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Sustainable Finance, Insurance and Reporting: Principles, Practices and Challenges

The publication is the result of research within the project "Sustainable Finance and Insurance: EU Principles, Practices and Challenges", supported by the Erasmus+ Programme of the European Union, Reference Number: 611831-EPP-1-2019-1 RS-EPPJMO-MODULE

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All **tables** should be numbered with consecutive Arabic numbers. They should have descriptive captions at the top of each table and should be mentioned in the text.
References should follow the **APA Style** convention, in alphabetical order at the end of the manuscript. The list of references should be formatted so that the second row in each entry is indented (Paragraph Indentation, Special - choose Hanging, by 0.5cm). Wherever possible, the DOI number should be provided, too, in addition to other reference data.
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EDITORIAL

Sustainable finance, insurance and reporting aim to consider various environmental, social and governance issues that can impact both the sustainable growth of the company and sustainable development of the global financial system and the overall economy. Sustainability is no longer just an issue managed by the social responsibility departments of individual companies; it became a part of the core business of entire industries. Due to its strong influence, sustainable finance is assumed to play a central role in introducing sustainability standards across the board. At the same time, investors increasingly require a broader range of information that go beyond the framework of traditional financial reporting in order to link companies' strategy, governance, environmental and social performances to their long-term competitive advantage and value creation. Financial institutions, in particular insurance companies, have recognised the importance of sustainability and endeavour to integrate ESG standards into their strategy, operations and risk management.

This special issue of the journal *Facta Universitates, Series: Economics and Organization* offers a selection of papers presented at the SUFIN conference held at the University of Niš, May 24, 2021, organized within the Jean Monnet module *Sustainable Finance and Insurance: EU Principles, Practices and Challenges* (SUFIN), the Erasmus+ Programme of the European Union coordinated by the University of Niš (Project reference: 611831-EPP-1-2019-1-RS-EPPJMO-MODULE). The conference brought together academics from seven countries and eleven universities to discuss recent research on a broad array of topics on sustainable finance, insurance and reporting. From the papers submitted to the special issue of the conference, three guest editors in cooperation with Editor-in-Chief of the journal and a large panel of reviewers, selected 7 papers for publication.

The first contribution to this issue, titled "Insurance development and life quality in the European Union countries. An empirical assessment", written by *Mirela Cristea, Graţiela Georgiana Noja, Doina Drăgoi* and *Leontina Codruţa Andriţoiu*, addresses the relationship between the insurance sector degree of development and the quality of life. The authors indicate that significant differences between EU-27 Member States require specific strategies and policies in order to enhance the wellbeing by insurance services and coverage.

The next two papers dedicate specific attention to the implementation of the concept of sustainability in banking system. The sustainable banking has conditioned the transformation of banks in the direction of their greater corporate eco-efficiency and the development of banking products and services that contribute to sustainable development. Recognizing the impact of environmental risks on banks' operations, the authors of the paper entitled "Sustainable finance and banking: A challenge for regulators and risk management system", *Mirjana Jemović* and *Jelena Radojičić*, elaborate the main issues concerning banks' exposure to environmental risk. Consequently, as showed in the paper entitled "Banks' corporate social responsibility (CSR) disclosure and their role in the betterment of society in the Republic of North Macedonia", written by *Marina Trpeska, Todor Tocev, Ivan Dionisijev* and *Bojan Malchev*, larger banks are prone to be responsible toward environment and society and report on their activity.

In the article "Value-based management, long term sustainability and corporate social responsibility ", the author *Dejan Malinić* examines the compatibility of value-based management (VBM) with the requirements of other stakeholders and concludes that a broader concept of VBM further enhances the interest-based logic behind the corporations' functioning, but at the same time enables the integration of the requirements related to sustainability and corporate social responsibility.

The authors of the paper "Moving from non-financial to sustainability reporting: Analyzing the EU Commission's proposal for a Corporate Sustainability Reporting Directive (CSRD)", *Josef Baumüller* and *Stefan O. Grbenic*, have recognized reporting requirements as a core element of the EU Commission's ambitions to transform the European economy towards more sustainability. Their analysis of the new Directive proposal emphasizes that many of the new proposed requirements are excessive and raise fundamental questions concerning acceptable levels of administrative burden for companies as well as necessary conceptual fundaments for a reporting framework.

The final two contributions discuss insufficiently explored issues that characterized current business operations. The authors of the paper titled "Intangible assets impact on sustainable growth rate of enterprises in the Republic of Serbia", *Amer Rastić, Tatjana Stevanović* and *Ljilja Antić*, reveal that intangible assets of the best performing companies in the Republic of Serbia positively influence the sustainable growth rate providing a reference point for future entrepreneurs on the way to intensive involvement of intangible assets in companies. Considering digitalization and up-to-date global trends, the paper under the title "The pandemic waves' impact on Romanian e-market: a non-linear regression model", co-authored by *Costin Radu Boldea* and *Bogdan Ion Boldea*, reveals the dynamic of the e-market, as the main channel of sales during the SARS-COV2 crisis across Europe, and propose a model for the prediction of the overall behaviour of online buyers.

We would like to thank, first of all, the authors of the articles published in this Issue of the Journal. At the same time, we feel grateful to all the referees for their valuable help in selecting the papers and improving their quality.

Guest Editors of the Special Issue:

Asst. Prof. Jelena Z. Stanković, PhD
Prof. Ksenija Denčić-Mihajlov, PhD
Prof. Evica Petrović, PhD

and
Prof. Dejan Spasić, PhD
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Original Scientific Paper

INSURANCE DEVELOPMENT AND LIFE QUALITY IN THE EUROPEAN UNION COUNTRIES. AN EMPIRICAL ASSESSMENT

UDC 368(4-672EU)

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Abstract. *The connection between insurance and economic development has been intensively addressed in the literature, but a comprehensive analysis including the dimensions of human capital/quality of life has been less considered. The general objective of this research is to assess the degree of development of the insurance sector in the interplay with the representative dimensions of quality of life, at the level of the European Union (EU) Member States (MS), and to propose strategies for narrowing the gap between countries. The data encloses representative indicators that reveal the size of the insurance market, on the one hand, and the dimensions of quality of life, on the other hand, at the level of 2019. The research methodology consists of cluster analysis with the Ward method. The main results reveal that, at the level of all EU-27 Member States, the size of the insurance market is interconnected with the quality of life, with significant differences between them, developing countries having modest results compared to developed countries. Thereby, specific strategies and policies for these groups of countries are paramount, in order to enhance the wellbeing by insurance services and coverage.*

Key words: *insurance, quality of life, human development, cluster analysis, European Union countries*

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JEL Classification: G22, I31, O15

1. INTRODUCTION

The insurance sector represents a paramount field of a country's economy, in terms of the income/turnover that it provides (called gross insurance premiums), the major investments of their assets in diversified areas (for life insurance class), but also the economic and social role played in covering the risks that can affect individuals and companies (the functions of preventing and compensating for damages) (Cristea et al., 2014).

Therefore, insurance enhances the economic growth and sustainable development through the contribution at Gross Domestic Product (GDP) creation, supporting capital markets, with manifold implications in people's social life (Cristea et al., 2009; Hufeld et al., 2017). Insurance encourages innovation, contributes to shaping a resilient society and plays a major role in addressing societal challenges, such as the effects of technological change, cyber risks or changing demographic trends. Insurance can be considered a barometer of the economic and social well-being of a country's population, which contributes to reducing the poverty and government spending, on the line of covering natural disasters (Janzen et al., 2020). In perspective, the insurance market, especially in terms of the life insurance sector, in addition to its traditional role, brings a significant contribution to supporting the pension system, long-term investment and economic growth (OECD, 2020). The connection between insurance and economic development (measured, mainly, by GDP) has been intensively addressed in the literature, for different periods of time, at the level of regions, such as Europe (Haiss & Sümegi, 2008; Peleckienė et al., 2019), countries from the United States of America (USA), Europe and Asia (Mohy ul din et al., 2017), the worldwide level (Chang & Lee, 2012), or specific fields and countries, like agriculture in Serbia (Piljan et al., 2018) or Romania (Cristea et al., 2014).

At the individual level, insurance contributes to improving people's quality of life by tackling the risks that may arise in their lives, by guaranteeing payments in case of insured risk, the risk of mortality and longevity, but also by the security, stability and financial protection offered through insurance agreements (Kaigorodova & Mustafina, 2014). The economic well-being of people is directly related to the insurance market through the products they develop and offer (European Union, 2017). Quality of life represents a multidimensional concept, which, in addition to the economic situation, living conditions and material resources necessary for people's lives, also addresses social aspects of society as a whole, people's lifestyle and perceptions. In addition to the economic issues (earnings), other sectors are also fundamental in determining the quality of life, such as the health care, living conditions, access to education, adequate financial products and the provision of social services (Ayte et al., 2001; Whelan & Russell, 2004).

On this groundwork, our general research objective is to assess the degree of development of the insurance sector in interconnection with the representative dimensions of the quality of life. The analysis is performed by homogeneous groups of countries, at the level of the European Union (EU) Member States (MS). It further aims to propose strategies for the insurance sector promotion, particularly for countries with downsized results. The novelty of our research lies in encompassing the dimensions of quality of life in the assessment of the insurance sector (which also includes human capital), different from previous studies that have focused on the degree of economic development, assessed by GDP. The data encloses representative indicators that reveal the size of the insurance market (namely, the insurance

penetration and insurance density degrees), on the one hand, and indicators that reveal the dimensions of the quality of life (namely, education index and life expectancy index - the components of the human development index, alongside with GDP per capita, earnings, employment rate, poverty and inflation), on the other hand, at the level of 2019. The research methodology consists in applying cluster analysis through the Ward method.

Besides the introduction, the structure of this paper comprises five sections, which follow: the main landmarks in the literature on the interconnections between insurance and the dimensions of quality of life/wellbeing; description of the data used in the research and the methodology applied; detailed presentation of the results obtained and assessment of the research hypothesis; main conclusions and recommendations. In order to substantiate the robustness of the results, at the end of our article, we inserted additional information summarized in the Annex section.

2. Literature Review

The connection between insurance and welfare has been studied in the literature, considering its various dimensions. Thus, according to studies conducted since the '60s by Hammond et al. (1967), it was shown that household income, education and occupation positively influence the demand on the insurance market. It was found that the higher the household income, the lower the investment in the insurance sector. Life insurance is preferred and accessed by middle-income people. On the other hand, high- and low-income families invest in the insurance system, while middle-income families do not (Hammond et al., 1967). Moreover, in this study, the negative relationship between education and the demand for life insurance is highlighted, a fact confirmed also by Beck & Webb (2003). Nevertheless, positive interlinkages between life insurance and education for European (Dragos et al., 2017), South-Asian (Sanjeew et al., 2019) and African countries were revealed when information and communication technology (ICT) was included in the analysis (Asongu, 2020). Thus, expanding the ICT applications will act as a favorable support for life insurance and education. Same results were highlighted for the Central Pomerania (a region between Germany and Poland), when studied the main factors that promote life insurance (Strzelecka et al., 2020).

In the literature, the positive relationship between *employment* and *the insurance market* is recorded (Lenten & Rulli, 2006). *Income* and *life insurance* for South-Asian countries are inversely connected, by the side also of "urbanisation, life expectancy, dependency, and private health expenditure" (Sanjeew et al., 2019, p. 109). *Life expectancy* in relation to the insurance market, in the case of life insurance, is ambiguous due to the composition of the products offered which aim at mortality and savings. Very few studies have found a correlation between these two concepts (Beenstock, 1986; Outreville, 1996). For example, an increased *life expectancy* of insured persons would lead to a longer life insurance payment period, which would mean income for insurance companies and the payment of a larger sum of money when the insured event occurs. *The inflation rate* can negatively influence the demand for health insurance by increasing the price of the insurance policy, which can discourage people from accessing this insurance product (Babbel, 1979).

The benefits and role of insurance in driving growth has long been officially recognized at the United Nations Conference on Trade and Development (UNCTAD, 1964, p. 227), which stated that "a sound national insurance and reinsurance market is an essential characteristic of economic growth". The results in the literature reveal the positive direct link between insurance and economic growth or national income (Chang & Lee, 2012; Cristea et al., 2014;

Dragos et al., 2017; Haiss & Sümegi, 2008; Mohy ul din et al., 2017; Peleckienė et al., 2019; Piljan et al., 2018). What manifests itself differently and influences the results obtained is materialized in the institutional regulatory framework (considering the Worldwide Governance Indicators) specific to insurance markets from one country to another, but also culture and the degree of economic development (Dragos et al., 2017). The recognized role of the insurance stabilizer gives households and companies that use insurance products a considerable reduction in their financial volatility. The insurance market also contributes to reducing and combating poverty, as well as social inclusion (Janzen et al., 2020).

The COVID-19 pandemic has generated a deep recession in the insurance sector and GDP will be significantly influenced by its decline (Babuna et al., 2020; Shennaev & Matiyazova, 2020). However, the insurance system, due to the fiscal and monetary policies adopted, has proved quite resilient, but we must not rule out possible vulnerabilities and uncertainties due to the impact of the Covid-19 crisis.

In conclusion, the results of numerous studies in the relevant literature show that the insurance sector has profound implications in a country's economy and in ensuring the economic well-being of the population.

3. DATA AND RESEARCH METHODOLOGY

In order to analyze the development degree of the insurance market in line with the quality of life in the EU Member States, we selected indicators that reveal the two areas concerned, respectively, representative indicators of the insurance market and representative indicators of the quality of life.

Thus, the selected ***indicators that reveal the size of the insurance market*** are represented by: *the insurance penetration degree* for total insurance market (*IsrP*) (% of GDP); and *insurance density* for total insurance market *(IsrD*) (USD/capita).

Insurance penetration degree shows the share of *gross written premiums* (which represent insurance turnover) in GDP, over a year (Insurance Europe, 2021). When there is an increase in gross written premiums, *the degree of insurance penetration* could be reduced if GDP were to grow more than in the insurance sector. *The density of insurance for the total market* is calculated by reporting the value of gross written premiums to the number of inhabitants of that country (Insurance Europe, 2021). This indicator is a barometer that indicates *the average expenditure made* by each inhabitant of a country to purchase products of insurance companies (OECD, 2020).

The representative indicators of quality of life are: *the life expectancy index (LE_I)* and *the education index (Ed_I)*, as component elements of the human development index (HDI); *GDP per capita (GDP_cap) (USD); poverty rate (Pov) (%); employment rate for the age segment 20-64 years (Empl_20_64) (%); the net earnings of a couple with two children (ERN) (purchasing power parity, PPP); and inflation rate (Infl) (%).*

Data were collected for 2019 and extracted from the database of the Swiss Re Institute (2020) (in terms of insurance market indicators), United Nations Development Program - UNPD (2021) (for the education index and the life expectancy index, HDI components), World Bank (2021) (for GDP per capita) and Eurostat (European Commission, 2021) (for the poverty rate, the employment rate for the 20-64 age group, the net earnings of a couple with two children and inflation rate). The data were then adjusted by logarithm to ensure their stationarity and adequate comparability across selection.

Regarding the size of the insurance market in 2019 in the EU-27 MS, the most developed insurance markets are in the Nordic countries - Denmark, and Finland, in terms of the share of insurance in GDP (over 10% of GDP) (Fig. 1, left), and Denmark, Ireland and Luxembourg, as regards the insurance density (over 5,200 USD/capita) (Fig. 1, right). The smallest dimensions of the insurance market are recorded in developing countries from Central and Eastern Europe, namely, Romania and Lithuania, both for insurance penetration (below 2% of GDP) (Fig. 1, left), and insurance density (below 200 USD/capita) (Fig. 1, right).

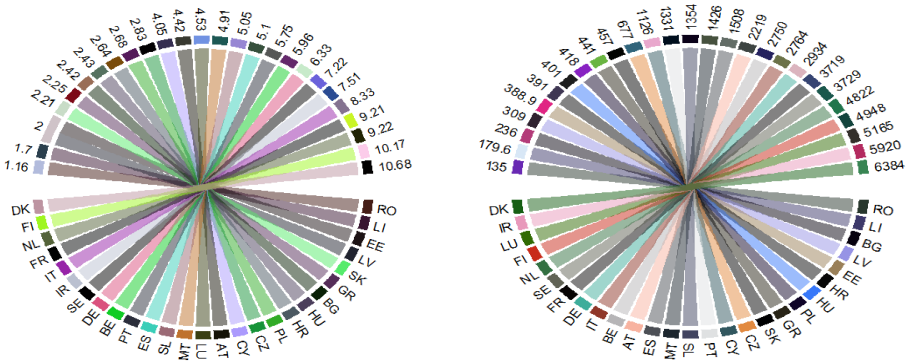

Fig. 1 Indicators of insurance market, EU-27, 2019: insurance penetration degree (left); insurance density (right)

Source: authors' contribution in R, data extracted from Swiss Re Institute database (2020). *Legend:* AT – Austria; BE – Belgium; BG – Bulgaria; CY – Cyprus; CZ - Czech Republic; DE – Germany; DK – Denmark; EE – Estonia; ES – Spain; FI – Finland; FR – France; GR – Greece; HR – Croatia; HU – Hungary; IR – Ireland; IT – Italy; LI – Lithuania; LU – Luxembourg; LV – Latvia; MT – Malta; NL – Netherlands; PL – Poland; PT – Portugal; RO – Romania; SK - Slovak Republic; SL – Slovenia

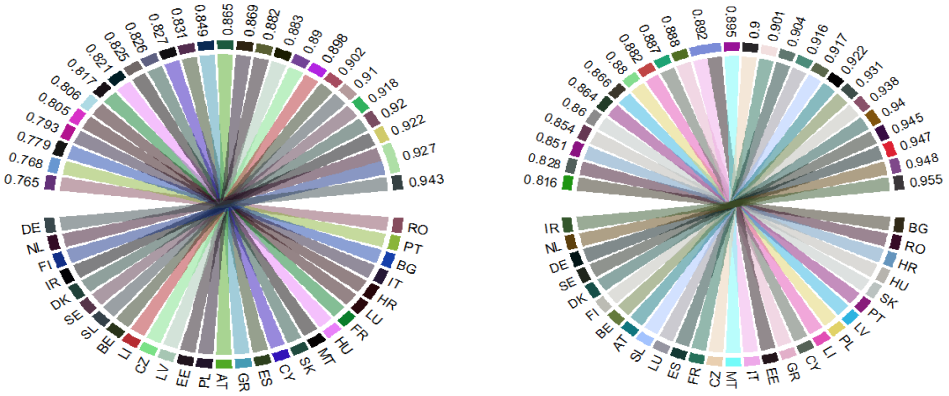

Fig. 2 Life quality indicators, EU-27, 2019: education index (left); life expectancy index (right)

Source: authors' contribution in R, data extracted from UNPD database (2021). *Legend:* AT – Austria; BE – Belgium; BG – Bulgaria; CY – Cyprus; CZ - Czech Republic; DE – Germany; DK – Denmark; EE – Estonia; ES – Spain; FI – Finland; FR – France; GR – Greece; HR – Croatia; HU – Hungary; IR – Ireland; IT – Italy; LI – Lithuania; LU – Luxembourg; LV – Latvia; MT – Malta; NL – Netherlands; PL – Poland; PT – Portugal; RO – Romania; SK - Slovak Republic; SL – Slovenia

Life quality dimensions, represented by the education index and life expectancy index (Fig. 2), entail high levels in Germany, the Netherlands, Finland and Ireland (over 0.922 index), as regards education (Fig. 2, left), on the one side, and Ireland, the Netherlands, Germany and Sweden (over 0.945 index), as regards the life expectancy index (Fig. 2, right), on the other side. The lowest degree of education and life expectancy, as main components of HDI, were registered in Romania, Portugal and Bulgaria (below 0.779 index), for education index (Fig. 2, left), and Bulgaria, Romania and Croatia (below 0.851 index), for life expectancy index (Fig. 2, right).

The research methodology consists in applying the *cluster analysis* at EU-27 level. Cluster analysis is a standard procedure used in the analysis of multivariate data, as an iterative process of optimization/interactive grouping of parameters (data) that have similar characteristics, those grouped in neighboring clusters with different characteristics, in order to identify the number of groups with similar characteristics (Hanumanth & Prasada, 2013; Tan, Steinbach & Kumar, 2005; Wierzchon & Kłopotek, 2018). The cluster analysis is performed by applying the Ward grouping method on the selected indicators, in order to evaluate the formation of groups (clusters) at the level of EU-27 MS and to make appropriate recommendations / policies for each group of states.

The research hypothesis (H) is: *"Among the EU-27 MS, there are significant differences in terms of the development of the insurance market and the level of quality of life, with developing countries performing modestly compared to developed countries"*.

4. RESULTS AND DISCUSSIONS

The correlation matrix of previously described indicators represents the first step performed in the cluster analysis (Fig. 3).

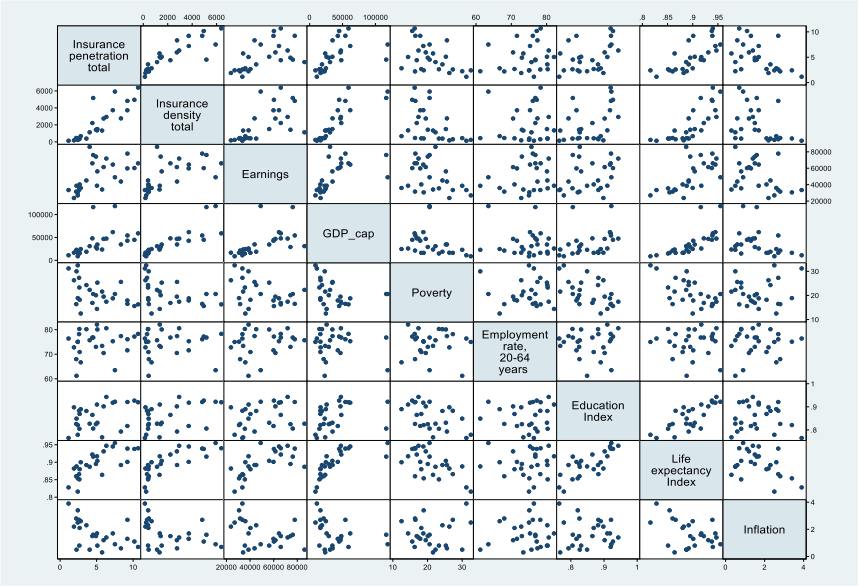

Fig. 3 Correlation matrix for the insurance market and quality of life, EU-27, 2019
Source: authors' contribution in Stata

Cluster analysis applied through the Ward method indicated the formation of an optimal number of 4 clusters (Fig. 4 and Table 1). The optimal number of clusters was obtained by applying the stop rules on the collected data (Calinski-Harabasz and Duda-Hart tests), resulting in pseudo-F statistics indicating the stopped grouping level.

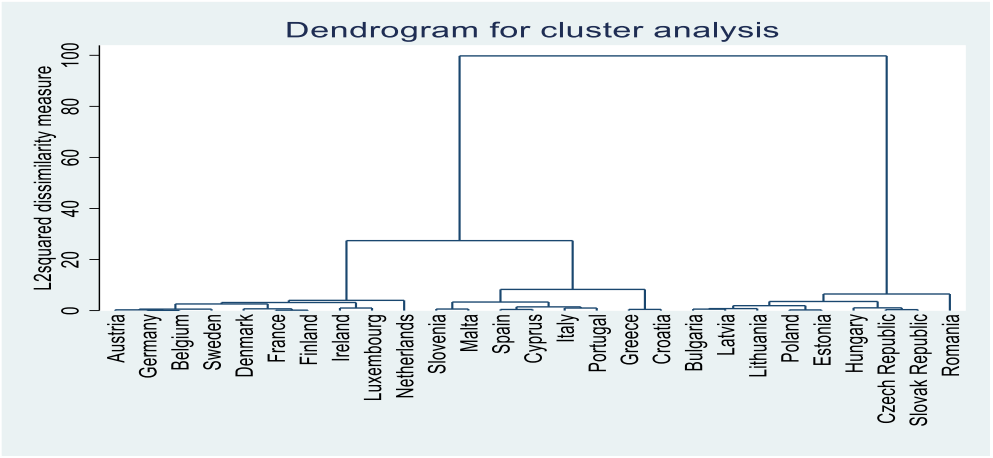

Fig. 4. Dendrogram of cluster analysis, EU-27, 2019
Source: authors' contribution in Stata

Table 1 Clusters associated with the insurance market and quality of life, EU-27, 2019

Clusters (C)	**EU Member States**	**Cluster Modelling – Ward Method** *Performance*
C1	Finland, Sweden, Belgium, Germany, France, Luxembourg, Netherlands, Ireland, Austria, Denmark	*High* (particularly in terms of *IsrP, IsrD, GDP_cap, Empl_20_64, ERN, Ed_I, LE_I, Pov*, on the one hand, and *Infl*, on the other hand – low to medium values)
C2	Portugal, Slovenia, Italy, Spain, Cyprus, Malta	*Medium High* (in terms of all indicators, except of inflation rate that is lower to medium)
C3	Croatia, Greece	*Medium Low* (in terms of all indicators, except of *Pov* that is the highest among the 4 clusters, and *Infl* that is the lowest)
C4	Latvia, Slovak Republic, Czech Republic, Bulgaria, Romania, Estonia, Lithuania, Hungary, Poland	*Low* (in terms of all indicators, except of *Education index* that is medium to high among the 4 clusters, and *Infl* that is the highest)

Source: own process of panel data in Stata

The EU MS with the highest development degrees of the insurance market and quality of life in 2019 are enclosed in Cluster 1, being represented by 10 countries from the old EU countries group, mainly, developed countries (Table 1 and Annex). These countries registered the highest development level of the insurance sector (insurance penetration and insurance density degrees), but also the highest level of quality of life, revealed by the GDP per capita, employment rate, earnings, education and life expectancy indexes, on the one hand, and low to medium values for poverty and inflation, on the other hand.

Medium to high levels of insurance related to quality of life are registered within 6 countries of the EU-27 in 2019, old (Portugal, Italy and Spain) and new EU countries (Slovenia, Cyprus and Malta), which were enclosed in Cluster 2 (Table 1 and Annex). Medium to low degrees of insurance development associated to quality of life are evidenced in 2 EU countries, namely Croatia and Greece (Cluster 3), with the highest poverty rate. The EU MS with the lowest development of insurance field in relation to quality of life are the new EU countries, mainly developing countries (Cluster 4), with the lowest GDP per capita and standard of living, revealed by life expectancy index (Bulgaria and Romania), education index (Romania), and insurance market indicators (Romania and Lithuania).

On the same line, similar results were revealed also by Hammond et al. (1967), considering positive associations among insurance and education, but also by Chang and Lee (2012), Haiss and Sümegi (2008), Peleckienė et al. (2019), Piljan et al. (2018), Dragos et al. (2017), when they analyzed the associations between insurance and economic development, alongside with some socio-economic factors like education or household income.

The results show that ***our research hypothesis***, *(H): "Among the EU-27 MS, there are significant differences in terms of the development of the insurance market and the level of quality of life, with developing countries performing modestly compared to developed countries",* is fulfilled.

5. CONCLUSIONS

Based on these results, we can say that in all EU-27 Member States, the size of the insurance market is interconnected with the quality of life, as the literature underpinnings also revealed, considering various socio-economic factors, such as education, income, poverty or economic development degree. At the same time, however, there are significant differences between the EU-27 countries, so that developing states register modest results, compared with the developed ones.

As such, to stimulate the interdependence between insurance and quality of life, we recommend best practice models applied in countries with the highest performance as entailed by the cluster analysis, namely Finland, Sweden, Belgium, Germany, France, Luxembourg, the Netherlands, Ireland, Austria and Denmark. Thus, Ireland and Luxembourg, in addition to the highest level of economic development, highlighted by the GDP per capita, have an innovative financial sector, with a contribution of over 25% to the value added and over 10% of employment (Commission European Union, 2021). As intervention policies in the lower performing states, we recommend: promoting financial education from primary or lower-secondary educational level, oriented towards financial market products, in general, and on the insurance market, in particular; applying strategies to increase the number of years of participation in education of the population, aimed at both the population under 18 and the population over 18, through continuing education programs; high quality medical services, which contribute to increasing life expectancy, in particular the number of healthy years; reducing the poverty rate through government programs to support low-income people; correlating the skills offered through education with the labor market; extending the ICT application that will support the life insurance and education, as Asongu (2020) proved for African nations.

Education has a key role to play in informing the public about the importance, role and use of insurance products, as well as in shaping risk awareness, as suggested by many scholars (Asongu, 2020; Dragos et al., 2017; Hammond et al., 1967; Sanjeew et al., 2019; Strzelecka et al., 2020). Failure to use insurance products and failure to insure risks by the population and companies such as accidents, diseases or natural disasters, would cause shocks in society with serious consequences that may persist over time, on economic growth and human development / quality of life.

The limits of our research encompass the low availability of certain data for various groups of countries and over a longer time span. Future research consists of an extension of the analysis for the insurance sector in interdependence with the human development index, as a composite indicator representative for economic development that includes the human factor and living standards, by groups of countries, developed and developing ones.

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RAZVOJ OSIGURANJA I KVALITET ŽIVOTA U ZEMLJAMA EVROPSKE UNIJE. EMPIRIJSKA PROCENA

U literaturi se intenzivno govori o vezi između osiguranja i ekonomskog razvoja, ali sveobuhvatna analiza koja uključuje dimenzije ljudskog kapitala / kvaliteta života je manje razmatrana. Opšti cilj ovog istraživanja je da se proceni stepen razvijenosti sektora osiguranja u interakciji sa reprezentativnim dimenzijama kvaliteta života na nivou država članica Evropske unije (EU) i da se predlože strategije za smanjenje dispariteta između zemalja. Podaci prikazuju reprezentativne pokazatelje koji otkrivaju veličinu tržišta osiguranja, s jedne strane, i dimenzije kvaliteta života, s druge strane, na nivou 2019. Metodologija istraživanja sastoji se od klaster analize sa metodom Ward-a. Glavni rezultati otkrivaju da je na nivou svih država članica EU-27 veličina tržišta osiguranja povezana sa kvalitetom života, sa značajnim razlikama među njima, a zemlje u razvoju imaju skromne rezultate u poređenju sa razvijenim zemljama. Stoga su posebne strategije i politike za ove grupe zemalja najvažnije, kako bi se poboljšalo blagostanje uslugama osiguranja i pokrićem.

Ključne reči: *osiguranje, kvalitet života, humani razvoj, klaster analiza, zemlje Evropske unije*

Annex Summary statistics of cluster analysis, EU-27, 2019

Cluster		IsrP	IsrD	log_ERN	log_GDP_cap	log_Pov	log_Empl_20_64	Ed_I	LE_I	Infl
1	N*	10	10	10	10	10	10	10	10	10
	Mean	1.97498	8.303838	11.07859	10.99462	2.886523	14.311013	0.8941	0.9334	1.41
	Sd*	0.3168224	0.3512955	0.1348109	0.376566	0.0986597	0.0687143	0.048112	0.0162289	0.5486347
2	N*	6	6	6	6	6	6	6	6	6
	Mean	1.684614	7.322756	10.86727	10.29367	3.053104	4.342227	0.825666	0.8931667	0.9
	Sd*	0.2414057	0.3106927	0.3687718	0.1557535	0.2107898	0.0471405	0.048032	0.0177698	0.56921
3	N*	2	2	2	2	2	2	2	2	2
	Mean	0.8908546	6.028876	10.52145	9.824335	3.274825	4.249959	0.827	0.8695	0.65
	Sd*	0.1130301	0.0850915	0.0581357	0.3062545	0.1787171	0.1920662	0.031113	0.026163	0.212132
4	N*	9	9	9	9	9	9	9	9	9
	Mean	0.8463849	5.769811	10.40223	9.682647	3.094687	4.298309	0.845889	0.8642222	2.722222
	Sd*	0.3147887	0.5026441	0.1944272	0.3137697	0.3216062	0.0619225	0.049886	0.0282391	0.5868939
Total	N*	27	27	27	27	27	27	27	27	27
	Mean	1.45395	7.072628	10.7649	10.31484	3.021692	4.309192	0.857852	0.8966667	1.677778
	Sd*	0.5880416	1.186637	0.3668212	0.6498761	0.2428899	0.0722801	0.053991	0.0369667	0.9488184

**Note*: N – number of countries; Sd – standard deviation

Source: authors' research

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BANKS' CORPORATE SOCIAL RESPONSIBILITY (CSR) DISCLOSURE AND THEIR ROLE IN THE BETTERMENT OF SOCIETY IN THE REPUBLIC OF NORTH MACEDONIA

UDC 005.35(497.7)

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Abstract. *Corporate Social Responsibility (CSR) is of great importance for companies and other stakeholders, which obliges the companies to establish a way of management that will simultaneously take care of the environmental, social, and ethical aspects of factors. If corporate responsibility is the guiding factor for companies, they can easily gain a competitive advantage over others. This paper researches how the banks in the Republic of North Macedonia report on CSR and in what report format CSR data is published. The research is based on the method of content analysis and statistical analysis to determine whether the size and profit of banks affect the CSR Reporting. The sample included in the research is 14 banks that the National Bank of the Republic of North Macedonia has granted a license to operate. The results of this research show that the size of banks has a positive effect on CSR reporting, while on the other hand, profit does not affect it.*

Keywords: *CSR, Disclosure, Banks, North Macedonia*

JEL Classification: G21, M14

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1. INTRODUCTION

Corporate Social Responsibility (CSR) reports refer to a company's systematic disclosure of information about its social performance. The term social performance has a broad understanding and refers to social, environmental and governance issues that are not generally included in financial performance indicators. Compared to management accounting, CSR reporting is primarily directed at external stakeholders, such as clients, investors, and the public. In the absence of mandatory formal rules, CSR reports differ greatly in form (design, means of distribution, reporting frequency, etc.) and content (scope, quality, etc.) (Schreck, 2013). In recent years, the scope of voluntary CSR reports has been expanded in response to demands that companies should be more responsible for their actions (KPMG, 2020). A Corporate Social Responsibility or Sustainability Report is periodic report (usually annual report) or more generally part of the company's financial/annual reports, aimed at sharing its philanthropy, corporate social responsibility actions and results. The report synthesizes and discloses the information that the organization decides to convey about its commitments and actions in the social and environmental fields. By doing so, the organization allows stakeholders to understand how they integrate the principles of sustainability into their daily operations (Youmatter, 2020). Regardless of the precise definition, with growing attention to firms' CSR strategies, interest in how firms account for, and report on, their CSR activities have also increased, and social responsibility is considered essential to the long-term survival of the company (Simms, 2002). Today, many industry different companies across many countries have introduced some form of social performance disclosure. Banks are increasingly involved in financing activities aimed at sustainable development (Scholtens, 2009). The issue of voluntary and mandatory CSR disclosure has been debated for several years. Proponents of voluntary disclosure note that corporate social responsibility reporting has increased in the last decade and believe that, for various reasons, companies have an incentive to disclose social and environmental behaviors without being forced (Jain et al., 2015).

Guided by the following issues and current topic in the increasingly complex environment and the necessary role of companies in society, the main objective of this paper is to measure the level of CSR reporting of actively operating banks in North Macedonia, the way they report and analysis of indicators that have a potential impact on the level of social responsibility, such as the size of the bank through the prism of total assets and profits as individual and related variables. Method of content analysis and statistical testing are taken into account as an approach to determine the situation and CSR disclosure in all banks that operate on the Macedonian market.

The paper first summarizes the relevant literature and current data related to social responsibility reporting, followed by a specific presentation on the situation of the CSR in North Macedonia. The conducted research is explained through the used methodology of data collection and statistical testing, the obtained results and appropriate interpretation of the same. In the further part of the paper, all the limitations and suggestions for further research are mentioned, as well as a complete conclusion based on the literature and the conducted research.

2. THEORETICAL FRAMEWORK

Banks play an important role in the modern economy of society, where a well-functioning financial system is essential. As an intermediary, banks provide a wide range of financing and savings solutions, risk management and payment services for various clients, and advise them, thus playing a fundamental role in society. The importance of banks can be also seen in the fact that they are considered the lifeblood of the modern economy.

Although banks do not create wealth, their essential activities promote the process of wealth production, exchange, and distribution (Farooq, 2020). Compared with the practices of the 21st century, management that does not meet the needs and expectations of community stakeholders will not be competitive. Corporate social performance (CSP) is as important as corporate financial performance (CFP) (Baird et al., 2012). Banks have a unique way of impacting on society, that is, they can engage themselves in CSR activities or they can influence other companies by financing the latter's projects with social, ethical, and environmental issues (Scholtens, 2006). Therefore, banks can also influence sustainable development through their environmental actions and impacts, and help limit or conversely strengthen the socio-economic problems that plague modern society (Lukasz & Justyna, 2019). The growth in reporting suggests that the issue of CSR is receiving more attention from the firms and that the number of reportable policy initiatives has increased. The main purpose of a sustainability report or CSR is to increase the transparency of organizational activities. There are two goals (Youmatter, 2020): on the one hand, the CSR report aims to allow companies to measure the environmental, social and economic impact of their activities (the famous triple-bottom-line). In this way, companies can obtain accurate and enlightening data which will help them improve their processes and have a more positive impact on society and the world. On the other hand, a CSR or sustainability report also allows companies to externally communicate their sustainability and corporate social responsibility goals to their stakeholders. Banks are more likely to present CR information in their annual financial report than companies in any other sector (KPMG, 2016). Banks and other financial services providers play an important role because banks are not only recipients of socially responsible investments, but also providers. Obviously, banks can benefit from applying some of the most basic concepts of CSR to their own human resource policies, and community engagement policies, but the involvement of banks in CSR reporting is neither overwhelming nor uniform in all countries. Some countries (e.g. France) have made CSR and its reporting mandatory, while in other countries, banks have carried out more or less CSR activities on a voluntary basis (Khan, Halabi, & Samy, 2009). Companies that demonstrate a sense of social responsibility get specific benefits. These benefits according to Adams & Ambika (2004) include: better recruitment and retention of employees, improved internal decision making and cost savings, improved corporate image and relations with stakeholders, improved financial returns, etc. GRI (Global Reporting Initiative) is an independent international organization that provides companies and other organizations with a universal language to communicate these impacts through the most widely used sustainability reporting standards in the world – the GRI Standards, thus helping companies and other organizations to take responsibility for their impacts

3. LITERATURE REVIEW

According to Carroll (1979), CSR is "economic, legal, ethical and discretionary expectations that society has of organizations at a given point of time". Matuszak et al. (2019) based on this definition and drawing attention to the fact that society has defined expectations for company operations and wants to know about such activities i.e. what companies contribute and do for the good of society. Even though a common traditional belief is that organizations need only to prepare financial reports that are required under the laws, accounting standards, or stack-exchange listing rules, ACCA (2015) suggests and indicates the importance of the environmental report, which is the production of narrative and numerical information on an organization's environmental impact within the reporting period.

Summarizing all relevant concepts, Garriga & Melé (2004) and Rogošić (2014) classify the main theories and related approaches of CSR into four categories:

1. Instrumental theories, where the organizations are only seen as a profitable business, and social activities are only seen as a means for achieving financial benefits;
2. Political theories, through which corporations, using social responsibility, gain power and political status in society;
3. Integrative theories, where the company focuses on satisfying social needs; and
4. Ethical theories, which are based on philanthropy, moral and ethical responsibilities of companies to society.

PwC (2013) revealed a document referring to "The rise of corporate social responsibility" that describes the SCR report as a "tool for sustainable development in the Middle East and suggests to the companies that greater access to more contextual and non-financial information increases the confidence of securities analysts when preparing recommendations for the buying/selling of companies' shares, but also increases the public trust and confidence".

The KPMG (2013 & 2015) view of corporate responsibility is that many companies no longer see it as an ethical issue, but rather as a core business risk, raising the question: What is the potential financial impact of these risks? And what steps does the company take to alleviate it.

According to the Hauser Institute for Civil Society (2015), with increasing social pressure to strengthen financial and corporate market regulation and transparency, corporate social responsibility reporting has increasingly become an area of concern.

This growth in reporting practice and interest from investors illustrates that businesses are responding to both increased regulation and cultural shifts in how individuals view the operation of corporations and the financial system at large.

From the KPMG (2020) Survey of Sustainability Reporting it can be seen that (96%), or almost all of the 250 largest companies in the world (the G250) reported on their sustainability performance. For N100 –5,200 companies comprised of the 100 largest companies in 52 countries – 80% do report.

GRI remains the most widely used reporting standard or framework, utilized by approximately two-thirds of N100 respondents and approximately three-quarters of G250 respondents. The application of the GRI Standards (launched at the end of 2016) has increased significantly since 2017 and has continued to grow in recent years.

One of the first comprehensive studies on the status and level of CSR in North Macedonia was published in 2007 from UNDP, called the Baseline study. This study refers to the level of acceptance and awareness of CSR in North Macedonia and reveals

that the business community has not yet fully understood and implemented it, due to the lack of relevant knowledge and practical tools (Baseline Study).

In 2008, North Macedonia became the third EU country to adopt a national CSR Agenda after Denmark and Lithuania (Stamenkova, 2011). The CSR Agenda is a comprehensive governmental plan that addresses CSR in North Macedonia. It is very similar to the Danish Action Plan, but there is an important difference between the two that is worth mentioning. According to the Macedonian document, the concept of CSR includes compliance with legal obligations, minimizing or eliminating the company's negative impact on society and increasing the positive impact. On the other hand, the Danish Action Plan limits the definition of CSR to voluntary initiatives (Stamenkova, 2011).

Rogošić (2014) in his research paper confirmed that there is a positive correlation between asset value and profits and the CSR reporting levels of the banks from Croatia, Bosnia and Herzegovina, and Montenegro by using statistical regression analysis where the level of CSR reporting was set as a dependent variable.

Matuszak et al. (2019) through content analysis and panel data analysis of annual reports and CSR reports of the banks operating in Poland for the period between 2008 – 2015, obtained results from testing several hypotheses which indicates that there are statistically significant differences in the level of CSR disclosures between banks with a different ownership structure; compared to unlisted companies, the public listing has a positive impact on corporate social responsibility; almost all variables related to the size, management board and foreign board members are relevant and have a significant positive effect on CSR disclosure.

Levkov & Palamidovska-Sterjadovska (2019) used a sample for the research of 102 banks, actively operating in the Western Balkan Countries for a three –year- period (2015 – 2017) and the results reveal that in North Macedonia, foreign and local banks attained an equal average score of CSR reporting, while in Serbia, Kosovo, Bosnia Herzegovina, and Montenegro, foreign banks have attained a higher score, i.e. higher level of CSR disclosure. The results from conducted regression analysis show that the size of the bank (total assets) is a moderate predictor of CSR reporting. Overall, their study shows that there are inconsistencies in disclosure of CSR initiatives on different markets, considering Western Balkan Countries.

The method of content analysis and regression analysis with the size bank (total assets) and the profitability as an independent variable were used in previous studies (Branco and Rodrigues, (2006); Hinson, Boateng & Madichie, (2010); Khan, (2010); Nyarku and Hinson, (2017); Matuszak et al., (2019); Levkov & Palamidovska-Sterjadovska, (2019)) to determine the disclosure of social responsibility in annual reports and banks' websites. In order to avoid the problem that arises from covering only descriptive data (Jiang et al., (2011), Nyarku & Hinson (2017)) and guided by the latest research conducted on the Macedonian banking sector together with the countries of the Western Balkan (Levkov & Palamidovska-Sterjadovska, 2019), which was also based on research from Matuszak et al. (2019) and previous studies (Fatma & Rahman, (2014); Kılıç, M., & Uyar, A. (2014); Nyarku & Hinson, (2017)), we used a binary scoring method of the CSR disclosures recorded in 1) annual reports, 2) financial reports and/or 3) web (online) content as a separate CSR heading. Following the same studies and due to the similar concept and social status of the banks, we used the already recognized and defined four key stakeholder groups in this sector: (1) environment, (2) employees, (3) customers, and (4) community. According to Hinson et al., (2010) *environment* related activities are the company's environmental concern, loan

and investment policies, energy conservation in business operations, and other supporting activities and calls for a cleaner and ecological environment; *employees* – working environment, employee health and safety, team buildings and trainings and employee remuneration; *customers* – product and service quality, customer complaints/satisfaction and services provided to customers with physical disabilities; *community* – charitable donations and activities, support for education and sports sponsoring or recreational projects.

As Achua (2008) states that banks have an important role in financial stability and economic development in countries, they must take social responsibility in order to build a reputation and attract investors, expand their customer base, attract qualified employees and earn the trust of the public.

Taking social responsibility is becoming the focus of banks' attention because their reputation depends on their CSR policies and plans (Dorasamy, 2013).

Consumers and governments are pushing business organizations to become more involved in social responsibility initiatives, which is why businesses today are working hard to become more involved in CSR initiatives and to publicly promote their CSR activities through their websites (Levkov & Palamidovska-Sterjadovska, 2019).

4. CSR Reporting in Macedonian Banking Industry

In North Macedonia, corporate social responsibility (CSR) was first introduced as a concept in 2002 through the activities of the World Bank Institute of the World Bank Group, UNDP, and USAID (Stamenkova, 2011). In December 2007, the Ministry of Economy of North Macedonia established the National Coordinating Body for Corporate Social Responsibility (NCB CSR) as a permanent working group within the Economic and Social Council of the Government of North Macedonia. NCB CSR is a cross-sectorial body responsible for developing multiple dialogues and identifying joint actions for the promotion and implementation of CSR. In June 2008, as part of the NCB's CSR work plan, the "National Agenda for Corporate Social Responsibility" was prepared. The agenda was adopted by the Government in October 2008. The goals of the Agenda are to raise CSR awareness, develop capacities and competencies to help establish CSR and provide a favorable CSR environment.

The banking sector plays a vital role in the Macedonian economy and can undoubtedly contribute to economic growth and social welfare. Historically, banks have been considered as public trust institutions, so people have expectations about their highly professional and socially responsible behaviors (Molyneux et al., 2014). The important role of the banks has been increased through CSR initiatives, including environmental protection and sustainability, community participation, occupational health and safety, employee development and training, bank products for marginalized groups, etc. (Levkov & Palamidovska-Sterjadovska, 2019).

According to the latest reports of the National Bank of North Macedonia including 31 December 2020, fourteen banks have actively been working, and five out of them count as large banks, six are medium-sized banks, and three are small banks. Compared to the previous two years 2018 and 2017 which are taken into account for the research, there is a change in the number of medium-sized banks, due to the closure of Eurostandard Bank. Due to the small market share of a large number of banks, the Macedonian banking market qualifies as a non-competitive environment (Filipovska, 2019). We focus on the CSR reporting activity of all licensed banks, but the main focus and discussion are based on large banks, because almost all CSR reports are issued individually or as part of the annual report.

In the Macedonian environment where "the rule of law is still not to be taken for granted" (Stamenkova, 2011), it shows that CSR is still not legally required, but it is still a vague concept, frequently equated with donations, sponsorships, and philanthropy, usually perceived as an obligation for large and profitable companies only.

Banks in North Macedonia, following the global trend of the manner of reporting on social responsibility, disclose CSR information mainly through their websites, as well as in the annual reports where the descriptive part lists the social activities, but it is worth to be noted that neither are they listed and compiled in the financial statements nor are CSR financial expenditure data available.

5. RESEARCH METHODOLOGY

In this research we applied content analysis methods to measure the CSR reporting activities of all licensed banks in North Macedonia, focusing on the large banks, which are actively operating until December 2020, and regression analysis on asset values and CSR reporting levels. The population and the sample used for this research is composed of 14 banks - all banks actively operating in North Macedonia.

The data about granted licenses were obtained from the official website of the National Bank of the Republic of North Macedonia. All banks operating on the Macedonian market have an official accessible website and published financial statements and annual reports from which CSR data were obtained.

As it was mentioned before, to overcome the limitation of using only descriptive data, we use a binary scoring approach of the CSR disclosures. The scoring was conducted depending on whether CSR data are available at all (whether published in financial statements, annual reports, or as a separate section of a website) and whether the four key stakeholders in the banking sector are covered, namely: (1) environment, (2) employees, (3) customers and (4) community.

To be able to provide the essential data, i.e. CSR data, we followed the procedure of searching the Banks' financial statements and annual reports, independent CSR reports, and website through all headings on the Web and links that lead to data on corporate social responsibility of the bank.

Table 1 summarizes the research methodology for how points are generated and how many total points a bank can earn.

Table 1 Research methodology for CSR points

Description	"Yes" Max points	"No" Min points
1. Are **CSR data available**?	1	0
2. CSR reporting referring to the **environment?**	1	0
3. CSR reporting referring to **employees?**	1	0
4. CSR reporting referring to **customers?**	1	0
5. CSR reporting referring to the **community?**	1	0
Total points per bank for 1 year	5	0
Total points for the observed period of 3 years (2017-2019)	**15**	**0**

Source: Authors' calculation

In addition to the content analysis and summarized relevant literature from already conducted research, the following hypotheses are set:

H_1 = The size of a bank has a positive impact on the level of CSR reporting done by banks.
H_2 = The bank's profit has a positive impact on the level of CSR reporting done by banks.

Due to the current situation caused by the pandemic COVID-19, many changes are taking place in both the world and the domestic market. Large and successful companies are expected to contribute to the easier overcoming of the crisis and make a positive contribution to society. According to media reports and information on social networks, banks in North Macedonia are one of the largest donors, which is an important issue worthy studying and discussing. Due to still unpublished annual reports by the bank, there is a restriction on access to annual data for CSR activities in the period of COVID-19 and therefore it will be processed only descriptively.

For testing the hypotheses, the appropriate indicators are taken into account, i.e. for the Bank Size in this research, the value of the average total assets for 2017, 2018, and 2019 are used (H_1), which are presented in the Balance Sheet of the banks and the measurement of the Bank Profit is de facto the average absolute amount of the profit for 2017, 2018 and 2019 (H_2), which are stated in the Income Statement of the banks.

This research uses a quantitative research method. The processing of the collected data was done through several statistical methods and tests, using SPSS software. The model is formulated as follows:

$$\mathbf{Y} = \beta_0 + \beta_1 \mathbf{X_1} + \beta_2 \mathbf{X_2} + \varepsilon \quad (1)$$

where: $\mathbf{Y}$ = CSR Reporting; $\mathbf{X}_1$ = Bank Size; $\mathbf{X}_2$ = Bank Profit; ε = random error

The analysis of the collected data includes several statistical tests, as follows:
1. *Data normality testing* to determine if data are normally distributed for decision making and conclusions. This test involves preparing a histogram of the dependent variable to see if the residual is skewed and a simple Kolmogorov-Smirnov test is performed. If the significance value of the test is greater than 0.05 then it means that the data are normally distributed.
2. *Multicollinearity test* to determine the relationship between the independent variables. Multicollinearity can be detected by the Variance Inflation Factor (VIF). If the value of Centered VIF is less than 10, then it means that there is no multicollinearity.
3. *Regression testing* to see if the change in variable Y can be explained by variable X. In this test, we use the coefficient R^2 (R square).

6. Results and Discussion

From conducted content analysis for the level of the banks' reporting on social responsibility, Table 2 presents the total CSR score according to bank size.

Table 2 CSR reporting in banking sector according to their size

Banks	Number of banks	Total CSR points	Average CSR score	Max points	Min points	Number of banks with max points	Number of banks with min points
Large sized banks	5	65	13	15	11	2	0
Medium sized banks	6	21	3,5	9	0	1	3
Small sized banks	3	12	4	6	0	2	1
Total	14					2*	4

*Total number of banks with max 15 points
Source: Authors' calculation

Only two out of fourteen banks have the maximum number of points (15) for CSR reporting which are from the large banks' group, while a total of four banks have a score of 0 points.

The CSR activity report score used in this paper ranks banks according to the indicators in Table 3.

Table 3 CSR disclosure of banks in North Macedonia

Banks	CSR data availability	Environment	Employees	Customers	Community
Large sized banks	15	10	15	10	15
Medium sized banks	9	6	0	0	6
Small sized banks	6	0	0	0	6
Total	30	16	15	10	27

Source: Authors' calculation

From the total maximum of 42 points that banks can achieve if they have published data about CSR for the period of three years (2017-2019), it can be seen that the total number of achieved points is 30, or 71%.

According to the four indicators i.e. stakeholders as an element of whether they are included in the reporting, the following data were obtained: Environmental 16 points (38%), Employees 15 points (36%), Customers 10 points (24%), and Community 27 points (65%). It can be concluded that most of the banks are active in the activities intended for the community.

Table 4 summarizes the results regarding the instruments used by banks in the disclosure of social responsibility information.

Table 4 Instruments used by banks to conduct CSR data

Banks	Independent report	Part of annual or financial report	Web CSR link/heading
Large-sized banks	1	4	/
Medium-sized banks	/	2	1
Small-sized banks	/	2	/
Total	1	8	1

Source: Authors' calculation

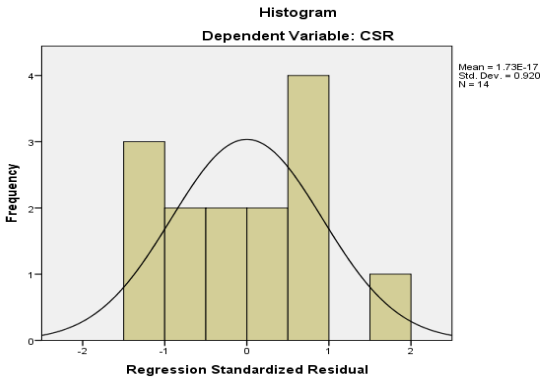
Of all banks that actively operate in North Macedonia, ten out of a total of fourteen banks (71%) report on social activities. Only one bank from the group of large-sized banks has an independent report for CSR activities, which indicates that banks in North Macedonia are not inclined to prepare a separate report exclusively for the CSR. Most banks that report on CSR summarize the data as part of an annual or financial report.

The results obtained from statistical data processing using SPSS software for testing the hypotheses of whether Bank Size and Profit affect the CSR reporting are presented as follows:

- **Residual normality test using One-Sample Kolmogorov-Smirnov Test**

This test is done to determine if the sample in the research is normally distributed or not, by testing the normality of the residuals. The first test is shown in histogram 1 and table 2 below.

Histogram 1 Data distribution



Source: Authors' calculation

Table 5 One-Sample Kolmogorov-Smirnov Test

		CSR	Profit	Size
N		14	14	14
Normal Parameters[a,b]	Mean	7.00	559966.5000	35321.5000
	Std. Deviation	5.533	807350.53484	36009.72815
Most Extreme Differences	Absolute	.183	.298	.233
	Positive	.183	.298	.233
	Negative	-.143	-.246	-.182
Kolmogorov-Smirnov Z		.684	1.116	.870
Asymp. Sig. (2-tailed)		.738	.166	.436

a. Test distribution is Normal.
b. Calculated from data.

Source: Authors' calculation

Histogram 1 shows that the residuals are normally distributed, it is not skewed either left or right. From Table 5, it can also be concluded that the obtained values of 0.738, 0.166 and 0.436 (Asymp. sig. 2-tailed) respectively are greater than 0.05, which means that the residuals have a normal distribution. This data can be used in the further research process.

- **Multicollinearity test**

Table 6 shows the Variance Inflation Factor (VIF) values for the two independent variables (size and profit) and all values are less than 10. This means that there is no multicollinearity between the two variables.

Table 6 Multicollinearity test

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	Correlations			Collinearity Statistics	
		B	Std. Error	Beta	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	2.338	1.471						
	Profit	-2.571E-06	.000	-.375	.651	-.247	-.154	.168	5.960
	Size	.000	.000	1.124	.782	.606	.460	.168	5.960

a. Dependent Variable: CSR

Source: Authors' calculation

- **Regression Tests**

Simultaneous Test (F test)

To see if the independent variables simultaneously affect the dependent variable, the following hypotheses are set:
H_0: Bank Size and Bank Profit do not have a simultaneous effect on CSR Reporting.
H_1: Bank Size and Bank Profit have a simultaneous effect on CSR Reporting.

Table 7 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	252.813	2	126.407	9.577	.004[b]
	Residual	145.187	11	13.199		
	Total	398.000	13			

a. Dependent Variable: CSR
b. Predictors: (Constant), Size, Profit

Source: Authors' calculation

As we can see, Table 7 - ANOVA shows the significance value of 0.004 which is < 0.05 so H_0 is rejected, which means Bank Size and Bank Profit simultaneously affect the CSR Reporting. With this result, we can continue the regression further by testing the individual variables with t-tests. So, for the independent variable 'Bank Size', we set the following hypotheses:

H_0: The size of a bank has no impact on the level of CSR reporting done by banks.
H_1: The size of a bank has a positive impact on the level of CSR reporting done by banks.

Table 8 Multiple regression

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.338	1.471		1.589	.140
	Profit	-2.571E-06	.000	-.375	-.844	.417
	Size	.000	.000	1.124	2.529	.028

a. Dependent Variable: CSR

Source: Authors' calculation

Table 8 shows the results from Multiple Regression and it can be seen that the value of Bank Size variable significance is 0.028 which is < 0.05 and hence, it can be concluded that H_0 is rejected and H_1 is accepted. This means that the size of the bank affects the CSR reporting, which means the bigger the banks are, the more they report for their CSR. Furthermore, we continue with the Profit variable and set the hypotheses:

H_0: The bank's profitability has no impact on the level of CSR reporting done by banks.
H_1: The bank's profitability has a positive impact on the level of CSR reporting done by banks.

From the Table 8 for the Profit variable, it is noticed that the value of the significance is 0.417 which is greater than 0.05, so in this case, we accept H_0 and reject H_1. This means that the profit or loss incurred by the bank does not affect their reporting of CSR.

Although it is logical to assume that the size of the realized profit is actually a larger amount of available funds that can be allocated by the banks for social responsibility and improvement of the society, while not disturbing their liquidity and survival, still the conducted statistical tests show that profits do not affect the level of CSR reporting in North Macedonia. This result can be explained by the characteristics of the population, habits, inertia of change, awareness of social responsibility etc. Social responsibility is increasingly found in the goals and policies of banks, which can be seen in their confidence that greater contribution and active participation in improving society will ensure better future results for all, especially for society and the financial results of banks, too. Changes can be expected in the near future as the population becomes more aware of the importance and significance of social responsibility, thus greater investment by banks in this field.

Finally, we will complete the analysis with the determination test. The purpose of this test is to see how the independent variable can explain the changes in the dependent variable.

Table 9 R Square

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.797[a]	.635	.569	3.633

Predictors: (Constant), Size, Profit[a]
Dependent Variable: CSR[b]

Source: Authors' calculation

R Square of the model is 0.635 which means that the Size and Profit of the banks explain as much as 63.5% of the CSR reporting by the banks in the Republic of North Macedonia.

7. RESEARCH LIMITATIONS

CSR reporting is becoming increasingly important for companies on the one hand, as a means of attracting attention and proving their participation and status in society, but also for the general public as current or potential users of their services and current residents in the environment. The survey was conducted based on publicly disclosed information about their acts on social responsibility, for which other activities are likely to have been undertaken, but they were not highlighted or included in the report or part of CSR passage.

For the purpose of the survey, only secondary data collected from financial/annual reports or links and headings published on websites were used. No data were used from primary sources that would be collected through interviews and survey questionnaires. In the published information on CSR activities by the banks, there are no financial indicators or amounts that would make a better comparison and statistical tests, but only descriptive information which was then processed through the binary score to enable hypothesis testing. Apart from one of the large banks, there are no separate reports on social responsibility activities, so the data collection process was carried out through a detailed analysis of the financial and annual reports, as well as CSR links and headings published on the official websites. The COVID-19 pandemic is a current topic and period in which banks actively participate with their donations, support, deferred loan installments, etc., but, due to the time period of the research, the reports for 2020 have not been published yet, which would provide significant information and a comparative analysis of bank charities before and during the pandemic can be made, which is our recommendation for future research. It is also worth mentioning that there is not much research and published papers on corporate social responsibility in Macedonian practice, especially for the banking system.

8. CONCLUSION

Acting in a socially responsible manner is not only a moral behavior or philanthropy, but it is an essential part of the banks' strategies and long-term survival. Many international papers and surveys conducted by academic researchers, audit firms, and other regulatory bodies and stakeholders state that CSR reporting is increasingly and continuously becoming a field of social and public interest that makes pressure for greater regulation and transparency of corporate social impacts. On the other hand, by attracting high-quality employees, negotiating better contracts, expanding the customer base, attracting investors and gaining the trust of the public, addressing CSR is crucial to the profitability of the company. Among banks, being socially responsible is becoming a strategic goal and competitive advantage since their reputation depends on their CSR policies and programs.

The results obtained from the conducted content analysis show that ten banks (71%) report on their philanthropy and voluntary participation in the betterment of society, while four banks (29%) do not report on their social activities.

In the statistical analysis, two independent variables were used: the size and the profit of the banks, in order to determine whether they affect the CSR reporting. The conducted statistical tests show that the influence of the bank's profit is not significant. Conversely, the size of the bank has a very significant effect on CSR reporting. This shows that the size expressed through the total assets of the bank means larger available assets, more

employees and more stakeholders, which increases their role, both, in the financial sector and from a social point of view.

However, the conclusions are based on publicly disclosed information and CSR reports, which does not exclude the possibility that there are additional social activities for which data are not available. There is a shortage and incentives are needed for banks to prepare individual reports on CSR activities.

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OBJAVLJIVANJE KORPORATIVNE SOCIJALNE ODGOVORNOSTI (CSR) BANAKA I NJIHOVA ULOGA U POBOLJŠANJU DRUŠTVA U REPUBLICI SEVERNOJ MAKEDONIJI

Društveno odgovorno poslovanje (DOP) je od velike važnosti za kompanije i druge zainteresovane strane, što obavezuje kompanije da uspostave način upravljanja koji će istovremeno voditi računa o ekološkim, socijalnim i etičkim aspektima faktora. Ako je korporativna odgovornost vodeći faktor za kompanije, one mogu lako steći konkurentsku prednost u odnosu na druge. Ovaj rad istražuje kako banke u Republici Severnoj Makedoniji izveštavaju o DOP-u i u kom formatu izveštaja se objavljuju podaci o DOP-u. Istraživanje se zasniva na metodi analize sadržaja i statističke analize kako bi se utvrdilo da li veličina i profit banaka utiču na izveštavanje o DOP-u. Uzorak obuhvaćen istraživanjem je 14 banaka kojima je Narodna banka Republike Severne Makedonije odobrila rad. Rezultati ovog istraživanja pokazuju da veličina banaka pozitivno utiče na izveštavanje o DOP-u, dok s druge strane profit na to ne utiče.

Ključne reči: *DOP, objavljivanje podataka, banke, Severna Makedonija*

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Review Paper

SUSTAINABLE FINANCE AND BANKING: A CHALLENGE FOR REGULATORS AND A RISK MANAGEMENT SYSTEM

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Abstract. *The key position of banks in the financial sector, as well as their indisputable role in financing economic development, have conditioned the need to consider their impact on the environment. The implementation of the concept of sustainability in banking has conditioned the transformation of banks in the direction of their greater corporate eco-efficiency and the development of banking products and services that contribute to sustainable development. Sustainable finance for banks is a source of new opportunities, but on the other hand, banks are more and more concerned about their exposure to environmental risk. Recognizing the impact of environmental risks on banks' operations, central banks and supervisors are taking a number of initiatives to reduce the negative impact of these risks on banks' operations, and, thus, financial stability. The paper aims to point out the challenges that sustainable banking has posed to regulators and the risk management system.*

Key words: *sustainable banking, environmental risks, regulation*

JEL Classification: G21, G28, Q56

INTRODUCTION

Preservation of health and protection of natural resources have created the need to balance the relationship between ecology, economic development and natural resources, which has resulted in the promotion of the concept of sustainable development. This concept should make it possible to meet the needs of present generations without compromising the

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needs of future generations (United Nations General Assembly, 1987). As such, it includes three dimensions: economic, social and environmental, and emphasizes that economic and social progress is possible only with the simultaneous care of the environment. The importance of the concept of sustainable development is recognized at the global level, where the leading G-20 countries and influential international organizations (World Trade Organization, G-20 group, United Nations, etc.) identify sustainable development and environmental protection as priorities. The role of banks in this process is indisputable, bearing in mind that they are key players on the financial market in most financial systems. The integration of sustainability into business strategy, decision-making processes, business activities, risk management processes, as well as bank reporting systems, contributes to the sustainable development of the financial and overall economic system. The paper aims to look at the role of banks in achieving sustainable development goals, as well as the effects that environmental risks have on banks. The structure of the paper consists of three parts. The first will point out the alternative approaches of banks in the application of the concept of sustainability, both through the improvement of their internal processes and through the offer of "green" banking products. The impact of risks arising from the environment on banking operations and banking reporting specifics will be analyzed in the second part of the paper. In the last part of the paper, the challenges posed by environmental risk management to regulators, supervisors and banks themselves as regulated entities will be considered, as well as the efforts of supranational regulatory bodies to establish coordination of activities and measures in this field.

1. FINANCE AND BANKING TOWARDS SUSTAINABLE DEVELOPMENT

Modern economic systems must be accompanied by a functional ecological system. That is why environmental protection is an important precondition for doing business in any economic activity. Given the key role of banks in financing the economic activities of most financial systems, their role in achieving sustainable development goals is crucial. However, banks have begun to see the impact of their activities on the environment quite late, classifying themselves in the group of "clean" industries. In addition, they did not show initiative to influence the change of client behavior in the part of their responsibility towards environmental protection. Such an attitude was especially present in European banks. U.S. banks have shown a more proactive approach to environmental liability, especially since the enactment of the *Comprehensive Environmental Response, Compensation and Liability Act* (CERCLA) in 1980, which provided for the obligation of banks to bear the costs of environmental pollution of their customers. The special emphasis in American banks was on credit risks. European banks, on the other hand, initially had no direct environmental responsibility. Their more proactive approach began only during the 1990s, and was focused on the development of new environmentally friendly products (Jeucken & Bouma, 2001, pp. 24-26). After that, the number of banks that apply environmental standards is constantly increasing.

1.1. Institutional framework of sustainable finance and banking

International organizations, agencies and institutions adopt programs and initiatives that provide guidelines to corporations and governments to integrate economic, social and environmental aspects. Although most of the initiatives appear in the form of

recommendations and principles and are not fundamentally binding in nature, there is a positive relationship between states, corporations, financial institutions and investors. The first major initiative, the United Nations Framework Convention on Climate Change (UNFCCC), emerged during the 1992 World Summit in Rio de Janeiro, setting the framework for international cooperation in the fight against climate change and global warming. With the same goal, the Kyoto Protocol was adopted in Japan in 1997, which, unlike the Convention, is binding. Its application, solely in developed countries, has not contributed to the achievement of the set goal. For these reasons, an agreement on climate change management was adopted in Paris in 2015, which became legally binding for all countries.

With the first initiatives in the field of environmental protection, financial institutions have shown interest in engaging in this field. In their activities in the field of environmental protection and broader social responsibility, banks and other financial institutions have joined numerous initiatives, programs, agreements, among which the most important are shown in Figure1.

Fig. 1 The Evolution of Sustainable Finance
Source: UNEP FI (2021)

The United Nations Environment Program Finance Initiative (UNEP FI) was launched in 1992 in order to establish a long-term partnership between UNEP and the international financial sector (banks, insurance companies and investors) from over 60 countries. The initiative envisages that environmental protection be an integral part of business activities and services of financial institutions, as well as that investment policy be directed towards environmentally sustainable projects. The positive attitude of financial institutions towards this initiative is evidenced by the fact that the initiative was supported by 13 banks, and that today more than 350 institutions – banks, insurance companies and investors, as well as more than 100 so-called supporting institutions, which contribute to sustainable financing within the financial system, support it. Along with UNEP FI, the Sustainable Stock Exchanges Initiative (SSEI) was launched in 2012, making an effort to establish a global platform for reviewing the stock market's contribution to sustainable development goals. Today, this initiative includes 106 stock exchanges listing 53,399 companies with a total market capitalization of 88,343,273 million US $ (Sustainable Stock Exchange Initiative, 2021). In order to assess the contribution of stock exchanges to the goals of sustainable development, a database on the activities of stock exchanges in this field was formed, whereby the assessment is performed from the point of view of certain criteria, presented in Table 1.

Table 1 Criteria for the Sustainable Stock Exchange Database

Criteria	Criteria fulfilment	
Stock Exchange has a sustainable partner	Yes	No
Reporting about sustainability	Yes	No
ESG criteria as a listing rule	Yes	No
Has written ESG guidelines	Yes	No
Offers training regarding ESG	Yes	No
Has sustainability-related index	Yes	No
Has listing platform for sustainable bonds and SME	Yes	No

Source: Sustainable Stock Exchange Initiative, 2021

Sustainability information is an integral part of individual stock market reports. Having in mind the mentioned criteria, it should be noted that some stock exchanges managed to meet all the criteria (China – Hong Kong Exchanges and Clearing Limited; India – Bombay Stock Exchange; Indonesia – Indonesia Stock Exchange; Luxembourg – Bourse de Luxembourg; Peru – Bolsa de Valores de Lima) listing 9,144 companies with a market capitalization of 6,743,309 million US $. In addition, the number of stock exchanges undertaking an increasing number of activities in the field of sustainability is constantly increasing, which is clearly shown in the following presentation (Fig.2).

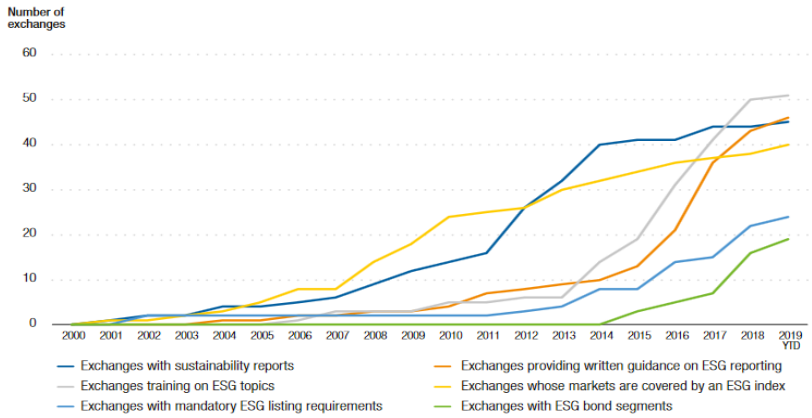

Fig. 2 Growth of stock exchange sustainability activities
Source: SSE initiative and the World Federation of Exchanges (2019, p.10)

The development of The Dow Jones Sustainability Indices (DJSI) speaks in favor of the importance of environmental issues and raising the awareness of companies and numerous organizations about the need to incorporate them into their business. Created in 1999, this index includes companies from as many as 61 industries around the world that have achieved the best ESG results. The assessment includes a number of criteria, such as corporate governance, customer relations, environmental policies, working conditions and social initiatives. By type of construction, this index is weighted by free-float market capitalization. DJSI includes more than 3,500 international groups and, as such, is a good indicator for investors who prefer a "sustainable" investment portfolio (S&P Dow Jones Indices: Dow Jones Sustainability Indices Methodology, 2021). In addition to DJSI, as many as 45 stock exchanges have developed their sustainability indices, which confirms the growing importance of sustainable finance for achieving sustainable development goals.

Among the numerous UN initiatives in the field of environmental responsibility and sustainable development, the Principles for Responsible Investment (PRI) stand out, which were adopted in 2006. Six principles have been formulated, the basis of which is to consider the impact of environmental and social factors on the investment process, and to incorporate the concept of sustainability into investment decision-making and investment processes. Since its establishment, the number of organizations that have signed these principles has been constantly growing (over 2,300). In addition, the Equatorial Principles adopted in 2003 are important, as a framework for environmental and social risk management, which can occur in project financing (Weber & Acheta, 2016). The primary task of this

framework is to provide minimum standards for due diligence and risk monitoring to enable the financing of only those projects that do not pose a risk to the environment and society. These principles have been adopted by 116 financial institutions in 37 countries, which otherwise finance most projects. Having in mind the positive institutional framework for the engagement of banks and other financial institutions in the field of achieving sustainable development goals, we will consider the approaches by which banks adopt the principles of sustainable development, the risks they face in this process, as well as the directions of further development of banks in conditions of their heightened environmental responsibilities.

1.2. Banks' environmental responsibility approaches

Modern economic systems must be accompanied by a functional ecological system. That is why environmental protection is an important precondition for doing business in any economic activity. Given the key role of banks in financing the economic activities of most financial systems, their role in achieving sustainable development goals is crucial. In this context, the responsibility of banks towards environmental protection has a dual nature: 1) internal, which implies the transformation of banks in the direction of their greater corporate eco-efficiency; and 2) external, which implies the development of banking products and services that contribute to sustainable development.

Eco-efficiency of banks: Banks belong to relatively clean industries. However, having in mind that this is a sector with a significant share in gross domestic product, its consumption of paper, energy, water is not negligible. Analyses conducted by banks in an attempt to "measure" the impact of banks on the environment, confirmed the significant impact of energy consumed by banks. In that sense, greater corporate eco-efficiency of banks implies efficient use of resources, introduction of new technologies, improvement of business processes, in order to ultimately achieve a positive impact of banks on the environment. For these reasons, many banks and other financial institutions have started using renewable energy sources (such as solar energy), use water and means of transport more rationally, reduce the use of paper, etc. (Jeucken & Bouma, 2001, pp. 29-30). In addition to the positive impact on the environment, this practice contributes to cost efficiency, long-term performance growth and improving the bank's image (Nizam et al., 2019).

Development of "green" banking products and services: Although not considered direct polluters, banks indirectly bear part of the responsibility for environmental pollution when they place money with clients engaged in activities that have a direct impact on environmental pollution. By approving green banking products and financing environmentally sustainable projects, banks contribute to their own clients becoming part of the "sustainability chain". Although the implementation of the concept of sustainability is not binding, the banking sector provides significant support to the implementation of the concept of sustainability and raising awareness of the importance of environmental protection. An increasing number of banks are adopting the concept of green banking, and strive to provide products and services to customers who take into account the consequences of their actions on the environment. This is not a one-way impact, given that the environmental practice of users of banking services ultimately affects the banking business. The impact of environmental risks on client operations, through approved bank loans and other bank products, affects the bank's operations.

The practice of "greening" banking products and services began first in the payment system, primarily in the *payment card* segment. Given that card payment has an upward trend, the contribution to the goals of sustainable development through this banking product is significant. Specifically, during the transaction, a certain percentage (0.1-0.5%) of the value of each purchase or transaction is transferred to non-governmental organizations for environmental protection or a special environmental fund. Prominent examples are: the World Nature Card created by the Swedish bank Föreningssparbanken and the WWF Visa Affinity Card created by the Royal Bank of Canada, where as much as 0.5% of the transaction value is transferred to the account of the NGO for animal and environmental protection (The World Wide Fund for Nature, WWF); HSBC Visa Card, where 0.1% of the purchase amount is transferred to the HSBC Green Roof for Schools program with each purchase; the Environmental Defense Platinum MasterCard created by the American bank Citigroup, etc. (Jeucken, 2001). In the area of *savings accounts*, directing funds to environmental funds is still the practice of individual banks. Thus, the VSB Panda Certificate stands out, within which the Fortis Group pays a fixed amount to WWF after the certificate is sold. In addition, ASN Bank and the Triodos Bank in The Netherlands use raised funds on savings accounts for placements in sustainable projects. In addition, investment funds specializing in investment in sustainable projects are formed, aimed at protecting the environment in general (Environmental Growth Fund), or a specific segment of sustainability, e.g. sustainable energy (Wind Fund, Solar Investment Fund).

When it comes to *loans*, an increasing number of banks offer loans that put the environmental dimension in the forefront. These are "green" car and mortgage loans, loans for energy efficiency, loans for small and medium enterprises that invest in sustainable development. In order to motivate customers to buy cars with high fuel efficiency, this type of loan is offered at lower interest rates compared to those for buying conventional cars. In addition, a lower interest rate is charged when taking a loan for the purchase of energy efficient real estate, as well as for the reconstruction and adaptation of homes. In addition to lower loan prices, clients reduce housing costs, achieve higher energy efficiency of the home, save energy, etc.

Previous banking products are intended primarily for households. In addition, banks seek to offer "green" banking products to the corporate sector. In order to encourage investments of small and medium enterprises in sustainable projects, banks form their own funds to approve loans on more favorable terms to companies that invest in sustainable projects. In the European Union, this process is supported by the European Investment Fund, and the number of banks that can participate in this program is limited. For priority projects, the Fund participates with as much as 50 percent in the total approved loan. In addition to lending, banks, through the investment banking segment, provide advisory and securities placement services to organizations that consider the effects of their business on the environment. In the area of advisory services, banks specialize in providing information to clients on sustainable projects, sustainable technologies, tax and legislative framework governing this matter. To this end, banks issue a number of brochures and reports with useful guidance on various aspects of adopting the concept of environmental responsibility. In addition, banks transfer part of the risk to investors through the mechanism of securitization of "green" loans. This process is known as eco-securitization. A prominent example is Forest Bond, created to finance the large and complex reconstruction of the Panama Canal, on the basis of which a twenty-five-year bond was created, whose buyers are entities that use this waterway. Catastrophe bonds (Cat Bonds), created to protect insurance companies from catastrophic

risks, by transferring them to investors, with the support of investment banks, also stand out (UNEP FI, 2007). In addition, specific financial derivatives have been created, primarily to protect companies from risks that may be caused by adverse weather conditions.

2. Environmental Risks in Banking

Various internal and external factors are putting pressure on banks to increase their role in environmental risk management and environmentally sustainable development. Banks are in a position to play a significant role in promoting sustainability, as bank loans continue to be the dominant source of funding for non-financial companies. For example, in the EU, the share of bank loans in the total debt of these companies was 82% (EBF, 2017, p. 7).

2.1. Integration of sustainability into banks' lending activity

Sustainable finance for banks is a source of new opportunities, but on the other hand, banks are more and more concerned about their exposure to environmental risk. The EY/Institute of International Finance (IIF) risk survey indicates that not only regulators are aware of growing environmental risks, but also that banks consider them to be key risks they will face in the coming years (EY/IIF 2019, p. 8). Banks have begun to integrate sustainability into risk management processes, green banking product design, and long-term strategies (BGLN, 2020, p. 1), but the integration of sustainability has been hampered by a lack of appropriate standards, relevant indicators, and the sharing of best practices (BGLN, 2020, p. 6). To overcome these limitations, the importance of regulators which could help coordinate and exchange information has been recognized. This is indicated by the establishment of the Network of Central Banks and Supervisors for Greening the Financial System, which now consists of 89 members representing central banks from countries around the world.

When integrating sustainability in the activity of banks, two approaches are distinguished: (a) a risk-based approach and (b) a values-based approach.

Table 2 Integration of sustainability

Sustainable Finance Typology	Bank loans
Sustainable Finance 1.0	Exclusion
Sustainable Finance 2.0	ESG integration
Sustainable Finance 3.0	Impact lending, microfinance

Source: Schoenmaker & Schramade (2019, p. 30)

As seen in Table 2, the risk-based approach involves excluding loan applications from companies involved in environmentally risky activities, and then including the ESG principle in the lending decision-making process. A step further in the integration of sustainability is a value-based approach that includes mission, strategy, publicly available information on ESG activities, impact of products and services etc.

Natural disasters and climate change bring high costs, the impact of which can undermine financial stability of both individual banks and the financial system as a whole

(NGFS 2020a, p.4). Integration of sustainability into lending activity can reduce the credit risk to which banks are exposed (Weber et al., 2015). Some empirical research found that banks with higher share of green loans to the total loan portfolio have lower non-performing loan ratio - (NPL) (Cui et al., 2018). The implementation of the concept of sustainability in lending activity should contribute to greater resilience of banks, but there is a danger that banks that base lending decisions on detailed environmental analysis may be at a disadvantage compared to non-banking competitors that provide alternative sources of financing.

Research by the European Banking Authority shows that - banks incorporate sustainability into their broader business strategy (around 95% of banks) (Coleton et al., 2020, p.11) and they see climate risk as a potential material risk (around 60% of banks) (Coleton et al., 2020, p.20). The majority of surveyed banks (77%) take into account the direct and indirect impact of activities that they finance (Coleton et al., 2020, p. 14). Direct impact that a bank has on the environment and society stems from its use of natural resources in doing business, while its indirect impact comes from its lending activity and projects it finances. Although they believe that risk management is a key mechanism for shifting capital from unsustainable activities to more sustainable investment, they do not see sustainability as something at the very core of risk management, which is a paradox that leaves room for regulators and supervisors (Coleton et al., 2020, p. 16).

In order to understand the drivers, practices and challenges of sustainable investment and financing, the OECD Secretariat interviewed risk managers from the largest OECD banks (OECD, 2020). According to the answers received, the leading driver of the integration of the ESG into the lending practice was the demand from investors (OECD, p. 121). Otherwise, investors are putting pressure on banks to get involved in managing and reporting on ESG risks. The OECD survey showed that almost all major banks have environmental and social policies and that most policies cover the practice of corporate lending (OECD, 2020, p. 126) and "screen their lending portfolios against specific ESG risks", but it was noticed that there are differences in the degree of implementation of ESG due diligence and that more attention is paid to environmental risks for project financing transactions (OECD, 2020, p.127).

2.2. Types of environmental risks for the bank

On the one hand, the exposure of banking clients to environmental risks is a source of opportunities for banks because it creates demand for products such as bank guarantees, green loans or environmental insurance products (Jeucken, 2001, p. 120). On the other hand, environmental risks for a bank are mainly the result of the environmental risks to which its borrower is exposed (Jeucken, 2001, p. 120).

The term "environmental risks" encompasses environmental-related risks and climate-related risks. Environment-related risks include risks arising from a bank's exposure "to activities that could potentially cause or be affected by environmental degradation" (NGSF, 2020b, p. 4) (such as soil, air and water pollution, deforestation, etc.) Climate-related risks refer to the risks posed by banks' exposure to "physical or transitional risks caused by or related to climate change" (NGSF, 2020b, p. 4).

Table 3 Sources of environmental risks

Physical Risks	Climate-related financial risks on the banking sector
Extreme weather events (e.g., winter storms, heat waves, floods) Ecosystem pollution Sea-level rise Water scarcity Deforestation/desertification	▪ Higher expected default by climate vulnerable sectors (e.g., agriculture and tourism) ▪ Lower property values in coastal areas ▪ Downgrade of credit ratings of borrowers including sovereigns due to extreme weather events ▪ Relocation of headquarters and data centers
Transition Risks	**Climate-related financial risks on the banking sector**
Public policy change (e.g., carbon pricing, pollution control regulations, resource conservation regulations) Technological changes (e.g. clean energy technologies, energy saving technologies) Shifting sentiment (e.g., changes in consumer preference for certain products, changes in investor sentiment on certain asset classes) Disruptive business models (new ways to run businesses that can rapidly gain market shares from traditional businesses)	▪ Declining collateral value ▪ Stranded assets ▪ Higher expected default by carbon intensive sectors ▪ Higher transaction costs due to weakened macroeconomic conditions ▪ Higher reputational risks by investing in carbon-intensive sectors

Source: NGFS, (2020b, p.5); Park & Kim, (2020, p. 7)

The sources of environmental risks are diverse, so these risks can be divided into two groups: physical risks that arise from weather-related events and transition risks that arise from the transition to a lower-carbon economy, as shown in Table 3.

The borrower's failure to address environmental issues effectively may jeopardize its business, as well as the bank that finances it. The bank may have to deal with: (a) delays in loan repayment or loan write-offs, (b) loss of collateral value on liquidation, and (c) loss of reputation and impairment of the brand.

2.3. Transformations of environmental risk into credit risk

Banks may be exposed to credit risk due to the *compromised ability of the client to repay the loan.* A bank is exposed to credit risk when a borrower is unwilling and/or unable to meet its contractual obligations due to environmental factors. Here, it is important to assess the client's financial ability to finance its environmental risks and to invest in preventive environmental management (Jeucken, 2001,p. 129).

Legal problems in the field of environmental protection faced by the borrower may jeopardize the continuity of its business. Problems in obtaining and retaining environmental permits (emission/discharge permits) or the need for the company to invest additional funds to obtain permits or comply with the regulations may have a negative impact on the business continuity of the company and its financial position. This may reduce the repayment capacity of the loan or lead to the termination of the bank's credit relationship with such a borrower. It is important for the bank to be aware of the client's liability for damage to the environment (environmental accidents or regulatory fines for violating the environmental permit or its expiration) as well as the client's financial capacity and reserves to cover these risks. There may also be the borrower's liability for environmental damage that will occur elsewhere in the production chain, i.e. the so-called *"sticky*

liability" (for example for substances embedded in a product) with which banks must be familiar (Jeucken, 2001, p. 125).

As shown in Table 3, one form of environmental risk is transition risk resulting from adaptation to a low-carbon economy and climate change, including changes in environmental policies and regulations, changes in technology, and changes in public mood and social preferences. This type of risk can affect the value of banks' loan portfolios or the value of financial assets in the affected sectors. For example, changes in the field of competition and consumer demand can lead to the loss of a part of the borrower's market and jeopardize its loan repayment capacity. More environmentally responsible competitors and their products pose a risk to a company that does not have such environmentally friendly producers. Consumers themselves may also demand more environmentally friendly products or production processes, and a problem may arise if the borrower is unable to meet the resulting changes in consumer demand and expectations.

Physical risks do not originate from the borrower's company and include several sources of risks: extreme weather events, climate change and environmental accidents that may lead to serious water and land pollution (NGFS, 2000b, p.5). For example, extreme weather events may disrupt business activity of -borrower and thus affect the ability to repay the loan, climate change and soil or water pollution can cause excessive costs for agriculture.

The materialization of environmental risk for the bank may also occur due to the fall in the value of the borrower's collateral. Security is an important factor in bank lending. The role of collateral can be played by the registered assets of the borrowing company (land or buildings) or inventories. Environmental factors can negatively affect the value of a particular asset of a borrower that is pledged as collateral (NGF, 2020). For example, the value of pledged land may fall due to pollution, a high-value machine that pollutes the environment may be worthless when sold, the value of pledged stock may fall due to lack of demand in the case of environmentally unacceptable products and the like.

Mortgaging gives the bank the right to sell the mortgaged real estate if the borrower does not fulfill its obligations to the bank. In the event that a bank becomes the owner of a pledged real estate, it may be exposed to the risk of not only a decline in value but also the occurrence of negative collateral value. The bank is exposed to liability risk arising from the client's legal obligations. This includes fines, costs for resolving third party claims for damages due to negligence in the client's environmental risk management and pollution clean-up. For example, a bank may be liable as the owner when contaminated land that is collateral has to be rehabilitated and cleared before sale (Tarna, 2001, p. 159- 160).

2.4. Negative impact of environmental risk on the bank's reputation

The bank is exposed to reputational risk due to potentially negative publicity associated with the borrower's poor environmental practices. With the increase of environmental awareness and attention focused on the issue of protection of the environment, the impact of environmental risk on the bank's reputation has become important because it affects not only specific loans but the entire loan portfolio and all other areas of the bank's business. Similarly, negative publicity that a bank gains on a particular local market can damage its reputation and negatively affect its business as a whole. However, this type of environmental risk is difficult to assess financially. Negative publicity damages the brand values and the image of the financial institution in the media, the public, the financial and business

community. The main negative consequence of damaged reputation is the abandonment of the bank by existing clients and the inability to acquire new clients.

Environmental risks to a bank's reputation are more pronounced in project financing (Case, 1999, p. 146), in cases of large infrastructure investments (such as roads and railways) and new technologies (Jeucken, 2001, p. 139). The negative public attention that is focused on companies and projects that pollute the environment does not bypass the institutions that finance them. Non-governmental organizations (NGOs) closely monitor banks in this regard. According to the organization that globally monitors the activities of NGOs, the number of campaigns aimed at banks that provide financial support to environmentally unacceptable projects is significantly increasing (OECD, 2020, p. 122). The NGOs campaigns (naming and shaming bad practices, inviting target bank clients to close accounts en masse, and similar campaigns) target the banks financing fossil fuel projects and supporting fossil fuel companies through corporate lending, issuing of bonds and share and bond holdings (Schücking et al., 2011).

This imposes the need for the bank to seriously examine potential borrowers or projects from the aspect of environmental risks. It should be borne in mind (Jeucken, 2001, p. 142): (a) that simply linking the bank to the detrimental impacts of the company or project on the environment is sufficient to create reputational risk (the degree of bank participation in the project is generally irrelevant, it can be only advisory services), (b) that there are geographical and cultural differences due to which the local population does not see the project as harmful to the environment, but clients in developed countries consider it environmentally unacceptable, which can damage the bank's reputation (e.g. the positive economic effects of the project are emphasized in developing countries), (c) that, while an isolated problem can be forgotten, a number of problems can seriously damage a bank's reputation, (d) that the larger projects are more likely to have adverse impact on the environment and/or to attract the attention of NGOs and (e) that project funders may underestimate risk when it is not measurable.

2.5. Environmental risk assessment

Banks strive to manage environmental risks. This includes linking the risk and the probability of negative impacts and the consequences of the occurrence of a risky event. Environmental risk becomes uncertainty when its probability and cost cannot be predicted and calculated. The bank assumes those risks for which the probability of loss can be predicted with a certain degree of certainty. Determining the exposure of banking institutions to environmental risk is not always easy. Credit exposure to "brown assets" is easier to determine (for example, exposure to key players in the fossil fuel industry) but it is far more complex to assess exposure to climate change (BGLN, 2020, p. 6-7)).

To reduce environmental risk exposure, banks must understand the potential environmental risks and their implications for the potential borrower's business. This requires proactive identification, assessment and management of environmental risks before they become significant or result in a negative outcome for the borrower and make it impossible to meet its financial obligations to the bank. Risk identification refers to the strategic assessment of environmental factors that may result in financial risks (NGSF, 2020b, p. 11). The extent of the bank's exposure to these risks is then determined (e.g. 10% of the loan is exposed to risks). Risk assessment refers to "estimating the probability and magnitude of financial losses that may arise from these risks" (NGSF, 2020b, p. 12). Banks can mitigate environmental risks by

taking risk reduction actions such as refusing a loan application from companies involved in environmentally risky activities, adjusting the interest rate or maturity of the loan to environmental risk or inserting specific clauses in loan agreements (Jeucken, 2001, p. 119).

For an effective environmental risk assessment, it is necessary for the bank to have information on the environmental sensitivity of the companies it finances. The bank may use its own resources or external expertise. Some of the possible sources of information on companies' environmental risk exposure are (Jeucken, 2001, p. 145): (a) standardized lists of questions (regarding compliance, own ESG initiatives, records of previous incidents, etc.) (b) information obtained from specialized agencies (credit rating agencies - are integrating ESG consideration into credit rating (Beeching et, al., p. 5) (c) direct contact with a potential borrower for risk assessment, (d) environmental reports, (e) permits and other government sources, (f) policy documents issued by the government; (g) past experience or experience of other banks, etc.

One of the methods for analyzing environmental risks in banks is the assessment of possible environmental scenarios. Scenario analysis could be used to determine the financial impact of climate-related risks (transition and physical risks) on banks (NGFS, 2020b, p. 3). Scenario analysis may include the following steps (Repetto & Austin, 2001, p. 281): (a) defining the sector, (b) identifying prominent future environmental issues for the sector, (c) identifying scenarios, (d) assigning probabilities to the scenarios, (e) assessing the exposure of individual companies, (f) assessing the financial impact of the scenario and (g) constructing an overall measure of the expected impact and risk.

Since various sectors may be more or less sensitive to the environment, many banks begin an environmental risk assessment with an analysis of the sector in which a particular company operates. Sectors differ in terms of environmental sensitivity. Environmental sensitivity means "that products from the production process itself and the emissions of the production process can be regarded as actually or potentially threatening for the environment" (Jeucken, 2001, p. 120) Particularly environmentally sensitive sectors include agriculture, fishing, mining and the like. Environmental risks are especially pronounced when looking at individual industries. Environmentally sensitive industries include oil refineries, metal production, textile industry, livestock, etc. Banks are exposed to greater risk when investing in companies operating in environmentally sensitive industries.

Environmental risks to which a bank is exposed also depend on the size of the company it lends to. These risks are more pronounced when it comes to small and medium-sized enterprises that approach environmental issues ad hoc, do not have specialized knowledge for solving problems in the field of environmental protection and only strive to comply with their regulations. Large companies have a greater opportunity to hire or train staff to deal with environmental issues, approach environmental issues systematically, have specialized knowledge of relevant legislation or technological and organizational solutions that they can use to innovate products that meet society's sustainability requirements (Jeucken, 2001, p. 122)

3. Regulatory Approaches for Environmental Risk Management in Banking

Recognizing the impact of environmental risks on banking operations, central banks and supervisors are taking a number of initiatives to reduce the negative impact of these risks on banking operations, and, thus, financial stability. At the international level, in 2017, the Network for Greening the Financial System (NGFS) was formed as a group of

central banks and supervisors, within which experiences are exchanged and non-binding principles are adopted to guide banks towards financing sustainable projects. In February 2020, the Basel Committee formed a high-level Task Force on Climate-Related Financial Risks (TFCR), in order to monitor the risks that climate change may have for banks. In the initial stages of its work, the TFCR organized a forum for the exchange of regulatory and supervisory practices of member states in the field of climate change risk management. Most participants supported the need to include these risks in the monitoring list, bearing in mind that they may have negative implications for banking operations. However, monitoring and managing these risks are significantly hampered by the lack of a unified methodology for measuring and calculating their impact on the stability of the banking sector, which makes it difficult to compare banks within the same, but also between different banking systems.

At this stage, most countries are raising awareness of the importance of taking these risks into account, but a prudential framework for including these risks in the capital adequacy calculation has not yet been established. Although the focus of regulatory and supervisory bodies, as well as supranational organizations, after the outbreak of the COVID-19 pandemic shifted to considering the impact of the pandemic on financial stability, the pandemic reaffirmed the importance of implementing ESG principles in banking operations. TFCR coordinates its work with the Network for Greening the Financial System (NGFS), the Financial Stability Board and other international organizations that set standards in this area, all with the aim of global coordination of issues related to environmental risks, especially those which are related to climate change and global warming.

In addition to initiatives at the supranational and national level, there are also initiatives at the level of individual banks. Specifically, an increasing number of banks include these risks in risk management systems, developing special instruments and methods for their coverage and measurement. An increasing number of banks report these risks in their reports, although they are not required to do so by the current regulatory framework. Most countries seek to develop approaches to measuring and managing the risks posed by climate change and other environmental impacts, as well as to look at the mechanisms by which the effects of these risks affect banking operations. In this regard, most countries believe that the existing prudential framework should be adapted to include environmental risks in the list of risks, while a minority believe that these risks should be integrated into the existing risk classification within the appropriate risk group (e.g. credit risk, operational risk etc.). For example, banks are expected to consider environmental risks when assessing the creditworthiness of borrowers, both in the phases of the loan approval process and later during the monitoring of the loan portfolio. The Prudential Regulation Authority (PRA) requires banks to consider this risk when calculating the capital adequacy ratio. Given that Pillar 2 of the Basel Framework provides for the possibility of internal assessment of capital adequacy, banks are left with the possibility to cover risks that are not fully covered by Pillar 1, which creates a basis for including environmental risks, especially climate change. In addition, in order to strengthen the market discipline of banks in this field, under Pillar 3, it is possible to provide for the obligation to publish relevant information on banks' exposure to environmental and social risks, especially in the case of large banks (BCBS, 2020).

CONCLUSION

Banks introduce the concept of social responsibility into their operations and implement numerous projects that significantly contribute to the community. Banks create green banking products and services and act as sources of financing for green projects. In addition, in the current environment, banks are working to raise awareness of the importance of sustainability and environmental protection both among their employees and in the community in which they operate. A comprehensive approach to environmental management involves establishing an internal environmental system (online services, reducing energy consumption, raising employee awareness, etc.), managing environmental risks associated with lending operations (credit portfolio environmental risk assessment) and promoting sustainable financing through creating green banking products and services.

In general, companies are increasingly being judged on the basis of their attitude towards the environment – customers today are undoubtedly better informed, more environmentally conscious and more sensitive. There are social expectations that the banking sector should also be more careful about environmental risks. In addition to economic indicators, banks are introducing sustainability as an important criterion for business cooperation with companies. Increased environmental risk may result in impaired ability of the borrower to repay a loan. Banks are therefore intensifying the inclusion of the sustainability element when deciding on loan approvals and developing procedures for assessing the risks associated with environmental damage that can be caused by loan beneficiaries. However, banks face ongoing challenges in the process of integrating sustainability into risk management frameworks due to the new and complex nature of risk, lack of historical data, lack of appropriate standards and relevant indicators for measuring environmental risk. The development of an adequate framework for measuring and monitoring environmental risk would contribute to the public declaration of banks as socially responsible institutions not only for marketing purposes, but also accompanied by appropriate actions in the field of sustainability. Sustainable banking includes environmental risk management and credit support to businesses that make positive impact on the environment. The transformation of banking from traditional, predominantly profit-oriented, to sustainable banking implies the creation of sustainable values for the banks themselves, but also for society as a whole.

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ODRŽIVE FINANSIJE I BANKARSTVO: IZAZOV ZA REGULATORE I SISTEM UPRAVLJANJA RIZICIMA

Ključna pozicija banaka u finansijskom sektoru, kao i njihova nesporna uloga u finansiranju privrednog razvoja uslovili su potrebu sagledavanja njihovog uticaja na životnu sredinu. Implementacija koncepta održivosti u bankarsko poslovanje uslovila je transformaciju banaka u pravcu njihove veće korporativne eko-efikasnosti i razvoja bankarskih proizvoda i usluga koji doprinose održivom razvoju. Održive finansije za banke predstavljaju izvor novih mogućnosti, ali sa druge strane raste zabrinutost banaka zbog izloženosti ekološkom riziku. Prepoznajući uticaj ekoloških rizika na poslovanje banaka, centralne banke i organi supervizije preduzimaju brojne incijative kako bi umanjili negativan uticaj tih rizika na poslovanje banaka, a time i finansijsku stabilnost. Rad ima za cilj da ukaže na izazove koje je održivo bankarstvo stavilo pred regulatore i sistem upravljanja rizicima.

Ključne reči: *održivo bankarstvo, ekološki rizici, regulacija*

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Original Scientific Paper

VALUE-BASED MANAGEMENT, LONG TERM SUSTAINABILITY AND CORPORATE SOCIAL RESPONSIBILITY

UDC 005.52:330.133.1

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Abstract. *Today's companies, especially large multinationals, are supposed to be financially successful in accordance with the shareholders' expectations, to operate in compliance with the requirements of sustainable development, taking into account the interests of future generations, as well as to act in a socially responsible manner, serving the interests of key stakeholders, including the interests of the community. In such circumstances, managers are expected to create enough value to satisfy all these interests. The adoption of Value-Based Management (VBM) approach has contributed to a better understanding of shareholders and managers and the alignment of their interests. In this paper, we analyze the compatibility of VBM with the requirements of other stakeholders, including the requirements regarding sustainability and corporate social responsibility. In this context, it could be said that a broader concept of VBM further enhances the interest-based logic behind the corporations' functioning, but at the same time it enables the integration of the requirements related to sustainability and corporate social responsibility.*

Key words: *value-based management, value creation, sustainability, corporate social responsibility, growth*

JEL Classification: M14, M40, G30, L21, Q01

1. INTRODUCTION

In today's world, the issues of sustainability and corporate social responsibility come to the fore more explicitly than ever before. Global challenges such as climate change,

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environmental protection, depletion of natural resources, high social costs, occasional crises, including the latest Covid-19 pandemic cause a major blow to economic activity. The magnitude of these problems, which affect companies, national economies and global economy, and the feeling of helplessness as a result of the failure to resolve them more efficiently are particularly troubling.

In this paper, we address the issues of corporate sustainability (CS), corporate social responsibility (CSR) and the concept of value-based management (VBM). Corporate sustainability is a prerequisite for the survival and continuity of companies, corporate social responsibility actualizes the company as a socio-economic institution, while VBM approach is aimed at making the process of value creation more feasible. Obviously, the importance of individual issues is not called into question. We rather seek to find out whether and how they could be interlinked in order to preserve the logic behind the corporate economy functioning, while simultaneously respecting the social responsibility. This is related to the reexamination of key corporate goals and their prioritization.

The current global crisis caused by the COVID-19 pandemic has further highlighted the topic of balancing the interests of various stakeholders. On the one hand, in the situation where social costs have increased significantly, the crisis has explicitly reinforced the importance of corporate social responsibility. On the other, when a strong focus is simultaneously placed on the company's continuity and need for value creation, then sustainability becomes a matter of central importance. In such circumstances, balancing different interests undoubtedly becomes more complex, but we believe that the question of setting the priorities from a wide spectrum of goals turns out to be much clearer.

The structure of the paper is suited to the intention to recognize the importance of the connection between value-based management, long term sustainability and corporate social responsibility. In the first part of the paper, the emphasis will be on valued-based management and valued based metrics, whereby VBM metrics will be seen as an instrument to help managers in making decisions that enable value creation. In the second part, there will be a broader interpretation of value-based management, which should show that value creation is not only in the interest of shareholders, but also the interest of other stakeholders. Finally, in the third part of the paper, the focus will be on the reexamination of value-based management in the context of long-term sustainability and corporate social responsibility.

2. VALUED-BASED MANAGEMENT AND VALUED BASED METRICS

Globalization of goods and services markets, internationalization and deregulation of capital markets, outstanding development of information technologies, higher standards of product and service quality and stricter regulatory requirements with respect to environmental protection have created major challenges in managing corporations. Besides, if we take into account an increased role of institutional investors and threats of hostile takeovers, then it becomes obvious that managers are under tremendous pressure to maintain the competitive advantage of companies and their ability to generate expected returns. The awareness of the risks that in such circumstances managers may not act in the best interest of shareholders has paved the way for the concept of value-based management.

VBM has its roots in the agency theory. The concept was created in response to the dysfunctional behavior of managers in situations where they, as agents, are in an informationally superior position in relation to shareholders. In these conditions, managers tend to pursue their own interests at the expense of shareholders' interests. This situation first leads to the

agency problem, and then to agency costs that undermine a company's performance and its market value. Moreover, the managers and shareholders attitudes toward risk may be different, which may also provoke the behavior that is inconsistent with the best interest of shareholders (Ameels et al., 2002, pp. 5-6). In this regard, VBM was created to alleviate the problem of aligning the goals and interests of shareholders and managers, encouraging managers to think and act in the interest of shareholders.

We could agree with J. Knight to VBM "instills a mind-set where everyone in the organization learns to prioritize decision based on their understanding of how those decisions contribute to corporate value" (Young & O`Byrne, 2001, p. 18). In this regard, "it aligns strategies, policies, performance, measures, rewards, organization, processes, people, and systems to deliver increased shareholder value" (Black et al., 1988, p. 292). VBM has two distinctive characteristics. First, it is oriented to value creation, which represents a significant shift relative to the accounting approach and measures of a company's performance. Its application involves raising the bar significantly as regards the criterion which differentiates successful from underperforming companies. This threshold implies that, in addition to common expenses included in the income statement, the opportunity cost of equity, which is equal to the returns that would be generated by investing in companies with a comparable risk, should also be covered. Second, a different perception of a company's success reveals that VBM is primarily focused on shareholders' interests, which basically means that the paramount goal of corporations is shareholder value maximization. Therefore, managers need to demonstrate the ability to create shareholder value, which further implies that only under such conditions can they be entitled to bonuses and other privileges. VBM Pyramid, which clearly points to the strategic importance of the shareholder value creation goal, is presented in Figure 1.

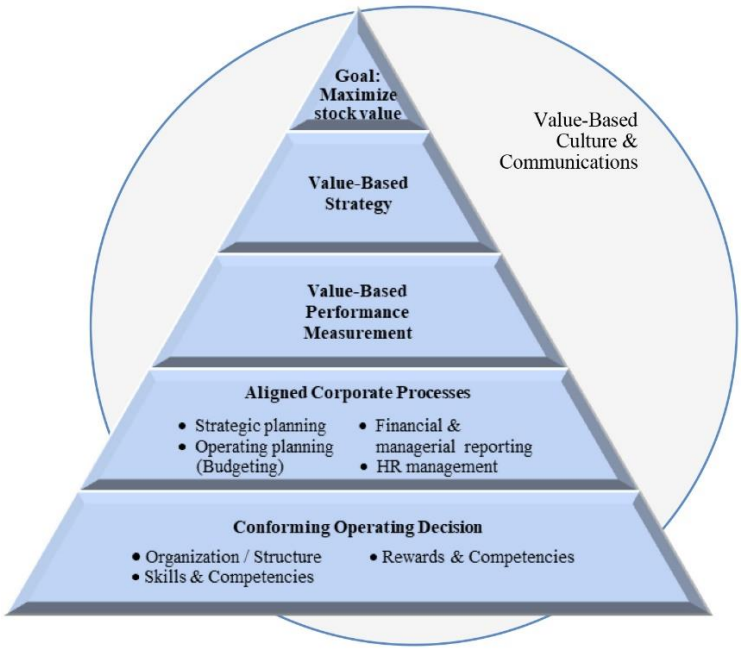

Fig. 1 Value-Based Management Pyramid
Sources: Ashworth, 2000, p. 42; Knight, 1998, p. 3., in: Holler, 2009, p. 19

The fact that the shareholder value creation is positioned at the top of the pyramid suggests that it represents the primary goal of a company and a basis for the setting of value-based strategy. Strategy formulation, its implementation and performance control require underpinning VBM metrics, so there is a need to set up Value-Based Performance Measurement. A logical prerequisite for the efficiency of VBM involves ensuring alignment and providing guidance for corporate processes, as well as coordinating operating decisions in such a manner that all activities are aimed at the accomplishment of value creation goal. All these activities together are transforming VBM into a corporate culture (Holler, 2009, p. 19).

This way of looking at the corporate purpose appears quite provocative because the company's goals do not take into account the interests of other stakeholders. Such an approach seems to overlook the fact that a corporation is actually a coalition of various constituencies which bring some inputs into that coalition with the intention of achieving their objectives. We hereby refer to managers and other employees, customers, suppliers, creditors, government and local community. The stakeholder theory extends the scope to other constituencies as well and, inter alia, draws attention to the risk that shareholder value creation might occur at the expense of other stakeholders. For example, the payment of too high dividends, excessive borrowing, the implementation of high-risk projects and similar activities may lead to shareholder value creation, but they may also expose creditors to a greater risk and jeopardize their interests. Fraudulent reporting may lead to better short-term performance, but the accumulation of hidden losses will certainly do great harm to investors who will lose dividends and invested capital, employees may lose their jobs, while the government may be deprived of tax revenues. A local community may suffer damage from the use of obsolete technology and the society from environmental pollution and high social costs. Therefore, it is emphasized that a corporation has a more profound purpose than just making money for its shareholders.

So, unlike VBM, which assesses a company's success based on its ability to generate long-term returns to shareholders, the stakeholder theory evaluates a company's performance based on its contribution to all stakeholders, including the community (Wallace, 2003, p. 120). Of course, defining the corporate purpose in this way, at least at first glance, sounds far better than insisting on the dominance of only one interest group (shareholders).

The application of VBM concept also requires a suitable VBM metric. Bearing in mind that VBM entails a different management philosophy which focuses on value maximization, its associated metric differs from traditional one, predominantly based on the use of accounting measures. The imperative of shareholder value creation calls for the calculation of the cost of capital that needs to be covered. The logic behind the creation of value added implies a need to cover not only interest expenses, but also the above-mentioned opportunity cost. On the other hand, incorporating the interests of all stakeholders and embracing the concept of social responsibility result in a necessity to complement shareholder value added measures with market value added measures. In this paper we only provide an overview of a wide range of available options (Figure 2).

The systematization of the presented measures is in accordance with the understanding of the company's goals. Accounting measures (stand-alone or combined with market measures) correspond to the beliefs that income is the primary goal of a company, measures of economic value added reflect the philosophy of creating shareholder value, measures of market value added enable the integration of the broader interests of different stakeholders, while the cash flow-based measures take part in each of the mentioned groups of measures. Furthermore, we must keep in mind that these measures are necessary both in the stage of performance budgeting and in the stage of control of the achieved performance against targets.

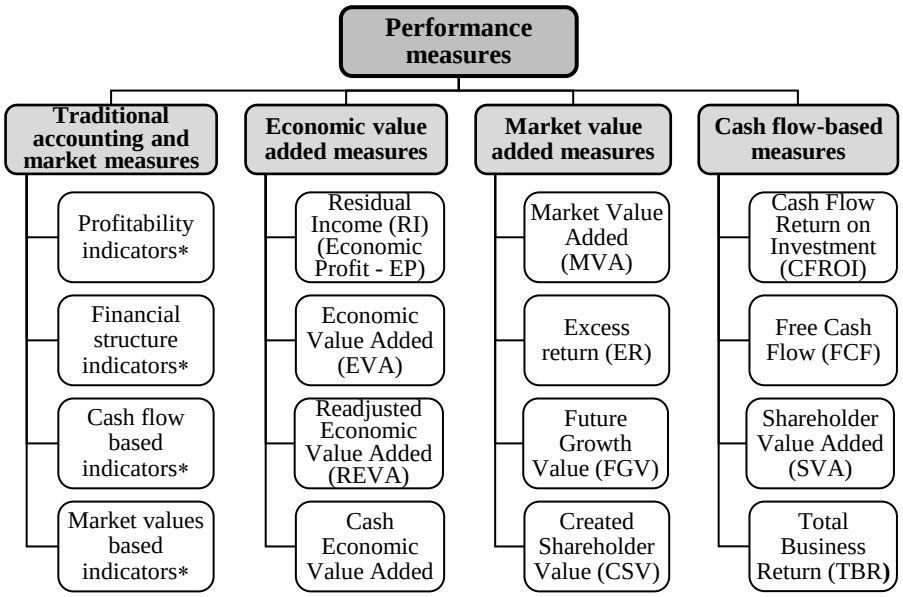

Fig. 2 Performance measures systematization

* See more about these indicators in: Malinić et al., 2019, pp. 85-150.

Source: Author

However, some measures, such as EVA, go beyond the scope of a simple "metric". EVA is not just a measure of a company's performance. It plays a central role in a strategy formulation process (since managers are supposed to strive to maximize the company's stream of future EVAs), capital allocation toward value-added investments, aligning the management compensation with the interests of shareholders, facilitating communication between managers at operating unit levels as well as the communication with the capital market (Young & O`Byrne, 2001, pp. 18-19).

Of course, the logic of calculating individual measures follows the logic of setting goals that are to be achieved. Despite the fact that performance measures are highly important, we must not forget that they do not create value in themselves. In other words, even the most excellent measures cannot help companies that lack an attractive production program, make low-quality products, have no customers or ignore demands of other key stakeholders. We could agree with the opinion that today we are witnessing a kind of "metric mania", but the essential purpose of metrics is "...to help managers make value-creating decisions and to orient all company employees toward value creation" (Copeland et al., 2000, p. 55).

At the core of VBM approach lies the effort to create value added by managing value drivers. Hence, the successful implementation of VBM requires the management to have the ability to identify value drivers and manage them in a way that leads to value creation. Also, value drivers can be found at different levels. For example, in the case of EVA, key value drivers at the first level include Return on Invested Capital (ROIC), Weighted Average Cost of Capital (WACC) and invested capital. This means that value could be created by increasing ROIC, reducing WACC, increasing investments with positive net

present value, as well as by disinvesting or selling assets that do not contribute to the creation of value added.

However, even the foregoing steps do not suffice to ensure successful management. If we follow the line of return on invested capital, then at the second level we can see that ROIC, as a broader performance measure, also has its own value drivers, including profit margin and turnover. Revenues are an important determinant of both value drivers (profit margin and turnover). A more thorough analysis shows that revenues are determined by market size, market share, sales prices, and sales mix. The situation is similar with other value drivers that determine EVA or some other measures of value. In the context of VBM approach, the managers must know what is behind each value driver and take actions that create value. Managers must adopt a value-based mindset, which directs their attention to value drivers rather than to EVA score.

3. THE BROADER INTERPRETATION OF VALUE-BASED MANAGEMENT

After all, the question arises as to whether VBM is in conflict with the requirements for satisfying the interests of all stakeholders. This issue is closely related to the answer to the question as to whether it is possible to create shareholder value without taking into consideration the claims of other constituencies. Anyway, there is an additional problem here. When it comes to multiple goals (from the perspective of various constituencies), then we might ask what would be a priority (decision criterion) in conflict situations where the interests of different stakeholders collide.

Value creation is important for any profit-oriented organization, and therefore indisputable. However, putting a strong focus on shareholder value creation does not necessarily mean ignoring the interests of other stakeholders. It is just not possible, as ignoring the customers' interests concerning design, functionality, provision of after-sales services and product quality obviously cannot lead to shareholder value creation. The same goes for other constituencies, including the community as a whole. In fact, we would rather say that the best way to satisfy the shareholders' interests is to provide that the interests of other stakeholders are met.

On the other hand, when it comes to the tradeoffs in the decision-making process, i.e. when interests collide, the situation appears to be much more complex. In such circumstances, while publicly advocating the idea of "balancing the interests of all stakeholders" some managers might actually cover up the company's poor performance and bad investments (Rappaport, 1997, p. 7). If there is a great number of goals, it becomes more challenging to make optimal decisions and control managers' behavior. Shareholder value creation stands out as the best criterion for decision making because it represents a clearly defined goal, which enables to make rational decisions that lead to an increase in value. The efficient use of resources should enable the generation of return that exceeds the total cost of capital (Ameels et al., 2002, p. 11). Jensen points out that "without the clarity of mission provided by a single-valued objective function, companies embracing stakeholder theory will experience managerial confusion, conflict, inefficiency, and perhaps even competitive failure" (Jensen, 2001, p. 9). Undoubtedly, stakeholders also tend to be very sensitive to the management's failure to create value.

However, all this does not necessarily mean that VBM is irreconcilably opposed to the stakeholder theory. In this regard, Jensen sees a possibility that VBM may embody some elements of the stakeholder theory, calling that form "enlightened value maximization" or

"enlightened stakeholder theory". This theory "…uses much of the structure of stakeholder theory but accepts maximization of the long-run value of the firm as the criterion for making the requisite tradeoffs among its stakeholders" (Jensen, 2001, p. 9). Wallace also supports the idea of the complementarity between VBM and stakeholder theory, emphasizing that each key stakeholder could be considered as value driver. Nevertheless, value creation remains the predominant goal (Wallace, 2003, p. 122).

Speaking of the corporate form of business activity, one should not neglect the fact that returns have to be risk-adjusted. In other words, the hierarchy of interests with regard to the correlation between return and risk must be preserved. For example, in the context of the risk borne by the company's constituencies, the greater returns to creditors in comparison to the returns to shareholders would make no sense. Besides, this situation cannot be sustainable in the long run. If such an environment even existed, then the interest of shareholders as providers of the riskiest capital would vanish, so there would be no primary issues and, consequently, no trading material for the secondary capital market.

In addition to all previously mentioned issues, we should bear in mind that benefits are not distributed exclusively to shareholders. In different phases they are also distributed to other stakeholders: to customers by delivering the products of required quality, to employees in the form of monthly salaries, to creditors through interest payments, to suppliers by making payments within agreed deadlines, while shareholders participate in the created value through dividends and capital gains. All this is possible only if value is created. The problem lies in the fact that value distribution is largely understood as the distribution of generated income which, formally and legally, belongs to shareholders. At the same time, it seems to be forgotten that in this case the interests of other interest groups must have been settled before. Clearly, there will be no income for distribution if a company does not pay off its liabilities to suppliers, ignore the customers' requests, does not pay interest to creditors or taxes to the government. So, it turns out that as long as VBM enables an efficient internal capital allocation and creates value, it suits not only the interest of shareholders, but also the interest of other stakeholders.

4. Reexamination of Value-Based Management in the Context of Long-Term Sustainability and Corporate Social Responsibility

Sustainability, as a global imperative, along with sustainable growth and corporate social responsibility at the company level are essential features of the environment in which companies operate. Economic responsibility has been a primary concern of the companies operating in a market economy, but it is obvious that in today's business environment companies' activities are also becoming a socio-economic phenomenon. "Though society expects business organizations to be profitable, as this is a precondition to their survival and prosperity, profitability may be perceived as `what business does for itself,` and obeying the law, being ethical, and being a good corporate citizen may be perceived as `what the firm is doing for others`, society or stakeholders" (Gal et al., 2018, p. 6).

Sustainable development is often defined "... as development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987. p. 43). It is originally based on the requirement for balancing the exploitation of non-renewable and renewable natural resources with the needs of economy and society in the long run. If the use of natural resources exceeds the capacity for their renewal, that leads

to unsustainable consumption of the resources that belong to future generations and, consequently, to intergenerational inequality. Speaking of growth from a macro perspective, it has been emphasized "… that growth should be smart (implies the development of a knowledge-based economy), sustainable (calls for promoting a more efficient use of resources, competitive economy and corporate social responsibility), and inclusive (supposes the equal opportunities for everyone, high level of employment, social protection, and fight against poverty)" (Malinić, 2019, pp. 57-58).

However, our attention is focused on the issue of sustainability at the level of business entities. In this case, the issue of sustainable growth could be addressed in a more concrete manner. First, sustainable growth implies cautiously differentiated financing (due to risks, cost of capital and the effect of financial leverage), reasonable income distribution policy (relating to dividends and the portion of income that will be retained in the company), and the required level of operating efficiency (to ensure expected ROIC). Second, when it comes to sustainable growth, VBM approach goes a step further regard to both of required returns and the use of metric. The relationship between ROIC, EVA, MVA and growth rate could be expressed as follows:

$$\boldsymbol{MVA} = \frac{(ROIC - WACC)\ x\ Invested\ Capital}{WACC - Growth\ Rate} \tag{1}$$

Growth is deemed to be attractive only if ROIC is greater than WACC. It enables to create value for shareholders as well as for other constituencies. Therefore, "positive expected returns spreads are the source of value creation, and negative expected returns spreads are the source of value destruction" (Hawawini & Viallet, 2007, str. 530). Obviously, growth does not always lead to value creation. "Sometimes, high-growth companies may even destroy value. By contrast, companies with lower growth may create value. Only the growth that is accompanied by a positive spread can generate value" (Malinić, 2019, p. 59).

Sustainable growth based on VBM mindset enables the fulfillment of economic responsibility in terms of creating value for key stakeholders. Nevertheless, this is not enough for a company to operate successfully in a complex environment. Another important dimension is corporate social responsibility. CSR implies that companies' activities should always be considered in the context of their impact on the community and environmental protection for the purpose of ensuring long-term sustainable development. This further involves balancing the needs of society and other stakeholders with the needs for making a profit. Such behavior goes beyond the legal obligations of companies and one-dimensional corporate goals. As such, CSR is based on the respect for moral values and ethical behavior, and implies a broader perspective of the role and importance of companies in the society.

There are moral and economic reasons behind the commitment to embrace social responsibility. Moral reasons stem from the belief that the goal of "making money" is too narrow and that the community expects far more from companies. Besides, it is an undeniable fact that companies are responsible for the pollution of air, water and soil and the disposal of toxic substances, so it would be fair that they bear a portion of the costs of environmental damage (Mowen & Hansen, 2011, pp. 688-689). Moreover, responsible behavior means "doing more with less" (producing more output with less consumption of natural resources and less environmental pollution) and moving towards cleaner production and environmentally-friendly processes.

Economic arguments in favor of social responsibility seem quite convincing. Given that VBM approach calls for the efficient allocation of resources and creation of more value for all stakeholders, it could be concluded that VBM approach is also compatible with the requirements for environmental protection and the fulfillment of other needs of the society. Orlitzky, Schmidt and Rynes, analyzing 52 studies examining the link between corporate financial performance (CFP) and corporate social responsibility, concluded that CSR is profitable for companies. The results of the analysis have shown that (1) there is a positive correlation between CSR and CFP, (2) the relationship tends to be bidirectional and simultaneous (companies with better financial performance spend more on socially responsible activities, but such activities help them to be even more successful) and (3) reputation appears to be an important mediator of the relationship (Orlitzky et al., 2003, p. 427).

Based on the analysis of 42 studies which also focused on the relationship between CSR and CFP, Wang, Dou and Jia showed that there is a positive relationship between CSR and CFP whereby it was confirmed that CSR improves CFP, but a similar impact was not confirmed in the reverse direction. Furthermore, the authors have concluded that CSR has greater social visibility in developed countries with strong institutions and developed capital markets, than in the case of companies in developing countries (Wang et al., 2016). Another research study analyzed 120 companies belonging to the Dow Jones Sustainability Indices (DJSI) and 120 non-DJSI companies (all from North America, similar in size and from related industries). The authors have found that the companies from the DJSI have a higher gross profit margin and greater return on assets than non-DJSI companies. They also believe that higher return on assets has a long-term character associated with sustainability (Byus et al., 2010). Let us add "that the U.S. and European companies that created the most shareholder value from 2007 to 2017 - measured as total shareholder return – have shown stronger employment growth" (Koller et al., 2020, p. 13-14).

An ever-increasing number of companies grasp the importance of social responsibility and the necessity of bearing a portion of social costs. So, they think proactively, and socially responsible behavior is becoming an integral part of their strategy. A one-sided observation of the issue of CSR, i.e. from the perspective of only one stakeholder group, obscures the reality of companies' functioning. At first glance, it seems that providing assistance to the community through various projects and donations may reduce returns to shareholders, giving more favorable terms to suppliers may partially spill over to customers in the form of higher prices, and overly generous compensation packages may mean less value left to other stakeholders. However, a more thorough analysis shows that these activities also bring some benefits. Helping the local community may result in increased sales, better negotiating position, more favorable reputation, exemption from local taxes, etc. Providing better terms for suppliers may contribute to optimal long-term supply contracts, better quality of production inputs and greater customer trust in product quality. Investment in employees could help retain and recruit a high-quality workforce, which could have a substantial impact on the creation of value added. It is obvious that stakeholders are interdependent, i.e. creating value for one stakeholder at the same time may also signify creating value for other groups (Freeman & Dmytriyev, 2017, p. 13). Incorporating CSR into a company's strategy as a means of creating long-term value leads to the conclusion that VBM actually directs a company to a win-win situation (Martin et al., 2009, pp. 116-117). Companies that invest in CSR projects can simultaneously achieve both goals: to be socially responsible and to make a positive impact on value creation through these activities.

5. CONCLUSION

The environment in which today's companies operate has significantly changed. Companies are increasingly seen as socio-economic institutions whose role does not boil down to just profit making. In this regard, managers must take into account broader social, environmental and regulatory trends. Consequently, there is a need to cover some additional costs arising from operating in a socially responsible manner, including the costs related to environmental protection. All this does not negate the economic responsibility of business entities, which is considered a key characteristic of market economies. On the contrary, value creation, which is based on VBM approach, is a necessary precondition for satisfying the interests of all stakeholders, including the community. It therefore follows that VBM is compatible with CSR. This is a two-way relationship so that VBM cannot ignore CSR, while CSR cannot be achieved without VBM.

Finally, we should not overlook a significant role of the government that participates in companies' income and has to allocate a portion of income for socially responsible projects. Also, we must not lose sight of the fact that the government is the owner of public companies and, consequently, it should bear a part of social costs just as private owners. Its responsibility goes a step further. It is responsible for providing an effective regulatory framework and conditions for transparent reporting. Governments may create regulations, taxes and other incentives that encourage companies to migrate away from environmentally unacceptable sources of energy. Such an approach would facilitate replacing aging technologies with cleaner and more efficient sources of energy and would not be at odds with the market forces (Koller et al., 2020, p. 10). Socially responsible behavior of the government could definitely contribute to the creation of a business climate in which corporate social responsibility would be highly valued.

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UPRAVLJANJE ZASNOVANO NA VREDNOSTI, DUGOROČNA ODRŽIVOST I KORPORATIVNA DRUŠTVENA ODGOVORNOST

Od današnjih preduzeća, posebno velikih multinacionalnih kompanija, se očekuje da budu finansijski uspešna u skladu sa očekivanjima vlasnika, da posluju u skladu sa zahtevima održivog razvoja, vodeći računa o interesima budućih generacija, kao i da se ponašaju na društveno odgovoran način, uvažavajući interese ključnih stejkholdera, uključujući i interese društvene zajednice. U takvim okolnostima od menadžera se očekuje da kreiraju vrednost koja će moći da zadovolji sve ove interese. Primena Value–Based Management (VBM) pristupa doprinela je boljem razumevanju vlasnika i menadžera i usklađivanja njihovih interesa. U radu je analizirana kompatibilnost VBM sa zahtevima drugih stejkholdera, uključujući i zahteve u pogledu održivosti i korporativne društvene odgovornosti. U tom kontekstu može se reći da šire shvatanje VBM osnažuje logiku funkcionisanja korporativnih preduzeća koja se zasniva na interesima, ali da istovremeno omogućava integrisanje zahteva koji se vezuju za održivost i korporativnu društvenu odgovornost.

Ključne reči: *upravljanje zasnovano na vrednosti, kreiranje vrednosti, održivost, korporativna društvena odgovornost, rast*

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Review Paper

MOVING FROM NON-FINANCIAL TO SUSTAINABILITY REPORTING: ANALYZING THE EU COMMISSION'S PROPOSAL FOR A CORPORATE SUSTAINABILITY REPORTING DIRECTIVE (CSRD)

UDC 657.3

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Abstract. *Non-financial reporting as established through the NFRD (2014/95/EU) has become a core element of the EU Commission's ambitions to transform the European economy towards more sustainability. To address the increased criticism which meets the current reporting requirements, the EU Commission initiated the development of a new set of European Sustainability Reporting Standards, followed by issuing the proposal for a new directive to supersede the NFRD. This paper analyzed these proposals in the light of previous findings from academia and corporate practice, contributing to an ex-ante impact assessment. As a result, it shows that improving completeness, comparability and reliability are the two main goals of the EU Commission. However, many of the new proposed requirements are excessive and raise fundamental questions concerning acceptable levels of administrative burden for companies as well as necessary conceptual fundaments for a reporting framework.*

Key words: *non-financial reporting, sustainability reporting, sustainable finance, NFRD (2014/95/EU); CSR Directive (2021/0104 (COD))*

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1. INTRODUCTION

On April 21, 2021, the European Commission published its draft for a new EU directive on sustainability reporting: The Corporate Sustainability Reporting Directive (hereinafter CSRD). The aim of this proposed directive is to supersede the reporting requirements introduced into European accounting law by the Non-Financial Reporting Directive (2014/95/EU; hereinafter NFRD) in 2014. This first directive aimed at improving the transparency in sustainability-related aspects of business activities – and soon became a core element of the far-reaching initiatives of Sustainable Finance (European Commission, 2018) and of the Green New Deal (European Commission, 2019). However, the provisions set forth by the NFRD soon proved to be inadequate in scope and content to keep up with the regulatory development (European Commission, 2021d).

For that reason, the announcements of the Green New Deal have already put forth the aim to improve the provisions of the NFRD (European Commission, 2019). Previous studies and consultations by the EU Commission have pointed out various important fields that required improvements for the European non-financial reporting regime. After a further consultation was carried out in the first half of the year 2020 (European Commission, 2020), the European Commission started with its work on the new directive. Also, the EFRAG's European Lab was mandated to start with the preliminary work on European Non-Financial Reporting Standards. The idea of a new standardization of non-financial reporting was introduced by several stakeholders in the past and it aims at providing more extensive guidelines to the companies in order to improve comparability of the information being reported. At the same time, however, it strengthens the aims of the European Commission to establish a specific European reporting regime that is tailored to the specifics of the ongoing reform program on sustainability within the EU – even at the cost of limited alignment with established international reporting frameworks (Sopp & Baumüller, 2021).

In early March 2021, the EU Commission published the final reports of the European Lab. Only slightly more than one month later, the proposal for a new directive followed: the CSRD. The consultation period for this proposal was open until mid of July. The first resonance by stakeholder considered the new rules that were put forward as "major step forward in sustainability reporting" (Deloitte, 2021) or even "nothing short of a revolution" (Value Reporting Foundation, 2021). Nevertheless, these reactions indicate that European companies will face considerable changes in their reporting environment with regard to the efforts that they face.

The aim of this paper is to highlight the cornerstones of the proposed CSRD. They are discussed in the light of the previous findings which led to the criticism on and the need to revise the currently applicable NFRD. By addressing these aspects, this paper gives an answer to the question on the implications of the CSRD for the non-financial reporting regime in the EU. Moreover, the consequences that European companies and companies from other countries will face, as well as needs for further clarifications in the proposals are concluded.

With regard to the limitations of this study, it shall be noticed that several aspects covered by the CSRD – such as issues related to the audit (verification) of the disclosed non-financial information – are only briefly addressed and not expanded upon for further discussion, see e. g. Velte, 2021). This paper's focus lies on the overall architecture and on reporting-related core issues of the CSRD. Furthermore, the question whether or not the proposals seem adequate to truly put sustainability deeper in the hearts of European

companies or run the risk of merely inducing new and different forms of greenwashing is not in the focus of this paper. Also, an empirical study on the practical implications for European companies as contrasted by their current reporting practices is not conducted (see e. g. Zülch et al., 2021).

2. Elements of the New Sustainability Reporting Regime

2.1. Overview

The CSRD replaces the provisions of the NFRD and completely reshapes the European reporting framework on sustainability reporting. On the one hand, it extends the scope of companies forced to publish such reports substantially and, on the other hand, it proposes a considerable number of new topics that must be reported. These new requirements are outlined in the subsequent chapters.

What is striking at first is the change in the name of the requirements put forth by the directive from "non-financial" to "sustainability" reporting. This follows the criticism that was increasingly prevalent on the vagueness of the term "non-financial", being criticized for just representing a negation without carrying a defined (positive) content. For that reason, the European Lab already proposed this change in terminology in its final reports on European Sustainability Reporting Standards (European Lab, 2021). Besides, the well-established concept of sustainability reporting is characterized by certain features such as a dominant inside-out view on reporting contents that the EU Commission also wants to stress with its proposed new reporting requirements (Baumüller, 2020).

Furthermore, the proposals of the CSRD aim at aligning the European provisions for corporate sustainability reporting with the further requirements put forth by other sustainability-regulated regulations. Most importantly, two other legal acts published in 2019 and 2020, respectively, force companies to extend their reporting: First, the Sustainable Finance Disclosure Regulation (hereinafter SFDR) (2019/2088) requires specific sustainability-related disclosures for companies working in the financial services sector. Especially, the extent to which investments in financial products are sustainable must be disclosed in a quantified manner. Second, the Taxonomy Regulation (2020/852) contains fundamental definitions on environmental sustainability within the EU and amends the reporting requirements of the SFDR. Furthermore, all companies that fall under the European reporting regime set forth by the NFRD (or in the future: by the CSRD) must disclose how and to what extent their activities are environmentally sustainable. For financial institutions, this also includes information on their "green asset ratio", requiring an increased transparency on the sustainability-related impacts of their lending (EBA, 2021).

The EU Commission's Sustainable Corporate Governance Initiative is expected to contain further references to the European sustainability reporting regime in the future. Relevant aspects include, among others, an extended responsibility for sustainability along the value chains of companies as well as linking the remuneration systems of board members closer to sustainability metrics (e. g. from the published sustainability reports) (European Commission, 2021a).

Figure 1 summarizes the interconnections between the CSRD and the most important complementing regulations.

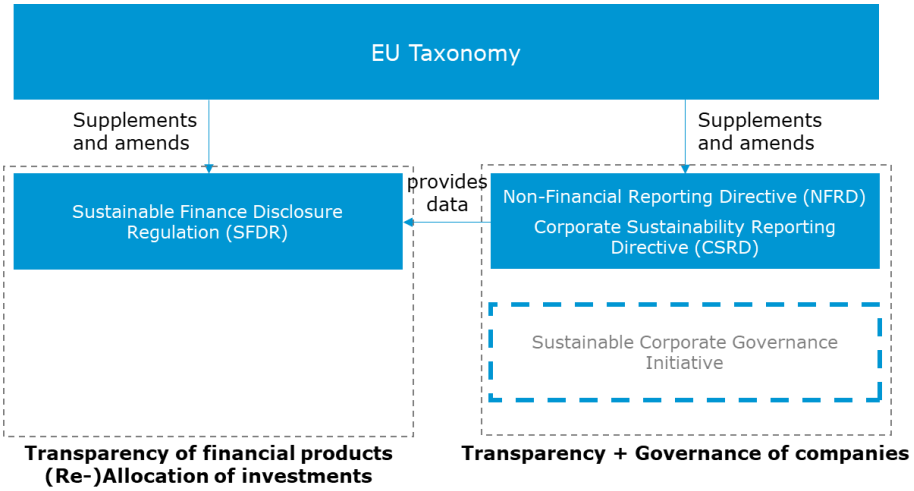

Fig. 1 Regulations addressing the transparency of European companies

The proposals of the CSRD shall apply to financial years starting on or after January 1, 2023. However, they first must be agreed upon on the European level and then, second, they must be transposed into the national laws of the member countries. Although, the number of member state options in the CSRD is limited as compared to the NFRD, heterogeneity is expected since the transposition of the NFRD has already highlighted differences in the efforts to implement sustainability-related regulations of corporate practices (CSR Europe & GRI, 2017).

Table 1 summarizes the timeline planned to finish the work on the CSRD and for its initial implementation.

Table 1 Proposed timeline (*Source*: DRSC, 2021a)

April 21, 2021	Official decision on the proposal of the CSRD in the College of EU Commissioners
April 2021 to June 2022 at the latest	Negotiations in the European Council of Ministers and the EU Parliament
by June 2022	Compromise on the content of the CSRD under the French Council Presidency
July 2022 onwards	Beginning of transposition into national law
by end of October 2022	Binding adoption of core standards developed by EFRAG through delegated act
by December 1, 2022	Completion of legal transposition by EU member countries
January 1, 2023 onwards	Beginning of the first financial year in which the new regulations of the CSRD must be applied
by end of October 2023	Binding adoption of enhanced standards and SME standards through delegated acts
January 1, 2024 onwards	Publication of the first management reports prepared in accordance with the new regulations of the CSRD

2.2. Scope of application

One of the most drastic changes proposed by the CSRD refers to the scope of companies that fall under the reporting regime. Whilst the NFRD contains three criteria that have to be met cumulatively ("[i] Large undertakings [ii] which are public-interest entities [iii] exceeding on their balance sheet dates the criterion of the average number of 500 employees during the financial year"), the CSRD extends the scope considerably. Based on the proposals, the following types of European companies will have to draw up sustainability reports: (i) All companies that are publicly traded and operate under the legal form of a limited liability company. Only micro-sized entities are exempted. For small and medium-sized entities, additional time is granted for their preparations (as the proposed reporting require the preparation of the first reports from January 1, 2026, onwards). (ii) All large companies operating under the legal form of a limited liability company, even if they are not publicly traded. (iii) All large insurance companies and banks, irrespective of the legal form they employ (e. g. cooperatives).

For consolidated sustainability reporting, all parents of large groups fall under the scope of the CSRD. Therefore, in contrast to the NFRD, the existence of an obligation to draw up consolidated financial reports is irrelevant (e. g. for reasons of applicable exemptions).

For the first time, also third-country issuers within the EU must prepare sustainability reports based on European law. This aims at establishing a "level play field" for European companies (European Commission, 2021b, p. 11). The requirements of the Transparency Directive (2006/43/EC) are amended accordingly by the CSRD – whilst the exemptions stated in Article 8 of this directive also remain unchanged.

As it is currently the case under the NFRD, subsidiaries are exempted from their obligation to publish sustainability reports if they are included in consolidated reports of their parents. In case the parent is located in a third country, however, the parent's sustainability report must meet the requirements of the sustainability reports published by European companies.

Based on the first assessments of the EU Commission, the increased scope put forward should increase the number of companies that have to publish sustainability reports from approx. 11,600 to 49,000 (European Commission, 2021b, p. 10). For some member states like Germany, however, the actual effect is expected to be much bigger (DRSC, 2021a). This increase is mainly driven by the regulations of the SFDR and the Taxonomy Regulation which require a higher degree of data availability for the financial sector (e. g. European Commission, 2010).

2.3. Reporting contents

The concept of materiality is the cornerstone of the current non-financial reporting requirements set forth by the NFRD – as well as for most other frameworks and standards addressing sustainability-related information. One of the most notable changes made to the European sustainability reporting regime is the – explicit – introduction of the principle of "double materiality" (Baumüller & Sopp, 2021). In order to assess which sustainability matters have to be reported on, companies have to consider both matters that impact their financial performance and position in the short, medium and long term – as well as the impacts of their business activities on these matters. I.e., for the first time it is clearly stated that a reporting obligation also exists for sustainability matters that are only material from one of the two stated perspectives, e. g. associated with relevant impacts on the environment but

without financial relevance to the reporting company (Adams et al., 2021). This is in line with previous demands addressed to European companies by the EU Commission as well as other stakeholders (especially NGOs). Additionally, it reflects the essence of a sustainability reporting system as compared to the previous requirements for non-financial reporting (Baumüller & Omazic, 2021). However, findings on the application of the ambiguous principle of materiality as set forth by the NFRD shows that European companies obviously struggle to understand or translate the principle of double materiality into practice. In parts, this might be attributable to specific challenges with regard to its operationalization (CEPS, 2020). In that respect, also the proposals put forth by the CSRD do not bring clarity to the question of how to apply the principle of double materiality.

Furthermore, the CSRD also proposes extended reporting requirements for those topics that are identified as material. Besides the information that is already required by the NFRD, new requirements address: (i) extended reporting contents (aims and strategies), (ii) applicable time frames (retrospective and forward-looking information is required), and (iii) newly structured and extended reporting matters (governance matters; more focus on value chain).

These fundamentally changed reporting requirements obviously reflect the criticism on the NFRD's current requirements that reporting practices were inadequate, are too often lacking depth, and are too often lacking a clear connection to the companies' strategies and governance processes (Alliance for Corporate Transparency, 2020). It seems that for the same reason, the process of materiality analyses must be disclosed by companies and the comply-or-explain principle is dropped. Inconsequently, the CSRD still includes a safeguard clause which allows companies to omit information under certain (very restrictive) circumstances. But, since the application of the identical option in the current NFRD is associated with many questions, the practical relevance of this provision is limited (and would have merited at least further clarification; Baumüller, 2020).

Adding to that, a new reporting requirement addresses information on intangibles that are not reported in the financial statements. The CSRD refers to intellectual, human, social and relationship capital, but also stresses the importance of information on research and development. Nevertheless, the essence of this requirement remains vague, especially as the definitions at the beginning of the EU Commission's proposals link this reporting obligation to the process of value creation by companies (European Commission, 2021b, Article 1 paragraph 2) – a concept which is grounded on the ideas of integrated reporting and thus new to European accounting law. Further references that seem applicable address the ongoing efforts by the EFRAG in terms of accounting for intellectual property rights (EFRAG, 2021) as well as the initiatives towards the concept of natural capital accounting (Capitals Coalition, 2021). Again, further clarification is to be expected in any case.

All companies under the regime of the CSRD additionally have to apply Article 8 of the Taxonomy Regulation. This regulation forces them to report the extent to which their revenues, capex and opex are environmentally sustainable as set forth by that regulation. For companies that already fall under the regime of the NFRD, the reporting requirements of the Taxonomy Regulations already must be applied for reports published in the year 2022. Currently, these companies face considerable challenges in implementing the relevant processes and collecting data to meet their upcoming obligations (EnBW, 2021). For companies which just fall under the extended scope of the CSRD for sustainability reporting, Article 8 of the Taxonomy Regulation will have to be applied for reports published in the year 2024 and later.

2.4. Standardization

A new element introduced by the CSRD to European sustainability reporting is the standardization of reporting requirements. Besides the basic requirements put forth by the CSRD itself, the EU Commission mandates the EFRAG to become a full-fledged standard setter and to develop detailed standards applicable for all companies falling under the regime of the directive (McGuinness, 2021).

The EU Commission's proposals widely follow the suggestions put forth by the EFRAG in early 2021 (European Lab, 2021). The new standards shall include sector-agnostic, sector-specific and company-specific information. The relevant reporting matters comprise environmental, social and governance matters (ESG) – thus changing the structure of the current NFRD. For each of these matters, a minimum of topics to be captured is given. By October 31, 2022, a first set of standards shall be adopted reflecting the information needs of financial market participants subject to the SFDR (2019/2088), implying a focus on environmental matters. By October 31, 2023, a second set of standards shall be published to introduce sector-specific reporting requirements. Furthermore, this second set shall also include specific reporting requirements for SME.

As the EFRAG is a private organization, the standards that will be developed have to be endorsed by the EU Commission. This is intended to be done via delegated acts, following a specific endorsement mechanism based on systematic criteria defined by the CSRD. Delegated acts become immediately applicable in all EU member countries and, thus, require no further transposition.

The directive requires the EU Commission to consider relevant development in the works of global standard-setting initiatives, e. g. by the IFRS Foundation or with regard to Natural Capital Accounting. However, this requirement still seems vague and will require further clarification once the CSRD enters into force and the first delegated acts are to be adopted. So far, this aspect of the proposed directive seems to attract considerable attention since many companies and stakeholders doubt that a European way in sustainability reporting is effective given the international scope of activities that European companies are engaged in (e. g. DRSC, 2021a). But, obviously, the EU Commission's initiative and the project of the IFRS Foundation seem to move in different directions concerning the structure and priorities of the developed standards, which might induce considerable complexity and cost for European companies having to consider both developments in their reports factually (Lanfermann et. al., 2021).

Furthermore, the CSRD refers to mechanisms for assessing the equivalence of standards applied by third-country issuers. This is important with regard to the extended scope of the proposed reporting obligations as well as to exemptions applicable for European subsidiaries of third-country parent companies. Unfortunately, the CSRD again misses any further clarification. This might be due to the fact that the European Sustainability Reporting Standards are also still under construction and, thus, an assessment of potentially equivalent other standards is difficult at the moment. For third-country issuers, however, this is an aspect of utmost importance (and corresponding time pressure).

2.5. Disclosure

Concerning the way that sustainability reports are published, the CSRD proposes to abolish the current NFRD's option to either disclose information in the management commentary or as a separate (stand-alone) report. In order to improve the connectivity of

financial and sustainability-related information, only a publication as part of the management commentary shall be possible. However, it is not specified whether this shall be made in the form of a separate chapter of the management commentary or even fully integrated into its various chapters. Reflecting the current practice in many EU member countries showing a prevalence of separate non-financial reports (e. g. DRSC, 2021b), this would imply the need for a fundamental change in the reporting practice having impact on the amount and the style of reporting of information as well as on the costs associated (CEPS, 2020). Conceptually, it introduces inconsistencies with the traditional focus of financial reporting in the management commentary – given the extended perspectives that have to be taken into consideration (Müller et al., 2021).

Furthermore, the CSRD requires companies to prepare their sustainability information in a single electronic reporting format (following the ESEF regulation). This is of fundamental importance to the plans of the EU Commission to introduce the European Single Access Point (ESAP) being announced in the Capital Markets Union Action Plan. By this ESAP, a universal accessibility of the information generated by companies with regard to their financial and sustainability-related performance would be achieved (European Commission, 2021c). This link is of high importance for financial market participants in order to fulfill their reporting requirements as mandated by the SFDR.

2.6. Corporate governance

Ultimately, the CSRD focuses on governance mechanisms within companies that underlie their sustainability reporting regime. Specifically, it addresses both internal and external mechanisms. This focus refers to the criticism on the limited reliability of information published by companies.

Concerning internal governance mechanisms, the duties of the management and supervisory board are addressed. First, the responsibility statement of the management boards is extended to sustainability information. Second, the responsibilities of the audit committee are also extended to the sustainability reporting of companies. With regard to the proposed new reporting requirements themselves, also the need to report on the role of the administrative, management and supervisory bodies for sustainability matters as well as on the link to the company's strategies forces these boards to further engage in the relevant matters.

Concerning external governance mechanisms, the mandatory assurance of published sustainability reports is introduced. The company's auditor shall be responsible to assess the compliance of the published sustainability reports along with the requirements of the CSRD. Specifically, the directive stresses four fields to focus the work on: (i) the compliance of the sustainability reporting with the European Sustainability Reporting Standards developed by the EFRAG, (ii) the adequacy of the process of materiality analysis carried out, (iii) the compliance with the requirement to mark-up sustainability reporting in accordance with the ESEF regulation and (iv) the compliance with the reporting requirements of Article 8 of the Taxonomy Regulation.

Besides the auditors of the financial statements published by the company, also other assurance providers – as specified by the CSRD – can be mandated to perform these assessments. For the first three years, these assessments must be based on the level of "limited assurance"; subsequently, the EU Commission is required to evaluate the provisions of the CSRD and to consider the introduction of more extensive requirements with regard to

"reasonable assurance" (European Commission, 2021b, p. 12). The latter would reflect the demand formulated by many stakeholders in order to ensure equal levels of reliability for financial and sustainability-related information (e. g. AK Europe, 2020). However, at least for the beginning, serious concerns about the robustness of established data collection processes and systems as well as the methodologies employed and capacities by assurance providers seem to have played a vital role for these proposals set forth by the CSRD (e. g. Accountancy Europe, 2020).

With regard to the provision of external assurance, the CSRD contains several requirements, e. g. for professional training and education of the assurance providers and for securing their professional independence. Furthermore, the application of the European enforcement regime on the published sustainability reports is explicitly stated. Finally, detailed provisions for penalties applicable in the case of violations against the reporting obligations are also included in the directive.

3. Discussion and Implications for Companies in and Outside the European Union

The CSRD represents one further step towards more explicit and extensive reporting requirements with regard to sustainability matters. By that, it ultimately abandons the idea of voluntary (reporting) practices or the sole reliance on market mechanisms to drive company reporting. This is obviously a reaction to the shortcomings of the current reporting regime under the NFRD – also in the light of the high time pressure given to achieve sustainable change in the global economy because of urgent issues such as climate change and its impact on mankind. However, this development also runs the risk of crowding out the sincere ambitions of many to contribute to this required sustainable change as well as of increasingly introducing a "tick-box mentality" to (European) sustainability reporting (Adams & Abhayawansa, 2021). Furthermore, the detailed requirements of the future reporting regime aim at inducing change to company behavior, by distinguishing "right" from "wrong" in their actions at least in an implicit way. The question in how far a political body like the European Commission has the legitimacy to act in such a prescriptive way remains open for further discussion.

The reporting requirements of the CSRD require an increased amount of information that has to be reported on the sustainability performance. Beyond this reporting content, also the underlying reporting processes (e. g. for materiality analyses) and governance structures (e. g. with regard to the responsibilities of the boards) are addressed by the proposals. This will require additional efforts and considerable investments even from companies that already fall under the regime of the NFRD. Although the CSRD is still a draft version for the new standard and variations in the detailed reporting requirements are possible, companies seem well advised to take the proposed reporting requirements as the starting point for their preparations as soon as possible.

Even more challenges will be faced by companies that currently do not fall under the regime of the NFRD but will have to start with their preparations for publishing the first sustainability reports in accordance with the CSRD in 2024. The fact that only in mid-2022 the final version of the CSRD is expected to be published and the transposition into national law is currently required by the end of the same year implies that the time for these companies for their preparation will be even shorter. Based on the current proposal

of the CSRD, especially large European corporations that are currently not in the scope of the NFRD will face considerable challenges (Hommelhoff, 2021). However, the first outlook on the future sustainability reporting standards that are developed by EFRAG also show that pressure on all companies as well as associated reporting costs will probably be high (DAI, 2021).

But also third-country issuers within the EU are well advised to pay immediate attention due to the perspective of being obliged to apply the requirements of the CSRD. The mechanisms for assessing the equivalence of international or foreign frameworks will play an important role with regard to the extent to which these companies face additional costs and challenges by the CSRD. The same relevance is given for companies from third countries that are not publicly traded on European regulated markets, but have (large) subsidiaries operating within the EU.

But not only companies that fall under the regime of the CSRD, both inside or outside of the EU, are affected by these changing reporting requirements. A mediate effect is to be expected due to the demand from the European capital markets for sustainability-related information. Furthermore, since companies in its scope must report on the impacts along their value chain, they might require additional information from their business partners. As a consequence, virtually every company that engages in business activities within the EU should consider the possible impact of the proposed new reporting requirements on its own (legal or just factual) reporting obligations, processes and governance structures (KPMG, 2020).

With regard to the further negotiations on the CSRD and its practical acceptance inside and outside of the EU, its relation to the project by the IFRS Foundation to publish its own set of sustainability reporting standards will be of high importance. For companies, the perspective of having to adhere to two different set of standards at the same time seems repelling because of assumably higher reporting compliance costs and the possible risk of increased complexity and confusion associated with parallel reporting practices. Business representatives responded to this threat by increasing their pressure on the EU Commission to follow the global developments aiming at establishing a "base-line" for sustainability reporting – which could imply that the IFRS Foundation's standards serve as the starting point for core reporting requirements around the world to which jurisdictions such as the EU add additional requirements given the specifics of their reporting environments and different political priorities (World Economic Forum, 2021). Both from a conceptual perspective as with regard to the practical implications of the many initiatives on the field of sustainability reporting on a global level, this approach seems promising in order to arrive at a balance between ambitious regulations towards sustainable development and pragmatic needs from practice. However, so far the EU Commission has hardly shown signs to step down from its high ambitions and to integrate its project into the broader scope of international developments on the field of sustainability standard-setting and current convergence initiatives. This underlines the political perspective of the current changes in the reporting landscape; given the momentum surrounding the IFRS Foundation's project and its increased relevance as further illustrated by the mergers of existing international standard setters with its newly established International Sustainability Standards Board (ISSB) (IFRS Foundation, 2021), the EU Commission's proposals face the considerable risk of lacking their relevance on a global scale and thus missing one of their main aims.

4. CONCLUSION

Via the CSRD, the EU Commission aims at improving the completeness, comparability and reliability of sustainability reports within the EU. Furthermore, gaps in the relevant sustainability-related European regulations are closed – especially with regard to the SFDR and the Taxonomy Regulation. For that reason, the scope of companies that must apply the reporting regime as well as the elements of these reports are considerably increased. Thus, it seems justified to call the proposals published on April 21, 2021, a major step forward in the field of corporate transparency.

However, this development comes at a cost that are borne by European companies that must invest into their processes and structures in order to come up with improved reports. The impact of these changes on the corporate decision-making is the ultimate goal of the recent flood of regulations that address sustainability within the EU (e. g. European Lab, 2021).

Still, specific points can be outlined that merit further consideration. Many requirements of the CSRD are still vague or raise important questions with regard to the alignment with existing (international or foreign) frameworks and standards. The high time pressure that is put on companies along with the uncertainties they currently face about the contents of both the final version of the CSRD and the European Sustainability Reporting Standards raise serious concerns. There seem to be good reasons for slowing down and reflecting the cost to benefit relation of the proposed regulation. However, the experiences from the past few years show that the EU Commission is following its sustainability-related aims with considerable determination and might not pay enough attention to the needs of corporate practice.

These developments are not only important within the EU but also for companies located in third countries. Other jurisdictions are increasingly turning towards the EU Commission's initiative and try to come up with similar solutions (KPMG, 2020). But also the CSRD extends its scope of application to these companies for the first time. Consequently, there is a need for all these companies to analyse the impacts of the EU Commission's proposals on them and to deduct the need for appropriate reactions as soon as possible.

The importance of sustainability per se and of invigorated behaviour by companies into the direction of sustainable development seems to have become a global consensus over the recent years. So, on the one hand, whatever the future way might be, there is probably no way back. But, on the other hand, along with all the challenges arising, also new business opportunities will materialize.

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PRELAZAK SA NEFINANSIJSKOG NA IZVEŠTAVANJE O ODRŽIVOSTI: ANALIZA PREDLOGA EVROPSKE KOMISIJE ZA DIREKTIVU O IZVEŠTAVANJU O KORPORATIVNOJ ODRŽIVOSTI (CSRD)

Kako je ustanovljeno kroz NFRD (2014/95/EU), nefinansijsko izveštavanje postalo je ključni element ambicija Evropske komisije da transformiše evropsku ekonomiju ka većoj održivosti. Da bi odgovorila na povećane kritike koje ispunjavaju trenutne zahteve za izveštavanje, Komisija EU je pokrenula razvoj novog seta evropskih standarda za izveštavanje o održivosti, nakon čega je izdala predlog nove direktive koja bi zamenila NFRD. Ovaj rad analizira ove predloge u svetlu prethodnih zaključaka iz akademske zajednice i korporativne prakse, doprinoseći ex-ante proceni uticaja. Kao rezultat toga, pokazuje da su poboljšanje kompletnosti, uporedivosti i pouzdanosti dva glavna cilja Komisije EU. Međutim, mnogi od novih predloženih zahteva su preterani i postavljaju fundamentalna pitanja u vezi sa prihvatljivim nivoima administrativnog opterećenja za kompanije, kao i neophodnim konceptualnim osnovama za okvir izveštavanja.

Ključne reči: *nefinansijsko izveštavanje, izveštavanje o održivosti, održive finansije, NFRD (2014/95/EU); Direktiva o društveno odgovornom poslovanju (2021/0104 (COD))*

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INTANGIBLE ASSETS IMPACT ON SUSTAINABLE GROWTH RATE OF ENTERPRISES IN THE REPUBLIC OF SERBIA

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Abstract. *The digital economy unites a dual typology of resources in enterprises, which can be tangible and intangible. In the language of accounting, it is about tangible and intangible assets. Due to the involvement of digital technologies in companies, intangible assets or intellectual capital became prominent. The sustainable growth of companies in Serbia has great importance for both management and external stakeholders. The presented paper examines the impact of intangible assets, formatted with the VAIC model, on the Sustainable growth rate (SGR) of companies in Serbia. The selected list of companies refers to the most profitable industry sector of the Serbian economy, assessed according to the Serbian Business Registers Agency for 2018. In order to confirm the hypothesis, the synthesis method, the analysis method, and the correlation analysis method were used. There was a significant positive impact of intangible assets on the sustainable growth rate of enterprises and a negative impact of physical assets, which, however, is not statistically significant. Since no research has been recorded in our country that sheds light on the correspondence between intangible assets and SGR, the study has a strong practical significance for this purpose. These results represent at the same time a reference point for our economy and for future entrepreneurs on the way to intensive involvement of intangible assets in companies.*

Key words: *intangible assets, digital economy, sustainable competitive advantage, sustainable growth rate*

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1. INTRODUCTION

The role and importance of intangible assets strongly correspond to the emergence of the digital economy or Industry 4.0. In other words, Industry 4.0 is determined by the process of digitization and the connection of digital and physical objects (so-called cyber-physical systems). It was first promoted by the German government in 2012 (germ. Industrie 4.0) as a progressive step in the digitalization of German society (see more Cagle et al., 2020, p. 106; Pozdnyakova et al., 2019, p. 12, 17; Sukhodolov, 2019, pp. 3-10). Industry 4.0 is characterized by extensive automation, robotization in the production and service sphere, increasing workforce efficiency and efficiency in companies in general, reducing the anthropological impact on the environment through the use of economical technology, and increasing demand for high intellectually capable workforce, especially in information technology (Prokofyev et al., 2019, p. 95).

Current technology of the digital economy refers to Big Data, Blockchain, Cloud technology, Internet of Things (IoT) or a network of various devices where data is an object of exchange, and artificial intelligence (AI), which refers to computer systems capable of performing tasks that require human intelligence. In addition, the digital economy involves Virtual Reality or computer-simulated environment technology and Ubiquitous Computing technology. Ubiquitous computing is defined as connected computer systems in the environment in which we live and work, such as devices in smart houses (Popkova & Haabazoka, 2019, p. 8). However, employees still represent the main carriers of economic activities, whose knowledge converges towards digital knowledge (Popkova & Haabazoka, 2019, p. 7).

This makes it clear that knowledge and information represent the starting point for creating the resources and values of today's economy. Accordingly, the assets of business entities are increasingly knowledge-intensive (Ghosh & Mondal, 2009, p. 369). In other words, in the digital knowledge economy, economic value is mainly derived from intangible assets, to a much greater extent than from physical assets (Chu et al., 2011, p. 249). This is particularly attributable to the European economic context (Sardo & Serrasqueiro, 2017, p. 771). It is, according to Stewart, "something that cannot be touched, yet slowly makes you rich" or, according to Sullivan, "knowledge that can be converted into profit" (Ghosh & Mondal, 2009, p. 370).

The competitiveness of the company is therefore established in the patterns of intangible assets exploitation. Sustainable competitive advantage is largely determined by a company's sustainable growth rate (SGR). SGR can be also associated with economic, environmental, and social initiatives to secure the future (Xu et al., 2020, p. 2).

The work is organized as follows. After the introduction, a review of the literature was presented, followed by a theoretical explanation of the relationship between intangible assets and sustainable enterprise growth rates, and research hypotheses were proposed. The next part is dedicated to the empirical analysis of the data, followed by a discussion of the obtained results. The final part of the paper includes concluding remarks.

2. LITERATURE REVIEW

2.1. Intangible assets

Knowledge resources have rapidly become important in many disciplines such as accounting, economics, and strategic management (Asiaei, Jusoh & Bontis, 2018, p. 294). The literature noted relatively early texts on the importance of intangible assets. Swedish economist Westerman (1768) points out that the Swedish transport industry at that time lagged behind the main competitors due to lack of professional knowledge (Serenko & Bontis, 2013, p. 478).

Clear guidelines for the development of intangible assets were established by Penrose as the founder of resource-based theory in 1959 (although the name resource-based theory is mentioned in 1984 in Wernerfelt's work, "Resource Based View of the Firm") in her work "The Growth of the Firm". Instead of perceiving companies as administrative units, Penrose described the company as a resource base made available to managers. Hence, it was concluded that competitive advantage is provided by ownership of certain key resources that are rare (Pike, Fernström & Roos, 2005, p. 490).

Increased corporate investments in intangible assets include, in addition to investments in pure forms of intangible assets, the intangible enrichment of the value of manufactured products and provided services (Mehta & Madhani, 2008, p. 11). According to the methodology of resource-based theory, intangible assets are viewed as equal to physical and financial assets (Gupta & Raman, 2020, p. 51). For creating value that is a consequence of investments in intangible assets, and in order to achieve a competitive advantage of the company, extraction of the given value is also required. By extraction, or extraction of the value of intangible assets, is meant primarily its conversion into monetary value.

Thus, achieving a competitive advantage in the digital economy has been redefined by the impact of digital technology and market globalization. In the new circumstances, there is a vertical disintegration, accentuation of innovations, and intensive use of informatics technologies. In other words, this process has produced the accumulation of intangible assets reflected in innovations, employees, and organization (Ciprian et al., 2012, p. 683). Finally, it is pointed out that intangible assets represent the most potent position of assets that affect value creation (Đuričin & Janošević, 2009, p. 10).

In the context of creating and using knowledge, companies in order to achieve a competitive advantage, focus on the following areas (adapted to Novićević, Antić & Stevanović, 2006, p. 9):

i. Computer and communication technologies (AI, Big Data, IoT, Blockchain, Cloud technology, virtual reality, versatile computing and 3D printing),
ii. Analytical methods (which involve intelligent analytical softwares).

Intangible assets, or in management terminology "intellectual capital", are in the literature, albeit unofficially, divided into three parts: human capital, structural capital, and relational capital (Cabrilo & Dahms, 2018, pp. 621–648; Wang et al., 2016 pp. 1861–1885). Gupta and Raman (2020) emphasize that the term "intangible assets" is attributable to accounting, while the term "intellectual capital" is present in the science of human resources management. The term "knowledge resources" exists between economists in general (Gupta & Raman, 2020, p. 49). The separation of terms according to the field of study has been respected in academic texts (Naidenova & Parshakov, 2013, p. 640).

According to Bontis *et. al.*, human capital is manifested as an individual stock of knowledge in an organization that results from employees (Bontis et al., 2000., p. 87). Also,

Bontis *et. al.*, indicate that human capital is the primary component of intangible assets as a value creator. The management of this capital is attractive in the sense of its conversion into a sustainable competitive advantage through increased business performance (Bontis & Fitz-enz, 2002, pp. 225, 227). We also notice that these assets are profiled in economics textbooks as "Key competencies" or as "Core competencies" as the main strategic determinant for achieving a sustainable competitive advantage (Michalisin et al., 1997, p. 374; Novićević, Antić & Sekulić, 2006, p. 41).

Capital that supports infrastructure for employees is interpreted as structural capital (Chowdhury, Rana & Azim, 2019, p. 787). Structural capital refers to databases, software platforms, algorithms, codes, organizational structure, documentation, and business processes or "everything of knowledge that remains in the company, after the end of the working day" (Bontis et al., 2000, p. 88). Relational capital refers to the company's relations with consumers and suppliers, includes distribution channels, brand and everything that creates and maintains the company's intangible assets by involving the company in interaction with the external environment. It "includes knowledge materialized in all the relationships that a company develops with suppliers, trade associations or the government." (Bontis et al., 2000, pp. 88-89).

The question is, how to calculate intangible assets and how to quantify their impact? Among many models that exist, the frequently cited model for calculating intangible assets is the VAIC model (VAIC is an abbreviation for Value Added Intellectual Coefficient). The model represents one of the most significant contributions in the valuation of intangible assets (Gupta & Raman, 2020, p. 50).

The VAIC model is based on the fact that the exploitation of physical and intangible assets creates added value (VA). VA implies the difference between output and input values. The output value, represents the value of total income, and the input value includes all costs except employee costs, which are treated as intangible assets of the enterprise (Andriessen, 2004, p. 365).

Specifically, VA can be determined as the sum of operating profit, investments in human resources, and depreciation costs (of fixed assets and intangible assets) (Dzenopoljac et al., 2017, p. 888):

$$VA = Operating\ profit + Employee\ costs + Depreciation \tag{1}$$

One of the weak points of the VAIC model is the condition that the company that is involved in the calculation needs to have a positive profit. If there are losses, according to the VAIC model it means that the company doesn't create new added value (for more see Chu et al., 2011, p. 252-253).

Capital employed (CE) refers to the value of net assets and includes physical and financial capital, or in other words, tangible capital. CE is used to start and maintain a business. Tangible assets in this sense play a fundamental role in determining the value of a company (Dzenopoljac et al., 2017, p. 888). Capital Employed Efficiency (CEE) is calculated as the ratio of balance sheet net assets and value-added VA (Dzenopoljac et al., 2017, p. 888):

$$CEE = \frac{CE}{VA} \tag{2}$$

HCE (Human Capital Efficiency) is calculated as ratio between VA and investments in human resources (employee costs) (Dzenopoljac et al., 2017., p. 888):

$$HCE = \frac{VA}{HC} \tag{3}$$

Structural Capital Efficiency (SCE) is calculated as ratio between SC and VA. For the calculation of SC, the value of HC is subtracted from VA (Dzenopoljac et al., 2017, p. 889):

$$SCE = \frac{SC}{VA} \tag{4}$$

$$SC = VA - HC \tag{5}$$

Dzenopoljac *et. al.* (2017) state that it is not difficult to notice that the sum of HCE and SCE represents the total efficiency of intangible assets (ICE, Intellectual Capital Efficiency). The rationalization of the model is based on the assumption that companies with a higher ICE ratio exploit intangible assets more efficiently and, consequently, have a higher amount of intangible assets (Dzenopoljac et al., 2017., p. 889).

2.2. Sustainable growth rate of the company

The sustainable growth rate of the company is a very important business and financial performance of the company, especially in situations of economic imbalance. Otherwise, SGR refers to the maximum and consistent growth rate that a company can achieve without mobilizing additional funds in the form of borrowing. Growth below a sustainable growth rate can affect the loss of a company's competitive advantage due to reduced business efficiency. Growth above a sustainable growth rate involves additional borrowing by the company, which can worsen its financial health (Stanić, 2015, p. 118). In other words, this represents a short-term expansion of sales growth because such a goal is ultimately unsustainable. Accelerated growth overloads corporate resources and requires new borrowing in order to prevent corporate insolvency (Xu et al., 2021).

An increase in debt while maintaining the same level of insolvency can only be implemented if the increase in the percentage of debt in total sources is equivalent to the increase in the percentage of capital. The growth rate is therefore a complex long-term indicator that belongs to the business and financial performance of the company. Any growth that deviates from a sustainable growth rate can be considered unsustainable growth (Xu et al., 2021).

The expression of SGR is clarified through several modalities, among which the most famous is the first, Higgins model of SGR. In a more concise edition, according to Higgins (1977), SGR is expressed as (Arora, Kumar & Verma, 2018).

$$SGR = ROE \textit{ (Return on Equity)} \times b \textit{ (Retention Rate)} \tag{6}$$

ROE indicator is an indicator with a long tradition and is calculated as:

$$ROE = \frac{Net\ profit}{\text{Shareholders' equity}} \tag{7}$$

On the other hand, as we know, retention rate b indicates the number of funds remaining for the company to reinvest in business activities after the payment of dividends. It is calculated as:

$$b = \frac{Net\ profit - payed\ dividends}{Net\ profit} \tag{8}$$

2.3. Intangible assets and SGR

Studies have concluded that intangible assets are a key element in achieving competitive advantage (Sardo & Serrasqueiro, 2017; Mention & Bontis, 2013; Zéghal & Maaloul, 2010). In other words, intangible assets significantly correspond to the business and financial performance of the company. These studies, which involve researches of relationship between intangible assets and business-financial performance, shed light on the impact of intangible assets on short-term indicators of performance in companies. SGR, however, is an accounting measure that covers a longer period of time and business-financial expansion of the company. Consequently, for the realization of SGR and, ultimately, sustainable competitive advantage, it is necessary for companies to create value by exploiting intangible assets.

A study by Xu, et. al. (2020) examined the impact of intangible assets on the sustainable growth rate of agricultural smart high-tech and non-high-tech enterprises in China. The results obtained suggest that human capital reflects the main impact on the SGR. In another study (Xu et al., 2021), a sample based on Chinese companies in the field of tourism, agriculture, and renewable energy industry was selected. The study concludes that physical and intangible assets reflect a positive impact on the sustainable growth of the company. In the context of intangible assets, the intensity of the positive impact is distributed primarily on human capital, then structural and to a lesser extent relational capital.

A study that covers India's evidence investigated the impact of intangible assets in India's enterprises on their sustainable growth rates. The results of the study indicate a positive significant impact of all variables of intangible assets on a sustainable growth rate. Intangible assets in this study are represented in a slightly modified edition. Intangible assets in this study are constituted from physical capital, human capital, relational capital, innovation capital, and process capital (Mukherjee & Sen, 2019).

A study from 2008, conducted in China, proved the positive significant impact of intangible assets (intellectual capital) on SGR, where, according to results of this study, "human capital is the root of the momentum of enterprise growth" (Shui-ying & Ying-yu, 2008).

The study, which covers Korea's evidence, also demonstrated the positive impact of intangible assets, more specifically human and relational capital, on the sustainable growth of manufacturing companies. The positive impact of physical assets on the sustainable growth of these companies has also been proven (Xu & Wang, 2018). Investments in physical assets are inseparable from investments in intangible assets. In other words, it is necessary to involve physical assets in this consideration when we are trying to measure the impact of intangible assets on sustainable growth.

Although SGR has not been the subject of such studies, according to previous studies related to other business and financial performance, companies in Serbia are still insufficiently exploiting intangible assets, materialized in innovation, employees and organization of the company, to achieve a sustainable competitive advantage (Dženopoljac et. al., 2016).

2.4. Proposed hypotheses

According to the previous text, using the mathematical formats listed above, the impact of intangible assets on SGR can be explained through the main and auxiliary hypotheses:

Hypothesis H1. There is a positive impact of intangible assets on SGR;

H1a. Companies with a higher ICE ratio have a higher rate of sustainable growth SGR;

H1b. Companies with a higher CEE ratio have a higher rate of sustainable growth SGR.

Or if we draw an overview of these relations (Figure 1):

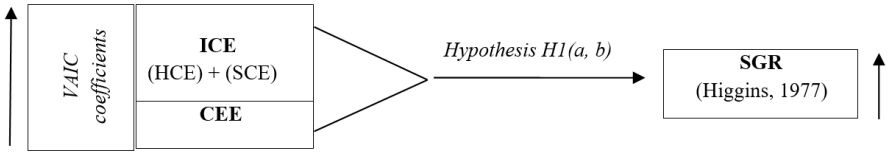

Fig. 1 Overview of Hypothesis H1
Source: Authors own drawings

Finally, this research aims to find a valid conclusion about Hypothesis 1. Precisely, the aim is to verify how much the intangible assets of the company, formatted by the VAIC model, are an influential predictor of the sustainable growth rate, formatted by Higgins (1977), of the company.

3. METHODOLOGY

3.1. Data source

To check the validity of Hypothesis 1, it is necessary to select the data source and select a suitable sample. In obtaining a suitable sample of companies to test Hypothesis 1, we were guided by the following prerequisites:

- sample needs to contain companies that reported significant net profit result during the observed period, that is, the leaders are in their branch;
- companies in the sample are knowledge-intensive with a relatively high share of balance sheet reported intangible assets, such as labor costs, development investments, and research and development costs;
- the financial statements of the selected companies in the sample were previously audited.

Considering these preconditions, the database for sample selection, which is published by the *Serbian Business Registers Agency (SBRA)* in its annual publication for 2018, is suitable.

These publications are reports of the "100 most companies" (Serb. „*Izveštaj o sto naj privrednih društava*") which are issued for each year. At the time of making this research, we were not able to download the publication for 2019, and we used a list of companies in this publication published for 2018 including their financial statements for 2019. There is a database in the form of a list that involves companies that have achieved the highest

annual net profit for the period. With the elimination of companies that do not have complete financial statements for the period, a sample of 67 companies that achieved the highest net profit in 2018 is selected (Table 1).

Table 1 Selected list of companies

1. Naftna Industrija Srbije, NIS	23. Farmina Pet Foods	45. Delta Agrar
2. Telekom Srbija	24. Imlek	46. Apatinska Pivara
3. Telenor, Beograd	25. Koteks Viscofan	47. Luxury Tannery
4. Javno preduzeće Srbijagas	26. Frikom	48. Fabrika Hartije
5. Tigar Tyres	27. JP Elektroprivreda Srbije	49. Impol Seval
6. JKP Beogradske elektrane	28. CRH Srbija	50. JP Srbijašume
7. Coca-Cola	29. Agromarket	51. Milan Blagojević-Namenska
8. Philip Morris	30. Heineken Srbija	52. Pharmaswiss
9. SBB	31. Titan Cementara	53. Phuket
10. Hemofarm	32. Karin Komerc	54. Marbo
11. Matijević	33. Sport Vision	55. OMV
12. Real Knitting	34. Contitech Fluid	56. Atlantic Grand
13. Delhaize	35. Ball	57. Naftagas
14. JP Jugoimport	36. Almex	58. HD-Win
15. Elektromreža Srbije	37. Pink	59. Zdravlje
16. Tetra Pak	38. Peštan	60. Elixir
17. JP Pošta Srbije	39. Yugoroskaz	61. Galenika
18. Henkel Srbija	40. RZD International	62. Phiacademy
19. Lafarge	41. Direct Media	63. Forma Ideale
20. Mozzart	42. Metalfer	64. Knjaz Miloš
21. Bambi	43. Soko Štark	65. Sport Time Balkans
22. Messer Tehnogas	44. Drenik	66. Mladost
		67. Auto Čačak

Source: Authors made a suitable list of companies according to SBRA – The Serbian Business Registers Agency. (2020). STO NAJ... privrednih društava u 2018. godini [The top hundred enterprises in 2018]. Retrieved from https://www.apr.gov.rs/upload/Portals/0/GFI%202019/STO_NAJ/STO_NAJ_2018_16102019.pdf

The sample includes financial statements (balance sheets and income statements) of these companies for the period 2015-2019. We collect relevant financial statements for this period manually inputting identification numbers or names of companies in the SBRA (2020) search engine. Companies that didn't publish financial statements for the given period or realized negative operating profit were eliminated from the study.

3.2. Construction of the regression model

To test Hypothesis H1, it is necessary to construct a regression model. Constructing a regression model requires the involvement of a dependent variable and independent variables in a regression equation with a specific constellation of relationships between variables. The dependent variable refers to the SGR. The independent variables are formatted with the VAIC model and refer to ICE and CEE. The construction of the regression model according to the equation looks like:

$$SGRi, t = \beta_0 + \beta_1 ICEi, t + \beta_2 CEE\ i, t + \varepsilon\ i, t \quad (9)$$

More precisely, using the technique of multiple standard regression analysis based on specified regression model, it is possible to determine (adapted according to Pallant, 2009, p. 147):

- how well the variables ICE and CEE can predict the outcome of the SGR in the sample;
- which variable (ICE or CEE) best predicts the SGR in the sample;
- after eliminating the impact of other variables, how much particularly, the selected intangible asset, can predict an outcome of the SGR enterprise.

3.3. Research results

3.3.1. Descriptive statistics and correlation analysis

According to Table 2, the average SGR value is 16.74. When we talk about intangible assets efficiency coefficient (ICE), it is 4.24. However, this is higher than the efficiency coefficient of physical assets (CEE), which is 0.84. This actually mildly shapes the initial impression in our analysis that intangible assets have a stronger impact on VA creation.

Table 2 Descriptive Statistics

	Mean	Std. Deviation	N
SGR	16.742801	62.6553640	335
ICE	4.2374	2.34498	335
CEE	.844540	1.5264232	335

Source: Authors own calculations

As an integral element of the preliminary analysis, Table 3. checks the normality of the distribution for the given variables. The values of the variables were found not to be normally distributed. Further, this will shape our next analysis.

Table 3 Normality test results

	Tests of Normality					
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
SGR	.307	335	.000	.344	335	.000
ICE	.159	335	.000	.766	335	.000
CEE	.305	335	.000	.384	335	.000

a. Lilliefors Significance Correction

Source: Authors own calculations

Correlation is a more suggestive technique, in that way, it doesn't give definitive answers. It suggests the existence of a possible relationship between variables (Barrow, M. 2009, p. 231). Since the values of the variables are not normally distributed, the correlation analysis was performed based on the Spearman coefficient (*rs*).

Table 4 contains correlation findings between presented variables in the regression model and reports the following:

- A weak positive relationship between the ICE coefficient and the dependent variable SGR was identified, where rs = 0.122 (p <0.05). In other words, this is the first indication that a higher ICE coefficient also means a higher SGR;
- A medium-strong positive relationship between CEE and SGR was identified, rs = 0.432 (p <0.05). This also indicates that the higher CEE coefficient also means a higher SGR.

Table 4 Normality test results

Correlations					
			SGR	ICE	CEE
Spearman's rho	SGR	Correlation Coefficient	1.000	.122*	.432**
		Sig. (2-tailed)	.	.025	.000
		N	335	335	335
	ICE	Correlation Coefficient	.122*	1.000	-.034
		Sig. (2-tailed)	.025	.	.533
		N	335	335	335
	CEE	Correlation Coefficient	.432**	-.034	1.000
		Sig. (2-tailed)	.000	.533	.
		N	335	335	335

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

Source: Authors own calculations

3.3.2. Analysis of the regression model

The results of the regression analysis according to Table 5. indicate that the model significantly affects the variability of the variable SGR. According to the amount of the adjusted coefficient of determination (Adjusted $R^{2)}$ is 2.9%, this model explains 2.9% of the variability of SGR. In other words, regression model with the coefficients of intangible assets efficiency (ICE) and invested capital efficiency (CEE) explains 2.9 % of changes in SGR.

Table 5 Explanatory power of the model

Model Summary[b]									
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.187[a]	.035	.029	61.7301839	.035	6.043	2	332	.003

a. Predictors: (Constant), ICE, CEE
b. Dependent Variable: SGR

Source: Authors own calculations

The explanatory power (2.9%) is not high. However, the model is statistically significant for p <0.05 (Table 6).

Table 6 Statistical significance of the model

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46057.627	2	23028.814	6.043	.003[b]
	Residual	1265124.382	332	3810.616		
	Total	1311182.010	334			

a. Dependent Variable: SGR

b. Predictors: (Constant), ICE, CEE

Source: Authors own calculations

The next typical step in interpreting the results of regression analysis is to interpret whether the independent variables (ICE, CEE) in the model make an individual and isolated contribution to the change in SGR (Table 7).

Table 7 Individual contribution of independent variables (ICE, CEE) to SGR in the model

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	.046	7.231		.006	.995	-14.177	14.270					
ICE	4.563	1.440	.171	3.168	.002	1.729	7.396	.171	.171	.171	1.000	1.000
CEE	-3.123	2.213	-.076	-1.411	.159	-7.476	1.230	-.077	-.077	-.076	1.000	1.000

a. Dependent Variable: SGR

Source: Authors own calculations

Standardized beta coefficients for independent variables indicate their individual and isolated contribution to the dependent variable. In the given model, the standardized beta coefficient for ICE is $\beta_1 = 0.171$. In other words, intangible assets compressed in the ICE reflect a significant positive impact on the SGR variable. The *Hypothesis 1a* is confirmed. In other words, a higher ICE also means a higher SGR.

The impact of CEE on SGR is negative, but not statistically significant. *Hypothesis 1b* is not confirmed. In other words, a higher CEE does not necessarily mean a higher SGR, but lower SGR. Additionally, this relationship is negative, but this is not confirmed with statistical significance.

Finally, we can state that *Hypothesis H1* is partially confirmed, because ICE reflects the positive impact on SGR and CEE does not reflect a positive statistically significant impact on SGR.

3.3.3. Useful implications of research results

The results unequivocally indicate a statistically significant positive relationship between the efficiency of intangible assets usage (ICE) and the sustainable growth rate SGR of companies. These findings are consistent with research that Xu et al. (2021) conducted. However, the impact of CEE on SGR is negative and not statistically significant, which is not consistent with research that Xu et al. (2021) and Xu & Wang, 2018) conducted because they

proved positive impact of CEE on SGR. The usefulness of these conclusions can be converted into instructions for business entities.

Management structures in companies are advised to be more aware of intangible assets and increase their investments, especially in human and structural capital (ICE). As Xu et. al. (2021, p. 11) stated, the sustainable growth of modern enterprises should rely more on intellectual capital than on capital employed. Specifically to each company, managers should strengthen the logic of creating intangible assets like developing more employee supportive corporate culture and promoting R&D activities to build innovations. Also, managers need to incorporate information technology through different initiatives. On the other side, because capital employed is synergistically connected with intellectual capital, managers should also improve the efficiency of CEE in order to make an additional positive impact on SGR. Additionally, managers should reduce the scale of liabilities in companies. To cover these processes, developed management accounting infrastructure is necessary for the assessment of the intangible assets exploitation efficiency. In this way, management is further referred for corrective actions in order to optimize these processes related to intangible assets.

3.3.4. Limitations of the conducted research

Despite the best intention to proceed the research in the absence of certain limitations, the obtained results are acceptable having in mind certain limitations. The limitations, however, do not undermine the essentials to which the results of the analysis refer. The first limitation relates to sample size. We believe that with a larger sample in the analysis, results will more strongly emphasize found links between ICE, CEE, and SGR. Second, the VAIC model has its limitations, which are also involved in the given research. VAIC model doesn't cover relational capital, also, the VAIC model doesn't include R&D costs within structural capital (for more see Chen, Cheng & Hwang, 2005, p. 162). Third, intangible assets can be hardly represented by a simple sum of components due to their synergistic nature.

4. CONCLUSION

Intangible assets strongly correspond to the digital economy and Industry 4.0. and with the development of AI, Big Data, Cloud computing, Virtual Reality, etc. Thus, knowledge becomes the main source of value creation in companies. The sustainable competitive advantage of an enterprise is established on the patterns of intangible assets exploitation rather than on the exploitation of physical assets. Sustainable competitive advantage is closely related to the sustainable growth rate of the company. The sustainable growth rate of a company is also associated with economic, environmental, and social initiatives in securing the future.

In this paper, research was conducted which sheds light on the impact of intangible assets of 67 most profitable companies in Serbia on their sustainable growth rate. Results involves significant positive impact of intangible assets on the sustainable growth rate of the companies. The intangible assets impact is predominant in relation to the impact that reflects physical assets on the sustainable growth rate of the observed companies. This identification represents a contribution in relation to previous research conducted in relation to intangible assets. Also, it represents an incentive for managers of companies in Serbia to focus more intensively on intangible assets creation and exploitation. This is especially due to the evidence in this research that intangible assets provide a better sustainable growth rate for companies.

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UTICAJ NEMATERIJALNE AKTIVE NA ODRŽIVU STOPU RASTA PREDUZEĆA U REPUBLICI SRBIJI

Digitalna ekonomija objedinjuje dvojaku tipologiju resursa u preduzećima, koji mogu biti materijalni i nematerijalni. Jezikom računovodstva, reč je o materijalnoj i nematerijalnoj aktivi. Usled involviranja digitalnih tehnologija u preduzećima do izražaja dolazi nematerijalna aktiva ili intelektualni kapital. Održivi rast preduzeća u Srbiji je od izuzetnog značaja kako za menadžment, tako i za eksterne interesente. U predstavljenom radu se ispituje uticaj nematerijalne aktive, formatirane VAIC modelom, na održivu stopu rasta (eng. Sustainable growth rate, u daljem tekstu SGR) preduzeća u Srbiji. Odabrana lista preduzeća odnosi se na najprofitabilniji sektor naše privrede ocenjen prema Agenciji za privredne registre za 2018. godinu. U cilju potvrđivanja hipoteza, sintetički metod, metod analize i metod korelacije je upotrebljen. Dokazan je značajan pozitivan uticaj nematerijalne aktive na održivu stopu rasta preduzeća i negativan uticaj fizičke aktive, koji međutim nije statistički značajan. Budući da u našoj zemlji nije zabeleženo istraživanje koje rasvetljava korespondiranje nematerijalne aktive i SGR, studija u ovu svrhu ima snažan praktični značaj. Navedeni rezultati predstavljaju ujedno i orijentacionu tačku našoj privredi i budućim preduzetnicima na putu ka intenzivnom involviranju nematerijalne aktive u preduzećima.

Ključne reči: *nematerijalna aktiva, digitalna ekonomija, održiva konkurentska prednost, održiva stopa rasta*

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THE PANDEMIC WAVES' IMPACT ON ROMANIAN E-MARKET: A NON-LINEAR REGRESSION MODEL

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Abstract. *The SARS-COV2 pandemic had a strong impact on the Romanian and European e-Market, manifested by the explosive increase in online sales, especially at the beginning of the two waves of epidemic, in spring and autumn. Using a statistical regressive analysis of monthly change in the volume of online sales in Romania, we propose a non-linear regression model of growth of this commercial sector that take into account the economic and socials effects of the three pandemic waves in 2020-2021, combining logistic equations of growth with attenuated quasi-periodical variations of market. The model allows a prediction of the overall behavior of online buyers for 2021 and 2022, similar to last year, but with annual growth peaks slightly less pronounced than in 2020.*

Key words: *E-market, Non-linear regression model, post-pandemic market behaviour*

JEL Classification: C51, C53

1. INTRODUCTION

The crisis produced by the spread of COVID-19 has severely affected the world both in terms of health and economics. The actions to prevent and combat it, such as social distancing and closing non-essential businesses, have significantly changed the lifestyle of the population.

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E-commerce refers to both online commerce and electronic transactions. It has greatly increased its popularity in recent decades and it is beginning to increasingly replace traditional stores. An e-commerce allows you to sell and buy products 24 hours a day, without having to be physically present in a traditional store. While many people think of e-commerce as business to consumer (B2C), there are many other types of e-commerce. These include online auction sites, internet banking, online tickets, reservations and business to business (B2B) transactions. Recently, e-commerce has expanded through sales using mobile devices, known as "m-Commerce".

The e-consumers' comportment is one of the most transformed behaviors after the spread of COVID-19 pandemic situation. With limited access to physical shopping areas and the potential danger of going outside, e-commerce has become the retail alternative of choice for the entire European population. The evolution of purchasing behavior in this time of crisis follows the logic of Maslow's pyramid of needs, which classifies human needs in order of importance. To meet their physiological and safety needs (at the base of the pyramid), consumers are mainly supplied with food and pharmaceuticals; they make sure they have the basic equipment to stay at home (electronic devices) and save on funds allocated to holidays or products of luxury.

E-commerce largely contributes to increasing globalization. The crystallization of a global network-based market has the advantage of removing the restrictions imposed by traditional trade. If they also take into account the low costs involved in an electronic business transaction, company managers must prefer such a market that provides them with substantial profits (Boldea 2010a).

The development of e-commerce offers unique opportunities to reorganize business, redefine markets or create new markets. E-commerce initiatives will influence cost reductions, revenue increases and greater efficiency for companies looking to gain an edge in today's competitive environment in light of the COVID-19 pandemic.

From a macroeconomic point of view at a Central Bank, the M0 Monetary Base, the money multiplier, and the M1, restricted money supply, will be severely affected by the development of e-commerce, leading to a significant decrease in primary currency issuance, and hence, the blocking of the transmission of monetary policy through monetary control. This reality also determines the diminution of the right of secrecy of the Central Bank, with a blocking of the actions influencing the main macroeconomic indicators - mainly the financial intermediation, the exchange rate, the balance of payments and the current capital account (Boldea 2010b).

For all these reasons, the study of effects and evolution of e-commerce in next short and medium term is very important in this period.

This paper examines the evolution of e-commerce observed in the Romanian retail sector in 2020, trying to propose a nonlinear statistical model with three components: main trend, explosion due to reduction of non-essential businesses and distancing restrictions, modeled by logistic components, and seasonal evolution, due to consumers' social reaction, of Romanian e-commerce market in 2020. The choice of this kind of model is justified by the increase in the number of users of electronic means of payment in various European countries, the diversification of the supply of traders and distributors, as well as the slower return to the classic system of purchases of consumer goods directly from stores by consumers already accustomed to the e-market.

After this introduction, we present a brief review of previous studies on the impact of the COVID-19 pandemic on e-commerce and the economy in general. The third section is dedicated to the presentation of our model of the global variation concerning the E-

market after the successive pandemic waves, followed by an interpretation section of the model in view of its applicability for economic forecasts. The article ends with some personal conclusions of the authors.

2. Previous Studies on the Impact of the SARS-COV2 Pandemic on E-Market

The SARS-COV2 pandemic spread extremely fast, with two successive waves in 2020 and a third in 2021, forcing the governments to impose isolation measure as well as the closure of many non-essential businesses. The result of these social and economic restriction produces major changes in the behavior of current consumption in households, as well as changing the way retail customers make their purchases. Baker, Farrokhnia, Meyer, Pagel and Yannelis, (2020) analyzed these effects for the case of USA, (Dou et al. 2020) for the case of China, and (Ker & Cardwell 2020) for Canada.

Starting from March 2020, new measures to slow the spread of COVID-19 had a significant impact on the way consumers shop in retail. As companies reduced or changed their operations in traditional stores, consumers were also called upon to practice physical distance, with the option of shopping online to become an important alternative to shopping in-person.

The vast majority of governments have adopted social distance measures, imposed blockades and temporarily closed certain businesses considered non-vital.

All this has led to a growth in the online shopping market, as well as an increased demand for a wide range of digital services, with many consumers opting for purchases made either via the Internet or by telephone. Several traditional companies have redirected their resources to e-commerce. "The increase in the number of consumers using digital services has led digital service providers and telecommunications operators to strengthen their network capacity and provide cheap or even free data sets and services" (WTO, 2020). An exhaustive study on the impact of pandemic on the economic policy of governments was published at the end of 2020 (Chen, Igan, Pierri & Presbitero, 2020).

From February to May 2020, the total retail sales in Europe fell by 17.9%. However, e-commerce retail sales almost tripled (+ 174%), with some retailers relying more on this method of sale than on the classic version (Wix E-commerce, 2020). The economic crisis generated by COVID-19 pandemic is expected to strongly affect many sectors of activities (such as health, education, living standard) of the developing countries (Barbier E & Bugess J. 2020), retarding the achievements of several Sustainable Development Goals (SDGs) (Shulla, K., 2021).

A comparative study between multiple country about the pandemic effect on the retail market was published by the Bank for International Settlements (Alfonso, Boar, Frost, Gambacorta & Liu, 2021), stating that “the growth of e-commerce has been higher in countries where there were more stringent containment measures and where e-commerce was initially less developed, and the changes in consumers’ shopping habits and payment behavior may be longer-lasting”.

A first regression model of the social and economic consequences of the e-market behavior was proposed in December 2020 (Kokh, J., Frommeyer, B, & Schewe, G, 2021). It is a structural equation multiple linear model, derived from four statistical hypothesis verified by authors.

We propose in this paper another non-linear model with higher correlation coefficient between predicted and observed global amounts of retail market, for the case of Romania.

3. The Proposed Regression Model of E-Market Behaviour

The evolution of online sales in Romania also experienced an upward trend in the year of the Pandemic, less pronounced than in other European countries, partly due to the lower spread means of electronic payment or even Internet access to the elderly or rural population. Fig. 1 presents the variation of monthly online retail sales in Romania, expressed in millions of euros, starting from the average monthly level of 2019: 360 million Euros (Iqads, 2020). It should be noted the existence of two peaks of strong growth of e-commerce corresponding to anti-COVID19 restrictions related to the two epidemic waves in spring (March-May) and autumn (September-December).

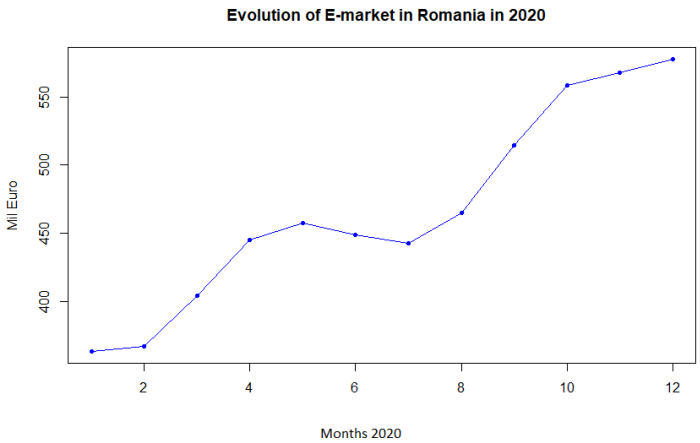

Fig. 1 The evolution of online sales in Romania in 2020, compared to the average monthly value (Euro mill. 360) in 2019
Data source: Eurostat 2021

The reduction in online sales during the summer is justifiable in terms of reducing government anti-epidemic restrictions. Statistically, the Romanian online retail trade reached Euro bill. 5.6 at the end of 2020, with growth peaks of 27% in May and 60% in December 2020, compared to the average monthly level from 2019.

The future evolution of this economic sector will also see increases based on the accustoming of the population to electronic means of payment, even in the absence of pandemic restrictions, as well as on the expansion of this market to the level of the European Union. But the growth of the e-commerce sector is not linear, being influenced by the European trend, seasonal variations and possible new waves of epidemics.

In this context, our research starts from the hypothesis:

(H1) *The effect of a Pandemic crisis can be positively related to the global increase of sales in e-Market.*

For testing this hypothesis, we chose to analyse a possible regression model based on asymtotical bouded logistical grothw equation. The second hypothesis was:

(H2) *The effect of a Pandemic crisis can be positively related to the accentuation of seasonal variation of e-Market.*

The second hypothesis was tested using a Fisher statistical test on the regression equation, including various quasiperiodical terms. In general, an F-test (Fisher) in regression compares the fits of different models. Unlike T-tests (Student) that can assess only one regression coefficient at a time, the F-test can assess multiple coefficients simultaneously.

In order to compute the coefficients of the non-linear regression, we used an implementation of NLStool package under R language, a high performant statistical programming language (see Baty 2015 for a reference documentation).

In our model design, from the beginning we excluded the variant of a uniform growth of the economic sector of online sales, given the instability caused by the Pandemic. The main trend is obtained directly from the linear regression on the raw data of the variation of online trade in Romania

$$\text{Sell (\%)} \sim -5.48 + 5.47^{*} M \quad (1)$$

where *Sell* represents the percentage of online sales growth compared to the average monthly value in 2019, and M is the time factor expressed in months, which represents an average monthly increase of 5.47%, with an error of 0.48% and the confidence factor $R^2 = 0.92$.

First we tested the hypothesis that the main effect of the pandemic crisis on the e-market behavior can be modeled by introduction of a new asymptotic term described by a logistic asymptotic equation, a model induced by the sudden change of interest in the online sale of current products, inspired by a previous work (Boldea & Boldea 2012):

$$\text{Sell (\%)} \sim [c0 + c1^{*} M] + [c2/(0.5+\exp(c3^{*}(M-c4)))] \quad (2)$$

We obtain the coefficient estimation of the model using the facilities of R language, the NLS package.

$$c0 \sim -1.76,\ c1 \sim 4.211,\ c2 \sim 6.074,\ c3 \sim -0.91,\ c4 \sim 7.5$$

The model has a residual error 5.793 on 8 degrees of freedom and passes the Fisher test of significance with an F-coefficient= 63.59. The correlation coefficient between the real *Sell* data and the prediction of model (2) is $\mathbf{Correl_1 = 0.966}$. The model is represented in Fig.2.

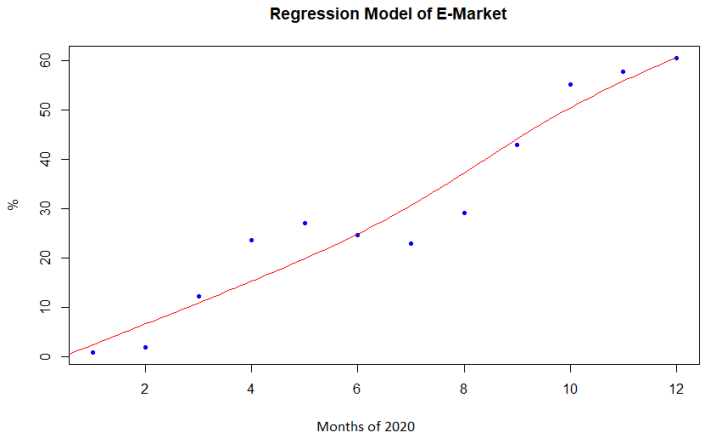

Fig. 2 The logistic regression model of online sales growth in Romania in 2020, compared to the average monthly value in 2019

In the second part, we introduced a seasonal factor related to the more pronounced variation of sales in the period corresponding to the Easter or winter holidays. Besides this, although the original data covers only 2020 year, we introduced a new logistic term in order to simulate the effects of the third wave of pandemic in 2021. The final model therefore contains three components:

$$\text{Sell (\%)}\sim[c0 + c1* M]+[c2/(0.5+\exp(c3*(M-7.5)))]+$$
$$c5.[\sin(\pi/3*(M-c6))/(\exp((M-c7)/12))]]+[c4/(0.5+\exp(c3*(M-15.5)))]+ \quad (3)$$

where the third factor, bi-annual seasonal, has a slow exponential decline in variation over time, based on the assumption that the effect of the Pandemic in 2021 and 2022 will be much smaller due to intensive vaccination campaigns. La last logistic term supposes that the maximum of the pandemic crisis was attained in the middle of April 2021. This factor models the consumer reaction to covid pandemic.

The coefficients of nonlinear Regression Model (3) were also obtained using the NLS nonlinear regression analysis package facilities from R language:

c0~ 7.88, c1~2.03, c2~ 13.05, c3~-0.91, c4~ 13.01,C5 =9.91, c6~ 3.2, c7~ 3.01

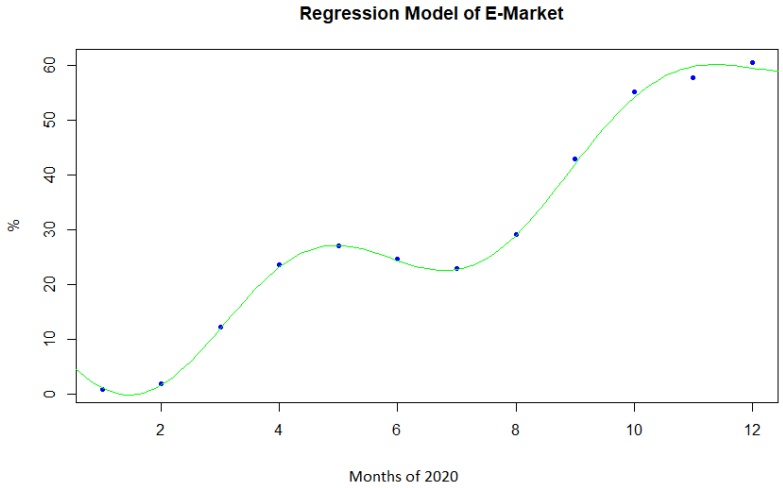

Fig. 3 Nonlinear regression model including seasonal quasi-cyclic factors and pandemic effect

The standard error of the model is 0.9226%, the Fisher test of relevance being passed with F_{calc} = 1341, well above the significance limit, and the relevance coefficient of the model was R^2 = 0.998; the correlation coefficient between the real *Sell* data and the prediction of model (2) is

$$\text{Correl}_2 = 0.99934,$$

which represents a significantly higher value than in the case of logistic regression, undoubtedly allowing the use of this model in short- and medium-term predictions of the behavior of the online sales market in Romania.

4. The Forecasting of the Model and Interpretation

Extending the simulation period of the model (3) by 24 months (Fig.4), we note the appearance of a phenomenon of constant growth of predictable online sales with an increasingly better-defined trend, having seasonal variations with growth peaks on the months of April-May, respectively October-December, economically significant as they correspond to the periods of maximum commercial activity induced culturally by the spring and winter holidays, respectively.

It should also be noted that this quasi-oscillating stretches with an average growth trend of 2.31% per month in the perspective of the next two years is justified by the growing interest of young people (aged 16-24) for e-commerce, according to the raw data at European level (Eurostat 2021, Fig.5).

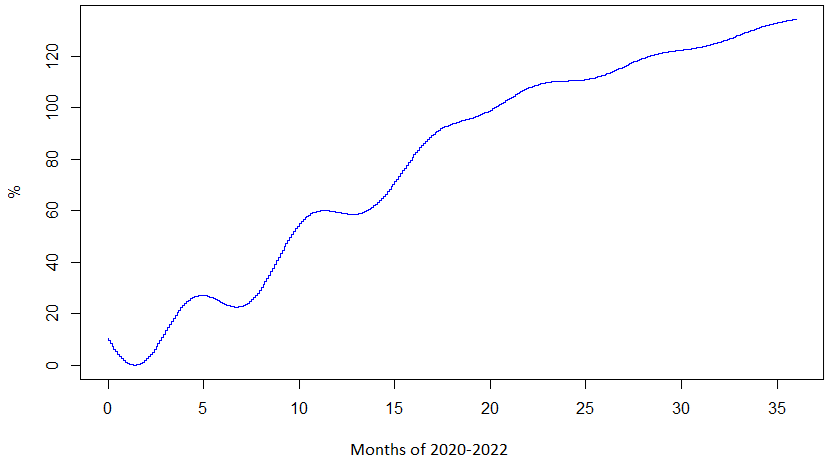

Fig. 4 The expected growth (in percent) of online sales in Romania in the period 2020-2022, compared to the average monthly value in 2019

One of the direct effects of pandemic restriction measures was the massive conversion of almost the entire young population (16-24 years old) to the massive use of the Internet, especially for online courses and socialization activities; given that over 78% of them use the electronic environment for shopping at least once a month, we can expect a doping effect on online commerce.

Thus, the seasonal component, strongly accentuated in 2020 (see Fig.5):

$$Sell_2 \sim 9.91*\sin(\pi/3*(M-3.2))/(\exp((M-3)/12)) \quad (4)$$

with the two pronounced peaks of growth from April-May, respectively October-December, overlaps with the introduction of mandatory online courses for young people and social distancing restrictions, thus being amplified in 2020 by changing the social behavior of pupils, students, and young people in general.

The proposed model does not take into account any significant new waves of epidemic, given that we can expect a gradual return to normality after the massive vaccination campaign at European level, probably at the end of 2021.

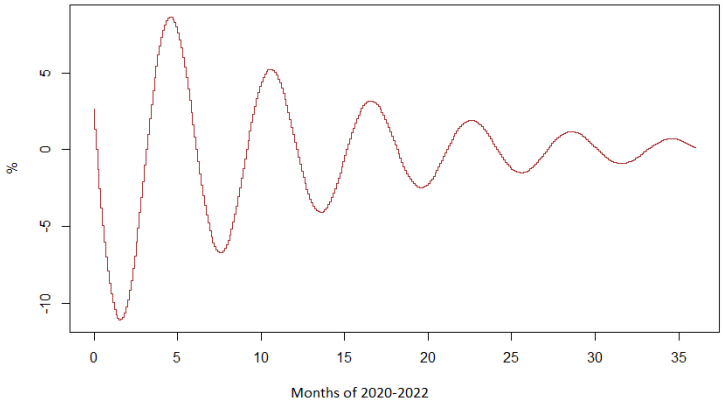

Fig. 5 The term of seasonal variation (in percentages) of online sales in Romania, related to the main trend of forecast growth of this sector in the period 2020-2022

According to our model, an increase in online commerce is expected until Euro mill. 610 per month in Romania, in April and May 2021, respectively exceeding Euro mill. 920 per month at the end of 2022, with 5% marge of error. Taking into account the evolution of the European e-Market (WIX E-commerce 2020), Romanian e-commerce sector will continue to be below European average.

5. CONCLUSIONS

The model we propose in Section 3, based on the combination of online sales doping, driven by the effects of pandemic restrictions, with a natural seasonal effect - greatly amplified by the drastic change in the behavior of young shoppers in particular - has a relevance coefficient, respectively the correlation of the prediction with the real data, very high, both of over 99%, the model being able to be used in predictions for the next two years of the e-Market of consumer products behavior. Following the results of this statistical study, we can say that the change in consumer behavior in the direction of e-commerce is irreversible, and the codifications that accelerated this trend during the pandemic are a natural evolution of e-Market.

However, the model proposed in this article did not take into account the impact of the vaccination campaign on consumers' dependence on online product sales (at the time of the study, the term "green passport" does not yet exist, with less benefits), as well as the emergence of new pandemic waves, much more virulent than the previous ones. The regressive model could be adjusted in the future in order to better adapt to their seasonal succession, given that a significant part of the population has already adapted to online commerce.

The current Pandemic situation will have a sustained impact on e-commerce even after the end of the pandemic restrictions, in several economic areas, not only those that include food and medication. The portrait of the online consumer has certainly changed, at least for now, forcing retailers to adapt to the new online market. There is no doubt that the Internet is about to become not only the new global electronic market on which the

economic battle between the world's great powers is to take place, but also the means for the integration of small countries into the global economy of the 21st century.

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UTICAJ PANDEMIČNIH TALASA NA RUMUNSKO E-TRŽIŠTE: MODEL NELINEARNE REGRESIJE

Pandemija SARS-COV2 imala je snažan uticaj na rumunsko i evropsko e-tržište, što se manifestovalo eksplozivnim porastom onlajn prodaje, posebno na početku dva talasa epidemije, u proleće i jesen. Koristeći statističku regresivnu analizu mesečnih promena obima onlajn prodaje u Rumuniji, predlažemo model nelinearne regresije rasta ovog komercijalnog sektora koji uzima u obzir ekonomske i socijalne efekte tri talasa pandemije u periodu 2020-2021., kombinujući logističke jednačine rasta sa oslabljenim kvaziperiodičnim varijacijama tržišta. Model omogućava predviđanje ukupnog ponašanja onlajn kupaca za 2021. i 2022. godinu, slično kao prošle godine, ali sa godišnjim vrhovima rasta nešto manje izraženim nego u 2020.

Ključne reči: *E-tržište, model nelinearne regresije, ponašanje tržišta nakon pandemije*

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