategy managers motivation of human resources.

Table 1: Percentage of each strategy

STRATEGIES	FIELD OF ACTIVITY			
	CONSTRUCTION, % *(v1)*	IT % *(v2)*	TRADE % *(v3)*	PRODUCTION % *(v4)*
S1 *(c1)*	11.13	20.71	24.97	12.24
S2 *(c2)*	10.23	15.23	10.98	14.98
S3 *(c3)*	7.2	12.54	9.04	8.98
S4 *(c4)*	19.54	14.98	11.87	10.98
S5 *(c5)*	51.9	36.54	43.14	52.82

(Source: developed by the authors based on the collected data)

The main results are the management of human resources in the first strategy *S.5 - Reward / punishmen*t and in the last instance *S.3 - Competition* (Figure 1).

Figure 1: The importance of each strategy
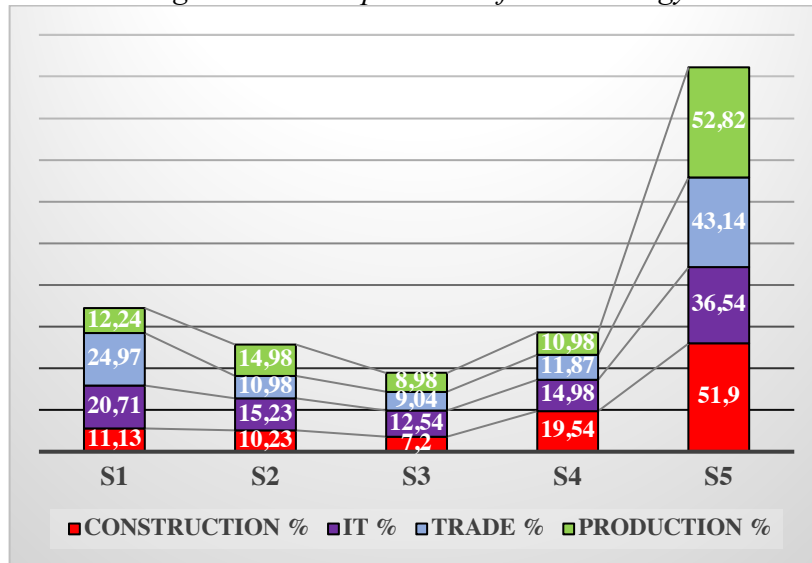
(Source: the author's own concept)

The execution of the calculation algorithm implied:
Step 1 – Building the unit matrix with the elements x_{ij} (Figure 2)

Figure 2: Unit matrix

$$
\begin{bmatrix}
0.00 & 0.69 & 1.00 & 0.08 \\
1.00 & 0.00 & 0.85 & 0.05 \\
0.00 & 1.00 & 0.34 & 0.33 \\
1.00 & 0.47 & 0.10 & 0.00 \\
0.06 & 1.00 & 0.59 & 0.00
\end{bmatrix}
$$

(Source: the author's own concept)

Step 2 – Calculating the global utilities for each organization (Table 2):

Table 2: The results of the calculation of the global units

GLOBAL UTILITY	RESULT
CONSTRUCTION	2.06
IT	3.16
TRADE	2.89
PRODUCTION	0.46

(Source: the author's own concept)

Step 3 - From the table no. 2 is observed by the calculation of the global utilities, the largest global utility has the IT.

Therefore, following the application of the algorithm for calculating the maximum global utilities method, it can be concluded that IT organizations give the most importance to human resource motivation strategies.

4. CONCLUSIONS

The mathematical model used in the research study was the *method of maximum global utility*, due to the fact that it has an accuracy in the process of evaluating the main strategies per acre is based on human resources motivation, according to studies in the socio-economic field. The analysis of the existing situation was performed under multiple aspects: number and structure of staff, by age, seniority, gender, level of professional qualification, depending on the level of professional competence in relation to the criteria established for assessing workers, by degree absenteeism.

Following this study we can conclude that human resource motivation strategies have broadened the field of research as follows:
- ✓ the motivation of human resources has become a strategic function of organizations, directly related to the top management of the unit;
- ✓ imposed new requirements on the part of the workers, increased content, on multiple levels, of which significant are the superior training in the field of management, knowledge of psychology and sociology, communication and negotiation capacity;
- ✓ has expanded its range of operational tools (social indicators, social balance sheet);
- ✓ the traditionalist conception of the staff has changed, which was considered a source of costs that must be minimized, for the staff which is considered as a vital resource of the organization and which needs optimization.

This research analyzed the main activities carried out by the human resources department, according to the studies in the economic field, which are grouped, according to the dominant activity, as follows:

1. *personnel administration,* which involves the registration of employees in the records of the economic organization; preparation of personnel files; compilation of related statistics; recording employee movements; administration of remunerations, calculation of social expenses related to unemployment, pensions, calculation and distribution of proposed social benefits for employees, tracking of individual salaries, bonuses granted, deductions from employees;

2. *strategic planning of human resources,* through which it is located at a high level of management, being a strategic activity.

3. *analysis of the position / position* - involves focusing attention on the content of existing positions / positions, activity that will facilitate, subsequently, recruitment and selection of staff, orientation and integration of new employees, evaluation of performance by employees in the work process;

4. *staffing,* which includes activities related to the recruitment and selection of staff for vacancies in the organization;

5. *professional training and staff development,* which includes orientation of new employees regarding the requirements of the position / position, as well as stimulating the development and growth of the employee's professional training.

6. *performance evaluation,* determining the level at which employees perform their work tasks, facilitating the adoption of decisions regarding rewards and incentives or the development of training and professional development programs;

7. *compensations, aids and incentives* - the stimulation of the staff through salaries, incentives and aids must be realized in correlation with the level of fulfillment of the work tasks within the organization.

8. *personnel health and occupational safety* - physical and mental health and occupational safety must be constituted as important occupations of the organization, by virtue of increasing the social responsibilities of management towards employees and the population in general;

We can observe that after a long period of time, economic organizations were not concerned with anything other than making a profit and, as a result, problems related to labor relations were considered less important, the emphasis being on administrative issues, legal or disciplinary. Human resources, as an object of the labor market, are a category of economic resources that synthesize the work potential of society, enterprise. Human resources are paramount among those available to an organization in carrying out its activities to achieve its objectives, and it is therefore logical to pay particular attention to the management of these resources. In order to be successful in the activity performed with subordinates, managers must know in depth the motivation process. To understand motivation, managers must first understand the reasons why individuals behave in a certain way and why they have certain reactions in threatening situations or through which they try to influence. Motivation is an internal process, not an imperative that can be imposed from the outside.

According to studies in this field of activity, effective performance at work does not depend only on motivation. There are many other factors, such as: individual knowledge and skills; the nature of the pregnancy; the adopted managerial style; organizational climate. These factors also play a role in human outcomes. The essential feature of the motivation is given by the fact that it determines the extent to which the individual wants to make his knowledge and skills available to others and, moreover, to remove the effects of obstacles and difficulties encountered along the way.

In conclusion, for each employee, the motivational framework created by the organization's management must allow the respective employee to feel important, to feel that he exists, to have the image of winner, winner, success.

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GREEN HUMAN RESOURCE MANAGEMENT - PERFORMANCE MANAGEMENT AND EVALUATION

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ABSTRACT

The concern for the natural environment began a long time ago. Throughout the previous two decades, the globe appealed for proactive ecological management. The term eco- friendly or environmentally friendly is also widespread nowadays, relating to laws, activities, products, services etc., theatre having, minimal, reduced or not having negative impact on eco- systems and the environment. Environmental performance is the relationship between the organization and the environment. Current writing on environmental management recognizes that with a specific end goal to accomplish environmental sustainability objectives, associations can use proper human resource management practices to motivate their employees. To this end, incredible endeavors have been made to investigate what drives workers to participate in pro-ecologic practices that help their organization to turn green and be sustainable. Additionally, a number of studies demonstrate that there is a connection among the green activities, organizational performance and corporate profitability within any association. The main purpose behind this thesis is to extend our understanding of how the concept of green management can be positioned as part of the human resource function. The motivation is to highlight the importance of building sustainable and eco-friendly business, and to gain knowledge of the outcomes after adopting Green human resource management in the organizations.

Keywords: *Green human resource management, Environmental performance, Environmental practices*

JEL classification: *O15, Q56*

1. INTRODUCTION

The thought of "green business" started to expand at the end of the XX century simultaneously with the continually growing concern about the sustainability of the economic development. While the starting points of the modern "green developments" are found in the middle of the 1960s, it took nearly twenty years for businesses to align with the "greening" inclines and integrate them into its value systems and to put effort to beget the term green business.

There are numerous reasons behind this. One is related to the fact that the pursuit of green business is still mostly considered as an extra burden (as far as cost increment or profit loss). The other is related to the country's factors like the political, social, and monetary differences. Brown and Ratledge (2011, p. 2) define the green business as "an institution that produces green output". Makower and Pyke (2009), on the other hand, say that the green business demands a dedication towards financial gain, sustainability and humankind. The Business Dictionary states that the green business is "a business working in a way that has no harmful effects on the environment, the community, or the economy".

These organizations integrate more sustainable business activities than the rivals, enhance the natural environment and improve the living conditions, while profiting and adding to the economy.

Slovik (2013) suggests a correlation between the sustainable practices and the social commitment: "a green business" is a business that utilizes renewable resources (environmentally responsible) and it is responsible for the HR part of their activities (socially responsible)".

In other words, these organizations except focusing only on the main goal, which is profit, they also focus on fields like conserving the environment, improving the community's life quality, usage of renewable resources, cost reduction, reducing the amount of waste.

According to Kassaye (2001), an ecologically mindful organization ought to take a commitment to one of "4Rs" – reduction, reuse, recycle and recovery.

Some organizations advice their workers to utilize public transport as opposed to private vehicles with a specific end goal to decrease air contamination or to refuel the car after six p.m. at the point when the gas exhausts are less destructive to the environment. We ourselves are witnesses of how much the air quality has improved during the pandemic.

2. THEORETICAL FRAMEWORK
2.1. Defining the concept and the determination of methods of work

To realize an ecological mindfulness into an association is different according to various kinds of changes, because it is a subsidiary's aim of the company. Eco-friendly companies are essential to customers, yet since this performance will never be the principle objective of an organization, it should be contended that they should put effort to achieve their primary objectives in an eco-friendly way. This demands a change in the organizations' attitude and culture (Borland, 2009).

If the organization wants to be capable of executing an ecological conduct, the organization's culture must be adapted and focused on the environment, and the management must show a dedication towards building an environmentally friendly organization. Organizational cultures have grasped the desired qualities needed for achieving competitive advantage, while at the same time promoting effective ecological execution. Some researches state that the representatives are the ones who through their everyday work can realize the environmental activities, which leads to the conclusion that the accomplishment of the ecological targets in evitable depends upon the willingness and commitment of the representatives to change their work practices.

When the management wants to bring and establish ecological values in the organization, the best approach is through changing of the organizational culture. The Motivation of the employees is essential in the change of the organizational culture. That what motivates representatives may be the money or different advantages, however in the case that the association is eco-friendly itself can act as an inspiring variable.

The significance of communication as a tool to include and engage workers during cultural and overall organizational developments is continuously highlighted by the researches (Andre, 2013). In case those representatives are not completely acquainted of the developments which are undertaken, it may convey misunderstanding and prompt resistance to change. For the change to be executed effectively, it should be founded on open interactions.

In the previous decade, the organizations started to focus their attention on the issue of environmental change and sustainability. Various opinions have emerged on the matter why associations should be more environmentally friendly; however, despite the general affirmation of this green necessity, progress stays moderate. Whilst extensive arguing continues over the relative effect of innovative green technology and the roles of governments, international bodies

and private and public sector associations, the truth is that the pro- environmental conduct relies upon individual behavior. Everyone has a part to play and the part of the organizations will essentially be manifested through the people that work in and for them.
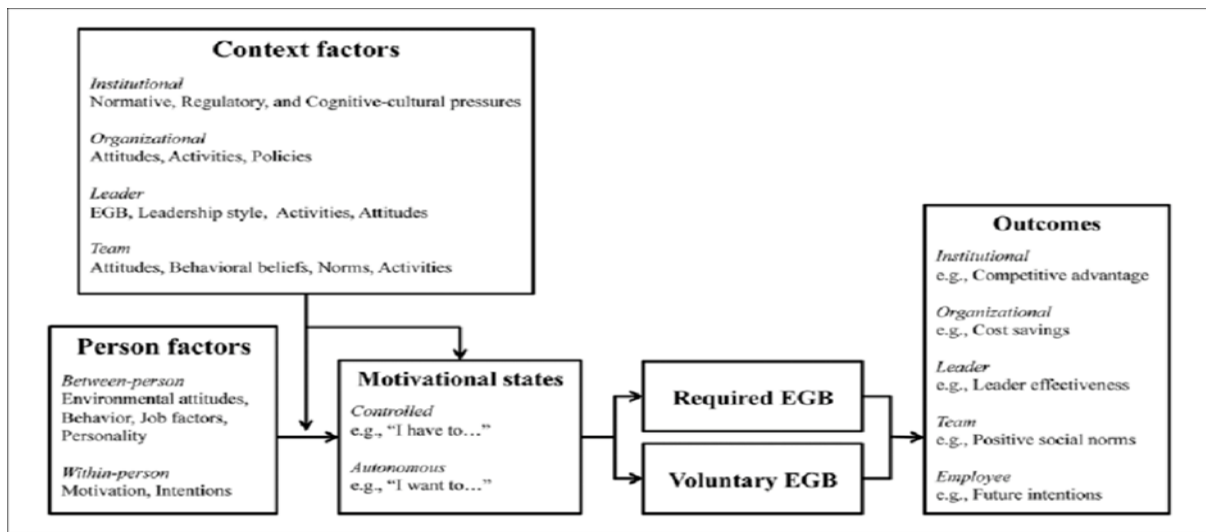
Source: Norton et al, Employee Green Behaviour: A theoretical framework, multilevel review, and future research agenda, 2015, pg. 104.

First, the model is founded on the viewpoint that performance is the function of a person and their environment. More particularly, inside this perspective, the conduct is a consequence of a person's ability and general eagerness to perform, along with other influences which are not controlled by a person.

Second, the job performance includes required and voluntary activities. By utilizing an approach based on job performance, Norton et al. conceptualizes worker's green behavior as a particular kind of work performance that corresponds with environmental sustainability, different from the environmental conduct which just happens to be implementedin the work surroundings. Basic to their methodology is evaluation for the significance of the factors which are not controlled by the individuals, but nevertheless influence the conduct, especially in connections where the person has decreased authority over its own activities, for example, in the working environment.

Green Human Resources Management – Performance Management & Appraisals
Performance management (PM) is the process by which employees are prompted to enhance their professional skills that help to achieve the organizational goals and objectives in a better way. Therefore, in order to create a greener company, performance appraisal (PA) systems can include sustainability goals (that come from a sustainability strategy done previously) measured with specific metrics.

While this accountability may be easily done in some jobs, one of the biggest obstacles of green PA is the difficulty to measure and gain data on environmental performance standards across different organizational departments/units. To help overcome this, companies can start using global systems that help them to collect data and at the same time give them advice on how they can become more sustainable and gets them a certificate for that, such as ISO 14001 or the Global Reporting Initiative.

When it comes to the PA of managers, green targets, goals, and responsibilities such as creating green awareness in their teams and encouraging them to get involved in green activities of the company can also be considered. In the end, the ultimate goal of green PM is to have a

measurable outcome of an organization's ability to meet its ecological objectives and targets set forth in the organization's environmental plans or policies.

Green Human Resources Management – Employee Relations & Ways of going green
To help to build a sustainable company it is crucial to promote 'eco-intrapreneurs' that add value to the organization's products and/or services with efficient utilization of existing financial, human and natural resources. This often means encouraging employees to get involved and participate in the social and environmental initiatives organized by the company. Some examples of practices that employees could get engaged with are:

To cut on carbon emissions: using car-sharing; taking advantage of the free or discounted transportation passes and hybrid/electric cars offered by the company; walking or cycling to work; working from home day once or twice a week;

To reduce waste: using porcelain mugs and glasses for tea and coffee; promoting the 3R's reduce, reuse and recycle; using electronic archives and electronic signatures to avoid wasting paper.

3. METHODOLOGICAL FRAMEWORK AND RESEARCH DISCUSSION
3.1. Methodology and description
An analysis of green human resource management in Gorenje
The empirical part introduces the green HRM and the process of integrating the green in the strategy process of Gorenje Group, and examines the challenges the corporation has in implementing and communicating green practices to the employees. The research questions are:
1.   Which Green human resource practices Gorenje implements?
2.   How Green practices increase the success and brand recognition of Gorenje?
Lastly, an interview process with seven Gorenje's managers is presented, thus providing a better overview of the green practices and processes the company executes.
One of the essential Gorenje's considerations is the protection of the environment, which is highly seated in all of its strategies for development. The approaches for the preservation of the environment involve the complete duration of a product, from planning, production, and usage, to disposal.
By using cutting edge technology, processes, and materials, Gorenje consistently diminishes the amount of wastage created in the manufacturing process and the utilization of energy and natural resources. Gorenje is among the first in Europe to decrease and subsequently completely abandon the use of ecologically hazardous refrigerants and propellants.
As a socially mindful organization, Gorenje as well works towards educating and improving the awareness of representatives and people in general about the environmental behavior and its importance. In 2006, the international certificate ISO 14001 was awarded to Gorenje; in 2004, it also became the first Slovenian companies that become part of the EMAS register (Gorenje Group, 2013). The Gorenje management considers that a company which operates in an environmental way gets a crucial advantage over its rivals. The EMAS certification indicates that responsibility to everyday advancement is an essential element of Gorenje's vision.
The company operates on the principle of the following orientations:
1.   All workers are actively involved in the policy. The company policies are the premise for consistent improvement setting goals in all key areas, including quality and environment.
2.   Satisfaction of investors, customers and other interested actors is Gorenje's primary consideration. With high-quality products and pro-environmental project execution Gorenje acquires customers' trust.

3. Gorenje is focused on long-term success on the domestic and foreign markets, the reputation and brand recognition.

4. All workers continually improve their work-related and other knowledge and experience. In addition to improving their skills Gorenje provides social security to employees, hence improving their loyalty to the company.

5. Gorenje is always concerned with commercially interesting projects by determining the requirements of potential buyers and with helping them to adjust rapidly.

6. Gorenje's focus is on the continual diminishment of environmental contamination with accentuation on preventive activity. This implies finding quality, innovative, aesthetic and environmental and efficient arrangements from planning, designing and project execution.

7. Concern for the environment is conveyed also by the advancement of renewable energy assets. Gorenje has established plants for cogeneration of electricity and heat by combustion or gasification of various types of biomass.

8. Gorenje regularly observes and meet regulatory needs, technical standards and other potential requirements and best practices related to the work execution.

9. The project execution reflects important balance between quality, environment, cost and timelines of implementation.

10. Gorenje strives to establish correct, fair and environmentally responsible relations with subcontractors and suppliers.

In evaluating the environmental effects which incorporate all changes to the surroundings, favorable or not, resulting partly or completely from the practices, appliances, and services, Gorenje considers (Gorenje Group, 2015):

1. Direct effect, i.e. direct impact of the practices over which the company has immediate responsibility; and

2. Indirect effect, i.e. the impact from other actors, in which case Gorenje influence on the volume, type and occurrence of the contamination.

Internal correspondence that involves environmental protection is organized through Works Council, system for submitting and rewarding valuable and important proposals known as "Sparks" ("Iskrice"), the twenty key system, internal newspapers, and coordinators for environmental protection and occupational safety and health. Representatives are educated about the occasions, practices and approaches in environmental work and occupational health and safety in the newsletters that are published every week.

The Gorenje's vision includes improving of the wellbeing and mindfulness of the surroundings. The Group's strategy involves a strong stands a pro-environmental manufacturer which results in changes in the use of new substances and energy. With the incorporation of new materials, procedures and innovations that minimize the damaging effects, Gorenje fully consents with the latest environmental standards.

Ecological management influences the design and execution of appliance development and production procedures. In the process of developing the products, Gorenje strives to diminish the appliance's final effect on the environment.

4. CONCLUSION

The above analysis recognizes that the significance of green human resource management practices is crucial to increase the employees' motivation and this may be advantage for both the organization and the employee. Some of the advantages that an association can accomplish as an after effect of presenting green human resource management standards in its management include:

1. Increasing the ability to retain the employees

2. Increasing brand recognition and improving the status of the company

3.   Attraction of most suitable representatives
4.   Increasing the efficiency and sustainability
5.   Minimizing or reducing the negative impact of the organization
6.   Improving the competitive position and leading 999to a superior performance

More associations now understand the significance that sustainability has on their competitive position, status, and capacity to draw in and hold talent. Aware of their financial, social, and environmental effects, reasonable associations now search input from a wide set of actors — both internally and externally — in molding their business systems and procedures. The human resource management has a crucial part to play. Using the human resource abilities in organizational procedures, change management and culture shaping, human resource management can help make and actualize sustainable business methodology all through the company. Not only human resource must become capable at using human resource management tools to implement the sustainability strategy, but also the mission in the organization should additionally learn how to change itself, so that its effect on workers, teams and different partners align to the vision for sustainability of the organization.

The purpose of this thesis was to investigate how the concept of green management can be positioned as part of the human resource function. As an example of successfully incorporated GHRM practices and sustainability programs, the case of Gorenje was investigated. The Gorenje vision incorporates the advancement of the quality of life and the responsibility for the surroundings. Gorenje's strategic plans involve a solid stance as a pro-environmental manufacturer, which has brought developments and reduction of the resource and energy consumption. Through the integration of new materials, procedures and advancements that reduce destructive effects on the surroundings, Gorenje works according to the newest environmental regulations. Environmental management influences the designing and executing of the appliance development and the related production processes. The environmental friendly approach and its application in all human resource practices is that what makes Gorenje one of the leading companies in Europe.

For a better review of the green human resource practices of Gorenje's Group, a qualitative study was performed. Structured interviews with seven employees from different managerial positions were conducted. The interview participants confirmed the conclusions gained from the theoretical part. Managers have a determining role in implementing an environmental management system in an organization. Gorenje's human resource management develops strategies to foster proactive environmental management through strong and highly visible top management commitment, development of training programs, strong internal environmental communication, development of green production and products, creation of performance evaluation and reward systems, implementing green programs and continuously improves in the area of environmental management.

Indeed, there are many gaps to be filled in terms of green human resource management, and theoretical and empirical research is needed in order to extend the knowledge on green human resource management. Notwithstanding, the green concept is becoming more and more important in the business environment (during the pandemic we saw how polluted our living areas were), and human resource management will have a crucial part in translating green policies in practice.

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MEASURING THE EFFECT OF SALARY RAISE OVER THE PERFORMANCE OF SALES PROFESSIONALS – THE CASE OF AN INTERNATIONAL ORGANIZATION

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ABSTRACT

Should fixed salary be the single and most appropriate tool for motivating employees; or should management consider a more diverse, innovative tools for motivation, based on multiple factors? Does a salary increase always guarantee ROI? Also, will sales professionals be motivated by an incremental, equal-to-all salary increase? This paper elaborates these and similar dilemmas and presents a research conducted in the sales sector, in a medium-sized international firm. It represents consequences of applying an equal and applicable to all salary increase of 10%. The paper tries to reject traditional beliefs (and awards distribution models) that salary, per se, is the highest source or motivation and a guarantee for improving performance. The research shows how sales professionals are affected by incremental salary increase, and tries to provide recommendations for further research on effective, cost-efficient award strategies that increase motivation and performance and can be easily adopted in similar organizations.

Key words: *Compensation and Benefits, Rewarding Sales Professionals, Motivation, KPIs*

JEL classification: *J33, M12. M52*

1. INTRODUCTION

Probably no other aspect of compensation has attracted as much attention recently as rewarding sales professionals, as they make a meaningful and instantaneous impact on business results. They are taking a customer facing role and represent the firm's brand. That is the main reason why leaders often treat and reward them a bit differently from other employees.

There are many different methods of rewarding sales staff and rarely firms adopt *a salary only* approach. It is justified only when sales professionals have little influence over sales volume or when promoting products/services is more important than direct selling. Most organizations implement more complex reward methods such as *basic salary plus commission*, *basic salary plus bonus*, *commission only* or *additional cash or non-cash rewards* (Armstrong, 2010).

Upon creating compensation programs, managers should be aware that employees not only want decent pay and benefits, but they also want to be treated fairly and be valued for their input. Implementing the two basic principles (1) external equity (market salary competitiveness) and (2) internal equity (employees within an organization are paid fairly versus each other) is critical for their motivation and performance (Bojadzioski, Eftimov, 2009).

This paper is dedicated to the topic of employee awards and via evidence-based research, into an international firm, aims to prove that awarding all employees with relatively equal-to-all salary raise shall not positively affect neither employee performance nor productivity; especially sales professionals. The paper's objective is not aiming to prove that salary increase, in general, does not affect performance. On the contrary, both history and practice prove that it has positive influence over motivation, performance and positively reflects the organization, its brand, and attracting more competitive workforce - talents. (Dal Bo et al, 2013). Therefore, this research paper elaborates on the various tools of motivating sales professionals, as an utterly unique group, comprised in every organization.

Building a sales career is not characterized with stability or (easily) predictable growth, since one's career development and future are predominantly reliant on achieved results and individual input. Hence, a significant amount of these professionals' total compensation is consisted of a variable part i.e. commission or bonus per the achieved results. Hence, this paper's practical objective shows that for such professionals a minor equal-for-all salary raise (around 10%), which does not consider individual working history, success and experience is not a proper solution to attract, retain, motivate or improve performance.

By conducting a studious analysis of similar research and literature withing this realm, one can elaborate that for sales and business development professionals a lot more appropriate strategies are those that include one's individual input, results, and achievements. When it comes to rewarding strategies, a "*kaizen mindset*" should be adopted, since it speaks volumes about the firm's culture and values. Thus, to sustain high motivation, it is critical to identify the appropriate tools and manners of recognizing one's individual work (Islam and Ismail, 2004). Professionals who are exceptional at their work, expect to be rightfully recognized and awarded by the management and their colleagues (Islam and Ismail, 2004).Taking myriad forms and approaches, awards are accepted in all organizations, regardless of the industry, size, private or public sectors. Hence, this paper aims to help shape these systems, as organizations risk to lose significant financial assets, if they fail to achieve the desired motivation and performance improvement objectives (Bowen, 2000).

In terms of the structure, the paper is comprised of three parts: the first is a brief overview of existing theory and elaborates on the topic's present-day relevance and significance; the second particularizes the research methodology and analyses the practice in one international organization, from the professional development industry; and lastly, it draws conclusions and shares practical recommendations for further research.

2. THEORETICAL BACKGROUND

Contemporary business leaders and scholars hold utterly diverse opinions regarding employees' total compensation and rewards; notwithstanding the unwritten consensus they are probably the most complex and sensitive managerial responsibility. Surprisingly, there is lack of empirical research over the implementation and management of these systems, especially on the most appropriate manner of awarding and compensating employees. (Bradler et al., 2013). Contrary, there is some research available that analyzes the influence awards have over people's status and their motivation (Dubey and Geanakoplos, 2006; Ellingsen, Johannesson 2007; Frey, 2007; Moldovanu et al. 2007; Auriol, Renault 2008; Besley, Ghatak 2008; Ederer, Patacconi, 2008; Dur 2009).

Nevertheless, there is not too much practical research that explains awards and status in actual business context (Ball et al. 2001; Markham et al., 2002; Ariely et al., 2009) and there is almost no research available that shows how performance can be improved, only by receiving recognition, or improved social status in the organization. Even so, organizations benefit from the fact that salary, per se, is not the single factor that contributes to high job satisfaction, as compensation and reward systems, which are not aligned with the market standard, can have significant negative effects on the company's bottom line (Bryant, Allen, 2013)

Some empirical research, conducted in laboratory environment (Fehr et al. 1993 и 1997), as well as other short-term practical research (Falk, 2007) supports a rather more traditional model for the awards exchange. In number of cases, it can be proven that giving (and receiving) awards always has positive effect on performance, (Gibbons, 1997; Lazear, 2000) so it does not come as a surprise that managers are extremely dedicated on finding a perfect formula for properly awarding professionals for the jobs they are performing. There are plans which could be adopted to take a strategic approach for total compensation and awards, which are aligned within the organizational strategy, decrease employee turnover, are run by fair system of policies and procedures and manage employee expectations and perceptions for these systems. (Bryant and Allen, 2013).

Few traditional theories, more specifically the theories of expectation, reinforcement, and fairness and equity, are trying to prove how organizations can model employee behavior via the award systems and total compensation practices. (Vroom, 1964; Adams, 1963; Greenberg, 1990; Cowherd & Levine 1992; Eisenhardt, 1989; Fama & Jensen, 1983; Lambert & Larcker, 1989) The theories of *expectation* and *reinforcement* are dedicated on the correlation between the expected employee behavior and the award that comes as a result of it. In other words, employee motivation is substantially influenced by what is expected because of a certain behavior, and how much value is added to that specific award. (Vroom, 1964). The theory of *fairness and equity* has major significance and affects all salary decisions, because to be fair and ethical and bring moral, consistent decisions for everyone is of critical value for all firms. This theory proposes that the award and compensation strategy should be completely aligned with the company's strategic objectives. (Adams, 1963; Cowherd & Levine, 1992).

Apart from these traditional views, research continually shows that salary is not as significant indicator of measuring overall job satisfaction, as are the idiosyncrasies that embody a specific job and organization, its culture and environment. (Allen & Bryant, 2012). One research that tried to

compare and examine various reasons for leaving an organization, showed that upon comparing and measuring 35 different job satisfaction indicators, salary ranked 24th on the list (Allen & Bryant, 2012). Much research has already proven the well-known mantra that "people don't leave organizations, but they leave leaders" which underlines the valuable impact leaders have over people. The leader's influence and style are one of the most meaningful components in achieving high job satisfaction. Moreover, employees who receive more attention from their leaders feel more attached to the firm, more privileged, are generally more satisfied from the firm and are less likely to leave. (Graen & Uhl-Bien, 1995).

Leaders are obliged to cascade the strategy and expectations, across the organization so employees can have clear path for professional growth and development. (Allen, et all., 2003). If employees believe the organization can provide them with professional growth, there is large probability they will be more committed and less likely to leave, even if they are not completely satisfied from the provided compensation and awards. Hence, firms should proactively manage the career paths and individual development, which helps strengthen the one's positive relationship with the organization. (Allen, et all., 2003).

In addition to close relationships with one's direct manager, strong team bonds have major influence in the overall job satisfaction, as they help increase one's positive emotional relation with the company. Therefore, it is the manager's responsibility to create platforms and opportunities for social interactions, support teamwork, enable new employees with creative onboarding (ways of entering in and learning about the organization), and to generate various positive experiences related to the workplace; so employees can be easily integrated, find their place in the company's future and ultimately show long-term commitment and loyalty (Mossholder, et all., 2005; Allen, 2006).

Employees are largely affected by their total remuneration package so, in addition to financial compensation they prefer other benefits such as: opportunity to purchase shares, private insurance plans, stable pension funds, professional development opportunities, travel, etc. (Dunford, et all, 2008)

3. RESEARCH QUESTIONS AND HYPOTHESES

This paper's subject matter elaborates on the effects of an equal-to-all salary raise, on the motivation and performance of sales professionals in the service industry's utterly competitive environment. It deeply analyses the effects from such salary increase, by measuring behavioral change *prior to* and *after* the announcement about the salary increase, in one key performance indicator in a particular employee group. The major challenge this research deals with is the knowledge gap, lack of awareness and data for sales professionals' motivation; as well as inclination to succumb to traditional beliefs and principles for their compensation.

Other significant managerial challenges, or habits, this research tries to address are: poor decision-making practices which are not based on data; improper problem-solving, which also lacks facts and application of the simplest, rather than the most effective solutions. How would this translate into practice? For instance, upon deciding how to award one's team, instead of identifying the most efficient, effective award strategy, the management decides to proceed with whatever

solution seems easiest to be executed, without getting employee feedback or analyzing in what other manners the decision could be applied.

The research has both scientific and practical objectives. The major scientific objective is to diligently analyze effects, after announcing the salary raise to the sales professionals, on one of their key performance indicators. The effect on the respective KPI should also mirror the effect on their intrinsic motivation. One would think that logically, after receiving a salary raise, performance would be improved. Nonetheless, the research will try to prove that managers should be alert that such decisions are not universal; thus, are not effective in all organizations, and certainly not to all employees. Awards and compensation decisions should be customized per the specific business and workforce requirements. To have an optimal award and avoid adverse or no impact over motivation and performance, management needs to collect enough data for the specific traits of the job activities, the people who execute them and their talents. Ultimately, this would help identify one's genuine motivation factors. (Benabou and Tirole, 2003). The organizations need to carefully plan the total compensation and award system by implementing innovative and diverse solutions and strategies.

The practical objective of this paper is to apply the research results in the decision-making process regarding employees' compensation and awards (especially for sales teams). Thus, it was conducted in one international organization, which attempts to apply sophisticated reward systems for its sales team. This research general hypothesis is that equal and applicable-to-all salary increase for sales professionals, which does not reflect one's individual contribution and results does not improve performance. Consequently, it aims to respond to the following supporting hypothesis *H1*: There is statistical difference between the mean values of the KPIs *prior to* and *after* announcing the salary increase decision.

4. MODELING THE TOTAL COMPENSATION SYSTEM (SALARY AND AWARDS)

Today, award systems, as a positive business practice, offer plethora of possibilities and can be pinned down in almost every organization. The more sophisticated and mature the firm, the more complex hierarchy and award prospects it offers to its teams (Gibbons, 1997; Lazear, 2000; Rajan and Wulf, 2004). The business world is still far from having a universal formula which can be utilized in solving all motivational challenges. Thus, leaders are yet to face the most sensitive aspect of management, which is finding the most efficient and cost-effective manners of awarding their teams for the jobs they are performing. Awards are usually costly, either in financial or other dimensions, which keeps these challenges attractive even today. Empirical research shows that fixed salary is a tool that makes people feel secure and equal, although it is not enough to secure additional motivation for which managers must implement awards per performance and individual input. (Segalla et al., 2006) Nevertheless, there is scarcity of evidence and research about the effects of salary raise and its influence over performance and motivation. (De Ree, et all, 2017).

Time and time again scholars and business practitioners have been trying to prove that compensation system based on individual input and performance (and not on fixed salary) guarantees performance improvement (De Ree, et all, 2017). Such belief almost justifies the

variable costs that stem from having variable financial remuneration; and the necessity to correlate salary and performance, while ensuring that employees would be motivated enough to improve their performance in the future (Abowd, 1989).

Salary and other financial advantages bring direct financial benefits, larger chance for successful career and send positive signals into the (business) environment, which later grants positive financial advantage to the firm. (Kosfeld and Neckermann, 2011). By implementing appropriate awards, organizations get plenty of non-monetary advantages such as: increase in confidence, recognition, higher status in the group, etc. (Kosfeld and Neckermann, 2011). There is a diversity of awards can be provided, out of which professional development opportunities are the most preferred choice, especially with younger workforce (Islam and Ismail, 2004).

The process of modeling the award system ought to consider several multinational and multidisciplinary factors, as to avoid future challenges that might arise because of people's intrinsic, hidden values and beliefs (Segalla et al., 2006). Furthermore, while one award/recognition tool might be appropriate for one person, it can be completely inappropriate for another, depending on their personality and culture (Islam, and Ismail, 2004). An interesting cultural fact worth mentioning is that although applying performance-based award system is not novelty, it is far more adopted in the USA, than in the European countries. That is probably a consequence of the US traditional capitalistic, business values.

Furthermore, it is interesting to point out that although nowadays the organizational structure and managerial layers have become more decentralized and sophisticated; compensation and award decisions are still predominantly brought within the closed silos of the top, C-level management, boards or owners; while the middle management (including sales managers or directors) are included in the less costly awards, and mainly cascade top management decisions down the organization (Segalla et al., 2006).

Awards can also take symbolic meaning and forms, where their value is taken from the social and psychological benefits. (Auriol and Renault 2008). Notwithstanding the predominant opinion that financial awards always secure increased efforts, organizations ought to incorporate non-financial awards which comprise significant part of the contemporary motivational practices, such as organizing public events where medals, certificates and recognition are provided. (Nelson, 1994). Such awards have non-materials benefits and advantages and public awarding helps create even more competitive environment, which is especially needed in the sales environment (Kosfeld and Neckermann, 2011).

These ceremonies help recognize employees and distinguish elite groups, which are not only differentiated via their financial power, but through their privileged status in the organization. Logically, such status differences are in favor of those at the top of the pyramid who enjoy certain privileges, while could be discarded, and even decrease the motivation of those who have lower status (Kosfeld and Neckermann, 2011). Therefore, giving such recognition should not entirely replace financial awards. Generally, scholars and practitioners agree that people care about status, and so they take it into account upon deciding on the most appropriate non-financial awards, which

may take diverse shapes such as: professional development opportunities, laptops, business phones, cars, fancy offices, travel opportunities, etc. (Auriol and Renault 2008)

While there are discrepancies and myriad ways of giving awards; and while some prefer to be publicly awarded, as *employee of the month*, and others would be satisfied by a simple *thank you note*, all effective awards share few common psychological traits. Once such important attribute is that the management must ensure everyone is well familiar with what an award represents; and what specifically leads to receiving it. It not, it might fail to reach the desired effect on people performance and motivation. (Bowen, 2000). Citing one employee, Bowen (2000) says *"I was utterly embarrassed to be given the employee of the month award. I never knew what had I done to earn that award, and noticed that even my teammates were not too glad I had been nominated for it"* (Bowen, 2000, p. 202).

In addition, awards ought to be aligned with people's specific experience and tenure. On the one hand, employees with shorter experience need not receive financial award and status. For them, motivation should arise from knowing their prosperous career path and professional growth. On the other hand, more experienced employees greatly appreciate any opportunities for growth and career development. They have already proven their value over the years, and as a result they should enjoy more prestigious awards and positions in the organization. Therefore, considering people's different preference, more experienced employees should receive packages that are comprised of both financial and non-financial awards (Bowen, 2000).

Reflecting on the overabundance of factors that impact award systems, it is recommended to implement awards that recognize: employees who are successfully running the most significant projects; initiatives that save costs or decrease expenses; team work efficiency and collaboration; high productivity and quality of work; innovation; customer care; highest achievements and sales; most successful teams; exceptional behavior in terms of organizational values, policies and behavior (Branham, 2001). Moreover, depending on the employee structure, management can implement creative awards, who could help employees improve their work-life balance. Organizations could offer awards that would provide employees with more quality free time in their private lives. For instance, such are: offering a healthy meal at work, which would enable them to spend the time they would cook a meal, on other meaningful free-time activity; or offering private kindergarten for parents, etc. (Oyer, 2008) In addition to these external awards, it is recommended to also apply *internal* awards whose benefits arise from conducting the job itself. These can take various shapes such as: assigning more meaningful job responsibilities; empowering employees and giving them more opportunities to directly impact their future; professional development and support in improving one's competencies; assigning challenging projects and activities which would ultimately lead to professional maturity; decision-making power; handover of various more diverse responsibilities per the employee specific interest and needs; providing opportunities to represent the organization on various public events; delegating tasks/projects that employees would prefer to do and find pleasure in doing; etc. (Bowen, 2000).

It is worth mentioning that there are some scholars and theoreticians who claim that in the long run, awards do not necessarily positively impact employee performance. (Kruglanski, 1978;

Koestner and Ryan, 1999; Wilson et. all, 1981) Or, awarding positive behavior weakens motivation and people should not be motivated by the award, but merely by conducting the job. Similarly, recent research shows that the process of giving up a certain habit (smoking or not pitting a seat belt while driving) should not be awarded. On the contrary, although initially awards may show success, they do not have a long-term positive impact over the entire process. (Kohn, 1993; Baron and Kreps, 1999) This research proves that there is more significant and longer success with those people who kicked-off a habit, without being incentivized by awards. By applying these principles into the business world, one can find theories who claim that award systems are rather demoralizing and diminishing motivation. (Kohn, 1993; Baron and Kreps, 1999, p. 99). Regardless, this research takes the completely opposite (and widely accepted) beliefs where awards are predominantly considered as a positive managerial practice, which positively impacts performance and motivation – with the important condition of - *only if* they are appropriately implemented.

5. RESEARCH DATA, METHODOLOGY AND RESULTS

To test the hypothesis, a practical test was conducted in the sales team of an international organization. More particularly, it examined the change in performance in a group of people, after they all were awarded with *equal 10% salary raise*. The selected firm is an international institute for professional development, from the education industry. It predominantly works in the MENA region, where it provides various corporate development services and solutions, such as certified training programs and examinations. Its Skopje Office employs over 150 employees, out of which 100 are part of the sales and business development team, which was our focus group. Their major job purpose is to contact and build rapport with clients, and conduct sales presentations about the firm's services. By communicating with clients, they firstly invite respective professionals to a training course and organize their attendance to the event. Considering that clients are predominantly located in the MENA region, the entire communication is conducted mostly via phone (or email). To precisely measure the time spent communicating with clients via phone, the company utilizes a very sophisticated software, which determines the exact *talking time* spent on the phone, for each employee; where everyone is given a personal line. Logically, this *talking time* with clients is one of the KPIs for all sales employees in the firm; where the more junior the employee, the higher the expectations for this daily total talking time. After each working week (or five consecutive 8-hour working days), employees receive *weekly reports* via email, which include clear reports with exact *talking time* for each employee i.e. exactly how much time each of them spent talking on the phone with clients (see: Photo 1,2 and 3 columns 3,4,5,8,9 and 10 where talking time is expressed down to hours, minutes and seconds). This research examined the case when after few utterly successful quarters, the management decided to award all employees with 10% salary increase; while not considering anyone's specific tenure, status, career development and progress, performance, achieved results, achieved KPIs, etc. Therefore, to prove the main and supporting hypothesis, we were focused on deeply analyzing this particular KPI. We took the average *talking time* for each employee three consecutive weeks *prior to* and *after* receiving the decision about the salary raise (see: Photo 1, 2, and 3). We considered the

performance during this period of 30 employees, from all sales teams. The selected sample is comprised of 15 employees with less than 2 years' experience (Juniors) and 15 with more than two years' experience (Seniors), out of which some are also Team Leaders and responsible for managing small teams.

Table 1: Research Structure – Prior to announcing the award

			Weekly KPI (Call Rates) BEFORE the announcement				
	Samples	**Date of employment**	**30.06 - 04.07**	**07.07 - 11.07**	**14.07 – 18.07**	**Average**	**Ave in Minutes**
up to 2 years	Employee 1	19/2/2019	06:50:12	07:03:49	08:48:49	07:34:17	454.28
	Employee 2	1/4/2019	04:16:15	04:51:56	04:35:49	04:34:40	274.67
	Employee 3	1/4/2019	01:06:04	02:20:29	04:31:05	02:39:13	159.21
	Employee 4	1/4/2019	05:03:52	06:29:25	03:44:14	05:05:50	305.84
	Employee 5	28/1/2019	03:01:11	04:57:02	04:46:49	04:15:01	255.01
	Employee 6	1/8/2018	3:07:37	03:27:53	4:06:18	03:17:45	197.75
	Employee 7	1/8/2018	3:26:58	3:23:21	04:25:32	03:56:15	236.25
	Employee 8	10/8/2018	3:41:00	03:31:59	00:00:16	01:46:07	106.13
	Employee 9	10/8/2018	1:25:30	01:33:48	1:09:28	01:29:39	89.65
	Employee 10	18/8/2018	0:44:58	03:03:03	03:47:06	02:31:42	151.71
	Employee 11	18/8/2018	2:48:17	2:42:04	00:02:03	00:02:03	2.05
	Employee 12	18/8/2018	4:32:22	05:02:22	05:00:39	05:01:31	301.51
	Employee 13	3/5/2017	02:37:20	4:14:41	03:13:23	02:55:21	175.36
	Employee 14	25/10/2017	05:10:38	5:24:44	05:52:40	05:31:39	331.65
	Employee 15	25/12/2017	05:10:06	05:58:12	05:10:20	05:26:13	326.21
2-5 years	Employee 16	1/3/2016	2:35:39	02:20:02	02:34:27	02:27:14	147.24
	Employee 17	27/10/2016	02:58:03	03:45:28	02:32:05	03:05:12	185.20
	Employee 18	27/10/2016	01:59:57	01:17:53	01:42:38	01:40:09	100.16
	Employee 19	1/11/2016	2:41:35	00:00:34	03:46:21	01:53:27	113.46
	Employee 20	25/11/2015	03:41:00	04:26:32	02:57:29	03:41:40	221.67
	Employee 21	16/6/2015	1:12:02	02:32:58	04:05:13	03:19:06	199.09
	Employee 22	1/10/2015	03:29:51	02:56:49	03:37:37	03:21:26	201.43
	Employee 23	16/1/2015	4:43:58	02:53:33	01:12:18	02:02:56	122.93
	Employee 24	11/9/2012	03:01:21	2:21:00	02:21:43	02:41:32	161.53
	Employee 25	18/9/2013	00:41:44	00:30:12	01:30:09	00:54:02	54.03
	Employee 26	1/12/2013	01:43:45	02:42:26	02:54:01	02:26:44	146.73
	Employee 27	1/1/2014	01:10:22	02:51:17	02:05:34	02:02:24	122.41
	Employee 28	4/9/2014	04:39:43	04:01:04	04:00:29	04:13:45	253.76
	Employee 29	25/4/2014	01:06:32	02:31:14	03:41:46	02:26:31	146.51
	Employee 30	4/9/2014	02:40:15	02:11:02	02:40:10	02:30:29	150.48

Source: Authors own calculations

Table 2: Research Structure – After announcing the award

Samples	Weekly KPI (Call Rates) AFTER the announcement					
	21.05 – 25.07	28.07-01.08	04.08-08.08	11.08-15.08	Average	Ave in Minutes
Employee 1	09:14:41	09:23:26	06:11:18	00:21:27	06:17:43	377.72
Employee 2	04:57:00	1:25:54	06:24:03	04:37:13	05:19:25	319.42
Employee 3	04:12:24	3:05:02	3:18:40	00:01:01	02:06:42	126.71
Employee 4	03:59:46	06:49:11	05:58:26	00:06:19	04:13:25	253.43
Employee 5	04:28:21	04:25:00	02:49:41	00:00:22	02:55:51	175.85
Employee 6	03:39:37	3:42:29	03:10:10	00:00:11	02:16:39	136.66
Employee 7	00:00:26	03:25:11	02:38:06	00:03:10	01:31:43	91.72
Employee 8	02:47:23	03:25:11	03:45:51	00:18:47	02:34:18	154.30
Employee 9	00:00:38	01:52:34	01:39:41	0:00:32	01:10:58	70.96
Employee 10	03:37:34	02:20:31	02:32:26	00:08:11	02:09:40	129.68
Employee 11	02:42:56	03:08:07	01:33:19	00:09:29	01:53:28	113.46
Employee 12	05:09:05	03:14:23	00:05:55	00:11:44	02:10:17	130.28
Employee 13	03:03:59	03:04:19	02:11:45	00:09:29	02:07:23	127.38
Employee 14	05:44:11	04:58:28	05:18:43	00:09:47	04:02:47	242.79
Employee 15	5:34:01	00:00:15	00:00:08	03:37:37	01:12:40	72.67
Employee 16	02:54:14	00:00:13	02:11:16	00:04:22	01:17:31	77.52
Employee 17	00:04:46	1:44:46	02:50:55	00:11:36	01:02:26	62.43
Employee 18	01:07:43	00:39:50	00:05:02	00:16:05	00:32:10	32.17
Employee 19	2:45:29	03:08:25	00:00:21	00:56:53	01:21:53	81.88
Employee 20	04:38:28	04:13:33	04:06:38	0:51:47	04:19:33	259.55
Employee 21	04:39:12	03:08:25	02:29:01	00:17:50	02:38:37	158.62
Employee 22	03:09:14	02:12:54	01:35:58	00:09:27	01:46:53	106.89
Employee 23	3:28:28	02:42:58	02:07:56	01:09:56	02:00:17	120.28
Employee 24	2:42:34	02:03:08	01:19:34	00:04:20	01:09:01	69.01
Employee 25	01:47:38	01:06:12	00:23:54	00:19:07	00:54:13	54.21
Employee 26	01:11:25	03:37:49	02:19:57	00:30:06	01:54:49	114.82
Employee 27	1:25:14	01:17:03	03:45:28	01:57:46	02:20:06	140.09
Employee 28	04:02:00	03:47:03	01:23:21	00:00:53	02:18:19	138.32
Employee 29	02:20:44	01:53:21	00:45:38	00:13:01	01:18:11	78.18
Employee 30	2:04:38	02:25:05	02:00:17	00:08:57	01:31:26	91.44

(Row label, left vertical: 21.07 ANNOUNCEMENT)

Source: Authors own calculations

Table 3: Research Structure - Results

Results	Difference in Hours	What % is M from G	Difference in minutes
down	01:16:34	0.17	76.56
up	na	-0.16	-44.76
down	00:32:30	0.20	32.50
down	00:52:25	0.17	52.41
down	01:19:10	0.31	79.16
down	01:01:06	0.31	61.09
down	02:24:32	0.61	144.53
up	na	-0.45	-48.18
down	00:18:41	0.21	18.69
down	00:22:02	0.15	22.03
up	na	-54.35	-111.41
down	02:51:14	0.57	171.23
down	00:47:59	0.27	47.98
down	01:28:52	0.27	88.86
down	04:13:33	0.78	253.54
down	01:09:43	0.47	69.72
down	02:02:46	0.66	122.77
down	01:07:59	0.68	67.99
down	00:31:34	0.28	31.58
up	na	-0.17	-37.88
down	00:40:29	0.20	40.48
down	01:34:32	0.47	94.54
equal	00:02:39	0.02	2.65
down	01:32:31	0.57	92.52
equal	na	0.00	-0.18
down	00:31:55	0.22	31.91
up	na	-0.14	-17.69
down	01:55:26	0.45	115.43
down	01:08:20	0.47	68.33
down	00:59:03	0.39	59.04

Source: Authors own calculations

Regarding the applied methodology, hypothesis were tested via the statistical *T-test,* predominantly utilized upon using a specific group; and tests whether there are statistical differences in the results, or they are random. More precisely, it is utilized to define whether one can find significant difference in the analyzed KPI for the selected group of 30 sales employees, *prior to* and *after* receiving the announcement about the salary increase. The larger the T value, the higher the difference between the median of both samples. More precisely, by applying the T-test, one can identify if there are significant statistical differences between the results' median *prior to* and *after* the salary increase. Should the test prove there are statistical differences, one can confirm the research hypothesis.

H0 Hypothesis: By comparing the medians (middle values) one cannot find statistical differences prior to and after announcing the salary increase.

H1 Hypothesis: By comparing the average value one can find statistical difference prior to and after announcing the salary increase.

The test rejects the H0 and confirms there are statistical differences, since the test statistic is larger than the appropriate critical value for the given value of alpha (α). That is, when the *p*-value is smaller than alpha α (p<α).

Usually, the level of significance is α=0,05. The hypothesis difference in the medium value is 0, which means that it is assumed that there is no significant statistical change in the key performance indicator which was analyzed. The level of α remains 0.05, as a standard for similar tests. The research results are represented in more detail in the table below (*Photo 4*).

Table 4: T-test results

	Variable 1	Variable 2
Mean	189.7962037	136.9475463
Variance	8886.911437	6430.748583
Observations	30	30
Pearson Correlation	0.677665037	
Hypothesized Mean Diffe	0	
df	29	
t Stat	4.064586812	
P(T<=t) one-tail	0.000167808	
t Critical one-tail	1.699127027	
P(T<=t) two-tail	0.000335617	
t Critical two-tail	2.045229642	

Source: Authors own calculations

Upon applying the T-test, the P value (0, 000167808) is compared with the value of α which is set as a parameter (0.05). If this value is smaller than α (which in our case it is), the H0 is rejected. More specifically, we can prove there are no significant changes in the analyzed KPI, which is this research's subject matter. Consequently, it can be concluded there is statistical difference in the median (middle values) *prior to* and *after* announcing the decision.

Moving on to the research, one can conclude that this two-tail test proves only if there are or are not changes in the median (middle values). In order to prove whether the change has been toward improvement or decent, one tail test had been applied which shows whether the key performance indicator, which was analyzed via the research, has improved or degraded after the announcement about the salary raise.

H0 Hypothesis: Performance remained the same, after the management's public announcement about the salary increase, applicable and equal to all employees.
H1 Hypothesis: Performance has deteriorated, after the management's public announcement about the salary increase, applicable and equal to all employees. (M1 – M2 > 0, M1 and M2 are average of the KPI).

For this purpose, another test was conducted; M1-M2 whose parameters are widely utilized in statistical analysis were created. The following formula was utilized to calculate the T-value: $T=(Xd - hypothesized)/(Sd / SQRT (n))$ whereby Xd is the average of the differences in the KPI differences, and Sd is the standard deviation from the differences in the KPI. The value of the hypotheses is equal to 0, because according to H0 no changes had been identified. By utilizing mathematical calculations, we receive the T value of 4.064586812.

Afterwards, we calculate the P value, via the function T.DIST.RT (T,Dof), where Dof represents the degrees of freedom where the value of P equals 0.00017. Since P's value is smaller than the α's starting value (which is usually 0.05), we can reject the hypothesis that there have not been changes in the analyzed key performance indicator thus, accepting the hypothesis that there are changes in the key performance indicator and the results had deteriorated.

The meticulous research, elaborated above, helps conclude the following:

- Upon measuring metrics in the selected KPI, one cannot identify a positive boost in performance for sales teams *prior to* and *after* they have been notified on an equal-to-all salary raise.

- Considering one cannot identify performance improvement, it can be concluded that awarding sales professionals via equal-to-all salary raise, regardless of their individual contribution, cannot result in improved performance; regardless of the fact the firm would need to set aside large budget to execute the decision.

- The research, which included 30 employees, showed that the analyzed KPI, not only had not improved, but it many cases worsened. Only *5* employees have shown improvement, where only *2* had sustained the same level of performance. This fact underlines the conclusion that the award had not positively affected motivation and performance.

- Upon analyzing any consequences of the salary increase, one can conclude that neither tenure or overall experience contribute to performance. Or, salary raise did not positively affected: less experienced employees (Juniors), employees with few years' experience (Seniors) and employees with managerial roles (Team Leads).

6. RESEARCH LIMITATIONS

Although the research is aligned with the defined hypothesis and supporting hypothesis, it is necessary to emphasize few limitations, which predominantly arise from a technical viewpoint. Firstly, it is based on a single KPI, which limits its scope. The effect of the salary raise could have influenced other KPIs such as: number of sent emails (which can also show daily outreach to clients); the quality of the presentations which were conducted at that time, since shorter talking time does not necessarily mean that the conversations per se were less efficient i.e. the quality of the pitches could have surpassed its quantity (talking time).

Moreover, the research comes down to the fact that the effect of the salary raise should be immediately distinguishable. Awards could have affected other psychological, internal territories, and be far more than something that can be simply measured through the KPIs. Similarly, the

research could further evaluate what were the effects on the firm's culture, the general perception on its brand, loyalty, job satisfaction, level of security provided to employees, etc.

Another limitation could potentially be the sample size and structure as it was based on a sample of 30 people. If the total number of sales employees is considered, one might question the sample size. Regardless, it is safe to scientifically assume that a sample of 30 employees is enough to represent relevant and fact-based data. The sample satisfies the required resources and time necessary to conduct a thorough and all-encompassing research, based on sample which is large enough to have people with different backgrounds and profiles. Moreover, the research sample includes employees that fall under different groups, more specifically: employees from different gender, age, working experience as well as employees from all sectors within the sales and business development team.

Other direct quantitative indicators, which might have been affected by the award and which could help in shaping a more comprehensive statistical and econometric analysis (such as the culture or the employees' subjective perceptions about the organization), are almost non-existent. Thus, it can be concluded that the statistical data which was applied, successfully provided solid foundation for reaching the above conclusions.

7. CONCLUSION

This paper contributes to the discipline of HRM by helping scholars and business practitioners understand that traditional systems for total compensation and awards are not sustainable for contemporary firms, especially to those who employ younger workforce. Awarding equal-and-applicable-to-all, minor salary raise is not an efficient practice that improves performance or motivation. The paper helps corelate the acumen from similar research, from eminent authors, to emphasize the fact that small, non-monetary awards, or awards which are individual and performance-based can have a lot greater impact over motivation and performance.

The main conclusion from the research is that implementing proper award systems has large influence over performance, especially for employees whose remuneration package is variable per their individual input, achievements, and results. Also, any award's specific purpose and criteria (requirements to receive the award considering accomplishment of specific KPI over a time) should always be transparently shared with the team and precede its implementation.

Nonetheless, it is important to note that the research does not want to prove that salary is not important, or that monetary awards do not influence performance. On the contrary, it is trying to prove that non-monetary awards can help create a perfect whole, and has the power to design optimal, personalized system for awarding and compensating teams, while being based on both financial and non-financial awards (Auriol and Renault 2008). Managers and HRM involved in reward management are responsible to build a high-performance culture by delivering awards and pay for performance programs that recognize and reward critical (sales) skills, strong (business development) capabilities, experience and performance, and ensure that reward systems are market based, equitable and cost effective (Armstrong 2010).

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IMPACT OF MOTIVATION AND JOB SATISFACTION ON EMPLOYEE PERFORMANCE

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ABSTRACT

The majority of organizations are competing to survive in volatile and fierce market environment, especially these days when the Covid 19 has collapsed most businesses. The essential tools for organizational success in the long run are motivation and job satisfaction on employee performance. There is a strong positive relationship between motivation, job satisfaction and organizational effectiveness. One of the main aspects of management is the measurement of employee satisfaction. The role of the manager is to continuously work towards aligning the aspirations of the employee with the goals of the organizations. The aim of this paper is to analyze the drivers of motivation and job satisfaction towards higher level of employee performance. The objective of the present paper is to focus on the relationship between motivation and job satisfaction and its overall impact on employee's performance. The theoretical framework of this research includes the concepts of motivation, job satisfaction, and employee's performance. The empirical component of this research and questionnaire were modeled accordingly. Furthermore, the questionnaire included parts where the questions regarding employee expectations, work environment and job organization were asked, while the analysis of the results of the survey was carried out with the SPSS statistical package. The study examines the value and impact of motivation and job satisfaction on employee performance. A sample of 460 employees from public and private sector was surveyed and empirical analysis showed that motivation and job satisfaction directly impact employee performance.
Keywords: Motivation, Job satisfaction, Employee performance

JEL classification: O15

1. INTRODUCTION

The Covid 19 pandemic is challenging business all over the world. Hence, global business environment has undergone major upheavals. Quickly adaptive organizations are the ones to survive. Motivation and job satisfaction are the most significant elements for all organization public or a private zone. Satisfied and motivated employees become more involved and committed to their tasks and assignments and work hard for the achievement of organizational goals. However, performance management was redefined in the early 1990s as a process for establishing a shared understanding of what is to be achieved and how is it to be achieved with a qualitative approach to managing people that increases the probability of achieving success (Armstrong and Murlis 2004). Moreover, motivation and employee job satisfaction in every organization plays a significant role in overcoming organizational challenges. Beck (1983) states that satisfied employees tend to be more motivated and they will be more loyal to the company. They also will conduct themselves and work on the tasks set for them more enthusiastically and passionately and consequently yielding higher quality output.

Mathieu and Zajac (1990) found that job satisfaction yielded significant correlations with organization commitment. By using meta-analysis, they found that job satisfaction has direct influence on level of organizational commitment.

Latham (2007) observes that challenging jobs appear to increase job satisfaction directly and independently of goal setting. Goal achievement, however, also affects job satisfaction. Furthermore, according to Lather and Jan (2005) learning new skills and competency opportunities increase the satisfaction and moral of the employees however it is realized that the important effect on the motivation and job satisfaction is created by goal achievement.

According to Cohen and Lowenberg (1990) the high performance is indicated by satisfaction. The satisfaction commitment relationship is higher in the private than in the public sector, and higher professional then clerical workers. The impact of motivation and job satisfaction on employee performance is a heavily researched area in general, but in Kosovo there has been no studies of any filed related to motivation, job satisfaction or employee performance before. The aim of this research is to investigate: i) how does motivation impact employee in their performance and ii) does job satisfaction affect employee performance, including public and private sector. The results of the survey showed that money, compensation, environment, benefits and managers strongly influence the overall employee's performance, potential rewards, administrative practices such as flexible work hours, vacation and communication have a very strong impact on the overall performance of workers, while the overall satisfaction and motivation of those employed by their work appeared to be in neutral contexts.

2. LITERATURE REVIEW

There is a fundamental relationship between motivation and that led to employee job satisfaction, resulting higher quality and committed workforce which then led to improved organization performance and profitability. Mullins (2015) argues that motivation define and describe forces within the individuals that can determine the level, persistence and direction of the effort they demonstrate at work.

According to Armstrong and Murlis (2007) motivation theory is concerned with what determine goal directed behavior. The process of motivation can be initiated by someone recognizing an unsatisfied need. A goal is then established that, it is through, will satisfied the need, and a course of action is determined which is expected to lead towards attainment of the goal.

Based on Vroom's (1964) expectancy theory, each employee possesses their individual needs, and using the right motivation satisfying his needs, employee also was able to alter his behavior and work attitude towards the job or task assigned to him based on his expectancy of a certain outcome. However, Deci (1985) a social psychologist claimed that motivation is divided into two factors; interstice motivation; a process of motivation by work itself, as it satisfies people's need, it is based in innate needs for competence and self-determination. However, extrinsic motivation refers the amount of effort other people give the person to motivate them, such as more job benefits, more competitive salary.

Furthermore, the level of job satisfaction is affected by external and internal motivating factors, the conditions in working environment, the quality of supervision, benefits, salary, financial bonuses, and social relationships with the work group and degree to which success or failure in their work, rewards. According to Saitis (2002) motivation is a complex internal situation, which is formed by the existence of incentives that drive the individual to act in a certain way.

Risambessy (2012) states that positive motivation influences performance at individual and group level, ultimately affecting the organizational performance. On the other hand, Herzbeg theory is

divided two elements theory motivation and hygiene. The theory states that in every organization there are certain factors environment which if present will be motivate employees. The motivation factors are strong contributors to job satisfaction, such as recognition, achievement, responsibility, promotion opportunities and opportunities for personal growth. However, hygiene isn't strong contributors to satisfaction but that have to be present to meet employees' expectations and prevent job dissatisfaction, which are pay, job security, company policy relationship with others, quality of supervision and physical working conditions. (Tietjen & Myers 1998).

Moreover, Burgeon (2001) found out different factors of job satisfaction by reviewing the most popular job. It is worth mentioning appreciation, fringe benefits, communication, co-workers, and job conditions, nature of the work itself, the nature of the organization itself, pay, an organization's policies and procedures, personal growth, promotion opportunities, recognition, security and supervision. Based on above communication at the workplace is a significant factor for organizations in term of job satisfaction Ozturk et al (2014) has defined two different dimensions in internal communication in the organization, the first one is administrative communication such as oral presentation and feedback, while the other one is informal interaction, such as communication between them over the official channel. Effective communication and interaction provide improved job satisfaction. Contrariwise, the lack of communication cause dissatisfaction.

3. RESEARCH METHODOLOGY

The purpose of this research work is to investigate the effect of motivation and job satisfaction on employee performance. In this study a quantitative research approach was used in which a survey questionnaire was distributed to random employees in public and private organizations. The research was conducted total population of employees in Republic of Kosovo, while taking a sample of 460 people according to Slovin formula. The questionnaire used for this study consisted of two parts. The first one was demographic variables including as gender, age, full-time/part-time, work position, economic sector and work experience, and the second part consisted of 27 questions about responses of employees towards leadership, motivation, and job organizations. A five-point Likert scale was used from strongly disagree to strongly agree (strongly disagree = 1 & strongly agree = 5). A total of 568 questionnaires were distributed by email, Facebook, Viber and other social media tools.Where 490 were received with a response, 30 questionnaires were discarded because of double filling; improper filling and missing values and 460 were used for empirical analysis. Furthermore, SPSS, Social Package for Social Sciences software was used to analysis the data from the questioners. The analysis investigates in this research study include, descriptive statistics, reliability, Pearson correlation, and regression analysis.

4. OBJECTIVES OF THE STUDY

The key to employee performance is to know what motivates and satisfies them and design strategy based on those needs. It is a deliberated fact that in my country, very few researchers are working in this area, the author has chosen this thematic for research that would be helpful for further research and exploration of new ideas in this field. In developing countries like Kosovo, it is required to work on such areas that can be developed to increase the productivity of employees and thus of the organizations as well. Therefore, the main objective of this research is to examine the effect of motivation on employee's performance and finding out the impact of job satisfaction on employee performance.

The research questions for the study are;

- *Does motivation affect employee performance?*

- *Does job satisfaction have impact on employee performance?*

5. THEORETICAL FRAMEWORK
In this study the motivation and job satisfaction are defined as independent variables however, employee performance is defined as dependent variable.

Figure1. Research framework of motivation and job satisfaction towards employee performance

Independent Variable   Dependent Variable

Motivation
Job Satisfaction

Employee Performance
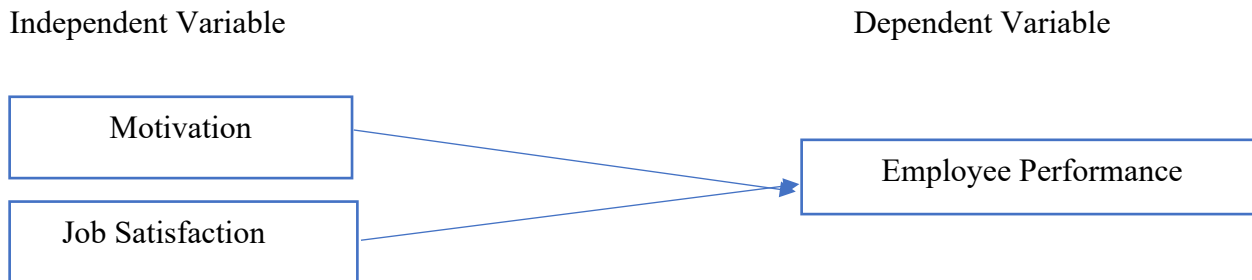
Research Hypotheses
H0: Motivation has positive impact on employee performance
H1: Job satisfaction has positive impact on employee performance.
H0: Motivation has no positive impact on employee performance.
H1: Job satisfaction has no positive impact on employee performance.

6. LIMITATION OF THE STUDY
The Covid 19 pandemic is a common drawback encountered in many fields these days. In the study research the lack of face-to-face contact with research participants has made many questionnaires invalid. There were also hesitations of respondents to be part of research paper because of the lack of informed consent.

7. DATA ANALYSIS INTERPRETATION
An empirical analysis for this research has been conducted by using the software SPSS IBM. In this research is using descriptive analysis is to describe the state of frequency distribution of respondents that are based on the questionnaire. Out of 460 respondents (55.2%) were female respondents are higher than male respondents (48.8%). This has shown in the below table that the majority of respondents belong to age group 20-40 specially 20 and 29 (45.5%) followed by those aged group between 30-39 years old (43.3%). (7.7%) was in the age group between 40-49 years old while (3.1%) belong to age group between 50-59 and the smallest group was between 60-64 years old (0.4). The public and private sectors employees were targeted where (34.3%) respondents work in public sector and (65.7%) private sector. Most of the respondents work full time (86.1%) while the remaining (13.9%) respondents work part-time. Based on respondents' job working experience (71.6%) have been working less than 10 years in their organization. (25.1%) respondents have been working for at least 11-20 years whereas the smallest group was from above 20 years' experience (3.3%).

Table 1: Descriptive Analysis of Demographic Characteristics of the Sample (N=460)

Demographic Variables		No. of respondent Frequency (f)	Percentage (%)
Gender	Male	206	44.80%
	Female	254	55.20%
	Total	460	100%
Age	20-29	208	45.50%
	30-39	198	43.30%
	40-49	35	7.70%
	50-59	14	3.10%
	60-65	2	0.40%
	Total	457	100%
Economic Sector	Pub. Sector	157	43.30%
	Priv. Sector	301	65.40%
	Total	458	100%
Work Experience Years	1-10	328	71.60%
	11-20	115	25.10%
	Above 20	15	3.30%
	Total	458	100%
Working Hours	Full-Time	395	86.10%
	Part-Time	65	13.90%
	Total	459	100%

Source: Authors own calculations

Table 2: Reliability analysis

Variables	No. items Alpha	Cronbach's
Motivation	5	.793
Job satisfaction	3	.789
Employee performance	2	.776

Source: Authors own calculations

Tables 2 shows reliability analysis statistics. Reliability analysis has been conducted to check the reliability of all variables. Cronbach's alpha values gives value .790 which shows that data by combining 10 items sore are good. According to Cronbach's alpha, if coefficient Alfa (α) is 0.60 ≤ α ≤ 0.80 it considers to be high level of reliability (Kalayci 2017). As shown in table 2 the independent variables of motivation have the highest Cronbach's alpha of .793 followed by job satisfaction with Cronbach's alpha of.789 while, the dependent variable employee performance with Cronbach's alpha of .776. All the variables have value more than .70 which is considerably sound. This mean all the variables are reliable for the data collection.

Understanding the strength and direction in linear relationship between motivation, job satisfaction and employee performance the Pearson's of coefficient correlation was measured. Table 3 illustrates that the results achieved from the correlation test there is a high positive correlation between motivation and employee performance and the strength is 51.6%. There is positive relationship between job satisfaction and employee performance is 50.1% while, motivation and job satisfaction are related positively and the strength is 47%. It is indicated that employee performance is positively correlated with motivation and job satisfaction with p value of 0.000 which is significant at 1%. Hence, it could be concluded that the higher motivation higher job satisfaction and higher employee performance.

Table 3: Correlation of the variables

	Motivation	Job Satisfaction	Employee Performance
Motivation	….		
Job Satisfaction	.470**	….	
Employee Performance	.516**	.501**	….

Source: Authors own calculations

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

Regression analysis has been used in order to find the impact of motivation and job satisfaction on employee performance. Results of regression analysis are shown in the table 4. The value of the coefficient of determination R is .235. The coefficient of relationship explains that the value of R square is .235; which means 23.5% of the variance in employee performance was affected by motivation. The Beta (β) value of standardized coefficients indicates the variable that contributes dependent variable. In this case these findings show that motivation has positive effect on employee performance. (β=.450, p value less than 0.01). This implies that employee performance is positively influenced by motivation. The organization or company can increase the employee performance and achieve the desired goals and objectives if the management focus their concentration upon motivation. Therefore, the study hypothesis (null) is rejected and the alternative hypothesis is accepted that motivation has a positive and significant impact on performance of employee.

Table 4: Regression results of Motivation and Employee Performance

Independent variables	Unstandardized cofficients (B)	Standardized coefficient (Beta, β)	sig
(Constant)	2.32		.000
Employee Performance	.461	.450	.000
R	.484[b]		
R square (R²)	.235		
Adjusted R square	.231		

Source: Authors own calculations

a) Predictors:(constant), Employee Performance
b) Independent variable Motivation

Regression was carried out in order to investigate the effect of job satisfaction on employee performance. The objective of the regression is this research was to find how the value of one variable is based on the other variables. Table 5 contains the model summary having R and R square which show the simple regression. Thus, R square shows how much independent variables show weather the relationship is significant or not. In table 5, the coefficient of relationship explain that the value of R square is 0.244 which mean that 24.4% of the variance of employee performance was affected by job satisfaction Standardized coefficient indicate the Beta (β) value of the variable which contributes the dependent variable. These analyses indicate that job satisfaction has positively influence employee performance (β= .373, p value less than 0.01). This indicate that when employees are satisfied, they performing their best. So, job satisfaction is the significant predictor for employee performance. Therefore, the research null hypothesis is rejected and the alternate hypothesis is accepted that job satisfaction has positively with employee performance.

Table 5. Regression results of Employee Performance and Job Satisfaction

Independent variables	Unstandardized cofficients (B)	Standardized coefficient (Beta, β)	sig
(Constant)	1.891		.000
Employee Performance	.382	.373	.000
R	.494[c]		
R square (R²)	.244		
Adjusted R square	.239		

Source: Authors own calculations

a) Predictors:(constant), Employee Performance
b) Independent variable Job Satisfaction

8. CONCLUSION

This research was carried out to determine the effect of motivation and job satisfaction on employee performance. This study was directed with a set of hypotheses relating to the research questions. Data was gathered through Google form questionnaires. Based on results there are positive effects of motivation and job satisfaction on employee performance.

Motivation and job satisfaction are the key tools for improved employee performance which can also increase the level of individual and organizational productivity.

People with high level of affiliation motivation and job satisfaction are more likely to perform in their job. The result proposed that if the public and private sector motivate their employees by using these elements such reasonable wage and salary, manager support, job security, job enlargement and other supplementary financial and non-financial incentives and bonus which the performance of employee will expand and very easily organization achieves their goals and objectives. Moreover, if organization wants to increase their productivity and revenues it should consider all aspects to increase the employee performance level of workplace.

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APPENDIX

Questionnaire
Demographic questions:
- Gender; - Age; - Working time; - Position; - Economic Sector; - Work experience?
- How much do you enjoy working every day and performing at your best?
- How much the following aspects affect your motivation: money; benefits; compensation; communication; promotion; appreciation of manager; administrative practices (flexible working hours, travelling, dress code, schedules, vacation), training?
- How well do you think your work fulfills your basic needs?
- How well do you think you are appreciated at your work place?
- How satisfied are you with your health benefits?
- How satisfied are you with the monitoring of your work directly by the Manager?
- How much do you think your Manager is aware of the performance of the employees in the company?
- How satisfied are you with the support you get from your manager?
- How do you find the company's benefits compared to other companies' benefits?
- How do you feel about the job security of your work place?
- How satisfied are you with the idea of not changing your work place within next year?
- How satisfied are you with the compensation made for your contributions to the workplace?
- How satisfied are you with the flexibility of the working hours?
- How do you find the organization hierarchy of the company?

THE EXPERIENCE ECONOMY APPROACH - AN EMPIRICAL EXAMINATION IN WINE INDUSTRY

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ABSTRACT
The purpose of this paper is to analyze the four realms of experience economy model (education, entertainment, escapism, and esthetic) and to examine their impact on wine tourists' arousal, memory and loyalty. The experience economy has recently emerged as a relevant framework for understanding the consumers' experience across different industries. Wineries are facing new challenges where tourists are in search for exciting, unique, and memorable experiences. Consequently, wine institutions should strive to create desirable experiential environment as an essential source of differentiation and competitive advantage on the market. Data were collected from online surveys completed by 158 wine tourists in Macedonia. This study employed multiple regression analyses to test the developed hypotheses. The obtained results indicate that there is a significant and positive relationship among education and esthetics as experience dimensions and arousal and memory, separately. The others two experience dimensions are not significantly related neither to arousal, nor to memory. The results also indicate that loyalty is significantly and positively determined by entertainment and negatively influenced by escapism. The obtained results suggest that Macedonian wineries should emphasis the educational and esthetic aspects in their tourist offers in order to improve tourists' arousal and memory. Understanding the concept of experience economy within the wine industry will lead to contemporary applications for all the involved parties.

Keywords: experience economy, arousal, memory, loyalty, wine tourism

JEL classification: M31

1. INTRODUCTION

Wine tourism is facing new challenges where tourists are in search for extraordinary, unique and memorable experiences which requires individual wine operators to develop a distinct, engaging and value-added offering. The latest research suggests the need for a more holistic approach to the experiential nature of wine tourism. The growing interest demonstrated by wine tourists has fostered the proliferation of extended wine related activities. Nowadays wine tourism is comprised not solely of wine consumption, but is accompanied by wine tasting in wine cellars, wine festivals or sport activities (Vesela and Malacka, 2015). With the growing awareness and

interest for wine tourisms visitors are seeking for more authentic and engaging experience, being able to actively participate in various activities.

The experience economy concept suggests that experience is a form of unique economic offering that creates a competitive advantage, which is difficult to be imitated and replaced (Pine and Gilmore, 1999). As mentioned above, experience occurs when a company intentionally uses services to engage individual visitors in a personal and memorable way, improving the significance of experiences of individual satisfaction of each visit. Despite the useful theoretical framework of the experience economy model, empirical examinations on the subject have been scarce (Ali-Knight and Carlsen, 2003; Pikkemaat et al., 2009; Mehmetoglu and Engen, 2011; Quadri-Felitti and Fiore, 2012; Quadri-Felitti and Fiore, 2013). Consequently, this work aims to contribute by empirically examining the experience economy dimensions in the field of wine industry. More specifically, this paper aims to explore a complex combination of four realms of the experience economy in formulating arousal, memories and loyalty among wine visitors. To assess this assumption, we have employed the Pine and Gilmore's experience model (Pine and Gilmore, 2011), and empirically examined the applicability of their concept of an "experience economy" and its four dimensions (education, escapism, esthetics, and entertainment, i.e. 4E).

2. LITERATURE REVIEW

Macedonian wine market is characterized by several brands, which makes it harder for consumers to differentiate value propositions. Most wineries are relatively small family businesses, facing the challenges of operating on a small market such as the Macedonian (Simjanovska and Caputo, 2015).

Recognizing that brand is extremely important in wine market where consumers are inundated with plethora of brands and too many choices. Competitive advantage among different offers could be gained and sustained by developing strong brands (Santos and Ribeiro, 2012). Consequently, successful, and strong brands have potential to generate consumer loyalty, as one of the main factors with a positive influence on brand equity (Yoo et al., 2000). Vrontis and Papasolomou (2007) emphasize the importance of branding in wine industry. Creation of memorable experiences that lead to visitors' engagement could improve the whole brand experience.

Visiting a winery comprise a whole set of activities with cultural, food related and historical character. Wine tourism is defined as a visitation to vineyards, wineries, wine festivals and wine shows for tasting the grape characteristic (Hall et al., 1996). Arguing that the motivations and expectations of winery visitors can be quite diverse, Johnson (1998, as cited in Hall et al., 2000, p.5) broaden a wine tourism definition as „visitation to vineyards, wineries, wine festivals and wine shows for the purpose of recreation." Geißler (2007, as cited in Pikkemaat, 2009) expanded the definition of wine tourism including a wide range of experiences, built around tourist visitation to wineries, wine regions or wine-related events and shows. Hence, wine tourism becomes tourism activity influenced by the physical, social, and cultural dimensions of the winescape and its components (Cambourne et al., 2000). Therefore, the prime motivation factors for visiting a winery are extended to broader set of engaging activities and have become more intentionally experiential. The experience economy is emerging in the context of increasing competition where companies are facing with significant market pressure (Karpov, and Merzlov, 2016).

Wineries need to wisely leverage experience economy and embrace theatre as a model for performance to better meet the needs of specific target group and contribute for promoting future economic prosperity (Pine and Gilmore, 2014). Rethinking the business model of transformations

with embracing the experience economy, companies can shift from offering mundane services to providing added value experiences (Pine and Gilmore, 2011). Pine and Gilmore (2011) emphasize the urge to employ a whole range of experiences in tourism. Tourists want to enrich their daily lives by experiencing new things and undertaking activities that have entertaining, esthetic, escapist and educational character. Experience providers, in this case wineries, must constantly improve the product experiences, exceeding the consumer needs so they become willing to pay more (Pine and Gilmore, 2011).

New experiences should provide an opportunity to develop new skills and gain new knowledge (Bourdieu, 2000). Visitors benefit from feeling they have experienced something authentic and unique and are willing to share it on social media. As experience-hungry tourists will actively seek enjoyable experience, companies that deliver memorable value beyond basic function of product will be gain better market positions (Yeoman and McMahon-Beattie, 2019).

As the interest in tourist experience has emerged, a plethora of studies have used theories of hedonic and experiential consumer behavior to understand aspects of wine tourism (Williams, 2001; Bruwer and Alant, 2009; Getz and Carlsen, 2008;). Jurowski (2009) proves that different dimensions of tourist participation in specified activities can be grouped in four realms of the experience economy model. Still, studies that have utilized the experience economy framework to wine tourism remains scarce (i.e. Ali-Knight and Carlsen, 2003; Pikkemaat et al., 2009; Mehmetoglu and Engen, 2011; Quadri-Felitti and Fiore, 2012; Quadri-Felitti and Fiore, 2013).

Ali-Knight and Carlsen (2003) emphasized the necessity for staging a memorable and compelling experience in wine industry. Pikkemaat et al. (2009) applied the experience setting model to measure the potential of experience-orientation of South Tyrolean wine routes. The authors emphasize the necessity to create multi-optional attractions and to stage experiences for wine tourists. The four dimensions of the experience realm of Pine and Gilmore were employed for analyzing the expectations and the degree of visitors' satisfaction. Results indicated that esthetic dimension, such as landscape and information about wine, are the most significant regarding visitors' expectations and satisfaction. In terms of expectation, education was noted as a least important dimension, while escape was ranked as lowest concerning visitors' satisfaction (Pikkemaat et al. (2009)

Very few studies empirically tested the 4Es and expanded understanding of the experience economy by examining how tourists' memories operate together with the 4Es and whether satisfaction have influence on their destination loyalty in different tourism settings (Quadri-Felitti and Fiore, 2013; Hosany and Witham, 2010; Oh et al., 2007). Four realms of experience offer not only conceptual, but also a practical measurement framework for analyzing the tourist experience. (Quadri-Felitti and Fiore, 2013) measured the experience economy's 4Es by adapting Oh et al.'s (2007) validated 16-item scale and structural equation modeling. The results demonstrated the supremacy of the esthetic experience in predicting positive memories and destination loyalty in the wine tourism context. Hosany and Witham (2010) have employed the four dimensions for understanding cruisers' onboard experiences. Esthetics appeared to be a dominant determinant in predicting satisfaction and intention to recommend. Oh et al. (2007) constructed a measurement scale and empirically tested experience economy conceptual model using customers' lodging experiences with bed-and-breakfasts and the results prove that the esthetic dimension was of high importance of the experiential outcomes. Visitors seek for unique experience among top three reasons in their decision to visit the winery region, after the desire for rest and relaxation in an attractive landscape (Carmichael, 2005). Getz and Carlsen (2008) suggest that wine visitors preferred friendliness, diversity of activities, attractive scenery, knowledgeable staff, and group tours as the main reasons for visiting winery. Mehmetoglu and

Engen (2011) explore the effects of the experiential dimensions on visitors' satisfaction in different contexts. The findings suggest that experiences need to be developed and modified depending on different contexts. Experiential dimension escapism and esthetics affect the visitor's level of satisfaction for the visitors of the Ice Music Festival, whereas the dimensions of education and aesthetics have significant influence for the Maihaugen Museum. Manthiou et al. (2014) examine the impacts of the experience economy dimensions on festival attendees' vividity of memory and loyalty. The findings reveal the positive effect of the all the experience economy dimensions on vivid memory. The results also indicate that loyalty was affected by the entertainment and esthetics dimensions. Providing satisfactory experience to attendees is the key for the long-term success of festivals (Cole and Illum, 2006). Brzovska et al. (2018) explore the importance of 4E construct to tourists' evaluations of wine tourism experience and confirm that visitors and wine industry experts perceive esthetic experiences as one of the most significant attributes of the wine touring experience. Olya et al. (2020) employ experience economy model in formulating memories and satisfaction among festival visitors by using augmented reality. The findings reveal that experience economy dimensions through augmented reality can influence visitor satisfaction and the creation of memorable experiences.

Previous studies have shown that implementing the experience economy activities strengthen the consumers' memories. Satisfactory experience is an important motivation for revisiting the place (Andereck and Caldwell, 1993; Tung and Ritchie, 2011). The interest for educational experience is increasing and is becoming one of the main factors for consumers' attendance (Ritchie et al., 2003; Prentice, 2004). Pine and Gilmore (1999) stress the needs for entertainment experiences for having fun and the desire engage in different experiential contexts (i.e. theme parks, theme restaurants) as a way of escaping from their daily routine and revitalizing their lives.

The importance of experience is immensely important, and therefore paper examines which experience dimension significantly influences the visitors' arousal, memory, and loyalty. A desirable experiential environment is an essential source of competitive advantage in the wine industry.

Based on the previous discussions, we focused on the role of arousal, memory, and loyalty, due to the unique context of wine industry. Therefore, the following hypotheses are proposed:

H1a. Education as an experience dimension has positive relationship to arousal
H1b. Entertainment as an experience dimension has positive relationship to arousal
H1c. Escapism as an experience dimension has positive relationship to arousal
H1d. Esthetic as an experience dimension has positive relationship to arousal

H2a. Education as an experience dimension has positive relationship to memory
H2b. Entertainment as an experience dimension has positive relationship to memory
H2c. Escapism as an experience dimension has positive relationship to memory
H2d. Esthetic as an experience dimension has positive relationship to memory

H3a. Education as an experience dimension has positive relationship to loyalty
H3b. Entertainment as an experience dimension has positive relationship to loyalty
H3c. Escapism as an experience dimension has positive relationship to loyalty
H3d. Esthetic as an experience dimension has positive relationship to loyalty

3. METHODOLOGY

In this study, Macedonian and foreign tourists, visiting three different Macedonian wineries in the period February to April 2017, were used in the sample. The questionnaire was completed by

158 respondents. The convenience sampling technique was applied for reaching the respondents. The obtained data were analyzed by applying multiple linear regression, using SPSS.

The survey was consisted of two sections. In the first section a Likert scale was used, measuring the level of agreement with the provided 31 items, ranging from 1 (strongly disagree) to 7 (strongly agree). In this section, the items measuring education (5 items), esthetic (5 items), entertainment (4 items) and escapism (4 items) as experience dimensions were adapted from Manthiou et al. (2014) and Oh et al. (2007). While the items referring to memory (4 items) and arousal (5 items) were developed based on the study of Oh et al. (2007). The loyalty construct (4 items) was measured based on the study of Manthiou et al. (2014).

In the second section, demographic questions were involved. Regarding the demographic characteristics of the sample, respondents are dominantly females (56.33%) with average age of 46, ranging from 29 to 65 years. Regarding the level of education, most of the respondents are with an acquired bachelor's degree (49.37%), followed by a Master degree (36.08%).

4. ANALYSIS AND RESULTS

Descriptive statistics

Analyzing the average level of agreement regarding the measured items of the independent and dependent variables, it could be assumed that all the values are below the average (on a scale of 1-strongly disagree to 7-strongly agree). Namely, respondents have perceived education as the most valued experience dimension of winery offers (2.81), while escapism is reported as the least appreciated experience dimension (2.28). Regarding the dependent variables, arousal and memory are also below the average (2.97 and 2.93, respectively), while loyalty has slightly lower values (2.84) (See Table 1).

Table 1. Descriptive statistics

Items	Mean	SD
Education	**2.81**	
My trip to Macedonian winery made me more knowledgeable	2.89	0.35
I learnt a lot in this winery	2.88	0.36
My trip to Macedonian winery was a real learning experience	2.83	0.44
Visiting winery stimulated my curiosity to learn new things	2.80	0.51
The experience in the winery really enhanced my skills	2.65	0.68
Esthetic	**2.73**	
The setting in winery was bland	1.89	0.91
Macedonian winery is very attractive	2.91	0.29
Being in Macedonian winery was very pleasant	2.96	0.21
The setting in winery provided pleasure to my senses	2.95	0.22
I felt a real sense of harmony. during my visit in Macedonian winery	2.95	0.22
Entertainment	**2.69**	
I really enjoyed watching what others were doing in Macedonian winery	2.74	0.58
Activities of others (engaged employees in Macedonian winery) were fun to watch	2.68	0.59
Watching others perform was captivating	2.61	0.64

Activities of others were amusing to watch	2.72	0.60
Escapism	**2.28**	
Being in Macedonian winery let me imagine being someone else	2.47	0.79
I completely escaped from reality	2.29	0.85
I felt I played a different character during my visit	2.20	0.90
I felt like I was living in a different time or place	2.15	0.87
Arousal	**2.97**	
My visit to the winery was interesting	2.96	0.19
My visit to the winery was enjoyable	3.00	0.00
My visit to the winery was exciting	2.96	0.24
My visit to the winery/these wineries was stimulating for my interest in Macedonian wines	2.96	0.26
My visit to the winery was delighting	2.96	0.21
Memory	**2.93**	
I have wonderful memories of this visit to this winery	3.00	0.00
I won't forget my experience visiting this winery	2.97	0.18
I will remember many positive things about this winery	2.99	0.11
This is one of the best wineries I have ever visited	2.75	0.51
Loyalty	**2.84**	
I will recommend these winery/ these wineries to others	2.92	0.31
I will encourage others to visit this winery	2.91	0.37
I am willing to visit this winery again	2.75	0.58
I will definitely come back to this destination	2.80	0.50

(Source: authors calculations)

Regression analyses

Three separate regressions were conducted, where education, esthetic, entertainment, and escapism were used as independent variables, while arousal, memory and loyalty were applied as dependent variables, respectively. Below are presented the regression equations, representing each dependent variable as a function of the independent variables, i.e.

$$I_i = \beta_0 + \beta_1 EE1 + \beta_2 EE2 + \beta_3 EE3 + \beta_4 EE4 \qquad \text{Equation (1)}$$

Where,
EE1-education,
EE2-entertainment,
EE3-escapism,
EE4-esthetic,
I1-arousal,
I2-memory,
I3-loyalty

Regarding the assumptions of the regression, diagnostic tests were conducted (for assessing the normality, linearity and homoscedasticity and no multicollinearity. The conducted diagnostic tests indicated that the models are well specified, but there are certain violations of normality. Regarding that the consequences of this violation are reduction of accuracy of the confidence intervals in predicting a model, this is would not be a strong assumption when the model is used for explanation and not for prediction (Schmidt and Finan, 2018).

The conducted analysis explains 25.4% of the variations for arousal, while only small proportions of the variations of memory and loyalty are explained (7.8% and 5.3%, respectively). All three models were statistically significant. Regression coefficients are presented in tables 2, 3 and 4.

Table 2. Regression results for arousal

Variable	b (unstandardized coefficients)	β (standardized coefficients)	T
Constant	3.547		9.575
Education	0.223	0.328**	4.387
Esthetic	0.206	0.265***	3.542
Entertainment	0.062	0.113	1.363
Escapism	-0.027	-0.066	-0.843
Multiple R	0.523		
R Square	0.273		
F test statistics, significance	0.000		

Notes: Dependent variable is arousal:
*p < 0.05, ** p< 0.01, *** p< 0.001
(Source: authors calculations)

The conducted regression analysis indicates that education and esthetic as experience economy dimensions are significant and positive determinant of arousal, on a significance level of p < 0.001. The other two dimensions (escapism and esthetic) are not proved to be significant.

Table 3. Regression results for memory

Variable	b (unstandardized coefficients)	β (standardized coefficients)	T
Constant	4.505		10.638
Education	0.129	0.185*	2.220
Esthetic	0.140	0.175*	2.102
Entertainment	0.043	0.076	0.828
Escapism	-0.023	-0.056	-0.635
Multiple R	0.318		
R Square	0.101		
F test statistics, significance	0.002		

Notes: Dependent variable is memory:
*p < 0.05, ** p< 0.01, *** p< 0.001
(Source: authors calculations)

Memory is also significantly and positively determined by education and esthetic as experience economy dimensions, on a significance level of 0.05.

Table 4. Regression results for loyalty

Variable	b (unstandardized coefficients)	β (standardized coefficients)	t
Constant	4.641		7.221
Education	0.037	0.035	0.415
Esthetic	0.110	0.092	1.094
Entertainment	0.207	0.244**	2.620
Escapism	-0.130	-0.207*	-2.329
Multiple R	0.277		
R Square	0.077		
F test statistics. significance	0.015		

Notes: Dependent variable is loyalty:
*p < 0.05, **p< 0.01, ***p< 0.001
(Source: authors calculations)

The conducted regression analysis of loyalty indicates that entertainment and escapism are significant influencers of loyalty, on a significant level of 0.01 and 0.05, respectively. In this regression model controversial results are obtained regarding the escapism dimension which has significant but negative impact on loyalty. Contrary to arousal and memory, education and esthetic are not significant predictors of loyalty.

5. DISCUSSIONS

Employing experience economy model is of utmost importance in the context of highly competitive wine market and offers sustainable competitive advantages. Therefore, wine brand managers should strive to develop relevant and memorable experiences to elicit and capture visitors' attention, increasing the level of interest for wineries among visitors (Mitchell et al., 2000).

In this paper experience economy dimensions are analyzed as predictors of tourists' arousal, memory, and loyalty. Wine tourists are faced with immersion experience during their visit in wineries. Certain experience economy factors may have greater influence on visitor engagement. The finding reveals complex influence and interrelations among esthetics, education, entertainment, and escapism experience on visitor perception. The results demonstrate that different experiential dimensions influence the visitors' overall arousal, memory, and loyalty in different contexts. For instance, while the dimension of education and esthetic has a significant effect on the visitors' arousal and memory, loyalty is significantly associated with entertainment. Escapism was the only dimension with a negative impact on loyalty. Therefore, education and esthetics are experience aspects which should be incorporated in winery touristic offers to increase customers' arousal and to stimulate their long-term memory. On the other hand, tourists will intent to revisit the winery and recommend the winery to their close ones because of experienced entertainment aspect of the visit.

Consumers are becoming more aware about their preferences and wineries should increase attention to extend the offerings by adding memorable experience. Employing the experience economy approach to the management of the wineries can provide a new impetus to the development of new activities to the visitors. The transition to the experience economy requires the formation of a more holistic product experience. Significant change in the current offers needs to be established to improve the experience, affecting the emotions of the wine visitor. Consumers need and demand new aspects of individual wine visit, willing to pay a high price for memorable experiences (Udviklingsråd, 2005). The delivery of experiences and unique added value for winery visitors will be of increasing importance in the future (Cambourne et al., 2000). Management at wine industries should strive to obtain memorable experiences by creating authentic, multi-sensory and engaging offers eliciting the visitors' attention. Visitors satisfaction derived from multiple experiences will generate positive brand associations and greater loyalty. Developing an educational activity for visitors, creating the attractive design and appealing atmosphere of wineries, providing the entertainment and escapist experience offers new opportunities for enhancing visitor experiences and should be an investment priority for Macedonian wineries.

This study has several limitations that the authors would like to address. First, a non-probability sample is applied which limits the generalization of the results. Also, the cross-country analysis could be performed. The sample investigated in the study involved only visitors form three wineries. To validate the findings in this study, future research should be directed toward larger, more diverse samples. Second, a simultaneous model testing should be conducted in future, comprising the relationships among the latent variables, i.e. the four experience economy dimensions (education. entertainment. escapism and esthetic), arousal, memory and loyalty. Consequently, structural equation modelling should be applied in future studies. Also, some other variables could be involved in the research model.

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INCENTIVES FOR SOCIAL MEDIA USERS' ENGAGEMENT TO DIFFERENT BRAND-RELATED CONTENT TYPES

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ABSTRACT
The purpose of this study is to analyze social media users' incentives for engagement with brand-related content on social media. Based on the uses and gratification theory, two types of incentives are analyzed as motivators of users' brand engagement, i.e. communal and self-interest incentives. Users' brand engagement is conceptualized and measured as intentions to contribute to brand-related content on social media in terms of intentions for commenting, sharing, and liking. Further, it is assumed that the effects of the two types of incentives (communal and self-interest) vary depending on the brand-related content type (commercial messages, personal opinions and lifestyle affairs). An online survey was conducted for obtaining quantitative data which were analyzed by applying structural equation modeling. The total number of effective responses is 415. The results indicate that only communal incentives motivate users to contribute to brand-related commercial messages, personal opinions and lifestyle affairs. The obtained results could be utilized by brand marketers in effectively designing brand-related content on social media.

Keywords: brand, communal incentives, self-interest incentives, engagement, contribution, content type

JEL classification: M31

1. INTRODUCTION

With the rise and proliferation of social media, customers are able to communicate more proactively, they are no longer "passive" consumers of marketing content, instead, they are involved in co-creation and multiplication of brand messages on social media (Jahn and Kunz, 2012). Businesses have realized they can use social media to create, strengthen, and enhance the relationships with customers, to create brands and increase brand's customer engagement (Tsimonis, and Dimitriadis, 2014).

Customer brand engagement on social media is a relatively new marketing phenomenon and its conceptualization and measurement have not been explored in depth so far (Schivinski et al., 2016; Barger et al., 2016). It is defined as "customers' behavioral manifestation toward a brand or firm, beyond purchase, resulting from motivational drivers" (Van Doorn et al., 2010, p. 254).

The brand-related users' activities differ in terms of level of engagement (de Vries et al., 2017), starting from consuming (reading posts, watching photos/videos) through contributing (commenting, sharing, liking) to creating brand-related content (creating postings, photos, and videos) (Muntinga et al., 2011). Consuming or lurking is the most frequent type of engagement

where consumers have only passive role, while contributing and creating refer to moderate and high level of engaging brand-related activities (de Vries et al., 2017).

Based on the uses and gratifications theory (Katz, 1959), users' motivations are analyzed as incentives to interact with brands on social media. The uses and gratifications approach to communication research examines how and why people use media (Katz, 1959) and explains the psychological incentives that motivate people to choose a specific media (Cheung et al., 2011). Therefore, this theory can be used as a foundation in explaining why people use social media (Raacke and Bonds-Raacke, 2008; Shao, 2009) and consequently why engage in brand-related content on social media. The widely recognized McQuail's (1983) four-category classification of motivations for general media use has been used for explaining Internet and social media use (Malthouse and Calder, 2010; Muntinga et al., 2011; Quan-Haase and Young, 2010). The proposed categories of motivations by McQuail (1983) are entertainment, integration and social interaction, personal identity and information. In addition to these, Muntinga et al. (2011) proposed remuneration and empowerment as information motivations specific to social media context, while Azar et al. (2016) proposed social influence, search for information, entertainment, trust and reward as motivations to interact on Facebook.

De Vries et al. (2017) suggested that brand-related activities on social media usually are affected by motivations ranging from fully intrinsic to fully extrinsic, i.e. entertainment and remuneration at the extremes and in between are self-expression, socializing, and obtaining information/knowledge. They indicated that self-expression and socializing as incentives have primary role in users' participation in moderately and highly engaging activities.

By applying the concepts of uses and gratifications theory and based on the studies of Fu et al. (2017) and de Vries et al. (2017), two types of incentives are analyzed in this research, i.e. communal and self-interest incentives and their influence on the social media users' intentions for brand engagement. Having in mind the interactive and co-creative nature of social media, this paper focuses on contributing activities as a moderate level of engagement, based on the prior work of Muntinga et al. (2011) and Schivinski et al. (2016). Further, considering that participation of users on social media is influenced by content strategy (Thongmak, 2015), different content types are analyzed in this study. Namely, three content types are applied (commercial messages, personal opinions and lifestyle affairs) based on the work of Fu et al. (2017), at the same time extending their work by analyzing not only sharing intentions but also intentions to like and comment brand-related content on social media.

Consequently, the objective of this study is to explore the influence of two types of incentives as antecedents of intentions to contribute to brand-related content depending on the content type. This work offers multiple contributions in the field of brand-related engagement of social media users. First, it examines moderate level of users' brand-related engagement on social media, i.e. contributing rather than focusing on consuming brand-related content on social media, thus extending the limited research findings related to contributing topics in social media marketing literature (de Vries et al., 2017). Secondly, this study analyses the simultaneous influence of two types of incentives (communal and self-interest) as drivers of intentions to contribute brand-related content on social media. The previous studies analyzed motivations of more general and passive activities on social media and only a few studies have analyzed the influence of incentives on user brand engagement on social media (de Vries et al., 2017). Thirdly, this study posits that the type of brand-related content (commercial messages, lifestyle affairs or personal opinions) determines the relationship between the incentives and intentions to brand-related contributing activities of social media users.

The remainder of the paper is organized as following: first, literature review and development of hypotheses is presented; followed by methodology and data analysis and results. At the end, conclusions and implications are discussed.

2. LITERATURE REVIEW

Generally, content type has been suggested as an important aspect of the strategy in the previous marketing literature (Chauhan and Pillai, 2013). Vargo (2016) empirically proved that content type of brand-related posts has a significant effect on number of retweets and likes, while de Vries et al. (2012) suggested that the content of brand post is one of the factors driving brand post popularity. Moreover, the research studies of Cvijikj and Michahelles (2013), Karpinska-Krakowiak and Modlinski (2020), Moran et al. (2019), Luarn et al. (2015) indicated that content type of brand posts is a significant factor for all measures of engagement (liking, commenting and sharing) on social media, applying diverse classifications of content type. Similarly, Fu et al. (2017) stated that share intentions of social media users are subject to content type. As posting brand-extended content (commercial messages) by the company leads to increase of the number of consumers and posting "unprofessional" content (noncommercial messages) leads to development of relational bonding (Kaplan and Haenlein, 2010), it can be assumed that users' contribution to different brand content (commercial messages and noncommercial such as personal opinions and lifestyle affairs) will increase as a result of social and personal incentives.

Communal (socializing) incentives: People use different social media for different reasons, among them for sharing problems, for social knowledge and sociability (Phua et al., 2017). Park et al. (2009) claimed that people use social media to gratify their socializing needs. Social media are also used for self-promoting (broadcasting) or maintaining relationships (communicating) (Underwood et al. (2011)), for social interaction, and for exchanging information to feel more connected to others (Chen, 2011; Sheldon et al., 2011) and to fulfill the need for community commitment (Walsh et al., 2004). Building and maintaining social connections is one of the motives for using social media like Facebook (Joinson, 2008; Quan-Haase and Young, 2010). In participation in moderately engaging activities (i.e. collaborating with others to contribute to content) people are highly motivated by the desires for socializing (de Vries et al., 2017).

Tsai and Men (2013) claimed that parasocial interaction and community identification play a significant role in encouraging customer engagement on social media. Socializing with others lead people to engage in brand-related contributing activities on social media i.e. to collaborate with other users in the brand-related content generation process (contributing) (de Vries et al., 2017) Chi (2011) found that the need for bonding social capital created by online social interactions and networking has significant influence on participation intention in Facebook advertising activities. According to Fu et al. (2017) communal incentive drives social media users' content sharing intention and the effects depend on the content type.

Based on the above mentioned the following hypotheses are defined:

H1. Communal incentives positively influence intentions to contribute to brand-related commercial messages on social media

H2: Communal incentives positively influence intentions to contribute to brand-related personal opinions on social media

H3: Communal incentives positively influence intentions to contribute to brand-related lifestyle affairs on social media

Self-interest (personal) incentives: Self-motives are initial drivers of word of mouth activities through which one strives to boost her/his self-image and to protect the ego (Alexandrov et al., 2013). These incentives refer to users' intrinsic utility (Toubia & Stephen, 2013) which leads to "doing an activity for its inherent satisfactions rather than for some separable consequence" (Ryan and Deci 2000, p. 56). On social media, users not only socialize with others (Ellison et al., 2007), but also manage their identities and their self-presentation (Zhao et al., 2008; Ong et al., 2011) by liking, commenting and sharing activities (Lee et al., 2014). Users engage in

such activities on social media in order to express and present themselves (de Vries et al., 2017), communicating one's personality and personal identity (Aaker, 1999). In the study of Muntinga et al. (2011), the personal identity aspects are covered by three sub-motivations (self-presentation, self-expression and self-assurance) related to contributing to brand-related content.

Based on the assumption that humans are self-interested, Shao (2009) analyzed self-expression and self-actualization as drivers of activities on user-generated media. Self-expression is related to brand-related activities on social media (Ryan and Deci, 2000; de Vries et al., 2017) where users are likely to participate in order to seek and maintain their personal status (Park et al., 2009). The motive for self-actualization also induce certain engagement as support of ones' own identity and personality (Trepte, 2005). Additionally, self-promotion is one of the reasons for consumers' contribution to content on social media (Berthon et al., 2008). Self-interest incentives lead to higher intention to engage in brand-related activities on social media (Buffardi and Campbell, 2008; Tennie et al., 2010), such as sharing a content about product information or some promotional opportunities (Fu et al., 2017).

Based on the previously explained, the following hypotheses are proposed:

H4: Self-interest incentives positively influence intentions to contribute to brand-related commercial messages on social media

H5: Self-interest incentives positively influence intentions to contribute to brand-related personal opinions on social media

H6: Self-interest incentives positively influence intentions to contribute to brand-related lifestyle affairs on social media

3. METHODOLOGY

Measures

All the variables applied in the research model were operationalized and measured based on the relevant literature in this area. Namely, social incentives (connection, altruism, and group joy) and self-interest incentives (achievement, self-expression, and loneliness) were adapted from Fu et al. (2017), while customers' intention to contribute to brand-related content were developed based on the study of Muntinga et al. (2011), Schivinski et al. (2016) and Fu et al. (2017). In this study, contributing intentions are measured in terms of intentions for liking, commenting and sharing on social media and refer to three different brand-related content types, i.e. commercial messages (promotion announcements and new product information), personal opinions (pleasant shopping experience and critical arguments) and lifestyle affairs (practical wisdom and inspiring articles). In these two sections, a Likert scale was applied where incentives were measured on a scale from 1 (strongly disagree) to 7 (strongly agree), while contributing intentions by content types were measured on a scale from 1 (strongly disagree) to 5 (strongly agree). Additionally, the questionnaire comprised sections of demographic data (age, gender, level of studies, and household income level) and psychographic data (social media usually used and usage intensity).

All the measurement items/questions were initially adapted from English and further translated to Macedonian, followed by a backward translation. The wording of the items was further improved by the feedback generated from questionnaire pre-testing on a sample of nine respondents. In Table 1 are presented the measurement items and their factor loadings.

Sampling

Data collection based on the final research instrument was conducted through online surveys, applying the snowballing sampling technique for reaching the target respondents, i.e. university students. A total number of 422 responses were generated and after the data cleaning, 415 effective responses were retained and further analyzed.

The majority of the respondents are women (66.5%) with an average age of 22.9 years. Most of them are at first cycle of studies (81.4%) and their household monthly incomes mostly range from 25.001 to 40.000 den. (33.0%). Regarding social media, most of them usually use Instagram (74.2%), followed by Facebook (17.9%), mostly spending daily up to 30 min. (27.5%), followed by "up to one hour" (23.4%) and "up to two hours" (20.0%) and more (29.1%).

4. DATA ANALYSIS AND RESULTS

The developed research model (see Figure 1) was analyzed first by performing confirmation factor analysis (CFA) for assessing the measurement model and further by conducting structural equation modeling (SEM) for evaluating the structural model. All the analysis were conducted by applying AMOS 20.0. Below are presented the results.

Figure 1. Conceptual model
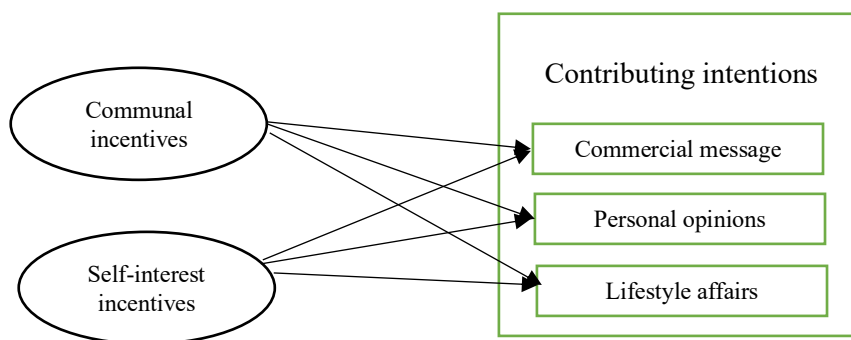
Measurement model analysis

The results obtained by performing CFA suggested that the measurement model was adequate, i.e. all the fit indices are above the required thresholds (Hair et al., 2010) (CMIN/df = 2.059; GFI = 0.9; AGFI = 0.876; CFI = 0.958; NFI = 0.922; RMSEA = 0.051). Further, the construct validity was evaluated in terms of convergent and discriminant validity.

Composite reliability (CR) and average variance extracted (AVE) of the latent variables are presented in Table 2, indicating adequate level of convergent validity. Namely, all the CR and AVE values are above the recommended minimum (0.7 and 0.5, respectively) (Hair et al., 2010). Additionally, the factor loadings of the measurement items are above 0.7 and all of them are statistically significant (see Table 1).

Table 1. Measurement model assessment

Construct name and measurement items	λ
Communal incentives (CI) (α=0.826)	
I interact with brands on social network sites in order to share helpful information	0.621
I interact with brands on social network sites to have group fun with friends	0.900
I interact with brands on social network sites in order to keep in touch with friends	0.851
Self-interest incentives (SSI) (α=0.828)	
I interact with brands on social network sites to gain sense of achievement	0.786
I interact with brands on social network sites to express self	0.810
I interact with brands on social network sites to seek for companionship	0.757
Intentions to contribute to commercial messages (CM) (α=0.914)	

I intent to put comments on posts/photos/videos related to new product information	0.842
I intent to share posts/photos/videos related to new product information	0.778
I intent to put comments on posts/photos/videos related to promotion activities	0.767
I intent to share posts/photos/videos related to promotion activities	0.742
I intent to put comments on posts/photos/videos related to industrial news	0.821
I intent to share posts/photos/videos related to industrial news	0.710
I intent to put comments on posts/photos/videos related to CSR events	0.744

Intentions to contribute to personal opinions (PO) (α=0.930)

I intent to put comments on posts/photos/videos related to other people's experiences about service quality store	0.839
I intent to share posts/photos/videos related to other people's experiences about the service quality store	0.746
I intent to like posts/photos/videos related to other people's experiences about the service quality store	0.676
I intent to put comments on posts/photos/videos related to other people's experiences about product quality	0.825
I intent to share posts/photos/videos related to other people's experiences of buying low quality product	0.799
I intent to put comments on posts/photos/videos related to pleasant shopping experiences	0.760
I intent to share posts/photos/videos related to pleasant shopping experiences	0.714
I intent to put comments on posts/photos/videos related to critical arguments (news or articles with critical opinions)	0.821
I intent to share posts/photos/videos related to critical arguments (news or articles with critical opinions)	0.726

Intentions to contribute to lifestyle affairs (LA) (α=0.891)

I intent to put comments on inspiring articles	0.860
I intent to share inspiring articles	0.720
I intent to put comments on popular music and movies	0.863
I intent to put comments on posts related to practical wisdoms	0.840

The discriminant validity was assessed by comparing the square roots of AVEs (presented in the diagonal cells) to the correlation coefficients of each pair of latent variables, as well to the maximum shared variance values (MSV). All the AVE values are higher than the comparing values, indicating adequate discriminant validity of the latent variables (Fornell and Larcker, 1981).

Table 2. Convergent and discriminant validity

Construct name	CR	AVE	MSV	PO	CI	SII	CM	LA
Personal Opinions (PO)	0.928	0.592	0.446	*0.769*				
Community Incentives (CI)	0.839	0.640	0.475	0.311	*0.800*			
Self-interest Incentives (SII)	0.828	0.616	0.475	0.362	0.689	*0.785*		
Commercial Messages (CM)	0.912	0.598	0.523	0.591	0.384	0.520	*0.773*	
Lifestyle Affairs (LA)	0.893	0.677	0.523	0.668	0.301	0.363	0.723	*0.823*

Structural model analysis

The maximum likelihood method of structural equation modeling was applied for assessing the structural model which was developed based on the validated measurement model. The goodness of fit indices indicate that the structural model is also adequate (CMIN/df = 2.005; GFI = 0.905; AGFI = 0.88; CFI = 0.961; NFI = 0.925; RMSEA = 0.049).

Regarding the hypotheses testing, the results indicate the first set (H1, H2, and H3) which refers to the relationship of communal incentives and customers' intentions to contribute to different content types on social media (commercial messages, personal opinions, lifestyle affairs, respectively) is statistically significant. Regarding the regression coefficients values, the results indicate that the relationship between communal incentives and intentions to contribute to lifestyle affairs content (0.824) is the strongest; followed by commercial messages (0.778) and personal opinion content (0.699). The second set of hypotheses (H4, H5, and H6) which refers to the impact of self-interest incentives on customers' intentions to contribute to commercial messages, to personal opinions, and to lifestyle affairs has not proved to be statistically significant (see Table 3).

Table 3. Structural model estimation

Hypothesised relationships	Standardized Estimate	p-values
H1: CI -> CM	0.778	0.003
H2: CI -> PO	0.699	0.008
H3: CI -> LA	0.824	0.016
H4: SSI -> CM	0.039	0.933
H5: SSI -> PO	0.036	0.933
H6: SSI -> LA	0.047	0.933

Regarding the coefficients of determination (R^2), 76.8 percent of the variations in the intentions to contribute to lifestyle affairs are explained by the independent variables in the model; while the model accounts for 67.9 percent and 55.1 percent of the variations in the contributing intentions to personal opinions and commercial messages, respectively.

4. CONCLUSIONS AND IMPLICATIONS

To better understand what elicits the intentions to contribute to brand-related content on social media, this study explores the complementary impact of self-interest incentives and communal incentives on intentions to contribute to three types of brand-related content (commercial messages, personal opinions and lifestyle affairs) on social media.

The findings of this study add significantly to the growing literature based on users and gratification theory about drivers of social media users' intentions to engage in different types of brand-related content. Given the limited research on contributing intentions (like, comment, share) to different types of brand-related content on social media, the present analysis contributes to a greater understanding of what stimulates social media users to contribute to brand-related activities. Additionally, this research study contributes to the growing body of research that focuses on the brand-related content type on social media (Karpinska-Krakowiak and Modlinski, 2018, Vargo, 2016, Moran et al., 2019) by analyzing the content from different perspectives, to be precise, by analyzing lifestyle, commercial messages and personal opinions, following the perspective used by Fu et al. (2017).

The results of this study enriches the previous literature by highlighting the significant influence of communal incentives on intentions to contribute to brand-related content on social

media. The findings generally suggest social incentives to be positive predictors of intentions to contribute to three different types of brand-related content on social media. This is in line with the findings of Chi (2011), Tsai and Men (2013), de Vries et al. (2017), and Fu et al. (2017) that relationship-oriented factors have a significant role in encouraging consumer engagement on social media. Therefore, companies should provide relevant information, interesting enough and at the same time appropriate for sharing, having fun and keeping in touch with friends i.e. for satisfying need for social interaction, which in turn will result in users' contribution to brand-related content on social media. Unexpectedly, the analyses show that self-interest incentives do not drive people to contribute to brand-related content no matter of the type of content. This is opposite to the findings of Schau and Gilly (2003) that customers intentionally choose the brands they will discuss in online communications in order to create positive self-images. Our findings can be explained in a certain way by the findings about consumer offline brand engagement that self-expression positively and significantly influences cognitive processing and affection but not the activation as dimensions of customer brand engagement (Leckie et al.2016). Therefore, the companies should avoid providing content suitable for self-promotion of the users, and provide content appropriate for satisfying users' communal need. The research results show that self-interest is a disincentive for contributing to brand-related content on social media. This can be explained with the findings of de Vries et al. (2017) who showed that self-expression of social media users is more related to creating activities comparing to contributing activities on social media. Consequently, it can be concluded that social media users driven by self-interest will be more likely engaged in creating postings, photos, and videos about the brand (creating) instead in commenting, sharing, liking brand-related content on social media (contributing) thus explaining the rejection of hypotheses H4, H5, and H6.

The present study has highlighted the central role that a communal incentives play in social media users' contributing activities to brand-related content. These findings are in line with the previous studies which analyze this relationship (de Vries et al., 2017; Fu et al., 2017; Vargo, 2016).

Additionally, the results of this study fills the research gap, by including the observation of different types of brand-related content the social media users contribute to, as very important issue in social media users' brand-related behavior. Namely, the results indicate that the relationship is the strongest between the communal incentives and intentions to contribute to brand-posts related to lifestyle. This is in line with the previous conclusion that the companies should provide content for satisfying social need such as content related to the lifestyle (inspiring articles, popular music and movies and practical wisdom) as the suitable content for having fun and staying connected with friends. The relationship between communal incentives and intentions to contribute to brand posts related to personal opinions about the brand is the weakest comparing to other two relationships, but is still strong and significant.

All these are consistent with the findings of Vargo (2016), who empirically proved that brand messages that mentioned popular culture events and current holidays or seasons (which refer to lifestyle affairs) strongly and positively influenced engagement on Twitter giving support to our findings regarding H1. This is also in line with the findings of Fu et al. (2017) who empirically proved that communal incentive drives users' intentions to share lifestyle affairs. The support of H2 is in line with the findings of Walsh et al. (2004) that a sense of community commitment defined by social interactions influence the likelihood of passing along content on social media to others. Additionally, promotional aspects of brand messages related to sweepstakes, content or giveaway (in this study commercial messages) have positively predicted engagement on social media (Vargo, 2016). The findings of this research study regarding the positive but weakest relationship between communal incentive and intentions to

contribute to personal opinions related to brand (H3), are in line with findings of Vargo (2016) that this kind of relationship is significant but relatively weak.

Accordingly, businesses should pay attention and get deeper insights into what motivate people to contribute to brand-related content on social media and create a content that inspires "likes, comments, shares" on social media in order to appeal to them through their preferred content types. Based on this research study, when designing the brand-related content on social media, businesses should appeal to the social media users who are driven by their social motives though brand posts related to lifestyle affairs, commercial messages and at last personal opinions. In other words, posting content about lifestyle (inspiring articles, popular music and movies and practical wisdom) and commercial content (new product information, industrial news and promotional activities) related to the company/brand on official social media pages of the companies will result users' communal incentives to lead to higher intentions for contributing to brand-related content on social media. At the same time, companies should be aware that social media users are willing to like, put comments and share content generated by the users themselves driven by their need to have relationships with others (social need). Consequently, companies should be focused on providing the best product/service that will overjoy the users resulting in users' positive personal opinions about the product/service that will be posted on social media and afterwards liked, shared and commented by other social media users, accordingly spreading positive word of mouth about the company/product.

This research study has several research limitations among which two research limitations are perhaps the most noteworthy. The first issue relates to the non-probability sampling used in this study. Therefore, the results of this study may not be easily generalizable. Secondly, this study relies on a sample from one country, which again limits the generalization of the results. Thirdly, in a lack of actual behaviour data, this study analyses users' intentions as a proxy for brand engagement on social media and therefore some gaps are expected. Nevertheless, the limitations of the study present opportunity for future research. In future, data mining techniques should be applied in order to analyze the actual social media users' engagement. Further, additional incentives for brand-related engagement activities could be simultaneously analyzed with the communal and self-interest incentives in order to better understand what prompts the social media users to contribute to brand-related content on social media. Furthermore, future studies should explore contributing together with creating brand-related activities with focus on different types of brand-related content. The moderating role of the social capital in the relationship between the incentives and intentions to contributing and creating different types of brand-related content on social media can be explored as well. In addition, the authors recognize that findings may differ across different social media given the differences in their characteristics. Thus, user's engagement to different brand-related content type on specific social media can be analyzed too.

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MARKETING METRICS: KNOWLEDGE AND IMPLEMENTATION BY MANAGERS IN MONTENEGRO

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ABSTRACT
Modern business conditions impose the need for more precise measurement of companies' marketing performance. Quantitative knowledge, which are *necessary for decision makers are partially obtained based on the results of marketing metrics which greatly facilitate the decision-making process. Thus, the subject of the research in this paper is the degree of knowledge and application of marketing metrics in Montenegrin companies, but also the importance that managers give to them when making business decisions. The research was conducted on a sample of 65 companies which operate in Montenegro, and it included a set of financial and non-financial marketing metrics. The results show that managers in Montenegro are pretty familiar with marketing metrics and consider them important for business decision making. However, the level of their implementation is not at a satisfactory one due to the lack of specific knowledge required for their adequate application.*

Keywords: *Financial metrics, Non-financial metrics, Marketing, Montenegro.*

JEL classification: *M31*

1. INTRODUCTION

The modern way of doing business imposes the need for continuous marketing research in order to achieve the best possible position of the company at the market. In order to create an adequate marketing strategy for entering the market, marketing managers must be up to date and possess the knowledge and skills that will enable them to be competitive, and thus have a greater market share of the company. With a quality marketing strategy, managers are given the chance to have a clearer picture of the market situation, which will greatly help them in making business decisions, all in order to improve business and meet customer needs. In other words, creating and implementing a good marketing strategy will improve marketing efficiency and lead to the desired results (Faridyahyaie *et al.*, 2012).

In order to achieve this, marketing managers need quantitative knowledge and more detailed analysis so that they can enter the market as safely as possible, while reducing the risk of performing on it. Quantitative knowledge, which is necessary for decision makers is partially obtained based on the results of marketing metrics which greatly facilitate the decision-making process. Marketing metrics are the core of the concept of measuring marketing performance and are a set of indicators that measure the results of marketing activities (Kurtović *et al.*, 2010). Depending on the company's goal, the types of marketing metrics also vary. There are financial metrics, metrics related to the product, price, promotion, place, consumers, as well as market

metrics (Farris *et al.*, 2014). By developing the marketing metrics, it is possible to monitor the efficiency and effectiveness of a company's marketing decisions.

However, marketing metrics are not widely applied in a significant number of countries yet. The reason for this is the fact that developed metrics for monitoring marketing performance in most cases are very complex statistical and mathematical models, incomprehensible to marketing managers and more difficult to be implemented in practice, and there are no developed information systems for support marketing metrics (Kurtović *et al.*, 2010). Investing in marketing should be seen as a kind of investment (Seggie *et al.*, 2007), which is expected to return, so it is not surprising that over time, in addition to the classic marketing metrics which are predominantly related to the marketing mix, financial marketing metrics have also developed. In other words, in a period when most companies are reducing their costs, it is essential to be financially responsible, which entails the need to measure, because without measurement there is no financial responsibility (Seggie *et al.*, 2007).

When implementing marketing metrics, the activity within which the company operates should be taken into account. The reason for this is the fact that not all metrics are adequate and adapted for all business branches, so they should be carefully selected and consistently applied in order to achieve the desired results.

Having in mind the role and importance of marketing metrics for modern business, this paper presents the implementation of the selected metrics at the Montenegrin market. In other words, the results of the research conducted on the Montenegrin market on the knowledge, application and importance of marketing metrics for business decision making will be presented in the paper. For the purposes of this research, it was analyzed how much managers in Montenegro know and apply financial and non-financial metrics as the two most important groups of metrics.

2. LITERATURE REVIEW

The introduction of metrics for marketing management, in fact for management of a company, is considered a top priority for marketing professionals today (Kurtović *et al.*, 2010, Seggie *et al.*, 2007). The above mentioned derives from the fact that a company's ability to use marketing metrics as indicators of the effectiveness of implemented activities is directly related to the company's overall performance (Zahay and Griffin, 2010). Research shows that those companies that implement marketing metrics achieve up to 21% higher returns on assets than those companies that do not use them, which is especially important for the markets where competition is expressed more (Pauwels, 2015). At the same time, the improvement of the company's business results directly depends on the frequency of their application (O'Sullivan *et al.*, 2008). However, the application of these metrics is particularly underrepresented in SMEs, due to the lack of adequate competencies of managers (Brooks and Simkin, 2011).

Similar results were obtained by Cvetanović (2018) in her research, emphasizing the fact that most employees in the marketing sector in Croatian companies do not have enough knowledge in the field of finance and accounting, which they need to accurately measure the marketing activities. The same author points out that this problem is especially expressed in domestic companies, whereas more attention is paid to eliminating this problem in the branches of foreign companies, in the form of organizing educational workshops for employees in the marketing sector (Cvetanović, 2018). We should bear in mind that there is no *trade off* between financial and non-financial indicators (Kipesha, 2013). However, companies need to pay equal attention to financial and non-financial indicators, even when it comes to institutions operating at the financial market. This is confirmed by the research of the author Kipesha (2013), which showed that the overall business performance of microfinance institutions that had better non-financial indicators compared to financial ones (or vice versa) were not at a high level. However, the results of the research related to the application of marketing metrics in Bosnia and

Herzegovina, Croatia and Serbia have shown that the use of financial-market metrics is more common than the use of metrics of consumer behavior, brand perception and innovation. Bendle *et al.* (2010) obtained similar results in their research (2010). In addition, a very small number of companies analyze the effects of marketing programs on consumers and brand perception on a monthly, quarterly, and even annual basis (Kurtović *et al.*, 2010).

The application of non-financial marketing metrics, especially those related to consumers, is particularly important for predicting the stability of a company's market position, even if it is about companies that place relatively homogeneous products at the market (Parcheta, 2016). One of the most commonly used non-financial marketing metrics is the number of consumers, consumers' satisfaction and the number of comments (Sampaio *et al.*, 2010). A study by Morgan and Reg (2006) showed that the consumers' satisfaction is a good indicator of a company's future revenue and market growth. However, the probability of purchase and consumers' complaints as marketing metrics are much weaker indicators of future business performance of the company, while metrics based on consumers' recommendations have a very small i.e. slight predictive power. In doing so, it should be borne in mind the results of research conducted by Ambler *et al.* (2004) which show that managers' perception of the degree of importance and use of certain marketing metrics largely depends on the sector of the company they manage. Apart from that, the selection of adequate marketing metrics whose results will be the basis for creating a future marketing strategy largely depends on the activities of the company (Milichovsky and Simberova, 2015). In this process, special attention should be placed on the characteristics of the environment in which the company operates, the specifics of the marketing mix (Mintz and Currim, 2013), as well as the product life cycle stages and the existing market position of the observed company (Frösén *et al.*, 2013).

The degree of use of marketing metrics also differs significantly depending on the country in which the observed company operates (Barwise and Farley, 2004). Therefore, a comparative study based on data collected in Spain and the United Kingdom showed that companies operating at the Spanish market are market-oriented and consider financial metrics less important than non-financial ones (Llonch *et al.*, 2002). In addition, company marketing managers in Spain often compare the results of marketing metrics with those achieved in previous years, while in the UK the main indicator of the achieved results is the comparison of the current situation with the defined marketing plan. Similar results were obtained in a comparative analysis of China and the United Kingdom, which showed that managers of Chinese companies believe that non-financial metrics are more important than financial ones, in contrast to managers of companies operating at the UK market (Ambler, 2003).

In order to improve the performance of marketing activities, many companies hire workers in mediation positions between marketing and the financial sector, in order to develop a joint strategy that will contribute to better business performance of the company (Cvetanović, 2018). Taking into account the above mentioned, it is clear that the application of marketing metrics is one of the key prerequisites for maintaining and strengthening the competitiveness of companies, regardless of its size. Hence, the importance of their application is particularly pronounced in developing countries which are usually characterized by relatively strong foreign competition and domestic companies that often do not have a satisfactory competitive position. Therefore, the aim of this paper is to investigate whether decision makers in Montenegro know certain marketing metrics, whether they apply them and how important they are while making business decisions. The research covered small, medium and large enterprises, regardless of the activity to which they belong. The research methodology and the obtained results are presented below.

3. MATERIALS AND METHODS

The previous research in the field revealed the importance of marketing metrics application for making adequate business decisions. A study of O'Sullivan *et al.* (2009) points out that the positive effects of using metrics directly depend on the frequency of their application. Although the modern approach implied the usage of small number of metrics, the modern business conditions impose the application of large number of metrics, in order to track and improve the effectiveness of marketing function (Ambler and Roberts, 2008). The usage of marketing metrics provides more precise directing of business activities, which leads to the improvement of the overall business performance (Zahay and Griffin, 2010). Considering the importance of financial and non-financial metrics, as well as the fact that the significance and predictive power of all metrics are not equal (Ambler *et al.*, 2004), the first research question was formulated:

RQ1: Are company managers familiar with marketing metrics and to what extent?

Financial metrics are traditionally considered the best indicators of business results (O'Sullivan, 2007; Frösén *et al.*, 2008; Bendle *et al.*, 2010). However, the research of Hacioglu and Gök (2013) revealed that the non-financial metrics are also an important tool for measurement of the marketing activities (Gupta and Zeithaml, 2006). The importance of applying marketing metrics for achieving defined business goals is indisputable (Kurtović, 2010). However, it should be borne in mind that their use in making business decisions does not depend solely on how much managers are familiar with the given metrics, but also on their subjective assessment of the importance of using selected metrics for making business decisions and ability to apply them. Based on the above, another research question was defined:

RQ2: Which metrics are most/least applied and what is their significance for business decision making?

In order to collect the data needed to obtain answers to the research questions, a survey was conducted. Empirical research related to the application of marketing metrics at the Montenegrin market was conducted in January 2020. It is based on data collected through an online survey, and it included companies operating in the Montenegrin market. The research referred to small, medium and large enterprises, regardless of the activity to which they belong. In order to collect data, a questionnaire consisting of 10 questions was used. In addition to open-ended and closed-ended questions, the questionnaire also contained questions for measuring attitudes in the form of a 5-point Likert scale. The research included 22 metrics, shown in Table 1, grouped into two categories. The first category consists of consumer metrics, which show how much the company cares about customers as the most important stakeholders, through the analysis of various indicators of their satisfaction and loyalty, in order to improve future business. The second category consists of financial and market metrics, which include the analysis of financial and market performance indicators of companies, observed from the aspect of marketing. It should be noted that, according to Kurtović *et al.* (2010) and Bendle *et al.* (2010) market metrics are also viewed as financial, while consumer metrics were viewed as non-financial.

Table 1: Financial and non-financial marketing metrics covered by the research

Non-financial metrics	Financial metrics
number of consumers/clients	sales volume
consumer/client structure	profitability
consumer/customer satisfaction	ROI (Return on Investment)
consumer/customer complaints	ROMI (Return on marketing investment)
consumer/customer loyalty	ROS (Return on Sales)
consumer/client recommendations	unit and marketing costs
customer retention rate	long-term investment effects
customer churn rate	market share
customer lifetime value	market growth
the expected time value of the potential consumer	availability of services
consumer return	coverage margin

Source: Authors' processing

In order to select marketing metrics, the authors analyzed the results of previous research in this area, and created a survey accordingly. The selection of metrics was adjusted according to the results of research by the author Sampio *et al.* (2011), Kurtović *et al.* (2010) and Farris *et al.* (2014). Selected marketing metrics are grouped into three segments. The questions from the first segment were related to determining the level of knowledge of selected marketing metrics by decision makers in the companies' marketing sectors, measured by the Likert scale with 5 levels, where grade 1 indicates that the respondent is not familiar at all, while grade 5 means that the respondent is very familiar with specified metrics. The second segment of questions referred to the research of the level of application of the mentioned metrics, while the questions from the third segment were focused on determining how important the offered marketing metrics are for decision making in companies at the Montenegrin market. The Likert scale was applied in these segments as well, where grade 1 indicated that the respondent does not use the stated metrics at all, i.e. that they are not important for decision making in the company, while grade 5 meant that the respondent regularly uses given marketing metrics, i.e. that they are very important for making business decisions in the company.

The sample in this research consists of 65 companies operating at the Montenegrin market. It represents small, medium and large enterprises, grouped according to the official EU criteria for classification of enterprises (European Commission, n.d.). Most of them are doing business in the retail industry (19.4%), finance (17.9%) and tourism (16.4%). The companies were selected by the method of random sampling. The given sampling method has been applied due to lack of previous research on this topic in Montenegro, which is why there are no available information that could serve as the basis for use of other sampling procedure. In order to analyze the obtained data, both qualitative and quantitative research methods were applied. Namely, by applying the method of analysis, certain similarities and differences in the levels of knowledge, application and importance of marketing metrics in Montenegrin companies were identified. By applying the inductive approach and the method of synthesis, it is possible to combine the results obtained by the method of analysis and identify the most important specifics of the

application of these metrics depending on the characteristics of the company. In order to interpret the obtained data in more details, the method of content analysis was applied, as the main qualitative method, as well as the method of descriptive statistics, as the main quantitative method, which also enabled graphical and tabular presentation of research results, i.e. their easier interpretation and drawing conclusions. The collected data were processed by using a SPSS software package and the results of the research are presented below.

4. RESULTS AND DISCUSSION

The results of the research show that the application of marketing metrics in companies in Montenegro is recognized as a very important. However, the level of knowledge is not at the appropriate level. Namely, as it is shown in Table 2, the average score of knowledge of marketing metrics is 3.81, while the degree of their application and importance (measured by the average score) is 3.63 and 4.25, respectively.

Table 2: Average ratings of knowledge, application and importance of marketing metrics

	Average grade
Degree of knowledge of marketing metrics	3.81
Degree of application of marketing metrics	3.63
The degree of importance of marketing metrics for business decision making	4.25

Source: Authors' calculation

The results of the research show that decision makers recognize the importance of applying marketing metrics, and consider them very important for making business decisions, but do not have enough knowledge and experience necessary for their adequate application. This provided an answer to the first research question.

With regards to the groups of metrics, decision makers are partially better acquainted with financial metrics, compared to non-financial ones, and accordingly use them more in the decision-making process. Also, the analysis of average grades (given in Table 3) shows that managers considered non-financial metrics relatively important in the decision making process, but a significant number of them do not know enough how to apply them properly. Hence, "usual" metrics are more often used, such as profitability, market share, market growth, number of consumers, etc.

Table 3: Average assessments of knowledge, application and importance of marketing metrics

Marketing metrics	AVERAGE VALUE		
	Degree of knowledge	Degree of application	The importance of metrics for business decision making
Non-financial metrics			
number of consumers/clients	4.23	3.91	4.52
consumer/client structure	4.29	4.00	4.45

consumer/customer satisfaction	4.17	3.97	4.55
consumer/customer complaints	3.91	3.81	4.44
consumer/customer loyalty	4.14	3.92	4.41
consumer/customer expectations	3.97	3.67	4.44
consumer/client recommendations	3.75	3.62	4.31
customer retention rate	3.81	3.56	4.2.
customer churn rate	3.25	3.05	4.00
customer lifetime value	3.16	2.92	3.79
the expected time value of a potential consumer	2.91	2.84	3.70
Consumer return	3.52	3.2	4.11
Financial metrics			
sales volume	4.29	4.12	4.44
profitability	4.26	4.17	4.53
ROI *(Return on Investment)*	3.06	3.61	4.20
ROMI *(Return on marketing investment)*	3.49	3.46	4.14
ROS *(Return on Sales)*	3.43	3.47	4.16
marketing cost	3.88	3.73	4.02
unit and marketing costs	3.38	3.42	3.97
long-term investment effects	3.46	3.56	4.30
market share	4.18	3.8	4.42
market growth	4.06	3.78	4.45
availability of services	4.27	3.92	4.33
margine coverage	3.98	3.62	4.23

Source: Authors' calculation

However, the data from the previous table simultaneously show that the differences in the degree of knowledge, application and importance of these metrics are not significant, and this is confirmed by the overall average scores obtained to assess the level of knowledge, application

and importance for these two groups of metrics. Still, it should be taken into consideration that the degree of application of certain metrics from the observed categories is different.

When it comes to financial metrics, the profitability indicator is mostly used in companies on the Montenegrin market. This is followed by sales volume, service availability and market share, while the ROMI (*Return on Marketing Investment*) coefficient, which indicates a return on marketing investment, is applied the least and it is followed by unit marketing costs and ROS (*Return on Sales*).

What is worrying is that companies use margin coverage less as an indicator, compared to most other financial metrics. This indicator is especially important from the financial aspect, because it is necessary for calculating the business risk of the company. What is interesting when this category is in question, is that more traditional marketing metrics are applied, while specific metrics that require additional knowledge and skills, such as ROI, ROMI, ROS, are applied less. In this way, it is suggested to companies to pay more attention to the training and improvement of the knowledge of their employees so that they can adequately respond to the challenges imposed by the market.

When it comes to non-financial metrics, the satisfaction of consumers/clients is mostly applied in Montenegrin companies. This is followed by the number of consumers/clients, their structure and loyalty. The least used are the expected time value of the consumer and the expected time value of the potential consumer, as well as the rate of lost consumers. The previous analysis shows that the companies at the Montenegrin market use more marketing metrics that are easier to apply, evaluate and monitor, compared to those metrics whose analysis and application require specific knowledge of employees. Therefore, the authors suggest, as in the case of financial metrics, that companies pay more attention to education and training of their employees in order to teach them how to independently apply these metrics, as one of the important prerequisites for achieving the company's ultimate goals.

CONCLUSION

In order to adapt to modern market conditions, companies are forced to continuously apply marketing metrics. Marketing metrics are the basis of the concept of measuring marketing performance and are established on a set of indicators that measure the results of marketing activities. The issue of calculating the specific contribution and income generated as a result of marketing activities has often proved to be a stumbling block and a subject of disagreement between employees of different business functions in the company. In order to improve the credibility of the marketing function, marketing employees must be educated about accounting and financial conditions and processes. It is necessary for them to understand and use their knowledge in an appropriate way, due to the operational and numerical tasks in marketing that need to be performed smoothly. In addition to providing a better understanding between these two business functions, marketing professionals will also be able to more easily address barriers to day-to-day operations and all related processes will function better. However, in many companies, measuring the effects of marketing campaigns is still not significantly developed because measuring and quantifying the contribution of the marketing function is often perceived as an insufficiently clear task.

Starting from the above mentioned, the objective of the research was to determine how much company managers know and apply marketing metrics, and thus how important they are for making business decisions. It should be noted that the research covered small, medium and large enterprises, regardless of the activity in which they are engaged. Accordingly, based on previous research on this topic, research questions have been formulated.

The results of the research showed that company managers are aware of the importance of applying marketing metrics for business decision making. However, apart from that, they do not know enough about the way of their application, which is one of the important problems on the way to improving marketing performance, and thus the overall results of the company. Also, the research showed that companies at the Montenegrin market predominantly apply "usual" metrics, such as profitability, sales volume, availability of services and market share when it comes to financial, i.e. consumer/customer satisfaction, consumer structure, consumer/customer loyalty and their number, when it comes to non-financial metrics. Hence the conclusion is that more attention needs to be paid to training employees in the marketing sector to use more marketing metrics, which is especially important given the fact that the importance of individual metrics varies depending on the company's activities, market specifics, market position and specifics of the company's marketing mix (Ambler *et al.*, 2004; Milichovsky and Simberova, 2015; Mintz and Currim, 2013; Frösén *et al.*, 2013).

Having in mind the above research results, it is concluded that it is necessary to further improve and point out the importance of marketing metrics for the modern way of doing business, in order to increase the competitiveness of companies at the Montenegrin market. This is especially important when it comes to non-financial metrics that are used less frequently in companies in Montenegro than the financial ones, and their analysis is often the key to better understanding the success or failure of marketing activities, which provides clear guidelines for further analysis and improvement of the marketing effectiveness.

IMPLICATIONS AND LIMITATIONS OF THE RESEARCH

Since there has been no previous research on this topic in Montenegro, the paper can serve as a basis for directing future research in this area, which is the main theoretical contribution of the paper. It provides an insight into which types of metrics are better known and applied. Also, it reveals whether marketing managers in Montenegro are more inclined to apply traditional financial and non-financial metrics, or they also implement modern metrics whose implementation often requires more advanced knowledge and skills, not only in the field of marketing, but also in the area of finance and accounting. Considering the different level of significance of individual metrics, the results show which metrics are important for more accurate measurement of company's performance and better direction of business decisions that Montenegrin managers do not know enough and / or do not use them, which is the main practical implication of the research.

Although this is the first research on this topic in Montenegro, the fact that it is conducted only in one country is its main limitation. Also it does not investigate the importance and the level of application of marketing metrics depending on the type of business activity or company's size, which can serve as a motive for future research. Additionally, further research should include the ownership structure as a variable, in order to investigate whether Montenegrin managers lack knowledge on this topic compared to their colleagues from companies with dominant share of foreign capital structure.

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