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МЕЂУНАРОДНИ ЧАСОПИС
ЗА ЕКОНОМСКУ ТЕОРИЈУ И ПРАКСУ И ДРУШТВЕНА ПИТАЊА

ЕКОНОМИКА

Часопис излази четири пута годишње Година LXVII, X-XII 2021, број 4

ИЗДАВАЧ: Друштво економиста "Економика" Ниш
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DETERMINATION OF THE IMPORTANCE OF EVALUATION CRITERIA DURING THE PROCESS OF RECRUITMENT AND SELECTION OF PERSONNEL BASED ON THE APPLICATION OF THE SWARA METHOD

Abstract

Personnel selection for an organization is an extremely important process. Modern organizations strive to improve the process of recruitment and selection of personnel as much as possible, in order to provide the organization with quality personnel and thus long-term competitiveness. In addition, the evaluation criteria on which the recruitment and selection process is based is also important, as it has a large impact on the final selection of candidates. Therefore, the aim of this paper is to propose the application of multi-criteria decision-making methods for the process of determining the weighting coefficients of evaluation criteria. Accordingly, the SWARA (Step-Wise Weight Assessment Ratio Analysis) method for determining weights was applied in the paper. The SWARA method proved to be extremely reliable when it comes to defining the weights of evaluation criteria, primarily due to its simplicity and the fact that respondents and domain experts could easily express their views on the issue.

Keywords*: SWARA, MCDM, group decision-making, personnel selection, weights determination*

JEL classification: *C44, M12*

ОДРЕЂИВАЊЕ ЗНАЧАЈА ЕВАЛУАЦИОНИХ КРИТЕРИЈУМА ПРИЛИКОМ ПРОЦЕСА РЕГРУТАЦИЈЕ И СЕЛЕКЦИЈЕ КАДРОВА ЗАСНОВАН НА ПРИМЕНИ СЊАРА МЕТОДЕ

Апстракт

Избор кадрова за једну организацију представља изузетно важан процес. Савремене организације теже да процес регрутације и селекције кадрова што више унапреде, како би обезбедили организацији квалитетне кадрове и тиме дугорочну конкурентост. Поред тога, евалуациони критеријуми на којима се

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заснива процес регрутације и селекције је такође значајан, јер у великој мери има утицаја на финални избор кандидата. Стога, циљ рада је да предложи примену метода вишекритеријумског одлучивања за процес одређивања тежинских коефицијената евалуационих критеријума. Сходно томе, у раду је примењена SWARA (Step-Wise Weight Assessment Ratio Analysis) метода за одређивање тежина. SWARA метода се показала изузетно поузданом када је у питању дефинисање тежина евалуационих критеријума, пре свега због своје једностасвности и чињенице да су испитаници и доменски експери лако могли да изразе своје ставове по том питању.

Кључне речи: *SWARA, MCDM, групно одлучивање, избор кадрова, одређивање тежина*

Introduction

Employees are a valuable resource on which the success of a company depends and without which the company cannot be highly competitive (Ulutaş et al., 2020; Karabasevic et al., 2016). The selection of adequate personnel today is a great challenge primarily due to extremely variable and demanding business conditions (Đorđević, 2021; Wedajo & Chekole, 2020). Human resource management and personnel selection is an important part of business activity on which the success of the realization of tasks and set goals of an organization depends. Many factors affect the process of choosing the right person for a particular business position, such as, for example, changes in business behavior, job changes, social changes, changes in the law, improvement of information technology, and so forth (Robertson & Smith, 2001; Liao, 2003). The importance of quality personnel gained special importance during the current Covid-19 pandemic (Stošić-Mihajlović & Trajković, 2021). Therefore, it is very important to invest in intellectual capital in order to obtain quality personnel (Petković et al., 2021)

The selection of personnel directly affects the quality of the human resources base available to a particular organization, and therefore the selection of personnel is an important task for organizations, whether public or private. Different approaches have been developed to help and make it easier for organizations to choose the best candidate, more specifically to select the right people to do certain jobs (Karabasevic et al., 2018; 2015). Traditional methods for selecting candidates are mainly based on statistical analyses of test results that are considered to reflect reality. Modern approaches start from the thesis that selection is a complex process that characterizes uncertainty and subjectivity. As one of the ways to minimize or even avoid uncertainty and subjectivity, the authors suggest the application of multi-criteria decision-making methods (Afshari et al., 2010).

The application of multi-criteria decision-making (MCDM) in the process of evaluation and selection of personnel for a certain positions in an organization implies respect for all the criteria on which the selection is based (Jauković Jocić, 2020a, 2020b). MCDM methods enable the successful overcoming of the problem that arises in the case of the existence of conflicting criteria, because everyone is involved in the evaluation process and everyone influences the final decision and choice (Bakir &

Atalik, 2021; Stanujkic et al, 2018). In that way, the subjectivity of the obtained results is minimized and the reliability and relevance of the obtained results and decisions made is increased. Accordingly, the MCDM technique may be extremely suitable for determining the significance of evaluation criteria. It is important to note that the MCDM area has experienced intensive growth over time, accordingly, many methods have been proposed, some of which are used for the determination of weights, whereas some are used for ranking of the alternatives, such as (Zavadskas & Turskis, 2011):

- the SAW method,
- the AHP method,
- the TOPSIS method,
- the PROMETHEE method,
- the ELECTRE method,
- the VIKOR method, and so on.

In addition, newer generation of the MCDM methods have been proposed, such as (Ulutaş et al., 2021; Stanujkic et al., 2021):

- the SWARA method,
- the ARAS method,
- the WASPAS method,
- the MULTIMOORA method,
- the EDAS method,
- the CODAS method,
- the PIPRECIA method,
- the WISP method, and so forth.

Accordingly, the paper proposes the application of the SWARA method for determining the importance of evaluation criteria in the process of recruitment and selection of personnel (Keršuliene et al., 2010). Therefore, the remainder of the paper is as follows: In Section 1, the Introduction is presented, whereas, in Section 2, the SWARA method is presented. Determining the significance of the evaluation criteria is demonstrated in Section 3, finally, Conclusions are given at the end of the paper.

The SWARA method

The SWARA method was developed by (Keršuliene et al., 2010). Over time, the method has been applied to solve a wide variety of problems, such as: evaluation of green suppliers (Akcan & Taş, 2019), risk management in supply chains (Ansari et al., 2020), project risk assessment (Valipur et al., 2017), selection of employees (Karabasevic et al., 2015; 2018), packaging design (Stanujkic et al., 2015) and so on.

The computational procedure of the SWARA method can be illustrated by applying the following steps (Stanujkic et al., 2015; Keršuliene et al., 2010)

Step 1. Defining the criteria on which the evaluation will be based and sorting of criteria in descending order. Sorting is done depending on the importance that the decision maker assigns to a certain criterion

Step 2. Expressing the relative importance of the criteria j in relation to the previous criterion (j-1). The relative importance is expressed for each criterion separately, and it

starts with second criterion.

Stepn 3. Determining k_j by using following Eq.:

$$k_j = \begin{cases} 1 & j = 1 \\ s_j + 1 & j > 1 \end{cases}, \quad (1)$$

whre s_j represents the ratio of comparative importance of the average value.

Step 4. Determination of recalculated weight q_j is performed as follows:

$$q_j = \begin{cases} 1 & j = 1 \\ \frac{q_j - 1}{k_j} & j > 1 \end{cases}. \quad (2)$$

Step 5. Determination of the relative weights of criteria by using the following Eq.:

$$w_j = \frac{q_j}{\sum_{k=1}^{n} q_k}, \quad (3)$$

where w_j represents the relative weight of the criteria j.

The ease of application of the SWARA method has contributed to its popularity and application for problem solving and determining the importance of evaluation criteria in various areas of life and business.

Determining the significance of evaluation criteria based on the application of the SWARA method

In this part of the paper, the segment related to weight determination is presented, i.e. the significance of the evaluation criteria based on the application of the SWARA method. Interactive questionnaires are designed to graphically and numerically present the importance of the criteria after entering the attitudes of the respondents, with the possibility for the respondents to finally correct their views, if necessary. A total of 50 questionnaires were distributed by e-mail. Feedback was received from 42 respondents, however, 31 questionnaires were completed correctly.

The weights of the following evaluation criteria will be considered:

- C_1 – Relevant previous work experience,
- C_2 - Education,
- C_3 – Interview readiness,
- C_4 – Interpersonal skills,
- C_5 – Communication and presentation skills, and
- C_6 – Computer skills.

In the continuation of the paper, the obtained weights of evaluation criteria of all respondents for the stated criteria are presented. The relative meanings of the criteria obtained from the first respondent are shown in Table 1. Table 1 also shows the procedure for calculating weights using the SWARA method, as well as the calculated weights of the criteria.

Table 1: Weights of the criteria obtained from the first respondent

Criteria		s_j	k_j	q_j	w_j
C_1	Relevant previous work experience		1	1	0.21
C_2	Education	0.10	1.10	0.91	0.19
C_3	Interview readiness	0.20	1.20	0.76	0.16
C_4	Interpersonal skills	0.00	1.00	0.76	0.16
C_5	Communication and presentation skills	0.10	1.10	0.69	0.14
C_6	Computer skills	0.00	1.00	0.69	0.14

Values of variables shown in columns k_j, q_j и w_j were calculated by using Eqs. (1), (2) and (3).

The relative meanings of the criteria obtained from the first five respondents are shown in Table 2, while the weights of the criteria obtained based on their responses are shown in Table 3.

Table 2. Relative significance of the criteria obtained from the first 5 respondents

Criteria	I_1	I_2	I_3	I_4	I_5
C_1	1	1	1	1	1
C_2	0.10	0.00	0.15	0.10	0.20
C_3	0.20	0.10	0.10	0.20	0.15
C_4	0.00	0.20	0.25	0.30	0.36
C_5	0.10	0.25	0.10	0.05	0.05
C_6	0.00	0.20	0.03	0.15	0.01

Table 3. Weights of the criteria obtained from the first 5 respondents

Criteria	I_1	I_2	I_3	I_4	I_5
C_1	0.21	0.21	0.23	0.23	0.24
C_2	0.19	0.21	0.20	0.21	0.20
C_3	0.16	0.19	0.18	0.18	0.18
C_4	0.16	0.16	0.14	0.14	0.13
C_5	0.14	0.13	0.13	0.13	0.12
C_6	0.14	0.11	0.13	0.11	0.12

The relative meanings of the criteria obtained from 31 respondents are shown in Tables 4a, 4b and 4c, due to the length of the table.

Table 4a. Relative significance of the criteria obtained by the first 10 of 31 respondents

Criteria	I_1	I_2	I_3	I_4	I_5	I_6	I_7	I_8	I_9	I_{10}
C_1	1	1	1	1	1	1	1	1	1	1
C_2	0.10	0.00	0.15	0.10	0.20	0.25	0.10	0.15	0.14	0.20
C_3	0.20	0.10	0.10	0.20	0.15	0.05	0.10	0.05	0.25	0.30
C_4	0.00	0.20	0.25	0.30	0.36	0.20	0.30	0.10	0.24	0.15
C_5	0.10	0.25	0.10	0.05	0.05	0.05	0.10	0.10	0.15	0.20
C_6	0.00	0.20	0.03	0.15	0.01	0.15	0.00	0.04	0.04	0.04

Table 4b. The relative significance of the criteria obtained by the following 10 respondents

Criteria	I_{11}	I_{12}	I_{13}	I_{14}	I_{15}	I_{16}	I_{17}	I_{18}	I_{19}	I_{20}
C_1	1	1	1	1	1	1	1	1	1	1
C_2	0.10	0.00	0.00	0.05	0.10	0.05	0.03	0.25	0.10	0.00
C_3	0.20	0.10	0.10	0.20	0.15	0.10	0.08	0.00	0.20	0.30
C_4	0.10	0.10	0.15	0.15	0.20	0.30	0.30	0.25	0.20	0.10
C_5	0.10	0.20	0.20	0.25	0.10	0.15	0.15	0.15	0.20	0.20
C_6	0.11	0.02	0.10	0.20	0.20	0.00	0.06	0.15	0.15	0.10

Table 4c. Relative significance of the criteria obtained by the remaining respondents

Criteria	I_{21}	I_{22}	I_{23}	I_{24}	I_{25}	I_{26}	I_{27}	I_{28}	I_{29}	I_{30}	I_{31}
C_1	0.10	0.00	0.00	0.10	0.05	0.25	0.00	0.00	0.10	0.00	0.10
C_2	0.09	0.20	0.25	0.15	0.30	0.03	0.02	0.20	0.30	0.25	0.20
C_3	0.30	0.25	0.25	0.15	0.30	0.30	0.10	0.20	0.15	0.30	0.30
C_4	0.15	0.05	0.05	0.25	0.15	0.10	0.10	0.15	0.20	0.00	0.25
C_5	0.15	0.00	0.15	0.15	0.00	0.07	0.15	0.10	0.00	0.00	0.00
C_6	0.10	0.00	0.00	0.10	0.05	0.25	0.00	0.00	0.10	0.00	0.10

The mean value of the relative significance of the criteria from Tables 4a, 4b and 4c, based on which the criteria weights were calculated, are shown in Table 5. Table 5 also shows the minimum and maximum values for each criterion, as well as the standard

deviation. The coefficient Cronbach alpha for the relative meanings of the criteria collected from the thirty-one respondents is as high as 0.999, which indicates a very high agreement in the attitudes of the respondents.

Table 5: The average relative importance of the criteria based on the attitudes of all respondents

Criteria	s_j	*min*	*max*	*stdev*
C_1	0.09	0.00	0.25	0.08
C_2	0.16	0.00	0.30	0.09
C_3	0.21	0.00	0.36	0.09
C_4	0.14	0.00	0.25	0.07
C_5	0.08	0.00	0.20	0.07
C_6	0.09	0.00	0.25	0.08

Table 6 summarizes the weights calculation procedure by using the SWARA method. The calculated criteria weights are also shown in Table 3.

Table 6: Weights of criteria obtained based on the attitudes of all respondents

Criteria		s_j	k_j	q_j	w_j
C_1	Relevant previous work experience		1	1	0.22
C_2	Education	0.09	1.09	0.92	0.21
C_3	Interview readiness	0.16	1.16	0.79	0.18
C_4	Interpersonal skills	0.21	1.21	0.65	0.15
C_5	Communication and presentation skills	0.14	1.14	0.57	0.13
C_6	Computer skills	0.08	1.08	0.53	0.12

From Table 6 it can be noted that the criterion designated as C_1– Relevant previous work experience, based on the attitudes of the thirty-one respondents is the most significant and that its significance amounts to 22% of the overall importance of all criteria. According to the respondents, criterion C_6 – Computer skills has the least importance for the selection of candidates, and its weight amounts to 0.13.

Conclusion

Hiring competent people is crucial for an organization. Multi-criteria decision-making methods have been developed to support decision-makers during a single decision-making process. The process of recruitment and selection of personnel can also be seen as a problem that can be solved by applying the methods of multi-criteria decision-making.

Consequently, in this paper, the SWARA method was successfully applied to determine the importance of evaluation criteria in the process of recruitment and selection of personnel. The obtained group weights of the six evaluation criteria are based on the views of 31 respondents/domain experts. The reason for applying the SWARA method is its simplicity and convenience of application for examining the attitudes of decision-makers even if they are not well acquainted with multi-criteria decision-making. Therefore, the weights of the evaluation criteria are successfully determined. However, it should be noted that one of the limitations is the application of the crisp numbers in this process. So, it was not possible to include the vagueness of the environment. As a direction for future research, some extensions of the SWARA method could be used to get even more reliable results.

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FDI INFLOWS IN SELECTED EMERGING EUROPEAN ECONOMIES WITH REFLECTIONS ON ECONOMIC GROWTH

Abstract

The objective of this paper is to identify the top destination for FDI inflows as well as to analyse related growth progress in selected Emerging European Economies (EEEs) in order to suggest significant implications towards economic policy creators in Western Balkan countries. The authors conducted descriptive statistical analysis together with correlation analysis in the time period 1997-2019. The analysis of average FDI inflows includes following country groups: Visegrad States, Baltic States, Western Balkan and eleven new EU member states with regard to the structural break of Global Financial Crisis (GFC). The results suggest that the Visegrad States (particularly Poland) were the top locations for foreign investors in the analysed time period. Having in mind a positive correlation link between significant FDI inflows, especially greenfield FDI inflows and economic growth, we suggest that Western Balkan countries should implement adequate measures to attract greater greenfield FDI inflows in order to stimulate real convergence towards developed European economies. Therefore, recommendations are directed towards economic policy of less developed countries of Western Balkan that need to continue to improve the quality of public institutions and infrastructure, as well as business environment and implementation of nonfinancial measures of promotional activities, in order to raise attractiveness of national market for foreign investors.

Key words: *FDI, economic growth, EEEs, Western Balkan.*

JEL classification: E22, F21, O19, O24.

ПРИЛИВИ СДИ ОДАБРАНИХ ЕВРОПСКИХ ЕКОНОМИЈА У РАЗВОЈУ И УСПОНУ СА РЕФЛЕКСИЈАМА НА ЕКОНОМСКИ РАСТ

Апстракт

Циљ рада је идентификација најатрактивнијих локација за прилив СДИ, као и анализа повезаног економског напретка у изабраним европским

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економијама у развоју и успону (ЕЕЕ), како би се пружиле значајне импликације на економску политику земаља Западног Балкана. Аутори користе метод дескриптивне статистичке анализе заједно са корелационом анализом у временском периоду од 1997 до 2019. године. Анализирани су просечни приливи СДИ по групама земаља у узорку: Вишеградским државама, Балтичким државама, Западном Балкану и једанаест нових чланица ЕУ са освртом на структурни лом изазван Светском финансијском кризом (СФК). Резултати указују да су Вишеградске земље (посебно Пољска) биле најатрактивније локације страним инвеститорима у анализираном временском периоду. Имајући у виду позитивну корелациону везу између значајног прилива СДИ, посебно прилива греенфиелд СДИ и економског раста ЕЕЕ, потребно је да земље Западног Балкана примене адекватне мере привлачења греенфиелд СДИ с циљем стимулације реалне конвергенције ка развијеним европским економијама. Стога, препоруке су усмерене у правцу економске политике мање развијених економија Западног Балкана, где је неопходно даље унапређење квалитета државних институција и инфраструктуре, као и пословног окружења и примена нефинансијских промотивних мера, ради повећања атрактивности националног тржишта страним инвеститорима.

Кључне речи: СДИ, економски раст, ЕЕЕ, Западни Балкан.

Introduction

The convergence process of the Emerging European Economies (EEEs) towards developed countries mostly relies at the substantial inflow of FDI. In the previous period there was considerable problem of insufficient level of total investment and domestic capital accumulation that would bust economic development, especially in the Western Balkan countries. In the EEEs the significant share of FDI was directed in financial and service sector that reflected in the faster economic growth. Also, received greenfield investments were the relevant factor that contributed to the rise of employment and economic development.

The considerable part of the received FDI inflows through acquisitions and *greenfield* investments were directed in the national banking sector, that together with higher government control contributed to a greater efficiency and restructuring of the domestic banking sector (Ercegovac, Vlaović Begović & Jovin, 2019).

The aim of this paper is to analyse FDI inflows in selected EEEs, along with the analysis of FDI effects on the real economy, as well as the factors that influence the FDI inflows. Key hypothesis of this research is: Host countries with high levels of FDI, especially greenfield FDI inflows, can achieve positive transmission effects and growth of real economy. The purpose of this paper is to offer relevant implications towards economic policy creators in the Western Balkan economies. Economic policy creators try to balance with goals of internal and external equilibrium on which significant effect has adequate level of the FDI inflows, especially greenfield FDI inflows. De Mello (1999) stresses that larger FDI inflows can affect positively on economic growth through capital accumulation and transfer of technology and knowledge.

Josifidis, Allegret & Beker Pucar (2013) state that in the period before Global financial crisis (GFC) substantial FDI inflows were enabled through high global liquidity and low lending costs. Relying on significant foreign capital in the combination with growing current account deficit problem initiated higher sensitivity of emerging economies towards external shocks, sudden stop episodes or capital reversals during GFC, with inevitable restrictive adjustments of real economy (Beker Pucar & Srdić, 2018). Żuk, Polgar, Savelin, Diaz del Hoyo & Konig (2018) analyse the level of real convergence and economic development of Central, Eastern and South-eastern Europe and they come to the conclusion that new EU states (Poland, Slovakia and Baltic States) have the fastest improvement, while Western Balkan states still have slow and challenging development pace.

Literature review

On the basis of different research results in the vast literature, it could be summarized that FDI can have a wide range of positive effects on the host economy like increase in financial resources, increase of employment, competitiveness growth, better access on foreign markets, rise in exports, contemporary technology transfer, human capital improvement and, finally, rise in economic growth (Caves, 1974; Romer, 1993; Noorbakhsh, Paloni & Youssef, 2001; Brooks & Sumulong, 2003; Durham, 2004; Crespo & Fontura, 2007; Azizov, 2007). Walkenforst (2004) highlights that multinational companies had a key role in restructuring and transition of Central and Eastern European economies from socialistic regimes to market oriented economic systems. Numerous studies have shown that FDI inflows had positive effect on economic growth (Borensztein, De Gregorio & Lee, 1998; Li & Liu, 2005; Pegkas, 2015; Iamsiraroj & Ulubasoglu, 2015; Iamsiraroj, 2016). According to Gerschewski (2013) the governments of emerging economies strive to attract greater FDI inflows because they expect positive transmission effects concerning the rise of productivity level and modern technology transfer.

Denisia (2010) points out that FDI inflows affects rise in employment, productivity level, competition, technology transfer, better position on international market, rise in exports and foreign currency inflow. Ercegovac & Živkov (2018) stated that more FDI inflows in the tradable sector and improvement in competitiveness position can contribute to more balanced current account. According to Bayar (2017) greenfield investments bring greater capital accumulation and productivity, while brownfield investments can affect positively the economic growth through knowledge and technology transfer. The authors who also come to the empirical evidence that greenfield FDI had positive effect on the real economy are Wang & Wong, 2009; Neto, Brandao & Cerqueira, 2010; Harms & Meon 2014; Luu, 2016 and Bayar, 2017.

Luu (2016) comes to conclusion that both, greenfield and brownfield FDI, had positive effect on economic growth. According to Kurtishi-Kastrati (2013) FDI inflows can have positive effects on economic growth and balance of payments that depends on FDI motivation. Blomstrom & Kokko (1997) also conclude that FDI have potential to stimulate economic growth through increase in productivity and greater exports of host country. Also, Dabla-Norris, Honda, Lahreche & Verdier (2010) state that larger inflow of foreign capital have been received in more developed countries that have greater

values of GDP per capita. Anghel (2006) comes to conclusion that more open countries, with higher rates of GDP growth and more qualified labour, had larger inflow of FDI. Dogru (2012) underlines that FDI inflow is significantly determined by the quality of government institutions and administrative business procedures.

Dunning (1994) states that foreign investors can be interested in local market, low cost of domestic resources, efficient production through specialization and strategic assets. Dunning (1992) underlines that government and tax policy, but also business environment, significantly determines the attractiveness of host country as an investment location. Kinoshita & Campos (2002) claim that motives of foreign investors can be also natural resources, large and growing market, low transport costs, geographical distance and efficient production process. Brakman, Garretsen & Van Marrewijk (2006) stated that greatest part of FDI was realized through mergers and acquisitions. Mergers and acquisitions are mainly motivated with market volume, decrease of competition and cost reduction. According to UNCTAD (WIR, 2002) factors that have influence foreign investors choice concerning investment location are government policy, economic determinants of local market and business incentives. Government policy includes economic and political stability, regulation for entrance and business of multinational corporations, tax policy, international agreements, trade policy, industrial policy and regional policy. Also, government policy and taxes besides their impact on received FDI inflows have a strong impact on economic growth. Empirical findings of Kalaš, Mirović & Andrašić (2020) confirm the positive and statistically significant effect of revenues of value added tax and excises on economic growth in the long-run.

Economic determinants of FDI inflows include market volume, consumer preferences, factor costs, labour qualification, modern technology, production capacity, infrastructure, business environment and human capital. Business incentives include promotional activities in process of building positive image of country, financial and nonfinancial incentives for investors, protection of property rights and additional services with administrative procedures (UNCTAD, WIR, 2002).

Wells & Wint (2000) highlight that promotional program and investor incentives are relevant factors in attracting multinational companies that search the most favourable location for production fragmentation and further export on regional and global market. On the other hand, multinational companies interested in local market pay attention on the business environment and regulation and don't need intense investment incentives. Ruane (2008) points out that financial incentive for foreign investors can have more negative effects because of, so called, "price wars".

In that sense, Ginevičius & Šimelyte (2011) states that fiscal and financial incentive measures can have only short term positive effects in attracting FDI, because multinational companies interested in economic incentives have tendency to transfer capital and escape to more favourable location with predictive government policy. Jovanović, Damnjanović & Mirović (2016) also find that social stability, reliable infrastructure, competitive local suppliers and highly educated and productive labour have more effect in attracting FDI, while direct subsidies and tax relive aren't efficient ways in attracting foreign investors.

Shukurov, Maitah & Smutka (2016) states that investor's choice about location depends on the analysis of strengths and weaknesses of host country that further attract certain type of FDI: resource seeking, market seeking or efficiency seeking investments. Dunning (2003) points out that factors that have influence on the choice of investors

location are permanently changing. In larger emerging economies traditional economic factors like cheap labour, natural resources and market volume are still significant factors, while in advanced industrial economies multinational companies are now looking for knowledge and innovation based capabilities with adequate trade, legal and communication policy and infrastructure. Canton & Solera (2016) points out that received greenfield FDI inflow in EU countries were influenced by flexible regulation, market volume, labour quality and lower distance between host and home country of investor. Authors conclude that macroeconomic factors, regulations and business environment had the most influence on attraction of foreign investments.

Transition economies of Western Balkan had less FDI inflows compared to the Central European countries because of slow process of reforms, political instability, infrastructure disabilities and inefficient institutions. It is necessary to underline that positive effects and nature of connection between FDI and host economy depends on level of economic development, industry characteristics, financial sector development and business environment of host country, but also from motivation and industry sector of investment.

Research Design and Methodology

Literature review gives relevant findings about positive effects of substantial foreign capital inflows with regard to the key factors that motivate FDI inflows. The authors analyse FDI inflows because they are the fuel that triggers changes and economic development in less developed and transition economies. The main goal of the paper is to identify the top destination for total and greenfield FDI inflows and analyse the annual GDP growth rates in EEEs in order to suggest useful recommendations for economic policy creators in the Western Balkan economies. Also, previous capital inflows are relevant factor that new investors consider in identification of foreign locations for their production facilities and market expansion strategies.

Research hypothesis is as follows: Host countries with high levels of FDI, particularly greenfield FDI inflows, can achieve positive transmission effects related with real economy, namely stimulation of economic growth. In order to analyse a magnitude of received FDI and greenfield FDI, as well as the level of annual GDP growth rates in selected EEEs, the authors use a method of descriptive statistical analysis with graphical presentation of analysed indicators. Also, authors use the Pearson correlation in order to determine if there is a positive link between the FDI inflows and GDP growth rate in selected EEEs. Methodology used is this paper is comparative analysis, backed up with descriptive statistics and correlation analysis, with the purpose of giving inductive conclusions focused on government policy recommendations for Western Balkan countries.

Research sample are sixteen EEEs i.e. transition economies that become EU members in 2004, 2007 and 2013 with countries of Western Balkan that are in the process of convergence towards the EU. Authors compare received FDI inflows by countries and by next four groups - Visegrad States, Western Balkan, Baltic States and eleven new EU member states. Also, the analysis covers received greenfield FDI by countries and country groups with comparative look at Poland, Western Balkan and Serbia.

In order to back up the defined hypothesis we analyse the real growth indicator by countries and country groups with graphical presentation for Poland, Western Balkan and Serbia. Key yearly variables are obtained from UNCTAD, FDI/MNE database, WIR2020 and Word Bank Sustainable Development Goals Database. Descriptive analysis of FDI inflows has been performed for the period 1997-2019, but also in regard to the structural break of the GFC (before GFC 1997-2007 and after GFC 2008-2019). Descriptive analysis of greenfield FDI inflows is conducted for the available data in the period 2003-2019. Annual GDP growth rates in the period 1997-2019 are investigated with the focus on average growth rates and volatility level measured with standard deviation. Correlation analysis covers the link between the FDI inflows and GDP growth rate for the period 1997-2019 and the link between the greenfield FDI inflows and GDP growth rate for the period 2003-2019 in selected EEEs.

Research Results and Discussion

The analysis of FDI inflows in selected EEEs

On the basis of descriptive analysis of FDI inflows presented in Table 1, we can point out that admission in the EU was relevant factor in the process of attracting foreign investors in the analysed time period. If we look average FDI inflows for total period of time (1997-2019) we see that Poland was the top destination for FDI with average FDI inflows of 10.4 billion USD. Moreover, Poland recorded maximum level of received FDI inflows compared to the total sample after 2004 and admission in the EU. Besides Poland, high level of average FDI inflows was obtained in Czech Republic and Romania. Countries that have received higher level of FDI after admission in the EU were: Hungary, Romania, Bulgaria and Czech Republic. Also, we can point out that Hungary along with the high FDI inflows also had the biggest FDI outflow.

Table 1: Descriptive analysis of FDI inflows in selected EEEs (1997-2019) in millions USD

Emerging European Economies	Average FDI inflows (1997-2019)	Average FDI inflows before GFC (1997-2007)	Average FDI inflows after GFC (2008-2019)	Median	Minimum	Maximum
Poland	10.419,27	8.761,23	11.939,13	12.140,25	2.734,02	19.836,22
Czech Republic	5.927,11	5.917,57	5.935,84	5.641,74	465,10	11.653,25
Hungary	3.620,76	4.126,21	3.157,44	3.936,05	-14.750,64	14.409,22
Slovak Republic	2.186,41	2.961,72	1.475,71	2.276,71	-604,08	5.864,88
Visegrad States	**5.538,39**	**5.441,68**	**5.627,03**	**4.889,12**	**-14.750,64**	**19.836,22**
Estonia	1.135,30	972,55	1.284,48	928,00	12,97	3.044,48
Latvia	730,18	677,14	778,81	706,19	93,88	2.323,67
Lithuania	778,31	796,41	761,73	700,04	-23,32	1.984,38
Baltic States	**881,27**	**815,37**	**941,67**	**724,97**	**-23,32**	**3.044,48**
Slovenia	642,80	517,76	757,43	675,46	-475,83	1.674,41
Romania	4.467,91	3.909,41	4.979,86	3.601,36	1.027,03	13.491,54
Bulgaria	2.780,80	3.144,93	2.447,02	1.549,13	646,66	12.388,86

Croatia	1.821,34	1.698,37	1.934,06	1.425,48	267,36	5.317,18
11 new EU member states	**3.137,29**	**3.043,94**	**3.222,86**	**1.697,19**	**-14.750,64**	**19.836,22**
Albania	663,09	217,05	1.071,96	855,44	41,20	1.289,69
Bosnia and Herzegovina	428,05	399,18	454,51	381,05	0,00	1.819,24
Montenegro	436,00	203,98	648,68	489,81	0,00	1.527,26
Serbia	2.137,15	1.304,45	2.900,46	1.996,14	51,78	4.932,25
North Macedonia	295,96	237,93	349,16	256,34	0,00	725,20
Western Balkan	**792,05**	**472,52**	**1.084,95**	**447,35**	**0,00**	**4.932,25**

Source: Authors calculation on the basis of yearly data from UNCTAD, WIR2020.

Based on the results of descriptive statistics we can say that the most attractive locations for foreign investors in the analysed sample were Poland, Czech Republic and Romania. If we compare average FDI inflows by country groups we can highlight that Visegrad States received the most of FDI inflows in the analysed sample in whole observed period. Also, Baltic group and Western Balkan countries had the lowest average of FDI inflows (less than 1 billion USD). Within the Baltic group Estonia had the largest average FDI inflows, while in Western Balkan group Serbia has received more average FDI. Maximum level of received FDI inflows in the Baltic group was recorded in Estonia in 2019, however the three times less than average in the case of Poland. In the Western Balkan group maximum level of received FDI inflows was received in Serbia in 2011, still two time less than Polish average.

If we analyse average FDI flows by country groups in two time sub samples (pre-GFC and post-GFC periods), we can see that new EU member states, as well as Visegrad and Baltic States, had slightly higher average FDI inflows after GFC. The biggest growth of average FDI inflows was recorded in Western Balkan countries that had only 472 million USD before GFC, but after GFC had two times higher level of average FDI inflows (1.1 billion USD). The main reasons for higher FDI inflows in Western Balkan group were higher FDI inflows in Serbia and Albania after transition reforms and macroeconomic stabilization. Serbia had two times higher average FDI inflows after GFC, while Albania had five times bigger average FDI inflows after GFC. Reasons for higher growth rate of average FDI inflows in Albania were very low level of received FDI inflows before GFC and more interest of foreign investors since 2007.

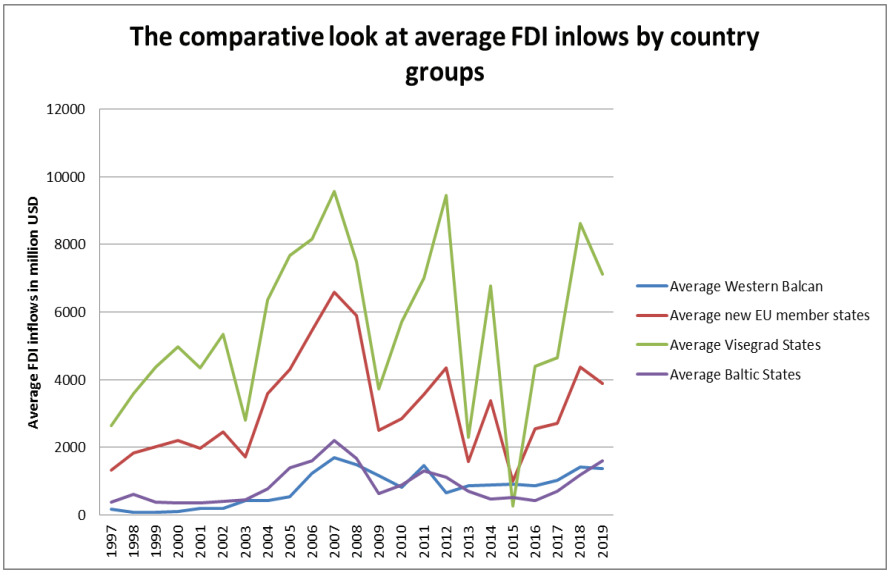
Cvetanović, Despotović & Milovanović (2018) also analysed FDI inflows in Western Balkan countries (2000-2016) and they come to conclusion that received inflow was insufficient. In order to attract more foreign investors and promote domestic investments it is necessary to continue to improve situation in public institutions and conditions for business activities. Cvetanović, Nedić & Despotović (2019) stated that Western Balkan countries significantly improved business conditions measured with *World Bank Ease of Doing Business Indicators* (2006-2017). The North Macedonia especially had a great progress that is aspiring to the rest of the region to conduct further changes and establish more favourable environment for starting a business and attract foreign investors.

If we analyse average FDI inflows by countries in regard to the GFC, we can see that Poland before GFC had 8.8 billion USD, and after GFC had 29% increase in average FDI inflow. The new EU member countries that after GFC have recorded slight

rise in average FDI inflows were Romania, Slovenia, Estonia, Latvia and Croatia, while in Czech Republic the average FDI inflows were balanced in the two sub-periods. On the other hand, Hungary, Slovakia, Lithuania and Bulgaria recorded decrease in average FDI inflows after the GFC. Also, Bosnia and Herzegovina and North Macedonia had the lowest average FDI inflows that are less than 500 million USD in the both sub periods.

In the Figure 1 is presented a comparative look at average FDI inflows by country groups in the period 1997-2019. It is evident that since entrance in the EU, the group of new EU member states obtained high level of FDI inflows until the GFC in 2007. Analysing the movement of FDI inflows we can point out that Western Balkan countries before 2005 were far behind the new EU member states with very low capital inflow. After the GFC situation is slowly improving, received FDI inflow was stable but still insufficient in regard to the needed capital incentives. Baltic group of countries has similar pattern of received FDI inflows that is more stable compared to the new EU member states but at a very low level. It is evident that new EU member states and Visegrad group of countries had a greater volatility and sharp drops of received FDI inflows compared to the Baltic States and Western Balkan.

Figure 1: The comparative look at average FDI inflows by country groups



Source: Authors review based on average FDI inflows (https://unctad.org/topic/investment/investment-statistics-and-trends).

In Visegrad group we can see that EU admission had strong impact on the high growth of FDI inflows that was stopped with the GFC. If we analyse movement of FDI inflows in Visegrad group we can see that there is a greater volatility in the FDI inflows with very high growth rates, but also sharp drops. The source of high volatility of average FDI inflows in the group of new EU member states and Visegrad group could be the capital movements in Hungary that were very unstable with huge capital outflows.

The analysis of greenfield FDI inflows in selected EEEs

In Table 2 is presented descriptive analysis of greenfield FDI inflows in EEEs (2003-2019). It could be pointed out that Poland had huge greenfield FDI inflows with maximum level of 28.3 billion USD in 2008. Average greenfield FDI inflow in Poland was 14 billion USD and is the greatest average volume compared to every other country in analysed sample. The second country by the volume of received average greenfield FDI was Romania that received maximum level of FDI in 2008. If we analyse Visegrad group of countries we can see that Czech Republic, Hungary and Slovakia had significantly less greenfield FDI compared to Poland and had average greenfield FDI inflow about 4-5 billion USD.

If we compare average greenfield FDI inflows by country groups it could be stressed that Baltic States and Western Balkan countries had very low inflow of greenfield FDI. Also, we can highlight that in the analysed sample nine countries have significantly low level of greenfield FDI (Estonia, Latvia, Lithuania, Slovenia, Croatia, Albania, Bosnia and Herzegovina, Montenegro and North Macedonia) with average level of greenfield FDI inflows less than 1.5 billion USD. If we look at average greenfield inflow in Western Balkan group we can highlight that Serbia has the greatest level of received greenfield FDI with average of 3.4 billion USD and maximum level of 6.7 billion USD in 2018. It is interesting to compare the maximum level of received greenfield FDI in Serbia that is proximal to minimum level of received greenfield FDI in Poland. This implies that Western Balkan countries must attract more foreign investments, especially greenfield projects. Less developed countries, like Western Balkan group, need to attract greater volume of FDI as well as to promote rise in domestic savings, in order to achieve the greater level of economic development.

Table 2: Descriptive analysis of greenfield FDI inflows in selected EEEs (2003-2019) in millions USD

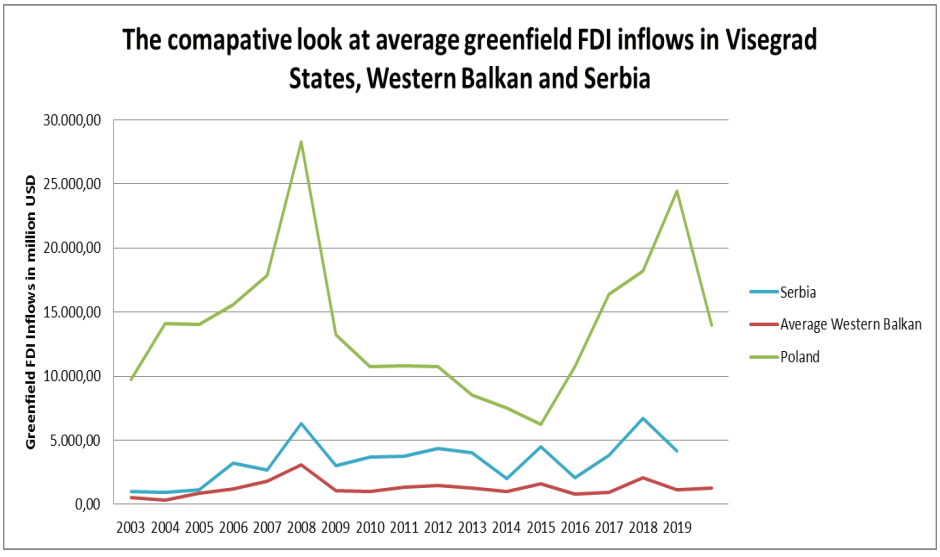
Emerging European Economies	Average greenfield FDI inflows	Median	Minimum	Maximum
Poland	13.951,36	13.199,13	6.238,53	28.257,06
Czech Republic	4.159,20	3.912,79	2.115,38	6.886,16
Hungary	5.423,39	4.894,23	2.220,14	9.480,33
Slovak Republic	3.717,56	3.054,80	1.198,19	9.259,54
Visegrad States	**6.812,88**	**4.905,14**	**1.198,19**	**28.257,06**
Estonia	786,13	800,89	176,20	1.701,53
Latvia	1.051,77	694,67	249,55	3.139,10
Lithuania	1.109,60	1.092,69	526,44	2.034,39
Baltic States	**982,50**	**808,01**	**176,20**	**3.139,10**
Slovenia	526,08	447,54	136,71	1.851,30
Romania	10.024,87	7.494,29	3.510,10	29.113,14
Bulgaria	4.261,71	3.220,56	1.080,88	15.418,73
Croatia	1.185,91	898,69	381,49	2.849,44
11 new EU member states	**4.199,78**	**2.220,14**	**136,71**	**29.113,14**
Albania	648,58	182,90	12,03	4.457,82
Bosnia and Herzegovina	1.100,20	895,50	290,75	3.140,49

Montenegro	500,83	387,80	0,00	1.987,95
Serbia	3.375,93	3.709,74	918,15	6.699,13
North Macedonia	693,21	534,16	110,53	2.661,53
Western Balkan	**1.263,75**	**659,62**	**0,00**	**6.699,13**

Source: Authors calculation on the basis of yearly data from UNCTAD, WIR2020.

In the Figure 2 is presented a comparative look at average greenfield FDI inflows in Poland, Western Balkan and Serbia in the period 2003-2019. It is evident that the EU admission had influenced the huge greenfield FDI inflows in Poland until the GFC in 2007. After the GFC Poland obtained a lower level of FDI with significant downward trend until the 2014 when greenfield FDI inflows started a trend of recovery and growth. Also, process of recovery from consequences of the GFC influenced on the lower rates of global capital investments of MNE, but Poland compared to the other less developed emerging countries (Western Balkan) still have far greater FDI inflows. If we compare Serbia to the Poland as an example of positive transmission effects of FDI inflows, we can see that until the GFC difference was enormous, but since the GFC inflow of greenfield FDI in Serbia was more closer until the 2015 when difference become again vast.

Figure 2: The comparative look at average greenfield FDI inflows in Poland, Western Balkan and Serbia



Source: Authors review based on average greenfield FDI inflows (https://unctad.org/topic/investment/investment-statistics-and-trends).

When we compare greenfield FDI inflows in Serbia and average of Western Balkan group of countries it is evident that Serbia received more foreign capital but still insufficient. Based on this analysis it is clear that Western Balkan countries must place more effort in process of attracting foreign investors.

The analysis of GDP growth rates in selected EEEs

In order to give substance to the hypothesis that countries with high level of total and greenfield FDI can have positive transmission effects on growth of real economy, authors present results of descriptive analysis of the annual GDP growth rates in selected EEEs obtained from the World Bank database (1997-2019). On the basis of descriptive analysis in Table 2 and 3 we can again highlight that Poland had the highest total and greenfield FDI inflows in the analysed sample of selected EEEs (1997-2019). Furthermore, in a Table 3 authors give a closer look at the annual rate of GDP growth with descriptive statistics by countries and country groups.

Descriptive analysis reveals that Polish average rate of GDP growth was very high at 4% with standard deviation of 1.53%. It is interesting that in the analysed period minimum level of GDP growth rate was 1.3% in 2001 and that Poland does not have negative growth rates not even in crisis period of the GFC. On the other hand, the rest of the EU countries in the sample recorded very low minimum growth rates in crisis period in range from -14.8% to -3.4%. After EU admission in 2004, Polish growth rates were substantial, about 3-7%. Significant level of GDP growth in Poland and low volatility of annual growth rates suggest that there is trend of substantial real growth that is most likely connected with high volume of received FDI inflows. However, for more specific empirical results concerning the link between FDI inflows and the stimulation of a real convergence, more detailed and specific research should be conducted, based at panel data set for selected groups of EEEs.

Analysing the results of descriptive statistics by country groups presented in Table 3 it can be stressed that Baltic States have a very high average growth rates but with more volatility compared to the rest of analysed sample. Visegrad group of countries have average growth rates in range of 2.5-4% with a lower standard deviation 1.5-3.1% that suggest that progress of the real economy was more stable. This is in the line with defined hypothesis that countries with higher level of received FDI inflows can achieve the better results of real convergence towards the core EU countries. Western Balkan countries have average growth rates in range of 2.6-5.5% with a greater volatility that indicates that progress pace is still unstable and dependent from external conditions. Żuk, Polgar, Savelin, Diaz del Hoyo & Konig (2018) also concluded that new EU states (Poland, Slovakia and Baltic States) have the fastest improvement of real convergence, while Western Balkan countries still have challenging development path.

Table 3: Descriptive analysis of annual GDP growth rate in selected EEEs (1997-2019)

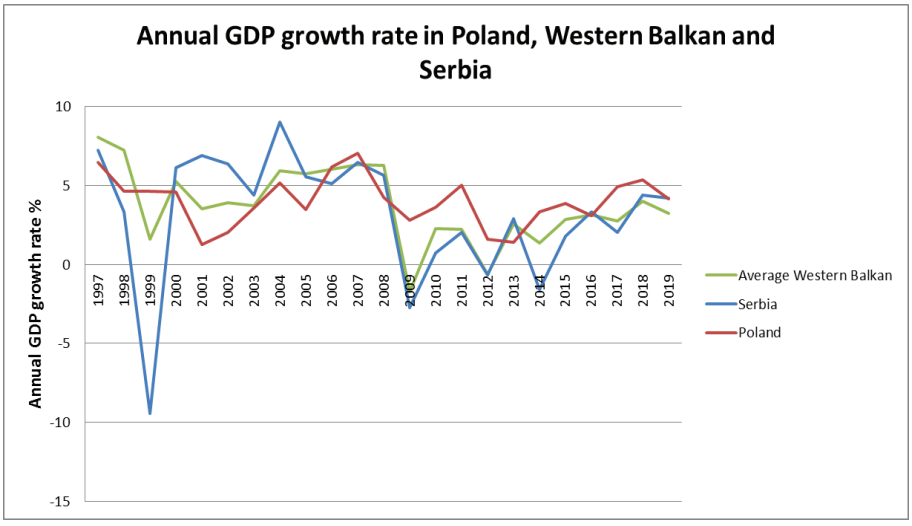
Emerging European Economies	Average	Standard deviation	Median	Minimum	Maximum
Poland	4,01	1,53	4,15	1,25	7,04
Czech Republic	2,51	2,64	2,68	-4,80	6,85
Hungary	2,73	2,63	3,90	-6,70	5,09
Slovak Republic	3,73	3,14	3,90	-5,46	10,83
Visegrad States	**3,25**	**2,63**	**3,61**	**-6,70**	**10,83**
Estonia	4,28	5,52	4,76	-14,43	13,05
Latvia	4,11	5,56	4,28	-14,24	11,89

Lithuania	4,25	4,97	3,93	-14,81	11,09
Baltic States	**4,21**	**5,35**	**4,33**	**-14,81**	**13,05**
Slovenia	2,69	3,00	3,28	-7,55	6,98
Romania	3,22	4,16	3,87	-5,52	10,43
Bulgaria	2,36	4,95	3,81	-14,19	7,15
Croatia	2,11	3,13	2,94	-7,36	6,75
11 new EU member states	**3,27**	**4,04**	**3,67**	**-14,81**	**13,05**
Albania	4,17	4,21	4,07	-10,92	12,89
Bosnia and Herzegovina	5,50	7,18	4,00	-3,00	34,39
Montenegro	2,63	3,97	3,31	-9,40	8,57
Serbia	3,18	3,93	4,19	-9,42	9,03
North Macedonia	2,88	2,12	3,36	-3,07	6,47
Western Balkan	**3,68**	**4,71**	**3,59**	**-10,92**	**34,39**

Source: Authors calculation on the basis of yearly data from the World Bank database.

This research is focused on progress of Western Balkan group of countries in order to shed more light on research problem and suggest significant government policy implications. In that sense, in Figure 3 is presented comparison of Western Balkan and Serbia with Poland as a positive example of real progress with high level of foreign investment. Looking at the Figure 3 it is evident that Western Balkan and Serbia have expectedly a more volatile and lower growth rates compared to Poland. In the period 2000-2008 Serbian growth rates were substantial because of the transition process, democratic changes and high level of FDI investments. After the GFC growth pace of Western Balkan was slower, but since 2015 it is again in raising trend.

Figure 3: The comparative look at annual GDP growth rates in Poland, Western Balkan and Serbia



Source: Authors review based on annual GDP growth rates (https://datacatalog.worldbank.org/dataset/sustainable-development-goals).

In Table 4 is presented the correlation calculation between the FDI inflows (with greenfield FDI inflows) and GDP growth rate in selected EEEs. The Pearson coefficient of correlation between the FDI inflows (in millions USD) and GDP growth rate is calculated by individual countries on the basis of yearly data (1997-2019). The Pearson coefficient of correlation between the greenfield FDI inflows (in millions USD) and GDP growth rate is also calculated by individual countries on the basis of yearly data (2003-2019). Based on the results we can stress that a strong positive linear link between the FDI inflows and GDP growth is evident in Romania (0,59) and Slovak Republic (0,54), along with a moderately high positive link in Poland (0,42), Slovenia (0,41), Bulgaria (0,37), Lithuania (0,35), Czech Republic and Latvia (0,32). These results back up the assumption that economic growth of the new EU member countries is stimulated with high volumes of received FDI inflows, but also high economic growth has influence on attracting greater FDI inflows.

Table 4: Pearson correlation between FDI inflows and GDP growth in selected EEEs

Emerging European Economies	Correlation FDI inflows & GDP growth	Correlation Greenfield FDI inflows & GDP growth
Poland	0,42*	0,43*
Czech Republic	0,32*	0,35*
Hungary	-0,08	0,09
Slovak Republic	0,54**	0,54**
Estonia	-0,15	-0,10
Latvia	0,32*	0,25
Lithuania	0,35*	0,02
Slovenia	0,41*	0,35*
Romania	0,59**	0,23
Bulgaria	0,37*	0,45*
Croatia	-0,08	-0,30
Albania	-0,24	0,60**
Bosnia and Herzegovina	-0,25	0,15
Montenegro	0,01	0,19
Serbia	0,06	-0,15
North Macedonia	0,24	0,23
Notes: **strong correlation ($\rho>0.5$), *moderately high correlation ($\rho>0.3$), weak correlation ($\rho<0.3$).		

Source: Authors calculation on the basis of yearly data from UNCTAD, WIR2020 and World Bank.

The correlation coefficients in Table 4 indicate a strong positive link between the greenfield FDI inflows and GDP growth for Albania (0,60) and Slovak Republic (0,54), along with a moderately high positive link in Bulgaria (0,45), Poland (0,43), Czech Republic and Slovenia (0,35). These findings also back up the hypothesis that high volume of received greenfield FDI inflows is positively linked with high economic growth.

On the other hand, an inverse weak link between the FDI and GDP growth is recorded in Hungary, Estonia, Croatia, Albania and Bosnia and Herzegovina. Moreover, an inverse link between the greenfield FDI and GDP growth is also present in the analysed sample for the next three countries: Estonia, Serbia and Croatia. A negative correlation indicates that FDI wasn't a stimulating factor as expected in mentioned countries and that some other factors determined the economic growth. Connecting all presented research results in this paper, authors in next section give concluding remarks and recommendations.

Conclusion

Based on the presented original descriptive analysis of total and greenfield FDI inflows we can point out that admission in the EU was a relevant factor in the process of attracting foreign investors. If we compare average FDI inflows by country groups, it could be highlighted that Visegrad group of economies have received the most FDI inflows in the analysed sample. On the other hand, Western Balkan and Baltic States had the lowest average of total and greenfield FDI inflows. Based on the research results Poland was the top destination for foreign investors with the highest average of total and greenfield FDI inflows in the analysed sample of selected EEEs in the period 1997-2019. Consequently, based on descriptive analysis of annual GDP growth rate in the mentioned period, Poland had a very high average growth rate with low standard deviation. Significant level of GDP growth and low volatility of annual growth rates in Poland and Visegrad group, suggest that there is trend of substantial real growth connected with the high volume of received total and greenfield FDI inflows. Also, correlation analysis gives evidence of a strong and moderately high positive link between the FDI inflows and GDP growth in analysed sample of countries. However, in order to provide more specific conclusions concerning the connection between the FDI, especially greenfield FDI inflows and GDP growth rates, authors plan to estimate mentioned relations in selected sample of EEEs with panel data approach.

National objectives of faster economic growth, lower unemployment and more balanced current account can be achieved with the greater level of investment, especially greenfield investments. Based on the cited literature, motivation of foreign investors is mainly oriented towards macroeconomic conditions, business environment, qualified labour and government incentives. Having in mind the presented evidence of a positive correlation between FDI and GDP growth and other empirical findings in the vast literature suggesting that significant FDI inflows, especially greenfield FDI inflows, have positive effects on economic development, authors recommendations are directed towards the Western Balkan countries which should implement adequate measures to attract greater greenfield FDI inflows as well as export oriented FDI inflows, in order to bust the level of economic development, employment and improve external position. Therefore, Western Balkan countries need to continue to improve the quality of public institutions and infrastructure, as well as to establish more favourable business environment and conduct nonfinancial measures of promotional activities, in order to raise attractiveness of national market for foreign investors. Besides government authorities, presented research can also be interesting to the new investors that consider markets of EEEs as a potential investment destination.

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CORPORATE CULTURE - BUSINESS PERFORMANCE FACTOR OF NATIONAL ORGANIZATIONS[4]

Abstract

The subject of this paper is to investigate the attitudes of owners and top managers of national organizations from different business sectors on how to increase the chances of the organization becoming competitive by raising the level at which the idea of corporate culture is realized. The paper starts from the assumption that the corporate culture depends on the context in which the organization operates and as such significantly affects performance. Each organization forms its own image in its organizational environment based on the strategy of quality of products and services it provides, the principles of behavior, and the moral principles of employees. Since it affects business performance and attitudes towards work, the corporate culture must be designed to be adapted to each work group. The results of the research show that depending on the decision makers in the organization and the management style, there are significant differences in the organizations in terms of the level at which the idea of corporate culture in the organization is realized. Hypothetical - deductive methods, analytical - deductive and comparative methods, explanatory methods, historical, and statistical - descriptive methods were used in the research.

Key words: *organization, business culture, leadership, performance.*

JEL classification: D23, L25, M21

ПОСЛОВНА КУЛТУРА - ФАКТОР УСПЕШНОСТИ ПОСЛОВАЊА НАЦИОНАЛНИХ ОРГАНИЗАЦИЈА

Апстракт

Предмет овог рада је истраживање ставова власника и топ менаџера националних организација из различитих сектора пословања како да се подизањем нивоа на којем се остварује идеја о пословној култури увећају шансе

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да организација постане конкурентна. У раду се полази од претпоставке да пословна култура зависи од контекста у коме организација фунционише и као таква значајно утиче на перформансе. Свака организација формира сопствени имиџ у својој организационој средини који се базира на стратегији квалитета производа и услуга које пружа, начелима понашања и моралних принципа запослених. С обзиром да утиче на пословни учинак и ставове према раду, пословна култура, мора бити дизајнирана тако да буде прилагођена свакој радној групи. Резултати истраживања показују да у зависности од доносилаца одлука у организацији и стила руковођења јављају се значајне разлике у организацијама у погледу нивоа на којем се остварује идеја о пословној култури у организацији. У истраживању су коришћене хипотетско - дедуктивне методе, аналитичко - дедуктивне и компаративне методе, методе експланације, историјске и статистичко - дескриптивне методе.

Кључне речи: *организација, пословна култура, вођство, перформансе.*

Introduction

The success of a company in modern market conditions significantly depends on its reputation as a business partner. Practice shows that organizations with a high level of corporate culture are successful organizations (Filipović, 2012). The corporate culture within these organizations is designed to reflect the attitude of the organization towards legality, personality, product quality, financial and production obligations, openness, and reliability of business information. It is manifested in the behavior of managers (Milovančevic, 2017) and employees, in their perception of themselves, the organization as a whole, and the environment.

Every organization has its own corporate culture but not all cultures have an equal impact on employee behavior and actions (Perišić, 2019). Each of them forms its own image based on the strategy of quality of products and services it provides, the behavior and moral principles of employees, reputation in the business world, etc. Some organizations have a strong culture and some a weak one. The strength of a culture depends on the level to which members of the organization share its values and the commitment of employees to these values.

Strong organizational cultures have a greater impact on employees compared to weak organizational cultures. The more employees accept the core values of the organization and the more committed they are to these values, the stronger the culture is. A strong corporate culture is a strategic resource of any organization as it determines its competitive position in the market, as well as the basis for overcoming a crisis. An ingrained and well-adapted culture is "a recipe for successful strategy implementation" (Cokins, 2009). It is able to initiate not only change within the organization itself, but also market transformation at the level of society, including the level of technology. Organizations will strive for for innovation, (Stevanović, 2017) stability and efficiency if the culture of the organization is adequate to the applied technology including digital (Sokolović, et al. 2020). A strong culture determines the consistency of the behavior of employees who clearly know what behavior they should follow. A weak culture, on the

other hand, can become an obstacle to the successful implementation of the corporate strategy.

Of course, one should keep in mind that corporate culture is influenced by national culture (Bodin, 2018). Often, the characteristics of national culture provide the key to understanding the characteristics of certain elements of corporate culture (Vukotić, Čeko, Gaćinović, 2016) that distinguish the activities of certain organizations. The connection between national and organizational culture (Mihaela, Bratianu, 2012) is especially seen through the encounter with multinational companies that bring standards from the experience of changes in both organizational and national culture.

The impact of corporate culture on the performance of a company depends on the compliance of cultural settings, values, and norms within the company with the reality in which it is located. Corporate culture changes only when the people who participate in it change. People change only when a leader models, demonstrates, and reinforces desired behavior (Mumford, Scott, Gaddis, Strange, 2002; Edmonds, 2012). It includes an opinion on the organization's environment, its mission, and the source of competitive advantage. A strong organizational culture leads to higher business results, i.e. a strong culture presupposes high performance (Jones, 1999).

Our national corporate culture and its dimensions (Vukonjanski, 2013) are significantly different from the Western culture. The society of Serbia has a high power distance and a very high level of authoritarianism. The high power distance in Serbian society (Vukonjanski, et al. 2012) indicates the vulnerability of people in uncertain circumstances, people who are reluctant to accept change, who do not like risk and uncertainty, and who choose formalization, evaluation, and hierarchy. Such a national corporate culture has implications for the leadership style of organizational managers because it creates an environment in which one leadership style (Janićijević, 2013) is acceptable while another is not. It is obvious that high economic performance is guaranteed to national organizations not by a culture (Miletić, 2020) that corresponds to the current situation but by one that contains within itself the ability to continuously adapt to a changing situation.

Research methodology

The conducted research aimed to see how many organizations in Serbia, in addition to other necessary elements, attach importance to corporate culture as a necessary precondition for increasing business performance. The premise is that the level at which the idea of corporate culture is realized in the organization as a variable significantly affects the chance of the organization to achieve top business results in the market. Corporate culture depends on the context in which the organization operates, and the organization's leadership profoundly determines its culture.

In the research conducted in 2020, the sample consisted of organizations of different sizes, taking into account their equal representation according to size, i.e. 26 micro organizations (19%), 38 small enterprises (28%), 39 medium-sized organizations (29%), and 33 large companies (24%). When choosing companies for the sample, the decisive factor was the success of their business. The largest number of organizations in the sample were privately owned, with the largest percentage operating between 11 and 30 years. The largest number of

organizations in the sample were engaged in both production and service activities, of which most organizations were in the field of transport, construction, textile industry, food industry, and other business sectors. A high percentage of organizations operate in the international market and in the majority of organizations, decisions are made by the owners and the top management. Organizations are mostly run by applying a participatory leadership style with a predominantly functional centralized organizational structure.

For the purpose of this research, an intentional sample was used. The survey was conducted via personal communication and an internet survey. The questions from the survey were answered by the owners of the organization or by the top management. The survey itself was anonymous and referred to organizations operating in the national market. The purpose of surveying managers/owners as respondents was to gather information on what they think regarding how much corporate culture as a strategic resource is grounded in their organization in terms of determining its competitive position in the market.

When creating the theoretical framework of the paper, in addition to the exploratory method, the bibliographic speculative method was used, and when processing and interpreting the results, the method of multiple comparison and statistical test was applied.

Results and discussion

Every organization that strives for success should meet certain conditions and criteria. Considering that the research presented in the paper is aimed at evaluating the importance of corporate culture for increasing the performance of organizations that operate in Serbia, managers of organizations or owners acting as respondents were asked to evaluate pre-selected characteristics within their business with grades from 1 to 5 (where 1 is the lowest grade and 5 is the highest grade), which in interaction should create a chance for organizations to become competitive. The characteristics examined were, above all, assessments of the level at which the idea of corporate culture in the organization is realized in correlation with assessments of the extent to which their organization is successful at all levels of business, the level at which leadership in the organization is consistent and clear, the level of teamwork in the organization, the chances of the organization becoming competitive, and the work habits of the employees in the organization. The results by individual characteristics are given in Table 1.

Tabl 1. Performance assessments in organizations

Characteristics	Rang									
	1		2		3		4		5	
	Af	Rf	Af	Rf	Af	Rf	Af	Rf	Af	Rf
Level to which the idea of business culture is realized within the organization	2	1,5	14	10,3	42	30,9	46	33,8	32	23,5
To what extent is the organization successful at all levels of business	9	6,6	12	8,8	39	28,7	50	36,8	26	19,1

The level at which leadership in the organization is consistent and clear	0	0	9	6,6	24	17,6	60	44,1	43	31,6
Team work in the organization	3	2,2	10	7,4	16	11,8	51	37,5	56	41,2
The chances of an organization becoming competitive	2	1,5	6	4,4	22	16,2	58	42,6	48	35,3
Work habits of employees in the organization	3	2,2	8	5,9	48	35,3	45	33,1	32	23,5

Af - absolute frequencies; Rf - relative frequencies (percentages); S.Vr. - Mean values

Source: Authors

Table 2 gives the performance rank based on average scores (mean values) for each performance considered.

Table 2. Rank characteristics

Characteristics	Mean value	Performance rank
Level to which the idea of business culture is realized within the organization	3,68	15
To what extent is the organization successful at all levels of business	3,53	18
The level at which leadership in the organization is consistent and clear	4,01	4
Team work in the organization	4,08	2
Chances for the organization to become successful	4,06	3
Work habits of employees in the organization	3,70	14

Source: Authors

Based on the results, it can be seen that in the sampled organizations the level at which leadership in the organization is consistent and clear, teamwork in the organization, and the chances of the organization becoming successful are characteristics that are best rated (average grade over 4). Next comes the level at which the idea of corporate culture in the organization is realized with a score of 3.68, the extent to which the organization is successful at all levels of business (3.53), and the work habits of employees in the organization (3.70). Based on the results, it can be further concluded that the management of organizations operating in Serbia believe that their companies have a chance to be competitive if the work culture and work habits of employees change. This would also change the assessment of the extent to which the organization is of high performance, i.e. to the extent that it has total excellence at all levels of business.

Table 3 presents the differences in organizations that have different decision-makers in terms of the level at which the idea of the corporate culture of the organization is realized. It can be seen that there are differences in organizations where decisions are made by the owner and by the top management.

Table 3. Differences in the level at which the idea of corporate culture is realized within organizations with different decision-makers

Level to which the idea of business culture is realized within the organization		Mean value of the difference (I-J)	Standard Error	Error significance (Sig)	95% Confidence Interval	
(I) Organizational decisions are made by	(J) Organizational decisions are made by				Lower limit	Upper limit
The owner	Top management	.536(*)	.184	.021	.06	1.01
	Top management and employees	.170	.246	.900	-.47	.81
	Not sure	.932	.574	.369	-.56	2.43
Top management	The owner	-.536(*)	.184	.021	-1.01	-.06
	Top management and employees	-.366	.250	.463	-1.02	.29
	Not sure	.396	.576	.901	-1.10	1.89
Top management and employees	The owner	-.170	.246	.900	-.81	.47
	Top management	.366	.250	.463	-.29	1.02
	Not sure	.762	.599	.582	-.80	2.32
Not sure	The owner	-.932	.574	.369	-2.43	.56
	Top management	-.396	.576	.901	-1.89	1.10
	Top management and employees	-.762	.599	.582	-2.32	.80

Source: Authors

Table 4 presents the differences in the level at which the idea of corporate culture is realized in organizations that have different management styles. It can be concluded that there is a significant difference in the assessments of those organizations in which the leadership style is autocratic and in those who were not sure of the leadership style within the organization.

Table 4. Differences in the level at which the idea of corporate culture is realized within organizations with different management styles

Level to which the idea of business culture is realized within the organization		Mean value of the difference (I-J)	Standard Error	Error significance (Sig)	95% Confidence Interval	
(I) Leadership style in the organization	(J) Leadership style in the organization				Lower limit	Upper limit
Autocratic	Participative	.002	.228	1.000	-.59	.59
	Democratic	-.017	.243	1.000	-.65	.62
	Not sure	.714(*)	.398	.028	-.32	1.75
Participative	Autocratic	-.002	.228	1.000	-.59	.59
	Democratic	-.020	.202	1.000	-.54	.50
	Not sure	.712	.374	.231	-.26	1.68
Democratic	Autocratic	.017	.243	1.000	-.62	.65
	Participative	.020	.202	1.000	-.50	.54
	Not sure	.732	.383	.229	-.27	1.73
Not sure	Autocratic	-.714(*)	.398	.028	-1.75	.32
	Participative	-.712	.374	.231	-1.68	.26
	Democratic	-.732	.383	.229	-1.73	.27

Source: Authors

The length of the organization's business and the level of business have a significant joint impact on all the attributes of the organization that are viewed as characteristics that a successful organization should possess. Regarding individual influences, it can be seen that the length of business significantly affects the differences primarily in teamwork in the organization. The level of business of the organization significantly affects the differences in the extent to which the organization is successful at all levels of business and the level at which leadership in the organization is consistent and clear.

Depending on the decision-makers in the organization (the owner, top management, top management and employees) there are significant differences in organizations in terms of the level at which the idea of corporate culture in the organization is realized, in terms of teamwork in the organization, and in terms of employee habits.

Depending on the difference in leadership style (autocratic, participatory, democratic) in organizations, the level at which the idea of corporate culture in the organization and teamwork in the organization is realized differs.

Conclusion

The results of the research given through the assessments of the characteristics necessary to create chances for success of organizations show that the best-ranked performance of organizations in the observed sample (with an average score over 4) is the level at which leadership in the organization is consistent and clear, teamwork in the organization, and the chance for an organization to become competitive. Characteristics of the organization ranked slightly lower (with an average score below 3.70) are the level at which the idea of corporate culture in the organization is realized, the work habits of employees in the organization, and the extent to which the organization is successful at all levels of business.

The results further show that there is a significant difference in the assessments of those organizations in which the leadership style is autocratic and in those who were unsure of the leadership style in the organization, and that there are differences among organizations in which decisions are made by the owner and by the top management.

It can also be concluded that the more the employees are tied to an organization's values (this is achieved by maintaining a stable configuration of employees who go through the ups and downs with the organization), the easier it will be for the management to find a way out of the crisis and towards a chance of success.

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TOTAL COST OF OWNERSHIP OF INFRASTRUCTURE AS A SERVICE FOR SME

Abstract

Cloud Computing offers significant cost benefits for SMEs that often do not manage internal IT infrastructure and start-up companies that do not have their own IT infrastructure. This paper presents a total cost of ownership (TCO) approach for cloud computing services with an emphasis on the infrastructure as a service (IaaS) model. Also, the paper presents a methodology for estimating total cost of ownership (TCO) when running computer instances in the IaaS cloud using the GARCH model to predict transaction volatility. The research results show that it is possible to successfully use GARCH models when there is historical data on the number of transactions. In addition, simulation shows that, when there are large oscillations in the number of transactions, the best choice is to reserve instances according to the Partial-Upfront price model. In contrast, if the transaction number is relatively stable, the best choice is the All-Upfront model.

***Key words**: Cloud computing, Total Cost of Ownership (TCO), GARCH model*

***JEL classification**: M41, L86*

УКУПНИ ТРОШКОВИ ВЛАСНИШТВА ИНФРАСТРУКТУРЕ КАО СЕРВИСА ЗА SME

Апстракт

Клауд рачунарство нуди значајне трошковне предности за SME које често не управљају интерном IT инфраструктуром и start-up компаније које не поседују сопствену IT инфраструктуру. У овом раду приказан је приступ укупних трошкова власништва (TCO) за услуге рачунарства у облаку са нагласком на модел инфраструктуре као сервиса (IaaS). Такође, у раду је приказана методолагија за процену укупних трошкова власништва (TCO) при покретању рачунарских инстанци у Iaas клауду коришћењем GARCH модела за предвиђање волатилности трансакција. Резултати истраживања показују да је могуће успешно користити GARCH моделе када постоје историјски подаци о броју трансакција. Поред тога, на основу симулације, када постоје велике осцилације у броју трансакција најбољи избор је резервација инстанци

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по ценовном моделу Partial-Upfront. Насупрот томе, ако је број трансакције релативно стабилан, најбољи избор је модел All-Upfront.

Кључне речи: *Клауд рачунарство, укупни трошковИ власништва (TCO), GARCH модел*

Introduction

Cloud computing, as a new paradigm, is developing rapidly and taking precedence among technologies that modern companies are adopting. NIST (National Institute of Standards and Technology) defines cloud computing as "a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (for example, networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service-provider interaction" (Mell & Grance, 2009; Makhlouf, 2020).

There are several models of cloud computing delivery, with three forms being the most common: infrastructure as a service (IaaS), platform as a service (PaaS), software as a service (SaaS), and business process as a service (BPaaS) (Rosati et al., 2019). The essence in any case is the delivery of computer resources at the user request via the Internet, whereby these resources are not bought but rented. According to the chosen model, the user pays only for as many resources as they actually use, so they no longer have to worry about the purchase of hardware and installation, or software maintenance (Đorđević et al., 2018).

However, although cloud technology is based on renting, rather than buying computer resources, recent research on the market of cloud computing services calls into question the profitability of using cloud services (Ramchand et al., 2018; Makhlouf, 2020). In some cases, the total cost of using cloud services is "unexpectedly" much higher than initial investment in their implementation, due to continuous maintenance and other hidden costs (Zimmerman, 2014). This makes the choice of using cloud computing services a complicated and expensive process, the more efficient implementation of which can be achieved by more comprehensive inclusion of all possible categories of cloud computing costs, i.e. by applying the Total Cost of Ownership (TCO) approach. TCO is one of the most important cost-oriented approaches that is widely used in various research areas (Strebel & Stage, 2010).

The paper presents a formal mathematical model for calculating the total cost of ownership of cloud computing services focusing mainly on cost factor to determine costs. The work is organized as follows. The first part of the paper explains the total cost of ownership of cloud computing services (TCO) and gives a schematic overview of cloud computing pricing (IaaS). The second part of the paper presents a methodology for analyzing and estimating the number of reserved instances using the GARCH model to predict the volatility of daily transactions of a hypothetical SME simulated by the Ethereum cryptocurrency transactions collected every hour.

TCO of cloud computing – theoretical background

The decision to use cloud computing services is largely conditioned by adequate cost analysis because the increasing complexity of managing the entire infrastructure of different information architectures and distributed data and software has made computing more expensive than before. The costing model most commonly implemented in research and practice is the TCO model because it provides companies with a comprehensive overview of cost factors (Rosati et al., 2017; Strebel & Stage, 2010). The application of the TCO approach to cloud computing services is vital for users of these services because it avoids the vague assessment of additional costs, both indirect and for the entire life of the service (Cegielski et al., 2012; Vouk, 2008; Makhlouf, 2020). Specifically, the benefits of TCO lie in improving customer-supplier communication and cost analysis throughout the service lifecycle (Ellram & Siferd, 1993). With the help of a predefined scheme, the TCO approach enables the analysis of individual cost components of one IT service (Martens et al., 2012), and the procedure is significantly simplified by including only a limited number of carefully selected cost factors. A summary of the costs by category according to the recommended TCO model for cloud computing is shown in Table 1.

Table 1. Cost categories for cloud computing services

	Service model		
	SaaS	IaaS	PaaS
Management	Strategic decision and selection of cloud services		
Delivery	Implementation, configuration, integration and migration ▪ Support ▪ Initial training		
Quality	▪ Backsourcing or discarding ▪ System failure		
Price	▪ Service charge ▪ Execution time ▪ Costs of input data transfer ▪ Costs of output data transfer ▪ CPU instance / hour ▪ Storage / month	▪ Service charge ▪ Load curve ▪ RAM ▪ Storage and network usage ▪ CPU virtual machine hour cost ▪ Cost of time contingent ▪ Internet bandwidth cost ▪ Inbound data transfer costs ▪ Outbound data transfer costs	▪ Service charge
Service	▪ Maintenance and modification ▪ Permanent training		
Communication	▪ Vendor evaluation and selection		

Source: Makhlouf (2020), https://doi.org/10.1186/s13677-019-0149-4

Table 1 clearly shows that TCO uses the following cost categories: management, delivery, quality, price, service and communication. However, as transaction costs make a significant part of the total costs, we believe that it is necessary to include them in order to more accurately estimate the total costs of using cloud computing services. This ensures fuller TCO application because the process of exchanging goods and services on the market involves a number of transactions with the environment and interactions

with it – negotiations with suppliers, customers, business partners. Transaction costs also include the cost of finding the most favorable suppliers, customers, the cost of negotiating contract terms, overseeing contract signing, adjusting to any changing circumstances, and processing relevant information (Free, 2010). Furthermore, the combined impact of certain human and environmental factors also brings transaction costs. These factor combinations include uncertain environment and limited rationality, opportunism and a small number of partners, risk and specific means and frequency of transactions.

With this in mind, transaction cost theory is a commonly used framework for conducting studies on information technology and cloud computing (Yigitbasioglu, 2014), helping the management structure reach an optimal solution and adequate decision on the adoption or non-adoption of a new technology and implement it in the organization (in this case whether to adopt or reject the decision to use cloud computing services).

Otherwise, the TCO approach for estimating the cost of cloud services takes into account the costs from initial investment to the end of service use, which can be the client transition to other services or suppliers (Rosati et al., 2019). Thus, it is a "procedure that provides a basis for determining the total economic value of an investment", and the nature of measuring the total cost of cloud computing provides a perfect basis for extremely low-granularity TCO analysis and the ability to perceive how business value can be measured in research and practice (Rosati et al., 2017). Preliminary, i.e. ex-ante, assessment of costs and benefits that investing in the cloud can create is crucial for effective decision-making. This is because the introduction of cloud computing usually dramatically changes the business model and internal organization in the company, and then requires significant resources for the migration process. In addition, the nature of the cloud allows for detailed subsequent cost analysis. In this sense, the total cost of ownership and the TCO cost factors represent the sum of initial investment required to purchase the asset (CapEx) and the operating costs generated by the cloud (OpEx). When choosing appropriate alternatives, it is important to consider both TCO components in order to adequately estimate the cost of using these services. The TCO can be formalized as follows:

$$TCO = CapEx + OpEx$$

When determining TCO in the IaaS cloud, in terms of IaaS operating costs for service providers, the focus should be on computer, storage and network resources as they are usually the most significant costs of this model. IaaS costs can be categorized as (1) fixed (value of reserved/allocated resources, availability, location and other additional and/or premium services) or (2) variable (i.e. use of all relevant IaaS resources) (Rosati et al., 2019).

There are various schemes on today's market for determining the prices of IaaS services. Most suppliers offer hourly payment (depending on the hours of use), using a cost component rate. Some try to attract customers by low price per GB of storage space while charging hidden costs for inbound and/or outbound data transfer or even for data transfer within the service provider's infrastructure. In particular, many suppliers offer basic packages at a fixed price that can be extended according to customer needs (variable, direct costs of the service in case the basic package limits are exceeded). It is also possible to pay a fixed price in order to get discounts on prices depending on the use of the service.

The IaaS charging procedure assumes the following: the cost of used computer resources incurred in a given period is calculated by multiplying the number of used processor units by period and the price of one computer unit in that period. The price varies depending on the specific system characteristics (selected type of instance), e.g. number of computer units, storage capacity (in GB), selected operating system (Linux or Windows) and platform (32-bit or 64-bit). The total cost of these factors is determined by summing all costs incurred over all periods. This calculation scheme also applies to storage capacity costs, inbound, outbound and internal data transfer, to other web services from the same provider, and database query costs. The total cost of domains, SSL certificates, software licenses, and basic service charges is determined by multiplying the number of service usage periods by the corresponding cost factor price (Martens et al., 2012).

The TCO model used in this paper relies on the following common TCO requirements (Martens et al., 2012):

- Transparency: a detailed description of the model and applied criteria is provided,
- Applicability: the prototype implemented software tool allows easy application of the TCO model with reasonable effort,
- Variability: The TCO model is standardized to a large extent, but the central aspects are variable, so the desired model changes or extensions are possible,
- Comparability: the results of the model analysis are comparable to each other given a pre-defined framework and transparent calculation schemes.
- Decision support: since the calculated costs are structured according to cost types and factors, the model provides a sufficient basis for a comprehensive analysis to yield significant information.

2. TOC calculation

Cloud computing enables faster adaptation to changes in the environment and reduction of IT costs. One of the main advantages of cloud services is the ability to optimize costs according to the changing company needs. As we saw in the previous part of the paper, the basic cost elements of IaaS are: computer (number of servers), storage (memory size in GB), and data transfer. AWS offers several price models depending on the product (AWS, 2020):

- On-demand instances –charging computer and stored resources per hour or minute, on user demand, without long-term commitments and prepaid (upfront) resources.
- Reservation – reserving resources in advance.

The On-demand model is the most expensive cost model per hour of cloud resource use. The user pays the full price, which does not include storage and network costs. However, as there are no long-term commitments or prepayments, this is the most flexible option as it allows the use of cloud resources when needed (AWS, 2020). Like Amazon, Google Compute Engine and Microsoft Windows Azure have a similar approach to the on-demand pricing model.

Cloud providers (such as Amazon EC2, Google Compute Engine, Microsoft Windows Azure) offer the possibility of capacity reservation. In relation to equivalent on-demand capacities, reserved capacities, or reserved instances (RI), can bring savings of up to 72% (AWS, 2020). Reserved instances are available in three options: All up-front (AURI), partial up-front (PURI) or no up-front (NURI). Reserved instances is an option that allows the user to pre-reserve instances of certain properties. The user pays in advance or in monthly installments for a one- or three-year term. The provider (Amazon) also gives significant on-demand discounts when the capacity is used up. Amazon distinguishes three types of instance reservations (AWS, 2020):

- All-upfront – payment is made in advance for the entire rent time, without monthly installments.
- Partial-upfront – partial payment is made in advance (usually about two-thirds) and the rest is divided into monthly installments during the instance reservation period.
- No-upfront – there is no advance payment, only monthly installments are paid during the instance reservation period.

Like the usual purchase of instances, when buying reserved instances, the user chooses the instance type and size, platform and region. There are other cloud providers that offer instance reservation as well, but with somewhat different features. Microsoft uses Azure Reserved VM Instances, and, based on Enterprise Agreements, offers various discounts on Azure resources or Microsoft software licenses. Google (Committed Use Discounts – CUD) gives certain discounts at the end of the month based on the time of instance use, without any prior commitments or payments.

Table 2 gives an example of the AWS pricing model per instance (t2.small). The data in the table is used to calculate the planned costs that will be presented in this paper.

Table 2. Pricing of on-demand and reserved t2.small instances in Amazon EC2 (General Purpose, Linux, EU(Frankfurt), September 1, 2020.)

Pricing Option		Upfront	Monthly	Hourly
On-demand		$0	$0	$0.0268
1-Year Reserved	No Upfront	$0	$13.94	$0.019*
	Partial Upfront	$80	$6.64	$0.018*
	All Upfront	$156	$0	$0.018*

*Effective hourly pricing is shown to help you calculate the amount of money that a Reserved Instance will save you over On-Demand pricing. When you purchase a Reserved Instance, you are billed for every hour or second during the entire Reserved Instance term that you select, regardless of whether the instance is running or not. The effective hourly price shows the amortized hourly cost of the instance (this takes the total cost of the Reserved Instance over the entire term, including any upfront payment, and spreads it out over each hour of the Reserved Instance term).

Source: https://aws.amazon.com/ec2/pricing/reserved-instances/pricing/

Cloud providers allow monitoring the use of cloud resources in real time. The user can, for example, monitor the cloud instances use pattern on an hourly basis according

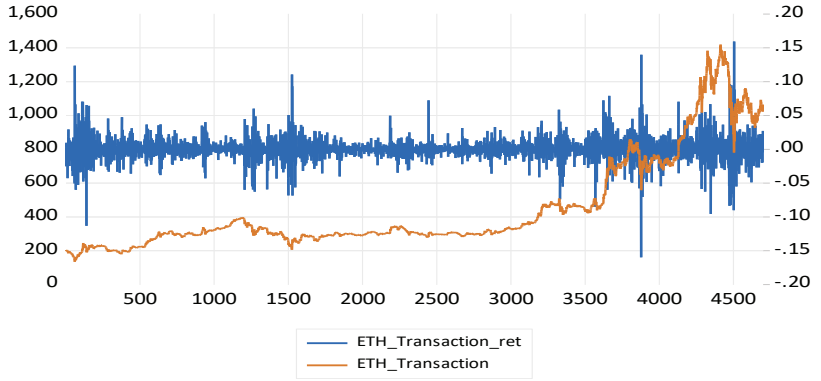
to the performed transactions. Data recording provides the user with information support for estimating the future costs of using cloud resources. Cloud providers state that instance reservation can potentially reduce costs by 70-80% compared to the on-demand model. However, when reserving instances, unused instances are permanently lost. In order to use the full capacity of the reserved instances, all purchased instances must be used. This requires detailed analysis and prediction of future instance needs. Planning the required cloud capacity and calculating the cost of instance rent is a complex task that requires an assessment of computer and storage resources, as well as an assessment of network traffic on a daily basis, but also planning and forecasting several business years in advance. On the provider side, user requirements are constantly changing and all possible combinations of instances and virtual machines should be explored. On the user side, it is extremely difficult to analyze the workload patterns of applications and computer resources used. These analyses are rarely performed or not performed at all. Deeper and more accurate analysis requires the use of artificial intelligence and machine learning tools as well as longer recording of all relevant data from hour to hour. The analysis of ongoing transactions, with large jumps in instance reservations, but also periods of low workload, is particularly complex. High load volatility and instance reservation is a key feature of transactional applications. Insufficiently accurate predictions based on incorrect workload patterns lead to over-reservation of instances or to over-consumption of on-demand instances. In an ideal prediction, we reserve exactly as many instances as the transactions require, in each time period of the prediction.

In this paper, we will try to give a rough estimate of the required instances for the changing market requirements of a small business in the e-commerce segment. Predictions are based on statistical properties and GARCH-modelled variance estimates in changes in the number of transactions on a daily basis. The number of required on-demand instances on a daily basis represents a deviation from the planned reserved instances on a monthly and annual basis.

2.1. Data analysis and volatility model

Data on the use of cloud resources in public IaaS is often confidential and not publicly available. In addition, cloud providers do not publicly disclose information about the volume of transactions performed by e-commerce companies that use their services. Because of this, researchers often use alternative data series. For example, Wang et al. (2015) use Google cluster-usage traces. For this reason, as a substitute for e-commerce transactions performed in IaaS, in this paper we have chosen a historical data series on Ethereum cryptocurrency transactions every hour, in the period from 2017-07-01 12-PM to 2018-01-25 06-PM (5000 observations).

Figure 1. Bitcoin transaction and transaction first difference



Source: Author's calculation

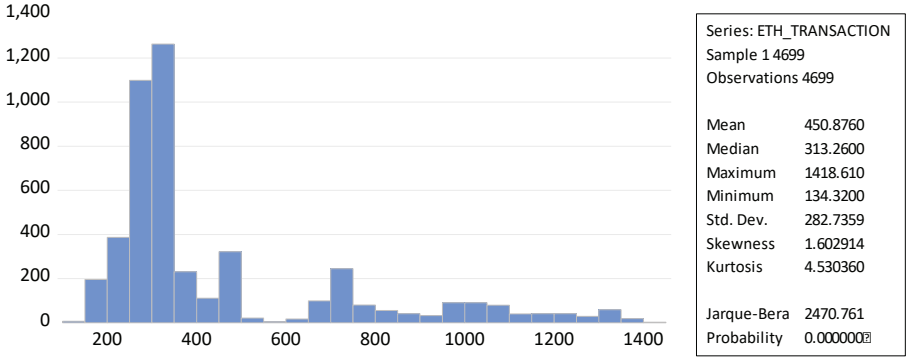
Like most financial time series, Ethereum transaction time series data is non-stationary while returns are stationary (Figure 1). In order to transform the time series of daily Ethereum transactions into stationary series, a time series of simple hourly returns on Ethereum transactions per hour is created. Simple return can be defined as:

$$R_t = \Delta ETH_t\,(ETH_t - ETH_{t-1})/ETH_{t-1} = \Delta ETH_t/ETH_{t-1} \qquad (1)$$

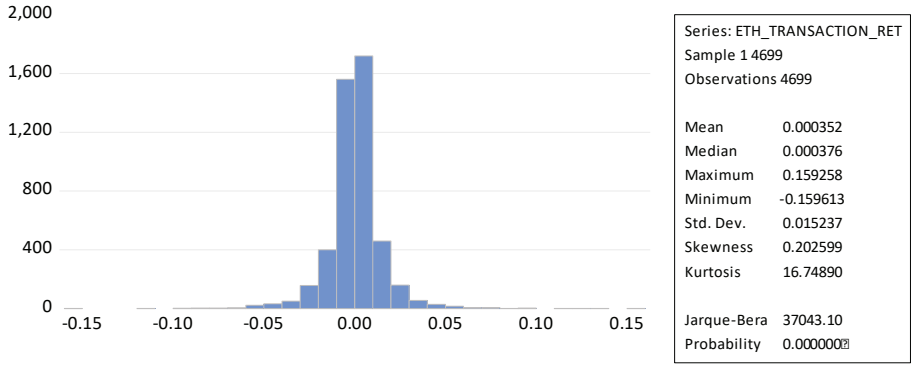
Where ETH_t is the value of the Ethereum transaction at time t, and ΔETH_{t-1} the Ethereum transaction difference.

Descriptive statistics on transactions and return on Ethereum transactions is summarized in Figure 2. The mean value of return is positive, which indicates that the number of transactions increased during the observed period. The statistical values of skewness, kurtosis, and Jarque-Bera test imply that the return series shows fat tailed properties and does not follow normal distribution.

Figure 2. Descriptive statistics and histogram



a) Ethereum transaction



b) Ethereum transaction returns

Source: Author's calculation

Checking the stationarity of the observed return time series includes testing for the presence of unit roots. In this paper, we use standard tests: Augmented Dickey-Fuller (ADF) test for unit roots (Dickey & Fuller, 1979), Phillips-Perron test (Phillips & Perron, 1988) and KPSS test (Kwiatkowski et al., 1992). Testing is done in the Eviews 10 software package. Based on the results shown in Table 3, we reject the null hypothesis of a single root at standard significance levels (1%, 5% and 10%, respectively) with a probability of p-values < 0.0001.

Table 3. Test of stationarity time series of bitcoin transaction return

Tests		ADF	PP	KPSS
		t-Statistic (Probability)	Adj. t-Stat (Probability)	LM-Statistic
		-53.80061 (0.0000)	-71.31998 (0.0001)	0.111334 -
ARCH-LM test (Probability)		19.94688 (0.0000)		
t-critical	1%	-3.431560	-3.431559	0.739000
	5%	-2.861960	-2.861959	0.463000
	10%	-2.567036	-2.567036	0.347000

Notes: ADF - Augmented Dickey-Fuller test, PP - Phillips-Perron test, KPSS - Kwiatkowski-Phillips-Schmidt-Shin test

Source: Author's calculation

Figures 1 and 2.b clearly show the presence of spikes and clustering volatility. Mandelbrot describes clustering volatility as a phenomenon in which "**large changes** tend to be **followed** by **large changes**, of either **sign**, and **small changes** tend to be **followed** by **small changes"** (Mandelbrot, 1963). To test the presence of heteroskedasticity in the residual Ethereum transaction return series, we use the Lagrange Multiplier test for Autoregressive conditional heteroscedasticity (ARCH-LM) (Engle, 1982). The results

of ARCH-LM test provide strong evidence to reject the null hypothesis that the series is not heteroskedastic. This indicates the existence of ARCH effects in the return residues of Ethereum transactions. The generalized autoregressive conditional heteroskedasticity (GARCH) is a model used to estimate and model volatility in time series (Bollerslev, 1986). Mathematically, the GARCH(1,1) model is expressed as:

$$r_t = c + \epsilon_t, \epsilon_t \sim (0, \sigma_t^2) \quad (2)$$

where

$$\sigma_t^2 = \omega + \beta_1 \sigma_{t-1}^2 + \alpha_1 \epsilon_{t-1}^2 \quad (3)$$

and α_1, β_1 are the model parameters.

Treshold GARCH (TGARCH) integrates the impact of good and bad news on volatility. TGARCH (1,1,1) can be expressed as follows:

$$\sigma_t^2 = \omega + \beta_1 \sigma_{t-1}^2 + \alpha_1 \epsilon_{t-1}^2 + \lambda \epsilon_{t-1}^2 I_{t-1} \quad (4)$$

where

$$I_{t-1} = \begin{cases} 1, & \text{if } \epsilon_{t-1} \leq 0, \quad \text{bad news} \\ 0, & \text{if } \epsilon_{t-1} \geq 0, \quad \text{good news} \end{cases} \quad (5)$$

Table 3 shows the results of volatility modeling of Ethereum return using GARCH (1,1) with normal distribution, GARCH (1,1) with student t-distribution and TGARCH (1,1,1) with student t-distribution. Based on Log-Likelihood values and AIC criteria, the best model is TGARCH (1,1,1) with t-distribution (TGARCH (1,1,1)-t). All model coefficients (c, ω, α_1, β_1) are statistically significant at the level of 1% (significant at 1% level) while the coefficient is significant at the level of 10%.

Table 4. Models for volatility of the return of Ethereum hourly transaction

Parameters	GARCH(1,1)	GARCH(1,1)-t	TGARCH(1,1,1)-t
c	0.000289 (0.0362)	0.000291 (0.0051)	0.000253 (0.0015)
ω	3.45E-06 (0.0000)	1.53E-06 (0.0000)	1.55E-06 (0.0000)
α_1	0.148487 (0.0000)	0.186598 (0.0000)	0.160038 (0.0000)
β_1	0.847200 (0.0000)	0.848685 (0.0000)	0.848955 (0.0000)
λ	-	-	0.045263 (0.0745)
Distribution parameter	-	DoF 3.553699 (0.0000)	DoF 3.563540 (0.0000)
Log-likelihood	14310.56	14751.28	**14753.10**
AIC	-6.089195	-6.276348	**-6.276698**

Notes: AIC - Akaike info criterion

Source: Author's calculation

2.2. Simulation results

In this paper, we test five pricing models: On-demand, No-Upfront reserved instance, Partial-Upfront reserved instance, All-Upfront reserved instance, and Max-Instance. In the first model, On-demand, the user rents all computer resources, i.e. instances, to fit their own needs, and there is no possibility to reserve instances. This model is common in situations where the user does not know the computer requirements in advance or with a time-varying workload (AWS, 2020).

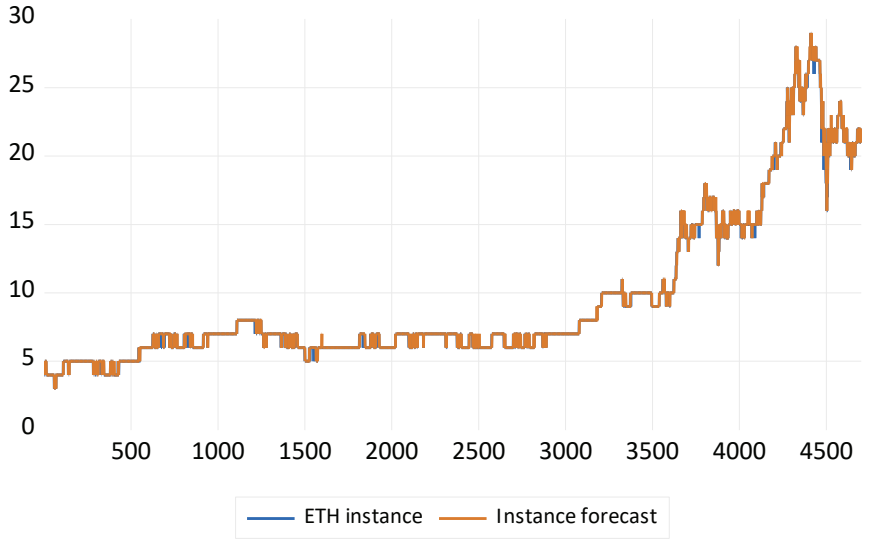
The next model group (No-Upfront reserved instance, Partial-Upfront reserved instance, All-Upfront reserved instance) is based on 1-Year Reserved Instance according to the Amazon EC2 model. The first model in this group, No-Upfront reserved instances, includes the costs of monthly reservation of instances based on the prediction of needs of the selected TGARCH model and the costs of using instances according to the on-demand model in conbtingencies. In the second model in this group, the Partial-Upfront reserved instances, the costs include partial instance reservation on an annual basis, monthly instance reservation costs, and the cost of on-demand usage of instances in contingencies. The cost simulation of the third model in this group, the All-Upfront reserved instance, includes the cost of a one-year reservation of predicted instances and the costs of using contingent on-demand instances.

The last model simulated, Max-Instance, is based on the unrealistic assumption that the maximum number of necessary instances is reserved for uninterrupted business throughout the year. In this model, the total cost is the cost of reserving instances on an annual basis and there is no cost of on-demand instance usage.

All costs are normalized to unit costs (first 300 pieces of data) assuming that one instance is required for that period. The volume of transactions, after the initial period, is reduced to a multiplier of the number of transactions in relation to the initial number of transactions. For example, if it is predicted that ten instances need to be reserved, this in our simulation means that ten times more instances need to be reserved than in the initial period. Also, the initial period is used to form the TGARCH model.

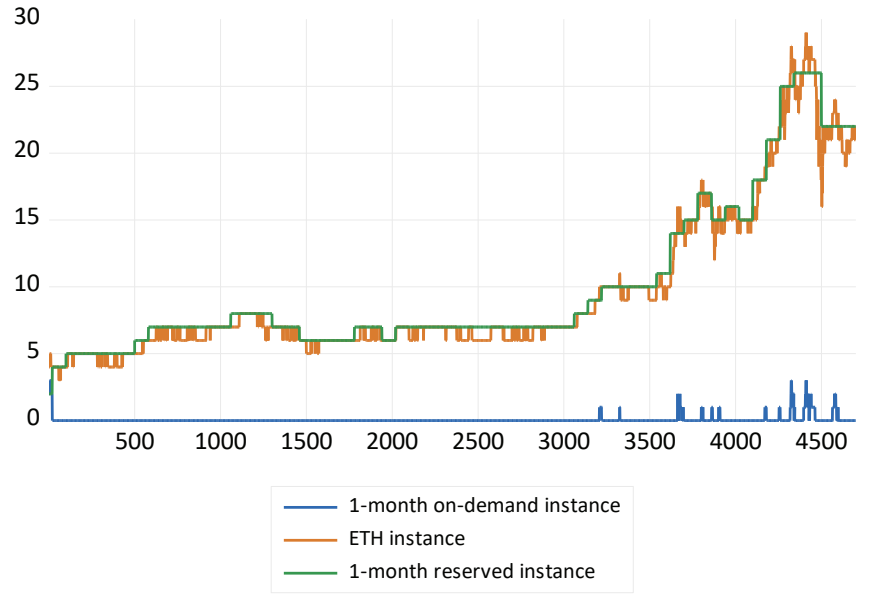
Figures 3-6 show graphical simulation results for pricing models. Table 5 shows the numerical results of cost calculation for all price models. Figure 3 shows the monthly prediction of the TGARCH volatility model in relation to the actual number of required instances for Ethereum transactions. Figure 3 clearly shows that the TGARCH model is acceptable as the volatility model. Based on the forecast of required instances for the next month, the Amazon EC2 pricing model is used to calculate reservation costs, as shown in Table 2. All figures show the actual overruns within Ethereum transactions that require the reservation of on-demand instances. The exception is the Max-Instance model where there is no on-demand usage.

Figure 3. 30-day forecast transaction vs. Ethereum transaction



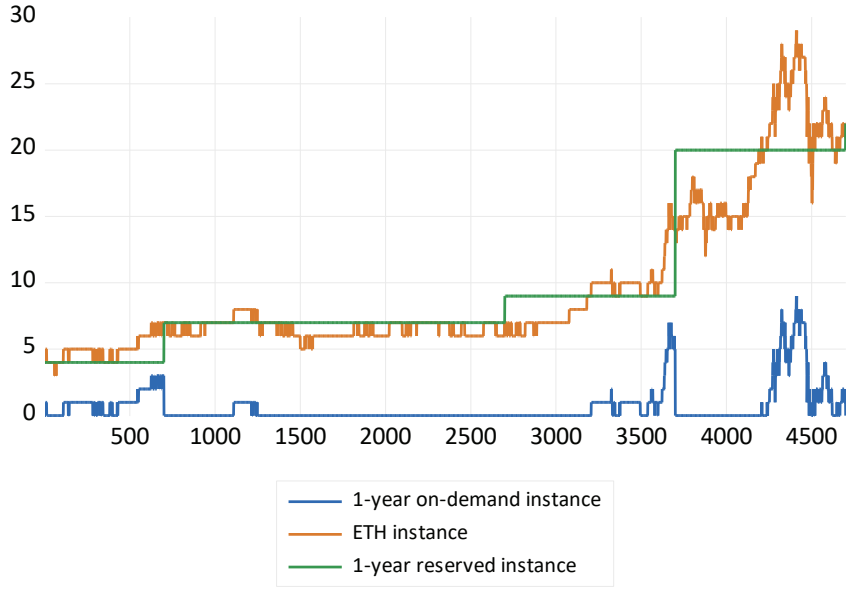
Source: Author's calculation

Figure 4. One-month reserved instance and on-demand instance vs real Ethereum instance – No Upfront and Partial Upfront Pricing options



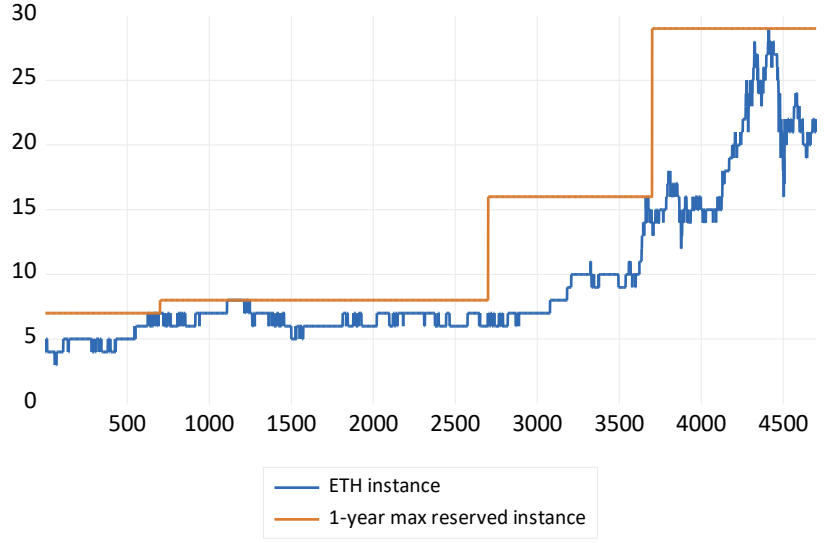
Source: Author's calculation

Figure 5. One-year reserved instance and on-demand instance vs real Ethereum instance – All Upfront Pricing option



Source: Author's calculation

Figure 6. One-year maximum reserved instance vs real Ethereum instance – Max instance Pricing option



Source: Author's calculation

The results of numerical analysis of the cost of computer resource renting, for all price models, are shown in Table 5. The Partial-Upfront model proves to be the best choice. However, all models with one-year instance reservation give approximately similar results. Our simulation does not take into account any discounts that providers give on on-demand instances with models with reserved instances already taken, so the advantage of instance reservation is even more obvious compared to the on-demand model. The Max-Instance model proves to be the worst model. In addition to extremely high costs, compared to models with reserved instances, Figure 6 clearly shows that a large number of reserved instances remain unused. This model is similar to the on-demand model in terms of costs, which shows that the overestimation of the required instances is equally expensive as when there is no assessment, but all instances are used as needed.

Table 5. Total Cost of Ownership (TCO) of running cloud instances in IaaS clouds

Pricing Option		TCO
On-demand		$28,932.55
1-Year Reserved	No-Upfront	$22,480.67
	Partial-Upfront	$20,674.68
	All-Upfront	$21,522.24
	Max-Instance	$29,429.32

Source: Author's calculation

The results of the simulation suggest that it is best for small and medium-sized e-commerce companies to start with an on-demand model of computer resource use in the first year. After the first year, based on historical data on the volume of daily (or per hour) transactions, they can choose one of the models with a one-year reservation. The better the historical data, the more accurate the prediction of future cloud service costs. If the volume of business is such that the fluctuations in the number of transactions are quite large, the Partial-Upfront model is recommended. If the transaction number is relatively stable, the best choice is the All-Upfront model. Many case studies show that effectively combining the use of these two models with instance reservation leads to a significant cost reduction (Chaisiri et al., 2012; Wang et al., 2013; Huang, 2013; Clamp & Cartlidge, 2013; AWS Case studies, 2019). This research shows that it is possible to qualitatively estimate the future costs of using cloud computing among small and medium enterprises that are already engaged in e-commerce or intend to start e-commerce in the cloud.

Conclusion

Cloud computing for small and medium enterprises (SMEs) promises a number of advantages over on-promise installations, including cost, operational and organizational efficiency. However, for SMEs in underdeveloped or middle-developed countries, the weaknesses of cloud implementation are: low quality of infrastructure, unresolved problems with legislation related to cloud data handling, dependence on cloud vendors, and loss of control over data. Total cost of ownership (TCO) is a widely used approach

that provides SMEs with a comprehensive overview of cost factors. The application of the TCO approach to cloud computing is important for quality assessment of indirect costs and costs that last over the life of the system, as well as for the overall value of the chosen cloud model. In this paper, we identify the key cost factors of the cloud infrastructure model as a service (IaaS). TCO supports SMEs and start-up companies that do not manage their own IT infrastructure.

This paper presents a methodology for analyzing and estimating the number of reserved instances using the GARCH class of volatility prediction models. The analysis focuses on the number of daily transactions of the hypothetical SME, simulating the Ethereum cryptocurrency transactions collected every hour. The research results suggest that the TGARCH model with student t-distribution can be used successfully when there is historical data on the number of daily transactions. In addition, the results suggest that in situations where there are large oscillations in the number of transactions, the best choice of instance reservations is according to the Partial-Upfront price model. In contrast, if the transaction number is relatively stable, the best choice is the All-Upfront model.

The presented cost analysis serves as a support for decision-making in the evaluation of cloud computing services and the selection of the appropriate pricing model. However, the TCO approach should be seen as part of a much broader overall IT cost management in SMEs as well as a starting method for estimating cloud computing service and costs for start-up companies.

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SOCIO-DEMOGRAPHIC CHARACTERISTICS OF DIGITAL FINANCIAL SERVICES USERS: EVIDENCE FROM SERBIA

Abstract

Given the importance of digital financial services on financial inclusion, the authors examined the socio-demographic characteristics of users of digital financial services in the Republic of Serbia. The authors hypothesized that age, education, employment, and income are key socio-demographic characteristics that have influenced digital financial services. The Global Findex database of the World Bank was used to analyse the socio-demographic characteristics of digital financial service users in the Republic of Serbia, with a sample of 1000 inhabitants older than 15 years. To test differences between the analyzed characteristics, a t-test was applied using SPSSv25. The results show a difference among most of the analyzed characteristics. Socio-demographic characteristics, apart from gender and income, are statistically significant. The results show a statistically significant difference in the age of users of digital financial services and non-users of digital financial services. Also, users of digital financial services are highly educated and more often employed. Based on the results, it can be concluded that the average user of digital financial services is younger, more educated, more often employed and uses various banking services, such as credit and debit cards, savings and borrowing more often than non-users of these services.

Key words: *digital financial services, Findex, Serbia, socio-demographic characteristics*

JEL classification: *O16, G50*

СОЦИО-ДЕМОГРАФСКЕ КАРАКТЕРИСТИКЕ КОРИСНИКА ДИГИТАЛНИХ ФИНАНСИЈСКИХ УСЛУГА: ИСКУСТВА ИЗ РЕПУБЛИКЕ СРБИЈЕ

Апстракт

С обзиром на значај дигиталних финансијских услуга на финансијску инклузију аутори су испитивали социо-демографске карактеристике корисника дигиталних

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финансијских услуга у Републици Србији. Аутори су претпоставили да су старост, образовање, запослење и приходи кључне социо-демографске карактеристике које утичу на употребу дигиталних финансијских услуга. За анализу социо-демографских карактеристика корисника дигиталних финансијских услуга у Републици Србији коришћена је база података Global Findex Светске Банке са узорком од 1000 становника старијих од 15 година. Да би тестирали разлике међу карактеристикама корисника дигиталних финансијских услуга примењен је т-тест програмом СПСС в25. Резултати показују разлику међу већином анализираних карактеристика. Све анализиране социо-демографске карактеристике осим пола и прихода, су статистички значајне. Пре свега, значајна је разлика у старости корисника дигиталних финансијских услуга и оних који не користе дигиталне финансијске услуге. Такође, корисници дигиталних финансијских услуга имају виши ниво образовања и чешће су запослени. На основу резултата могуће је закључити да је просечан корисник дигиталних финансијских услуга млађи, образованији, чешће запослен и учесталије користи разне банкарске услуге, као што су кредитне и дебитне картице, штедња и задуживање у односу на популацију која не користи ове услуге.

Кључне речи: *дигиталне финансијске услуге, Findex, Србија, социо-демографске карактеристике*

Introduction

In the era of digitization and rapid technological advancements, there have been significant changes in all parts of corporate processes, as well as the creation of new business opportunities. Changes in the financial industry, as well as acceptance of digital technology, have occurred in parallel with changes in the real sector. This is known as the financial sector's digital transformation, which brings new business models and products/services to the market. Various forms of digital money have arisen over the last decade, including digital advising and trading systems, peer-to-peer (P2P) financing, crowdsourcing, mobile payment systems, and even new monetary capabilities (such as Bitcoin and other crypto-assets) (Junger&Mietzner, 2020). They are often called alternative sources of finance as they arose outside the traditional financial system, which includes banks and financial markets. Today, financial markets are complex, offering a wide range of services as mentioned above. Having this in mind, it is not easy to survive in the new digital world. New knowledge and skills are needed to analyze all possibilities and make the best decisions for financial security.

Innovative technology research and use has a significant impact on the development of digital financial services, particularly in industrialized countries. Digital financial services appear in a wide spectrum of digital asset utilization, from the use of mobile phones to the use of various information and communication technology apps with electronic payment capabilities. David-West (2016) defines DFS as the leverage of information and communication technologies for cost-effective delivery channels that include electronic payments systems (retail and wholesale) and electronic banking products or services. services. Financial services offered via mobile phones, personal

computers, the internet, or cards linked to a secure digital payment system are also regarded as a part of digital finance (Ozili, 2018). DFS activities can significantly help to increase financial inclusion by providing access to other financial services such as payments, savings, loans, insurance and investments.

The development of digital payment, money transfer systems, and the growing use of mobile phones has enabled financial institutions to design products that are accessible to a wide variety of users. These new digitally delivered products and services have the potential to contribute to financial inclusion and, ultimately, social economic development. In many developing countries, financial inclusion appears to be a potential transformative agent that can lead to poverty reduction, ensure a more financially inclusive society (Sassi & Goaied 2013) and improve financial access to traditional financial institutions (N'dri & Kakinaka, 2020). In rural and excluded communities, mobile money can be the best tool for individual financial inclusion because it allows individuals to easily transfer money (Munyegera & Matsumoto, 2016).

Since the commitment to the Maya Declaration and the G-20 Financial Inclusion Plan, the concept of financial inclusion has sparked a lot of interest, highlighting two essential aspects of financial inclusion: "access" to financial products and "usage" of customers to obtain economic advantages (Demirguc-Kunt & Klapper, 2012). According to a United Nations Report, financial inclusion is the sustainable provision of affordable financial services that brings the poor into the formal economy (United Nations, 2016). Since then, many academics and economic policymakers have emphasized the importance of financial inclusion for many reasons. Ozili (2020) highlights the main reasons: strategy of sustainable development goals by the United Nations; improved social inclusion; poverty reduction; and finally, the link with socio-economic benefits. It is well established that increasing the number of (mainly poor) people who have access to formal financial services leads to higher financial inclusion. As a result of increased financial inclusion, previously financially excluded individuals will be able to invest in education, save, and start enterprises, helping to reduce poverty and boost economic growth (Beck et al., 2007; Bruhn & Love, 2014). In this regard, we investigated the socio-demographic characteristics of digital financial service users in Serbia.

Theoretical backgrounds and Literature review

Digital finance, according to Gomber et al. (2017), includes a wide range of new financial products, enterprises, software, and unique modes of consumer communication and interaction, all of which are provided by FinTech companies and creative financial service providers. There are other definitions too, but as Ozli (2018) mentions, digital finance includes all products, services, technology, and/or infrastructure that enable individuals and companies to have access to payments, savings, and credit facilities via the internet (online) without the need to visit a bank branch or without dealing directly with the financial service provider. As a result, three elements must exist and be employed to establish digital services: the platform (technology for transactions), the agent (bank or other financial institution), and the mediator (internet or mobile phone).

The importance of digital finance and financial inclusion for poverty reduction and fostering economic growth and development has attracted the attention of numerous

institutions, policy makers, and the academic community (Ozli, 2018). The benefits of digital finance and financial inclusion are primarily reflected in the increased access to finance for the poor, lower financial intermediation costs for banks and providers of FinTech technologies. The goal of financial services made available through digital platforms is to help emerging nations achieve their poverty reduction and financial inclusion goals (United Nations, 2016). While financial inclusion emphasizes having an account (Sarma, 2015), affordable services and the formal economy (Demirguc-Kunt et al. 2017), digital financial inclusion focuses on technology as a facilitator for expanding access to financial services to excluded or underserved individuals (Wang and He 2020), as well as tailor-made products that can meet the needs of these individuals (Alameda 2020). Also, it is considered that automation, new data technology processing, and artificial intelligence unravel credit assets of clients and eliminate the need for historical records (Sapovadia, 2018). DFS allows small transactions to be completed at a low cost and in a shorter amount of time, which is beneficial for small enterprises and the vulnerable population (Dawei et al., 2018). Despite these advantages, digital financing is not broadly available to all segments of the population (G20 Summit, 2013), demonstrating a gap between finance availability, accessibility, and use (Kumar & Rao, 2015). There is also a problem with high start-up costs in establishing new technologies. However, the economy of scale brings marginal costs towards zero (Liao et al., 2020).

In the 2016 State of the Market Report on Digital Financial Services in Nigeria, David-West et al. (2016) reported that "the under-banked and unbanked citizens of Nigeria are predominantly women and youths between the ages of 18 and 35, with minimal education, either unemployed or in low-income earning jobs". Age, gender, and income have been found to have negative effects on mobile money transfer user approval. However, education levels and employment status are major socio-demographic characteristics that predict the frequency of use, use, and acceptance of mobile money transfers in Zimbabwe (Marumbwa, 2014). Another study on the socio-demographic aspects of e-inclusion found that while there are no statistically significant gender differences in Internet use, the degree of education, along with income status, has a positive association with Internet use (Silva et al., 2017). In the research that is indirectly related to the topic of this paper and deals with using modern technologies in personal financial management, the authors check the socio-demographic characteristics of individuals to decide whether to entrust financial decisions to a computer program. Age, employment, and income have the strongest influence on their decision to use modern financial technology, whereas gender and level of education were not shown to be statistically significant (Waliszewski & Warchlewska, 2020). In an effort to analyse the socio-demographic characteristics of people who use digital technologies, Mouna & Jarboui (2021) conclude that better collaboration between the government and the financial sector can help to develop digital financial inclusion through technology adoption channels, as they found that the poor, the less educated, and the young are disproportionately excluded from the financial system. In India, gender, age, education, income, and employment status have a significant influence on the accessibility of digital financial inclusion (Nandru, et al., 2021).

Research Design, Methodology, Research Tasks and Hypothesis

Based on the literature review, we can expect major differences in socio-demographic characteristics of users of digital financial services in Serbia. We suppose that age, education, employment, and income are major factors, followed by the use of financial services. As in the prior studies, we do not expect gender to have a significant role, as the tradition and mentality of the environment in Serbia do not limit them from using digital services.

The World Bank's Global Findex database was used to discover the socio-demographic characteristics of users of digital financial services in Serbia. The database contains information on adult inhabitants' savings, borrowing, payment, and risk management habits (aged 15 and over). Since 2011, data has been collected every three years. The most recent study was completed in 2017, with a follow-up study scheduled for 2020. The results of the 2020 database, however, have yet to be disclosed. As a result, we will use the most recent available data from 2017 in our study. The 2017 edition of the database includes statistics on the use of financial technology (fintech), which was not included in prior versions. The Serbian database provides micro-level data containing socio-demographic and economic indicators of the Serbian adult population aged 15 and up (N=1,000) drawn from nationally representative, randomly selected samples.

The World Bank's questionnaire collected over 100 variables. However, in this study, we evaluated socio-demographic features of users of digital financial services (DFS) in Serbia using the information on digital services, socio-demographic characteristics, and the use of financial services. The question in the survey, whether an individual "used the Internet to pay bills or to buy something online in the 12 months before the research" was used as a variable pointing to the use of digital financial services. If the respondent answered yes, the variable takes the value of 1, elsewise zero. Socio-demographic variables include gender, age, education, income level, and employment status. The level of education is measured using official educational grading, categorized into three groups: completed primary or less (up to eight years of schooling), secondary (up to 12 years of schooling) and tertiary or more (over 15 years of schooling). The income level is grouped into five quintiles per 20%. Employment status reflects whether the respondent is in or out of the workforce. To measure the use of financial services, we used responses to the question about owning a debit and credit card and questions related to savings and borrowing patterns (answers to the questions: did you save or set aside any money in the 12 months before the research and did you borrow any money in the 12 months before the research). All variables used to measure the use of financial services have a value of 1 if the respondent answered yes, zero elsewise. To test the differences between the characteristics of digital financial service users, we applied a t-test. The analysis was performed using SPSS v.25.

Table 1 shows descriptive statistics, socio-demographic characteristics, and the use of financial services of the survey participants. The sample consists of 1,000 individuals, with 19.3% of users of digital financial services (n=193). The proportion of females in all samples, including the whole sample, the sample of users of financial services, and the sample of non-users of financial services, is similar and ranges from 45.6 per cent, 43.5 per cent, and 46.1 per cent, respectively, compared to the proportion of males. The mean value for age is 49.8 years in the total sample. However, the users of digital financial services are much younger, with an average age of 36.1, compared to the non-users of DFS (mean age of 53 years). The majority of respondents have secondary education, but in the sample of users of digital financial services,

the significant participation of individuals with tertiary education is noticeable. Most of the users of digital financial services come from the fifth (the richest) income quintile. Also, users of digital financial services are predominately included in the workforce (71%), opposite to the general sample, and a sample of non-users of DFS. Looking at the variables related to financial inclusion, users of digital financial services much more often use credit (75.6%) and debit (36.8%) cards, more often save (46.1%) and more frequently borrow (56.5%). Generally speaking, besides age, the subsample of users of digital financial services does not correspond to the general sample (Table 1). As we can observe from the descriptive statistics that differences between groups of users and non-users of digital financial services exist, and our independent variable is a dichotomous variable with two levels, a t-test is appropriate.

Table 1: Descriptive statistic of the sample

Variables	Description	Users of DFS (%)	Non-users of DFS (%)	Total (%)
Bought something online using the Internet	yes	100	0	19.3
	no	0	100	80.3
Gender	female	43.5	46.1	45.6
	male	56.5	53.9	54.4
Age	(mean value)	36.1	53.0	49.8
Education	primary	2.6	22.8	18.9
	secondary	66.8	64.3	64.8
	tertiary	30.1	13	16.2
Within-economy household income quintile	Poorest 20%	15.5	14.1	14.3
	Second 20%	14	19.6	18.4
	Middle 20%	16.6	20.2	19.6
	Fourth 20%	21.8	22	22.1
	Richest 20%	32.1	24.2	25.6
Employment status	out of workforce	29	58.5	52.9
	in workforce	71	41.5	47.1
Has a debit card	yes	75.6	64.5	66.6
	no	24.4	35.5	33.4
Has a credit card	yes	36.8	15.2	19.3
	no	62.7	84.3	80.5
Saved in the past year	yes	46.1	29.6	32.9
	no	53.9	70.4	67.1
Borrowed in the past year	yes	56.5	37.9	41.3
	no	43.5	62.1	58.7

Source: Authors' calculation

Research results and Discussion

The t-test confirms significant differences among these groups (Table 2). The results show a difference among the majority of analysed characteristics. Socio-demographic characteristics, except for gender and income, are statistically significant. There is a significant difference in the age of users of digital financial services (M = 36.2, SD = 11.9) and non-users of DFS (M = 53, SD = 17.3, t (994) = -12.8, $p < 0.01$). Users of digital financial services have obtained higher education (2.29 opposite to 1.91, t (994) = 8.35, $p < 0.01$) and are more often employed (0.71 against 0.41, t (994) = 7.58, $p < 0.01$). All variables related to the use of financial services are statistically significant. Users of financial services more often use debit and credit cards (0.76 compared to 0.65, t (994) = 2.63, $p < 0.01$ for debit cards, and 0.39 versus 0.16, t (994) = 7.04, $p < 0.01$ for credit cards). Moreover, a larger number of respondents belonging to the users of digital financial services have savings (0.746 compared to 0.3, t (994) = 4.42, $p < 0.01$) and borrow from the formal financial system (0.56 to 0.38, t (994) = 4.73, $p < 0.01$).

Table 2: Differences between users and non-users of digital financial services

	Users of DFS		Non-users of DFS		
	M	SD	M	SD	t-test
Gender	1.56	0.497	1.54	0.499	0.639
Age	36.15	11.918	52.98	17.304	-12.801***
Education	2.29	0.539	1.90	0.590	8.349***
Income	3.41	1.452	3.23	1.377	1.637
Employment status	0.71	0.455	0.41	0.493	7.577***
Has a debit card	0.76	0.430	0.65	0.499	2.632***
Has a credit card	0.39	0.549	0.16	0.373	7.039***
Saved in the past year	0.46	0.500	0.300	0.457	4.415***
Borrowed in the past year	0.56	0.497	0.38	0.485	4.763***

*** p>0.01

Note: M=mean; SD=standard deviation

Source: Authors' calculation

In our research, we found that the average user of digital financial services is younger, better educated, more frequently employed, and uses a variety of banking services, such as credit and debit cards, saving, and borrowing, more regularly than non-users of DFS and the overall public. This supports our initial claim that there are significant socio-demographic differences among users and non-users of digital financial services in Serbia.

According to the research, age has the greatest impact on the use of digital financial services, as in Waliszewski & Warchlewska (2020); Mouna & Jarboui (2021) and Nandru, et al., (2021), but in contrast to the research related to mobile money transfers approval and use (Marumbwa, 2014). This finding is supported by the fact that ICTs play a special role in young people's lives (Coleman, 2012), whereas the current digital generation will be able to transform traditional social institutions, develop the priorities of the digital economy and become the creators of advanced technologies (Korshunova,

2020). Education is the second most influential factor on digital financial service usage patterns, which is consistent with the majority of research (Marumbwa, 2014; Silva et al., 2017, Mouna & Jarboui 2021; Nandru, et al., 2021). However, these results differ from Waliszewski & Warchlewska, (2020), who did not find any statistical significance among these variables. Digital financial services are used to a greater extent by people declaring themselves to be employed. It implies they have a greater demand for these services and are willing to spend money on online shopping (Nandru, et al., 2021). We did not find any statistically significant relationship between gender and dependent variable, as in Marumbwa, 2014; Silva et al., 2017; Waliszewski & Warchlewska, 2020, nor with income and the use of digital financial services. In addition, we tested for the differences between users and non-users of digital financial services and the use of financial products. Here, we found a major difference, where users of digital services more often approach the formal financial system.

Conclusion

In this paper, we provided an empirical analysis of the differences in socio-demographic characteristics of users of digital financial services in Serbia. Given the importance of digital products for financial inclusion, we examined data on 1,000 individuals from Serbia from the World Bank Global Findex database to understand the basic differences in chosen characteristics. In conclusion, the typical users of digital banking services are younger people who are more educated and employed, whereas gender and income do not have major roles in digital inclusion. Furthermore, because they use various banking services, credit and debit cards, saving and borrowing, consumers of digital banking services are more financially included. Such results have practical implications for defining public policies that can help boost digital financial services, and thus increase financial inclusion through technology adoption channels. This study confirms the importance of government policy towards digital services in advancing financial inclusion in Serbia. As the covid-19 pandemic didn't cause just social distancing but also financial distancing (Howell et al., 2021), the importance of policies to promote digital services is becoming even more important. Although this study contributes to the literature on digital financial inclusion, there is a limitation regarding the sampling period. It would be interesting to compare the findings of the study with newer data from 2020 in the future. Next, because the dataset is limited to Serbia, no general conclusions about the world's population can be formed. However, considering that public policies have local character, we must take into account the specificities of the local financial system and local habits regarding the use of digital technologies. To make financial inclusion more wide-ranging, governments should focus on the elderly population, which is less educated and out of the workforce.

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INNOVATIVE ENTREPRENEURSHIP AND ECONOMIC GROWTH IN EMERGING MARKETS

Abstract

The paper analyses the contribution of different types of innovative entrepreneurship: new products entrepreneurship, new technology development entrepreneurship, high growth expectation entrepreneurship and average growth expectation entrepreneurship to economic growth in emerging markets. The aim of paper is to identify types of innovative entrepreneurship which have the greatest contribution to economic growth in emerging markets and propose measures that macroeconomic policy makers could implement to achieve sustainable economic growth. The regression analysis is performed in order to estimate the impact of different types of innovative entrepreneurship on economic growth in 13 emerging markets. The results have shown that a high growth expectation entrepreneurship has the greatest influence on economic growth. Also, results have shown that impact of new products entrepreneurship is bigger than impact of technology development entrepreneurship on economic growth in emerging markets.

Key words: *innovative entrepreneurship, economic growth, emerging markets.*

JEL classification: M13, O31

ИНОВАТИВНО ПРЕДУЗЕТНИШТВО И ПРИВРЕДНИ РАСТ НА ТРЖИШТИМА У НАСТАЈАЊУ

Апстракт

У раду се анализира допринос различитих врста иновативног предузетништва (понуда нових производа, понуда нових технологија, иновативно брзорастуће предузетништво и иновативно предузетништво са просечним стопама раста), привредном расту на тржиштима у настајању. Циљ рада је да се идентификују врсте иновативног предузетништва које имају највећи допринос привредном расту на тржиштима у настајању и предложе мере чија примена може подстаћи развој тих облика предузетничке активности. Ради испитивања утицаја наведених облика иновативног предузетништва примењена је регресиона анализа на узорку од 13 тржишта у настајању. Резултати су

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показали да највећи утицај на привредни раст имају иновативне, брзорастуће предузетничке организације. Такође, резултати су показали, да значајан утицај на привредни раст имају предузетници који нуде нове производе или нову технологију.

Кључне речи: иновативно предузетништво, привредни раст, тржишта у настајању.

Introduction

Emerging markets have become very serious players on the global market in recent years (Lu et al., 2010). The World Bank predicts that emerging markets will account for half of the world's economic growth by 2025 (Lin, 2011). For that reason, it is very important to analyze the drivers of their economic growth.

According to Schumpeter (1934) a key driver of economic growth is entrepreneurship, because it initiates a process of "creative destruction". Such claims are confirmed by a large number of contemporary empirical researches (Koster et al., 2011; Van Stel et al., 2018). Innovations in the product, organization or process, introduced by entrepreneurs are the basic elements of creative destruction. Accordingly, entrepreneurs can be seen as innovators introducing new products or innovators introducing new technologies. Also, there are differences among innovative entrepreneurs related to the expected growth rate. Some of them offer products or technology that are new to the local or national market and expect average growth rates. The others offer innovative solutions to consumers around the world and expect high growth rates (Janjić & Rađenović, 2019). We assume that the contribution of these forms of entrepreneurship to economic growth is not the same. Therefore, we assume that different forms of innovative entrepreneurship do not have the same contribution to economic growth in emerging markets. This is our starting hypothesis.

Hence, we will examine the impact of the aforementioned forms of entrepreneurial activity (new products entrepreneurship, new technology development entrepreneurship, high growth expectation entrepreneurship, average growth expectation entrepreneurship) on the economic growth in the 13 emerging markets in order to identify the forms of entrepreneurial activity which have the most important role in economic growth. We will use data from the Global Entrepreneurship Index (GEI) Report for the period 2011-2018. The hypotheses will be tested by employing the regression analysis on the panel data.

The paper is structured as follows. First, it gives an overview of literature that links entrepreneurship with economic growth in emerging markets. Then, the next part of the paper presents methodology, followed by the obtained results, and the discussion of results. The final part of the paper presents concluding remarks and recommendations to macroeconomic policy makers.

Literature review

"Emerging markets are societies transitioning from a dictatorship to a free-market-oriented-economy, with increasing economic freedom, gradual integration with the global marketplace and with other members of the GEM (Global Emerging Market), an

expanding middle class, improving standards of living, social stability and tolerance, as well as an increase in cooperation with multilateral institutions" (Kvint, 2009). Emerging markets include very diverse countries by country's history, size, economic development paths, etc., but also which are in different geographical areas, such as East Asia, Eastern Europe, and Latin America (Bruton et al., 2008) including former communist and today transition economies that started economic liberalization and implemented free-market principles (increasing transparency, deregulation, privatization, and so on) in order to advance their global competitiveness (Kiss et al., 2012). All of these economies have similar macroeconomic characteristics such as: underdeveloped market-supporting institutions, including weak laws and poor enforcement capacity of the formal legal institutions as well as governmental policies which incentive economic liberalization and free market system (Khanna & Palepu, 2000). For that reason, emerging markets very often are treated as a uniform block which account for about 25% of global GDP, 50% of the world's population and a large share in the consumption of many products (World Bank Report, 2018).

The World Bank predicts that they will have increasing participation in world's economic growth in the future (Lin, 2011). In other words, the group of emerging markets has become a very serious player on the global market. A major challenge for the scientists has become analyzing the drivers of their economic growth.

Previous research conducted in developed countries shows that entrepreneurship has an extremely important role in their economic growth. Scientists have explained that the introduction of innovations leads to the supply of a greater variety of products, which results in a more efficient use of resources because the market confirms what is technically viable and what consumers prefer (Van Stel et al., 2005; Rusu & Dornean, 2019). Innovations and business creativity (which are involved in entrepreneurial activity) enable knowledge spillovers and stimulate economic growth (Acs & Varga, 2005).

However, Baumol (1990) pointed out that entrepreneurship does not always have a positive effect on economic growth ("productive"). It can be sometimes "unproductive", and even "destructive", because some forms of entrepreneurial activities may have insignificant or even negative impact on economic growth. A number of empirical studies confirmed claims that the different forms of entrepreneurship do not have the same contribution to economic growth (Valliere & Peterson, 2009). Previous research shows that the innovative entrepreneurship is one of the most "productive" form of entrepreneurship in developed countries (Salango-Banda, 2007).

As regards emerging markets, previous meta-analysis conducted in these markets, showed that the number of papers exploring the importance of entrepreneurship for economic growth were limited. For example, Bruton et al. (2008) investigated papers which addressed entrepreneurship in emerging markets. They found that there were only 43 articles on that topic (out of 7,482) published in leading journals during the period 1990-2008. Recent meta-analyses show that research on entrepreneurship in emerging markets has grown significantly in the last several years. For example, Kiss et al. (2012) presented comprehensive and detailed investigation of entrepreneurship in emerging markets. They found that these studies were methodologically and topically very diverse, geographically focused, and fragmented. Hence, their conclusion was that further integrative studies were needed to get a better understanding of entrepreneurship

and its role in economic growth in emerging markets. Zolfaghari et al. (2013) came to a similar conclusion in their meta-analysis. They suggested that many more studies in field of entrepreneurship in emerging markets should be conducted in the future analyses due to the fact that it is still an under-studied subject. For that reason, we will investigate impact of innovative entrepreneurship on economic growth.

There are different forms of entrepreneurship in line with different forms of innovation. Forms of innovative entrepreneurship can be formed based on the elements of innovation. For example, the Global Entrepreneurship and Development Institute explains and monitors two forms of innovative entrepreneurship: new products entrepreneurship and new technology development entrepreneurship (Acs et al., 2018). New products entrepreneurship implies product innovation. The result of this process is the supply of new or modified products/ services. New product entrepreneurs are innovators who state their products or services are new to all or some customers and for which there are no or few competitors (Bosma & Kelley, 2019). The second form of innovative entrepreneurship implies process innovation. New technology development entrepreneurship is the process of new venture creation by developing novel digital technologies and/or usage of such technologies.

Also, Global Entrepreneurship Monitor differentiates entrepreneurs based on growth (job creation) expectations. All entrepreneurs are divided into three groups: entrepreneurs with low, medium, and high growth expectations, according to the number of employees that entrepreneurs plan to hire in the next five years. Those anticipating six or more hires can be seen as medium growth-oriented entrepreneurs, entrepreneurs anticipating to hire up to six employees are low growth-oriented entrepreneurs, and high growth-oriented are entrepreneurs who expect to employ at least 20 employees in 5 next years (Bosma & Kelley, 2019).

Previous research, conducted in developed countries, show that all forms of entrepreneurial activity do not have a same impact on economic growth (Valliere & Peterson, 2009; Van Stel et al., 2018; Ivanović-Đukić et al., 2019). Also, studies examining the link between different forms of innovation and economic development indicate significant differences (Prabhu & Jain, 2015). Accordingly, we assume that the contribution of different forms of innovative entrepreneurship to economic growth in emerging markets is not the same. Our hypothesis is:

H1: Different forms of innovative entrepreneurship do not have the same contribution to economic growth in emerging markets.

A large number of scientific papers explain that entrepreneurs who offer new products have a great importance for economic development, given the fact that new products can improve the living standards and national competitiveness. For example, Du and O'Connor (2018) show that new product entrepreneurship significantly contributes to improving efficiency at the national level (Du & O'Connor, 2018). Also, Van Stel and Koster (2011) in their study demonstrate that innovative entrepreneurs offering new product initiate a process of "creative destruction" in Netherlands, which was elaborated by Schumpeter. The emergence of new innovative firms, with new products and services that compete with existing businesses, contributes to survival and growth of the most competitive companies only, thus leading to regional economic development (Van Stel & Koster, 2011).

New technology development entrepreneurship, also, has great importance for economic growth. New technologies can revolutionize the world, while the entrepreneurs

who create them make a huge contribution to economic development. A study conducted by Cenamor (2019) discovers that entrepreneurs offering new technologies improve their performance and national competitiveness.

Hence, it can be expected that both groups of innovative entrepreneurship have a positive impact on economic growth in emerging markets, but the question is whether this impact is the same? Given the fact that in the most emerging markets product innovation index is larger than process innovation index (Acs et al., 2018), it can be expected that the contribution of entrepreneurs offering new products is greater than the contribution of innovative entrepreneurs offering new technology. Hence, our next hypothesis is:

H2: The impact of new products entrepreneurship on economic growth is higher than the impact of new technology development entrepreneurship in emerging markets.

Further, there are differences among innovative entrepreneurs related to the expected growth rate. A lot of them offer products or technologies that are new only on the local (national) market. The entry of such new firms into the market stimulates existing firms to do business better and have a significant impact on economic growth. However, they can expect average growth rates, because they are primarily oriented on the national market, which is limited. On the other hand, high growth-oriented entrepreneurs, can have extremely important roles in economic growth (Steve & Dorf, 2018). The enormous global market allows to these entrepreneurs the extremely high income and growth rates in a very short time (Ries, 2018). At the same time, they employ a huge number of new workers and create enormous value added. Thus, our last hypothesis is:

H3: High growth expectation entrepreneurship makes the greatest contribution to economic growth in emerging markets.

Methodology

The universal qualification of emerging markets does not exist. For example, Morgan Stanley Capital International Emerging Market Index lists 24 developing countries which qualify as emerging markets (MSCI, 2019). The International Monetary Fund (IMF) classifies 23 countries as emerging markets, Standard and Poor's (S&P) classifies 23, Russell classifies 19 countries as emerging markets, while Dow Jones classifies 22 countries as emerging markets.

In our sample we chose those countries which were included in the list of emerging markets by at least 6 out of possible 9 classifications that can be found. Additional criteria for the country selection were data available in the GEI reports. List of countries is presented in Table 1.

Table 1 Countries included in the study and GNIPC in 2019

Country	**GNIPC in US$**
Argentina	11,200
Brazil	9,130
Chile	15,010
China	10,410
Croatia	14,910
Estonia	23,220
Hungary	16,140
Latvia	17,730
Poland	23,080
Russia	11,260
Slovakia	19,320
Slovenia	25,750
Uruguay	16,230

Source: World Bank (https://data.worldbank.org/indicator/NY.GNP.PCAP.CD?name_desc=false)

Results

Regression analysis was performed in order to estimate the influence of different types of innovative entrepreneurship on economic growth in 13 emerging markets. An average annual growth rate of GDP is selected as dependent variable. All models control for capital and labor, and following variables are used as proxies: GDP per capita (PPP 2011 $) (an explanatory variable to limit the potential impact of reversed causality), inbound foreign direct investment per capita and population. Data are used from World Bank Development Indicators. We employed different forms of innovative entrepreneurship as independent variables: new products entrepreneurship, new technology development entrepreneurship, high growth expectation entrepreneurship, and average growth expectation entrepreneurship. All of them are lagged by one year. Data are used from the GEI.

Two regression models were created in order to test the validity of the hypotheses. Since we have a panel data, diagnostic checking is performed to determine the appropriate model (pooled regression model (Pooled), fixed effect model (FEM) or random effect model (REM). Therefore, several tests were performed. According to the obtained test results, the Pooled model was chosen. The regression analysis results are presented in Table 2.

Table 2 Regression results

Variable	Model 1	Model 2
Constant	65.02	38.76
GDP per capita	-0.0003	-0.00009
Inbound foreign direct investment per capita	-0.00008	-0.00008
Population	3.29e-09	-1.99e-04

New products entrepreneurship	3.79*	
New technology entrepreneurship	1.76*	
High growth expectation entrepreneurship		4.26**
Average growth expectation entrepreneurship		0.22
R^2	0.34	0.37
Adjusted R^2	0.29	0.30

Note: All independent variables are measured with a one-year lag.
* Significant at 0.05 level
** Significant at 0.10 level

Results show that all forms of innovative entrepreneurship have positive impact on economic growth in 13 emerging markets, but their contribution to economic growth is not the same (our first hypothesis is confirmed). Model one shows that new products entrepreneurship had higher impact on economic growth (3.79) in emerging markets, compared to the new technology entrepreneurship (1.76) (hypothesis H2 is confirmed). This model explains 34% variability in GDP growth ($R^2 = 0.34$).

Model two shows that high growth expectation entrepreneurship has the highest impact on economic growth (4.26) in emerging markets, while the influence of average growth entrepreneurship is smaller and insignificant (hypothesis H3 is confirmed). This model explains 37% variability in GDP growth in emerging markets.

Discussion

Our paper has shown that all forms of innovative entrepreneurship contribute to economic growth in emerging markets, thus suggesting that innovative entrepreneurship should be stimulated. This is in line with a number of previous theoretical studies which explain that development of entrepreneurship in emerging markets contributes to job creation and poverty reduction, intensifies competition, introduces innovation, and increases productivity.

The results of empirical study conducted on a sample of 13 selected emerging markets have shown that largest and statistically significant contribution to economic growth has a high growth expectation entrepreneurship. This is in accordance with the result of studies conducted in developed countries, but different compared to results obtained by prior research in emerging markets. For example, Valerie and Peterson (2009) concluded that impact of high growth expectation entrepreneurship on economic growth is insignificant in emerging markets. This can be explained by the fact that the economic environment has been improved in emerging markets in recent years, which has become stimulating for high growth-oriented entrepreneurs. Number of these entrepreneurs is increasing rapidly, they are creating great added value and employing a huge number of workers, thus contributing to an increase in economic growth. Average growth expectation entrepreneurship has also had a positive impact on economic growth in emerging markets, but its influence is insignificant.

Also, results show that innovative entrepreneurship offering new products has a bigger impact on economic growth, compared to the innovative entrepreneurship offering new technologies. In the most emerging markets, there are several problems that slow down the development of entrepreneurship offering new technologies, such as: small technology absorption capacity, lack of capital for R&D, etc. For this reason, innovative

entrepreneurs offering new products are more numerous than innovative entrepreneurs offering new technologies and have a greater contribution to economic growth.

Conclusion and recommendations to policy makers

Over the past decade, many studies in entrepreneurship have tended to assume that entrepreneurship is extremely important for economic growth. For that reason, academics and policy makers have demonstrated renewed interest in entrepreneurship as an engine for economic growth.

But entrepreneurs generally act differently depending on their institutional settings, and their contribution to economic growth is not the same. Previous researches have shown that entrepreneurship is one of the main drivers of economic growth in developed countries because innovation offered by entrepreneurs constitutes better ways to meet existing demands. However, entrepreneurship does not always have a positive effect on economic growth. Some forms of entrepreneurial activity can be "unproductive", and even "destructive". Prior research suggests that in developed countries only innovative and high-growth entrepreneurship (not new firms in general) have significant contribution to GDP growth and represent productive forms of entrepreneurship.

However, emerging markets represent specific and scarcely studied institutional context. Besides, although the emerging markets hold a billion people, the potential impact of entrepreneurship on the subsistence of their economy has largely been ignored. On the other hand, macroeconomic characteristics in emerging markets create a specific framework for the development of entrepreneurship, while "rules of the game" in the economy are completely different compared to developed countries. Therefore, it is uncertain whether in emerging markets the same forms of entrepreneurship are "productive" as in developed countries. The research papers on this topic in emerging markets has grown significantly in the last several years. They explain that entrepreneurship is important for economic growth in emerging markets. But empirical studies examined this relationship are very rare. Therefore, recent meta-analysis on this topic and further integrative studies are needed to get a better overview of relationship between entrepreneurship and economic growth in emerging markets (Kiss et al., 2012).

This paper investigated impact of four types of innovative entrepreneurship on GDP growth in emerging markets in order to identify the form of entrepreneurship which has the greatest contribution to economic growth. Regression models were developed with purpose to investigate the effect of different types of innovative entrepreneurship on economic growth in 13 selected emerging markets on panel data for period 2011-2018. We found that all forms of innovative entrepreneurship contribute to economic growth. The largest and significant influence on economic growth has high growth expectation entrepreneurship. Also, results shown that impact of new products entrepreneurship was bigger than impact of new technology development entrepreneurship on economic growth in emerging markets. In order to create an environment that encourages innovative entrepreneurship in such a way that it can contribute more effectively to economic growth, it is necessary to implement a lot of different measures and involve a lot of stakeholders: government and policy makers, corporate sector, knowledge institutions, media, and civil institutions.

In order to stimulate the development of innovative entrepreneurship government can create startup ecosystems. Start-up ecosystem encourages the creation and development of high growth expectation entrepreneurship thanks to different forms of support such as: mentoring, consulting services, contacts with investors, etc. Also, a lot of high growth-oriented entrepreneurs included in entrepreneurial ecosystem create a pool of well-trained and like-minded entrepreneurs. It enables exchange of knowledge and experience and creates culture that encourages innovation and new businesses. The link of capital, technology and know-how within the supportive entrepreneurial ecosystem, enables the speeding up of the business creation process and limits the probability of failure.

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TAX CONTROL AND INSPECTION SUPERVISION IN THE REPUBLIC OF SERBIA–CHARACTERISTICS OF THE LEGAL FRAMEWORK AND THE NEED FOR COORDINATION

Abstract

Today, the success of entire tax system is viewed through the effectiveness of tax control. Tax control activities are performed by tax inspectors with special authorities, duties and responsibilities, and its purpose is to control whether taxpayers activities comply with tax laws and regulations. With the adoption of the Law on inspection supervision, the Republic of Serbia has implemented a crucial, comprehensive reform of inspection bodies and the process of inspection supervision which has been of great significance for public administration, economy and citizens. The provisions of this law are applied to tax procedures based on the principle of subsidiarity, while the activities of tax inspection are mostly based on the provisions of the Law on tax procedure and tax administration.

In tax procedures, the issues which are not regulated by the general Law on inspection supervision, are the subject of another specific law – however, the direct application of the specific law cannot rule out or restrict the application of the law which governs the issues of inspection supervision and official control which are not regulated by the specific law. In this paper, the author discusses the similarities and differences between two laws and solutions for their harmonization underlining their advantages and weaknesses aimed at ensuring the maximum compliance with tax laws and reduction of tax evasion and shadow economy.

Key words: *tax control, inspection supervision, taxpayer, the supervised subject*

JEL Classification: *H20, M42*

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ПОРЕСКА КОНТРОЛА И ИНСПЕКЦИЈСКИ НАДЗОР У РЕПУБЛИЦИ СРБИЈИ – ОСОБЕНОСТИ НОРАМТИВНОГ ОКВИРА И ПОТРЕБА КООРДИНАЦИЈЕ

Апстракт

Данас се успешност целокупног пореског система посматра кроз пореску контролу. Послове пореске контроле обављају порески инспектори са посебним овлашћењима, дужностима и одговорностима, а њена сврха јесте провера да ли је поступање одређеног субјекта усклађено са законом и подзаконским актима. Доношењем Закона о инспекцијском надзору спроведена је свеобухватна суштинска реформа инспекција и инспекцијског надзора која је од великог значаја за јавну управу, привреду и грађане. Одредбе овог закона се супсидијарно примењују у пореском поступку, док пореска инспекција пре свега примењује одредбе Закона о пореском поступку и пореској администрацији.

За питања која су другачије уређена у односу на Закон о инспекцијском надзору, у поступку контроле се примењују одредбе посебног закона, али непосредна примена посебног закона не може искључити или ограничити примену закона којим се уређују питања инспекцијског надзора и службене контроле који нису уређени посебним законом. У овом раду се разматрају сличности и разлике у примени оба закона, њихово усаглашавање и указује на предности и недостатке са циљем да се обезбеди максимално поштовање пореских прописа и смањи пореска евазија и сива економија.

Кључне речи: *порска контрола, инспекцијски надзор, порески обвезник, надзирани субјекат*

Introduction

The tax reform which started in 2001 included the adoption of the Law on tax procedure and tax administration which regulates the procedure of determining, controlling and collecting public revenues. The normative and legislative significance of this law lays in the fact that previous tax procedure had been regulated by several laws which considerably hindered its efficient application. A separate section of this law, and it can be said one of the most important, is dedicated to the issue of tax control. It is defined as a control procedure aimed at determining whether the taxpayers comply with tax laws. It is conducted by Tax Administration for the purpose of identifying irregularities and oversights in meeting the obligations foreseen by tax laws and regulations. The tax control includes the collection of information in order to determine the level of compliance with existing laws and constitutes an essential part of tax system ensuring that taxpayers meet their obligations (Enofe, Embele, Obazee, 2019, 51). The significance of tax control lies in its insurance that the information the taxpayers provide in their tax form are complete and true (OECD, 2016, p. 14). It enables identifying the data related to tax evasion since the control includes a large number of taxpayers and each of the obtained

data can be used for the initiation of actions against tax evasion and shadow economy. The tax control is the basic means for ensuring the compliance with tax laws in most tax jurisdictions worldwide maximizing the estimated tax revenue for the governments in both developed and developing countries. It represents a vital instrument for collecting taxes which are essential for the state budget, as well as for maintaining economic and financial order and stability (Olaoye, Ekundayo, 2019, p. 4).

The state administration is in charge of conducting the inspection supervision for the purpose of ensuring legality and safety of work performed by the supervised subjects (legal persons, entrepreneurs and natural persons) and preventing or eliminating the damaging consequences that may result from their actions. The procedure of inspection supervision, the authorities and obligations of the subjects participating in the procedure, as well as other supervision related issues are regulated by the Law on inspection supervision, which came into force on April 29th, 2016. The inspection supervision is performed by inspection bodies, that is the inspectors with special authorities, duties and responsibilities who meet the requirements for performing supervising activities defined by law. The provisions of this law apply to the work of tax inspectors as well, but only in domain not regulated by the specific law. Given the fact that the Law on tax procedure and tax administration governs all issues related to determining, controlling and collecting public revenues, registration, rights and duties of taxpayers, as well as tax penalties for criminal offences and misdemeanors - this makes it a specific law in relation to the Law on inspection supervision, and, therefore, the tax police involved in tax inspection supervision mostly acts according to the provisions of this specific law. However, the direct application of the specific law cannot rule out or restrict the application of the law which governs issues of inspection supervision and official control which are not regulated by the specific law ("Official Gazette of the Republic of Serbia" no. 35/15, 44/18, 95/18, Law on inspection supervision, Article 4, paragraph 5).

The tax control mechanism – functions and operative specifics

Tax bodies are expected to apply tax laws consistently and impose taxes that, based on these laws, correspond to taxpayers actual economic strength, which makes the tax control one of the most important tax functions enabling an adequate and timely fulfilment of tax obligations (Andjelkovic, 2016, p. 162-163). Tax control activities, particularly those aimed at countering shadow economy, are performed by Tax Administration via tax inspectors (Milosevic, Kulic, 2013, p. 145). Tax control is an activity of a tax body which assesses whether a taxpayer's activities comply with tax laws and regulations. Today, the success of entire tax system is viewed through the effectiveness of tax control. Any problem in its organization or work may impact the efficiency of tax collection. Therefore, in practice, it is often believed that the tax control is actually "the heart" of tax administration, the absence of which would question the mere purpose of its existence. A tax body initiates tax procedure *ex officio* or at the request of a client and the tax procedure is deemed initiated by performing any action aimed at governing this procedure (Vukša, 2011, p. 74). Whether tax control has positive impact on taxpayers' compliance with tax laws is the question to which tax experts often give opposite answers. Some of them state that after a tax control, particularly if it results

in additional tax burden, the taxpayer may think that tax authorities will continue to monitor its activities and that he will be "easily caught" if it attempts to cover its revenue. On the other hand, some taxpayers think that following the tax control there is less chance that they will be selected again for tax control which may encourage their tax evasive activities (Yongzhi, 2011, p. 238).

Tax administration management requires a functional reporting system - timely obtained, valid, legitimate and reliable data on revenue sources per type of business, locations and taxpayers' categories required for performing various analyses, issuing recommendations for modification of tax regulations and undertaking certain measures (Dimitrijevic, 2003, p. 311). The prerequisite for performing a successful tax control is the existence of a good information system and developed network for the exchange of information between various bodies and departments. The facts are established based on evidence, but taking into account that there are various types of taxes, the tax control procedure may include checking, in addition to tax applications, tax balances, business records, accounting statements and other documents and information available to tax bodies collected from the taxpayers themselves or third persons – witness statements, expert witness findings, investigation results, and any other relevant means used for establishing the factual state ("Official Gazette of the Republic of Serbia" no. 80/02, 84/02 23/03, 70/03, 55/04, 61/05, 85/05, 62/06, 63/06, 61/07, 20/09, 72/09, 53/10, 101/11, 2/12, 93/12, 47/13, 108/13, 68/14, 105/14, 91/15, 112/15, 15/16, 108/16, 30/18, 95/18, 86/19, 144/20, Law on tax procedure and tax administration, Article 43, paragraph 2). The tax body is required to produce the facts relevant for proving the existence of tax obligation, while the taxpayer needs to produce the facts relevant for reducing or canceling its tax obligation.

Tax control embodies a triple function: preventive, corrective and repressive. The preventive function serves to encourage taxpayers to comply with tax laws and regulations (Kulić, 2007, p. 159) in order to avoid to be sanctioned for tax offences. The corrective function is aimed at monitoring the taxpayers' activities and offers a unique, efficient control of data relevant for determining tax obligations, while in case of identifying irregularities related to meeting tax obligations, certain corrective measures are imposed on taxpayer to ensure their elimination. The repressive function is applied when taxpayers fail to correct the irregularities identified in their work within defined deadline and are, therefore, subjected to criminal charge and other penalties and fines. Identifying and sanctioning of taxpayers non-compliant behavior contributes to increasing tax (budget) revenue (Dimitrijevic, 2017, p. 91).

The control is performed based on the annual plan which is adopted according to tax significance grade, that is the taxpayer risk assessment, as well as based on the emergency plan which is adopted in unexpected circumstances. During its preparation, the effects of the control on the tax collection efficacy is taken into account. It requires a strategy which prioritizes large taxpayers due to their large contribution to budget. Therefore, it is important to classify the taxpayers into groups based on their tax obligation, acquired revenue and the type of business (Hrustic, 2007, p. 228). A control is performed in several phases which include: preparation, conducting control, making a report and issuing a decision, and, if necessary, filing a request for initiating a criminal or misdemeanor proceeding.

The provisions of the Law on tax procedure and tax administration in previous times included two different types of tax control: desk control and field control. As of

2019, the law does not make a distinction between these two forms of tax control, that is they are jointly regulated as a tax control. In some cases there is a need for tax control to be performed in the taxpayer's business premises, while in others it is sufficient that business records and documents are collected and sent to the tax body to be inspected there (OECD, 2006, 10). The tax control procedure may involve the control of all taxpayer's tax obligations, or the inspectors may focus only on one tax type. A desk control is usually limited to the information that can be acquired by the taxpayer and via tax information system, while a field control includes a wider spectrum of issues and evidence that can be acquired on the spot, that is in the taxpayer's business premises (Pentland, Carlile, 1996, p. 275-276). The control is performed during the taxpayer's business hours, or exceptionally after business hours if the purpose of control requires longer time, or if there is an agreement with the taxpayer. Tax control is considered to be one of the most sensitive contacts between the Tax Administration and a taxpayer. The presence of tax inspectors in the taxpayer's home or business premises, along with the collection of information from business records and accounts, or even the mere interruption of daily business routine, imposes a burden on the taxpayer, who often feels that it is an unjustified intrusion into his business activities. Despite such feelings, the tax control remains the most efficient way for determining the facts important for establishing tax obligation or verifying the truthfulness of the data produced by the taxpayer.

A tax control usually starts with the taxpayer's filing a tax form. After the form is received and registered, tax officers check their calculating accuracy, formal correctness, wholeness, as well as the adequacy of the reports submitted along the form. Contemporary tax information systems have greatly contributed to reducing time needed for processing tax forms which are electronically filed and the system itself can identify most of the irregularities. A tax body may call taxpayer and request the filing of its tax form or producing additional documentation and information within reasonable timeframe, all for the purpose of establishing its tax obligation. The taxpayer needs to comply with all requests of the tax body and produce all information required for establishing its tax obligation. The same applies to third persons: legal entities, banks, state bodies and organizations, local government and autonomous province's bodies, etc. which are all under the obligation to provide, at the request of the tax body and within the timeframe it specifies, all available information necessary for establishing the state of facts relevant for taxation. („Official Gazette of the Republic of Serbia" no....144/20, the Law on tax procedure and tax administration, Article 45, paragraph 1). The new provisions regulating the tax procedure allows issuing of a decision on establishing tax obligation based on the data and documents obtained from relevant bodies, without obtaining the taxpayer's statement on the state of facts relevant for taxation. In this way a tax inspector may establish tax obligation on the bases of the data and documents he collected even if the tax form has never been filed by the taxpayer. In order to apply this legal novelty, it is necessary to have a good organization of tax administration, reliable information support system and continuing education and development of tax inspectors enabling them to navigate this complex tax procedure (Brčić, 2002, p. 661).

If during tax control procedure a tax inspector identifies the existence of tax irregularities, he writes the minutes in which he lists all the activities performed during the procedure in a chronological order including the supporting evidence, identifies

precisely the cases of non-compliance with tax laws and states the amounts of public revenue that have not been paid as a result of this non-compliance. A copy of the minutes is sent to the taxpayer, which he can object to within legally set timeframe. If his objections are supported by new evidence that may change the state of facts, the supplementary minutes are written which the taxpayer may not object to. However, if the inspector acquires new facts following the writing of the supplementary minutes, he will prepare an annex to the minutes which the taxpayer may challenge.

In order to eliminate the identified non-compliance with tax laws and irregularities in applying these laws and regulations, the taxpayer who has undergone the tax control may be subjected to penalties and fines according to law (Popovic, 2012, p. 181). Based on the tax control minutes and supplementary minutes, a decision is passed ordering the taxpayer to pay a certain amount of tax or to correct the identified irregularities. The decision must be duly sent to the taxpayer and include the instructions for legal remedy which the taxpayer may resort to.

The tax control may also be initiated by issuing a tax control order which is delivered to the taxpayer at the beginning of the control, not excluding the possibility to commence the procedure without the delivery of the order if its delivery would severely obstruct the procedure.

The role and importance of the tax control is particularly seen in identifying and eliminating a taxpayer's non-compliant behavior (Stojanovic, 2012, p. 919). It is taxpayers who are responsible for making a decision whether they will declare their income or evade paying taxes. If they decide to declare their income accurately, their tax obligation will remain the same regardless the fact whether a tax control takes place or not (Youngse, 2005, p. 522). Taking into account the lack of discipline of our taxpayers in meeting their tax obligations, the tax control is conducted mainly for the purpose of maximizing the compliance with tax laws and reducing the tax evasion and shadow economy.

Inspection supervision in the innovated legal framework

Inspection supervision examines the application of laws and other regulations by the supervised entity. As a specific type of administrative procedure, it differs from the general regime of administrative action according to the methods of execution and powers of the inspectors abiding by the principles and operating rules of state administrative officers. Inspectors are independent in their work which means that no one can prevent or hinder them from exercising their duties, that is no one can undertake the tasks and issue measures which are in their jurisdiction. Their powers are only limited by tax laws and other relevant regulations.

In order to be efficient in performing its tasks, the inspection body needs to have a well developed analytical function and unrestricted access to data and documentation in order to form a clear picture of the situation in the field of inspection supervision and risk assessment. The inspection supervision is performed according to the plan based on the established state of affairs in the given field and risk assessment, and the inspection body shall perform it unless prevented by justified circumstances. Planning is made on annual and perennial (strategic) basis. The strategic planning includes the field of

supervision, its scope, complexity, trends, the number of regulations whose application is supervised, as well as the number of supervised entities, which is important for planning the number of staff needed for performing certain inspections.

Inspection supervision is divided into following types: regular, exceptional, mixed, controlling and supplementary, while, based on the type of supervision, it can be a desk supervision or field supervision.

In order to achieve the goals of inspection supervision, the inspection body needs to act in a preventive way. The inspection supervision was previously considered to be a reaction of the inspection to the damage which had already been incurred; however, the Law on inspection supervision underlines the preventive action of inspection bodies before the violation of regulations or the damaging consequences take place. For this purpose, official counselling visits are planned providing expert opinion, explanation and answers to supervised entities, while applicable regulations, inspection supervision plans and checklists are published in order to prevent possible occurrence of damaging consequences. It may be said that the effects of preventive actions are achieved through its transparency, mainly by publishing the applicable regulations, inspection supervision plans and checklists, by informing the public of the amendments to the regulations and rights and obligations of the supervised entities stemming from them, by making public all the findings of the inspection regarding the existence of serious risk to human life and health and property of greater value, by providing professional and counseling support to the supervised entity, by publishing the amended regulations, by organizing official counselling visits and by undertaking preventive inspection supervisions and other activities aimed at the support of legality and safety of operation and conduct (Vuckovic, Vuckovic, Stefanovic 2017, p. 140). Each inspection body must prepare checklists within its field of inspection supervision which include the list of actions they are authorized to perform. The checklists are also used for the purpose of unification of inspection procedures and practices, and, therefore, their contents need to be changed and amended at least twice a year. During the inspection supervision, the inspector undertakes and checks all the actions contained in the checklists and, therefore, it serves as a reminder what needs to be examined. In addition to the preventive action, the inspection body also exercises its supervising function. The supervision procedure is initiated *ex officio*. By rule, the inspector informs the supervised entity of the upcoming inspection supervision prior to the commencement of supervision, except in the situation when such notification may

mitigate the achievement of the objective of the inspection supervision. The inspection order is prepared in a written form and includes all data required for initiating the inspection supervision which officially commences by delivering this order to the supervised entity. The inspector writes the minutes stating all the data relevant for the inspection supervision, particularly those mentioned in the order for inspection supervision, then the measures that need to be implemented within the specified timeframe, as well as the data on criminal charges or charges for commercial offences or misdemeanor offences that will be filed against the supervised entity. The checklist remains the constituent part of the minutes on the inspection supervision. The supervised entity is entitled to submitting objections to the minutes in a written form within five days from receiving the minutes. The inspector assesses the submitted objections, if any, and performs supplementary inspection supervision. If new facts have been set forth, along with the new evidence, due to which the factual situation, which has been determined in the minutes, needs to be modified, the

inspector prepares supplementary minutes, to which an objection may not be made. Acting upon objections to the minutes, the inspector may modify the proposed or ordered, i.e. imposed measure or waive it. ("Official Gazette of the Republic of Serbia" no. 35/15, 44/18, 95/18, Law on inspection supervision, Article 36, paragraph 5). The inspection supervision results in passing a decision on measures undertaken against the supervised entity, except in cases when no irregularities, deficiencies and omission are detected and the procedure is completed only by delivering the minutes of the inspection supervision. However, if during the performance of the extraordinary ascertaining, or confirming inspection supervision, the inspector fails to identify any irregularities, deficiencies and flaws, he issues a decision on fulfillment of prescribed conditions or confirmation of legality and safety of the supervised entity's work. According to the provisions of the Law on inspection supervision, within eight days from the date of expiry of the deadline for implementation of measures imposed by the inspector's decision, the supervised entity must inform the inspection of the implementation of imposed measures. In addition, the inspector monitors the implementation of the measures which he has issued and performs desk or field, i.e on-site inspection supervision to determine whether the measures imposed by the decision have been implemented and files a motion for the initiation of misdemeanor proceedings if the entity has failed to implement them. The law also foresees the enforcement of the decision by sealing the building and equipment for the purpose of terminating the illegal and unsafe activities of the supervised entity.

New inspection system foresees a special procedure for regulating unregistered entities. Unregistered entity is a supervised entity which performs activities but is not registered with a relevant register or has no work permit issued by an authorized body. The inspection supervision of unregistered entities is performed according to the plan, but also when it was not envisaged by the supervision plan, without notification on the upcoming inspection supervision and without issuing an order for inspection supervision. When an inspector identifies an unregistered entity, he immediately issues a decision stating the measures to be implemented by the unregistered entity.

Following the modification and amendment of the Law on inspection supervision, a new form of supervision has been introduced, called covert shopping. It represents a specific method of collecting evidence in a case of a reasonable suspicion that a person operates as an unregistered entity or does not issue invoices and is applied if the necessary evidence cannot be provided or would be significantly more difficult to be provided in any other way. This form of inspection supervision is carried out without prior notification and presenting to the supervised entity the official identification document and inspection order. However, although the order is not delivered to the supervised entity, it should include the explanation of a reasonable suspicion and why by using other proving actions necessary evidence may not be produced, collected or secured, of why would that be significantly more difficult. This method represents an essential deviation from the general procedural arrangement of inspection supervision since the inspector without official identification covertly collects evidence and identifies himself and produces the order for supervision when he completes covert shopping (Martinovic, 2018, p. 1728). This method represents a specific type of evidence collecting and is used only in situations when the evidence cannot be obtained in any other way. Covert shopping remains a powerful instrument in inspection supervision used by many inspection bodies, including tax inspectors, for the purpose of countering shadow economy.

Inspection supervision in tax control

Inspection supervision is a procedure governed by a specific law which is, in case of tax procedure, applied based on the principle of subsidiarity. The provisions of the Law on inspection supervision are not necessarily applied to tax inspection since the scope of supervision, as well as the restrictions, powers, rights and obligations of its participants are defined by a specific law. Since the specific law supersedes the general law, harmonization process has been foreseen to take place within the timeframe of one year, in order to ensure the uniformity with the Law on tax procedure and tax administration. The provisions of the Law on inspection supervision regulate issues common to all inspection bodies which contributes to work rationalization and decrease of norms; however, more or less specific activities of individual inspection bodies are regulated by specific laws.

The aim of tax bodies is to ensure compliance with tax laws and improve services offered to taxpayers Better understanding of their clients' motives and opinion related to taxation policy can enhance the efficacy of tax bodies (Hauptman, Horvat, Korez-Vide, 2014, p. 482). In its work, tax inspection first applies the Law on tax procedure and tax administration, then the Law on inspection supervision and, finally, the Law on general administrative procedure.

Tax control is conducted on the basis of an annual plan or extraordinary plan, passed by the Tax Administration director, which is based on the assessment of tax relevance and tax risk of taxpayers ("Official Gazette of the Republic of Serbia" no. 80/02...144/20, Law on tax procedure and tax administration, Article 118). The criteria that may be used for risk assessment are the type of business, turnover, the results of previous controls, the change of business seat, punctuality in filing tax forms, etc. It is more difficult to assess the risk of newly registered taxpayers since there are no sufficient information on their business activities in the first year of doing business, but they are not generally considered to be higher risk taxpayers. Regular control is conducted according to the annual plan passed by the Tax Administration director and the inspection body has to publish it on its web page. Operational plans for regular controls are made and control orders are issued on the basis of the annual plan. Extraordinary tax control is conducted if there is a reasonable suspicion of non-compliance with tax laws, or high risk of tax evasion.

Preventive action of tax inspection includes undertaking counselling visits aimed at making taxpayers aware of their tax obligations. This practice is predominantly introduced for micro, small and middle size enterprises and is mostly aimed at encouraging willing compliance with tax regulations among this kind of taxpayers.

The tax control procedure commences by delivering a notice to the taxpayer inviting him to participate in the procedure and produce requested explanation and documentation, while prior notification on upcoming tax control is not mandatory. Invitation and notification are different forms of the same legal institute and, in this case, notification represents a specific form of invitation and the invitation to participate in the tax control is a specific type of notification according to the Law on inspection supervision. The tax inspector may also conduct tax control based on the issued order which is delivered to the taxpayer prior to conducting the tax control. The two laws foresee different methods of delivering this order. In the tax procedure it is considered

delivered if it is served to the taxpayer's employee if it is a legal person, but if the taxpayer is a natural person or entrepreneur, if it is served to him directly or to an adult member of his household, or to entrepreneur's employee. In case these persons refuse to be served, the order shall be deemed served if the delivery official makes an official note of the refusal. Based on the Law on inspection supervision, if the supervised entity refuses the serving of the inspection supervision order, it is deemed that the inspection supervision commences by presenting the order and reading its contents to the supervised entity, while in case of unregistered entity, no order is required to be delivered to initiate an inspection supervision.

Tax control lasts as long as it is necessary to determine whether a taxpayer fulfils its obligations foreseen by the tax law and other related regulations, but its planned duration needs to be included in the order. If, after the examination of documentation and other data, the tax inspector decides that he needs more evidence for establishing the state of facts, he will conduct supplementary inspection supervision within 30 days from the date of completing the regular or extraordinary control. It is the taxpayer's obligation to participate in the tax control procedure, either directly or via its tax attorney and not responding to the invitation will not delay the commencement of the tax control procedure. Tax inspector may request orally from the taxpayer's employees to produce required data and documents and they have to make them available to the inspector. In case several inspection bodies perform an inspection supervision jointly, the supervised entity may refuse to provide certain data to an inspector during the supervision if they have already been given to another inspector participating in the same supervision, or if they have already been the subject of previously conducted supervisions, unless meanwhile they have changed. This issue has been regulated by the Law on tax procedure and tax administration, specifically to include misdemeanor sanctions in case of failing to provide requested information and evidence. Of course, it should be mentioned that the participation of the taxpayer (supervised entity) in this procedure is not only its obligation, but also its right as it is foreseen in both laws. If during the tax control an inspector identifies irregularities, he has to include them into the minutes. The taxpayer may express its objections to the minutes within eight days, while the inspector has five days to respond to them and prepare supplementary minutes. The supplementary minutes may not be objected to and the tax body will proceed with issuing a decision. In the inspection supervision procedure, the supervised entity has five days to state its objections to the minutes. After that, the inspector reviews them and decides whether there is a need for a supplementary inspection supervision, based on which supplementary minutes are prepared to which an objection may not be made. The tax body shall issue a decision within 60 days from the day of receiving the minutes or supplementary minutes on conducted control. The decision shall order the taxpayer to eliminate established violations of law or irregularities by filing a tax order or, in case of unregistered entities, the decision shall establish their tax obligation. In the inspection supervision procedure, it is the inspector who points to the violation of laws and irregularities of the supervised entity and proposes or issues measures for their elimination within the specified timeframeand includes them into the minutes of the inspection supervision. However, the tax control minutes cannot include the proposed and issued measures. Instead, based on the minutes, a decision is made ordering the taxpayer to implement them.

The provisions of the Law on inspection supervision are not applied on the tax procedure cases when the supervised entity has undertaken measures and actions aimed at eliminating the identified irregularities and therefore, the inspector will not initiate misdemeanor sanctions or issue a misdemeanor order. The specific law foresees that the tax body may not file a motion initiating a misdemeanor proceeding if the taxpayer on its own initiative and before the commencement of the tax control, reports the omissions it has made and pays the tax owed, along with the incurred interest rate, within specified timeframe.

Although Tax Administration is the part of the Ministry of Finance, its involvement in developing tax policy is not sufficient. Laws interpretation and decision making are in the exclusive jurisdiction of the Ministry of Finance and, therefore, the recommendations of Tax Administration on tax treatments often come late which contributes to spreading uncertainty among taxpayers. (Krstic, G., et al., 2013, p. 96). Some countries have a developed mechanism of previously issued tax guidelines which are binding for taxpayers who seek them before filing their tax forms and are considered to be one of the principles of acting in good faith (Andjelkovic, 2016, p. 167-168). The by-laws governing the application of regulations (opinions, explanations, guidelines) issued by the minister in charge of financial affairs, or the person he authorizes to act on his behalf, are published on the web pages of the Ministry of Finance and Tax Administration and are binding for all tax departments. According to the Law on inspection supervision, the by-law governing the application of regulations is issued and published on web page by the inspection upon its own initiative or upon the request of a natural or legal person within 30 days deadline ("Official Gazette of the Republic of Serbia" no. 35/15, 44/18, 95/18, Law on inspection supervision, Article 31). It represents a form of a professional and counselling support and the supervised entity who acted according to its provisions may not be issued punitive measures.

Coordination of tax administration and other inspection supervision bodies - a step forward in countering shadow economy

The synergy obtained by combining general mechanisms of inspection supervision and tax control instruments is particularly evident in domain of countering various transactions of shadow economy, which in the widest context include all forms of " the emigration from established work methods" (Stütsel, 1980, p. 453). During the entire transition period of domestic economic system, shadow economy has topped the list of burning issues of national economy whose consequences are seen in economic and financial spheres and whose possible solutions are, by rule, dependent on current political conditions.

Tax control activities and a numerous forms of inspection supervision performed by different public bodies provide a realistic assessment of the extent of shadow economy as a whole, as well as of the "neuralgic" segments of the informal market and at the same time represent the major operative instrument for returning them into legal flows. Partial attempts aimed at inventing effective mechanisms against economic transactions in the "grey zone", which were exclusively based on intensifying *ad hoc* control measures of Tax Administration, have shown that an insufficiently comprehensive

approach to eliminating this phenomenon may result not only in the absence of expected results, but in considerable counter effects, as well. Meager outcomes of the "surface treatment" of the problem with shadow economy justify the conclusion that looking deeper into the problem of shadow economic flows would require not only political will, as a general precondition, but also: 1) adoption of a general legal framework and vertical coordination in planning public policy goals and the methods of their realization (the organization of the general planning system in domain of public policy); 2) creation of realistic and comprehensive strategic (mid and long term) plans of institutional activities with underlined models of connecting different control (preventive and repressive) mechanisms used for identifying undesired activities and 3) existence of detailed operative action plans which clearly mark boundaries between the jurisdiction of individual organizations.

As of 2015, the Republic of Serbia started to fulfill general preconditions for systematic countering the ballast of informal economy, although in an odd timeline. As a result of the coordinated analyses performed by a number of actors from public and non-government sectors, in 2015 the Government of the Republic of Serbia passed a National program for countering shadow economy ("Official Gazette RS", no. 110/15), which could be considered as a legally rather comprehensive and policy-wise detailed framework for strategic countering the socio-economic causes of this phenomenon. However, the outset handicap of this framework (revised in 2019), which to a certain extent has affected its successful implementation, lies in the fact that until 2018 our country had no general legal framework for public system policy management which was one of main causes of a chaos in developing basic strategic and operative directions for countering shadow economy. The long-awaited adoption of the Law on planning system of the Republic of Serbia ("Official Gazette of RS", no. 30/18) created the first preconditions for coherent planning of public policy in a structural sense (connecting horizontal and vertical planning flows), as well as in the context of connecting timeline planning coordinates in public sector (harmonization of short term goals with mid and long term public policy goals).

From the perspective of general public, the empirical research has led to a clear conclusion that citizens generally believe that ill-defined and blurred boundaries between the jurisdictions of bodies performing inspection supervision are mostly the result of the absence of coordination in their work (Milosavljevic, Nikolic, 2014, p. 50), which is a vital precondition of effective institutional fight with shadow economy. The need for coordination of the activities of public bodies is highlighted in the Law on inspection supervision in a more general context, while it is more closely defined in the Law on planning system. This law imposes the obligation on the Government of the Republic of Serbia to establish a specific public body – *the Coordinating Committee for inspection supervision* in charge of the harmonization of inspection supervision plans and the work of inspection bodies, as well as of the exchange of information obtained during the performance of the inspection. Hence, it is expected that organizational "remoteness" between Serbian Tax Administration and other bodies performing inspection supervision will be considerably reduced in future, particularly in the fields important for countering shadow economy. These cooperation possibilities are further expended by the fact that the scope of the activities of the Coordinating Committee for inspection supervision is operationally divided among work groups in charge of specific fields, - in the context of

countering shadow economy, the most significant being the work group for countering informal labor and the work groups for the control of tourism and hospitality, transport of goods and passengers and the work of non-government organizations. By including a large number of Tax Administration representatives, some of them even being high ranking officials, in the work of the most Coordinating Committees work groups, the forms of jointly coordinated actions of Tax Administration and other inspection bodies have been raised to a considerably higher level, with particular focus being placed on the activities aimed at eliminating black market labor practices.

In addition to legislative shaping of the general system of public policy planning, the efficient demolition of the shadow economy "fortress" also requires a precise allocation of institutional responsibilities for achieving this aim, with the acknowledgement of the fact that the overlapping of jurisdictions of the state bodies performing the tasks of inspection supervision should contribute to their more efficient work and not to blurring lines of responsibility. In a general sense, delineation of the jurisdiction "zones" of the Tax Administration and other administrative bodies performing the tasks of inspection supervision is to a great extent based on the trends of shadow economy. High level of tacit systematic tolerance of various models of illegal activities of business entities represents fertile ground for *unregistered shadow economy* thriving, which is basically considered as permitted economic activity but entirely outside the control mechanisms of public bodies. Facing this form of shadow economy manifestation, the operative capacity of Serbian Tax Administration remains rather limited by the underlined jurisdictions of other administrative bodies (before all, the labor inspection and, to a less extent, the market inspection departments) leading the process of transforming the unregistered economy into "visible" economic transactions. On the other hand, the possibilities of Tax Administration to tackle, in operative sense, the illegal activities of business entities are increased in situations when they are manifested in the form of *illegal shadow economy.* This manifestation of shadow economy assumes illegal activities the taxpayers resort to in performing their *registered* business (Feige, 2007, P. 17), which in practice is more suitable for activating standard procedural instruments of tax control.

Conclusion

Although the Law on inspection supervision foresees the process of harmonization with specific laws, the tax control procedure has not sustained significant changes. Specific laws do not regulate the matter of inspection supervision in general; however, when a specific inspection control is required, as in case of tax inspection, specific laws provide different legal solutions. Tax control is a very important function which should not be understood as an act of mistrust, but rather as an act of accountability. The method and procedure of performing tax control are aimed at enhancing taxpayers' discipline and awareness of their contribution to public revenue, as well as at identifying those taxpayers who intentionally and purposely violate laws by avoiding to report income and pay tax. The legality of business activities is ensured by inspection supervision, mostly by its preventive function, which was the purpose of the law adopted in 2015. It is believed that it is more efficient to undertake measures aimed at preventing irregularities than to implement repressive action when they occur. However, in the Republic of Serbia, the preventive function of tax control is less

applicable, while the repressive measures seemed to be more effective for Serbian taxpayers. This can be confirmed by the fact that the law defines taxpayer's obligations, as well as the sanctions for the obligations that have not been fulfilled. In future, more attention should be paid to the application of preventive measures in order to make tax control more acceptable as a form of positive cooperation between Tax Administration and taxpayers.

The provisions which regulate the inspection supervision of unregistered entities foresee some exceptions from the general supervision regime. When dealing with this kind of entities, it is important that the inspection body which has identified an unregistered business activity is also authorized to pass a decision with proposed measures and inform the tax inspection about their existence. In this way, tax body will be able to register a new taxpayer and reduce the number of illegal business entities. It is important to note that more intensive inspection supervision will not contribute to eliminating the shadow economy, but would definitely assist in channeling illegal activities into legal economic flows. The introduction of covert shopping as a new form of inspection supervision shortens the procedure and makes it easier to obtain necessary evidence that the entity is not registered or that it does not issue invoices. This sends a clear message to all entities who operate in a " grey zone" that their illegal activities will be prosecuted.

All inspection bodies should maintain their controlling role, but the preventive measures seem to be far more efficient for creating a favorable business ambient. Therefore, they should be more frequently applied in work with taxpayers and then, if necessary, include corrective and repressive measures. In this way the tax control would not be viewed as a negative undertaking since the primary goal is to make business entities understand the advantages of legal operations. However, the beginning of the application of the systematic framework of inspection supervision cannot change the fact that in the burning fields of shadow economy, the current arrangement of division of jurisdictions between Tax Administration and other bodies performing inspection supervision does not take into account the actual capacity of these bodies to truly solve the problem they are institutionally focused on. The attempts to make improvements in this field call for the need to reevaluate institutional by-laws regulating the jurisdictions of separate inspection bodies. In this context, it is important to analyze the possibility to expend the scope of jurisdiction of Tax Administration related to the activities which are directly or indirectly aimed at increasing the economic substance generated in the shadow economy that will be subject to taxation. In this way, national mechanisms of tax control would not be so far away from the "sources" of illegal tax evasions which business entities resort to, as it is the case with the current institutional arrangement.

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CORPORATE BONDS AS A WAY OF FINANCING COMPANIES IN THE REPUBLIC OF SERBIA[3]

Abstract

The security of sources of financing is of undoubted importance for the continuous and sustainable operation of economic entities, which is a long-term interest of persons interested in the operation of economic entities. In the structure of possible sources of financing of economic entities, corporate bonds are of great importance everywhere in the world, and their application in the Republic of Serbia could bring a great contribution to the domestic economy. Corporate bonds are debt obligations issued by corporation to debt refinansing, improvements, expansions or acquisitions. The bondholders are the issuer's creditors and for the money invested in the company, they expect earnings. The main goal of this paper is to consider the conditions and importance of issuing corporate bonds by medium and large companies in Serbia and the advantage over other sources of financing. Based on the obtained research results, it can be concluded that the issuance of bonds is a good alternative to other sources of financing the company's operations, but the corporate bond market in Serbia is in the development phase. Bond issuers with listing on the regulated market of the Belgrade Stock Exchange include, in addition to the state, only certain commercial banks and international financial organizations.

Keywords: Bonds, securities, corporate bonds, securities market, issuer financing.

***Jel classification:** Q14*

KORPORATIVNE OBVEZNICE KAO NAČIN FINANSIRANJA PRIVREDNIH DRUŠTAVA U REPUBLICI SRBIJI

Apstrakt

Sigurnost izvora finansiranja ima nesumnjiv značaj za kontinuirano i održivo poslovanje privrednih subjekata, što predstavlja dugoročni interes lica zainteresovanih za poslovanje privrednih subjekata. U strukturi mogućih izvora finansiranja privrednih subjekata, korporativne obveznice imaju veliki značaj svuda u svetu, a njihova primena u Republici Srbiji mogla bi doneti veliki doprinos

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domaćoj privredi. Corporate bonds are debt obligations issued by corporation to debt refinansing, improvements, expansions or acquisitions. Imaoci obveznica su poverioci izdavaoca i za uloženi novac u kompaniju, očekuju zaradu. Osnovni cilj ovog rada je da razmotri uslove i značaj emitovanja korporativnih obveznica od strane srednjih i velikih preduzeća u Srbiji i prednost u odnosu na druge izvore finansiranja. Na osnovu dobijenih rezultatima istraživanja, može se zaključiti da izdavanje obveznica predstavlja dobru alternativu drugim izvorima finanisranja poslovanja preduzeća, ali je tržište korporativnih obveznica u Srbiji u fazi razvoja. Izdavaoci obveznica sa listingom na regulisanom tržištu Beogradske berze uključuju osim države, samo pojedine poslovne banke i međunarodne finansijske organizacije.

Ključne reči: Obveznice, hartije od vrednosti, korporativne obveznice, tržište hartija od vrednosti, finansiranje izdavaoca.

Intraduction

Every company during its financial activity must provide itself with the necessary sources of financing. Also, in the course of business, companies, regardless of profile, plan their development and growth, through the implementation of certain investment projects. However, what will be achieved from what is planned will depend, above all, on the available and available to the issuer, primarily external, financial resources (Rajnović, Subić, Zakić, 2016), in the growth phase or the need to downsize the company. Generally speaking, the provision of additional funds can be based on two forms of financing - financing with own or other people's (borrowed) funds, or partly with own and partly borrowed funds, which in practice is the most common case (Rajnović, Subić, Zakić, 2016).

In this paper, the authors want to show the advantages of financing companies by issuing bonds:

- by opting for external financing, the company can obtain additional funds by issuing bonds, under more favorable conditions, if it meets the conditions.
- on the other hand, the purchase of corporate bonds brings the investor a guaranteed, certain annual income.
- at the same time, the trade in debt securities significantly accelerates the development of the securities market, without which the securities market cannot be developed.

A bond is a debt security of a certain nominal value, by which its issuer undertakes to pay the investor, ie. the person by his order or bearer, the amount stated on it, with a certain interest on the due date of the bond for collection, ie. to pay the amount of annuity coupons (Fabozzi, Fabozzi, 1989). In the formal legal sense, the bond has three important features:

- nominal amount of debt, ie principal owed by the issuer,
- maturity date, the exact date when the borrowed amount is returned to the bondholder,
- nominal or coupon interest rate, as the yield of the bondholder (Šoškić, Živković, 2006).

Bonds are, as a rule, long-term securities with a maturity of more than one year, with the purpose of identical issue of shares, ie. for the purpose of raising financial funds for the needs of the issuer. The bondholder is the issuer's creditor and has no management rights in the issuer, unless it owns bonds that can be converted into the issuer's share capital based on the will of the bondholder or bonds that are convertible into shares automatically (Giyon, 1984). The shares acquired through the conversion also give the owner personal management rights. The claim of the bondholder against the issuer is, as a rule, fixed and is related to the nominal value of the bond and the determined amount of interest. (Vasiljević, 1999). The holder of the bond secured by the guarantee does not bear any risk, and if it is a bond that is not secured the guarantee bears the risk of insolvency and bankruptcy of the bond issuer. The bondholder's claim is at the same time the issuer's debt, the bondholder's claim can be secured by a guarantee in which case it does not represent risk capital (Rodiere-Opetit, Hamel, 1984).

The motives of bond investors are generally twofold:

- Collection of income paid by the issuer and thus return on investment with earnings, in a larger amount than the one invested,
- Increasing the price of the bond on the market and thus gaining additional income through the secondary sale of securities on the market, at a price higher than the purchased one (Jovanović, 2006).

Investor motives often depend on the personality of the investor. Investors who are willing to invest only because of the stability of the price of securities and income (hedgers) buy mainly the so-called Secure securities. These are securities of safe and stable large issuers that have a successful and long business, come from stable markets and a good reputation, such as long-term government bonds or first-class large companies, which usually pay lower but secure interest rates compared to other issuers that pay more. Interest is higher and the investment risk is higher. In contrast, investors who want to acquire wealth quickly, with a willingness to take risks, often due to falling exchange rates, buy securities that "promise" rapid and significant growth in income, prices and capital gains (risk investors, speculators). Investments in such securities are significantly riskier than investments in safe bonds due to various internal and external influences, sudden changes in technology development or depletion of available natural resources (eg. oil companies) (Jovanović, 2006).

Bonds can be used as a means of payment in the circulation of goods and services, a means of securing payment, a means of securing loans, etc.

Corporate bonds

Corporate bonds are securities issued by companies, which oblige them to pay a defined coupon as well as the main debt on the due date of the bond within a predetermined period, on a precisely determined day. Corporate bonds are debt securities and also represent the means of financing the company's operations in order to raise additional funds for various reasons, such as financing current operations, mergers and acquisitions, or to expand business, refinansing debt (O'Sullivan, Sheffrin, Steven, 2003). Corporate bonds are issued through a public offering of bonds on the capital market and are purchased

by various investors, institutional investors, including banks, insurance companies, pension funds, investment funds, international financial institutions and others.

The bond market plays a very important role in the economies of developed countries, as a mechanism of mutual relations of the issuer who is the user of capital and the buyer of bonds, investors. Corporate bonds are very important for large and medium-sized enterprises and can significantly contribute to improving their economic position.

Protection of bondholders

In many legal systems around the world, bond investors are provided with special protection measures, although they essentially have the status of a creditor, like all other lenders. The reason for this is the fact, that the corporate bond is burdened with credit risk (de risk), which at least theoretically does not burden the bonds issued by the state, because investing in government bonds is usually the safest, because the state cannot go bankrupt and is the issuer, at the same time the issuer of money. This is the essential difference between these two large groups of bonds. Compared to other instruments issued by corporations, the bond gives priority to the collection of receivables over the owners of ordinary and preferred shares.

The existence of credit risk and the level of its representation, causes modifications in the procedure of issuing corporate bonds in relation to government ones. The most significant modifications are the following:

- access to the bond issue market is more complex in regulatory terms,
- a high-risk issuer may, in order to provide security to bond investors, offer collateral in the event of default on its payment obligations. This can be the real assets of the issuer, which can be sold and used to cover liabilities, a guarantee of a third party (usually a bank) or securities owned by the issuer. This is a collateral of bonds, which, in that case, are allocated to a special group of collateral-secured bonds (collateral, trust, bonds). Certainly, their rating is of great importance for the security of investments in corporate bonds (Šoškić, Živković, 2006).

The rights of bondholders, of all or some types, are regulated in the legislation of countries due to the special sensitivity and complex activities of large investors, due to the need for enhanced protection of a large number of small and ignorant investors and special measures of supervisory authorities regulating the securities market, strict conditions and reduction of bond issue costs intended exclusively for professional investors (Jovanović, 2006). At the same time, in the course of the company's operations, there may be a need to change the established rights of bondholders (eg. reduction of interest rates, changes in the depreciation plan).

Although according to the rules of contract law, changing the established conditions that were valid at the time of issuing the bond, would not be in accordance with the law without the consent of the bondholder, a large number of experts believe that it would be necessary to have certain special rules that would allow bondholders to be organized in a similar way as shareholders, when it comes to expressing their will, and especially when it comes to protecting their collective, common rights. Serbian law, for now, there are no such regulations in this matter (Vasiljević, 1999).

Unlike our country, in French law bondholders organize a specific "civil society", which are legal entities, governing bodies, an assembly that can make decisions by a prescribed majority of votes, which are determined by the nominal value of the bond and the decisions are binding on each individual holder of bonds. Bondholders who are at the same time shareholders with at least 10% of the issuer's capital are prohibited from participating in the General Meeting. The Assembly of bondholders gives its opinion to the Assembly of Shareholders of the issuer on the merger of the issuer, change of activity, change of legal form, issue of bonds that give greater rights than they have. In this case, the scope of the decision of the assembly of bondholders is limited, but not accepting such decisions of the issuer does not prevent their adoption, but in that case the issuer is obliged to pay the claims of bondholders who request it within a certain period. But the shareholders 'assembly cannot, without the consent of the bondholders' assembly, make decisions that change their bond rights. In any case, the decisions of the general meeting of bondholders and shareholders of the issuer cannot increase liabilities from already issued bonds, force the conversion of bonds into shares or determine different rights of bondholders of the same series (Loi sur les societas commerciales). But more recently, French theory has increasingly argued that such provisions are unnecessary, as bond buyers are increasingly institutional investors, who are professional in the securities business, economically more powerful than the issuer and in a position to create rules (Guyon , 1984).

American and English law use a trust deed for these cases, and a trustee is mainly a trust company, which is placed between the owner of the capital and the owner of the bond, with the obligation to act as a fiduciary. Since he must take care of the interests of the bonds, the trustee protects their interests with a special mortgage on the issuer's property and a floating pledge on the rest of the property, which gives great security to both professional investors and dispersed bondholders and the issuer's investor confidence and ability to raise capital. With this approach, it is possible to impose on the issuer the obligation to inform bondholders about important issues in the issuer's business. In these systems, there is a bondholders' assembly that decides by a prescribed majority of bondholders, whose decisions are binding on all bondholders and is authorized to convene a trustee when it deems it necessary, and in the event of certain important events, the trustee is obliged to convene an assembly, informing bondholders and making timely decisions (Boyle, Birds, Company Law, 1995).

Trading in these corporate bonds is performed on stock exchanges and on the over-the-counter market, which depends on the quality, ie. the rating of the bonds. As a rule, high quality bonds are traded on stock exchanges.

Corporate bonds are often issued as callable bonds, with a call option, which allows the issuer to redeem the bond at a fixed price before maturity. The issuer will take advantage of this if the company issues a bond with a high coupon rate in circumstances where there are high market interest rates, and then there is a fall in the general level of interest rates. In these circumstances, bonds with high coupon rates are withdrawn, and payment is made by a new issue with lower coupon rates. The presence of this clause is a source of a special type of risk that can be designated as a risk of revocation. The call clause reduces the market value of the bond. The call or bond revocation price is, as a rule, initially set at a level close to the par value and one-year coupon yield. The recall price decreases over time, gradually reaching a par value. In the case of revocable bonds,

the initial period in which the bond cannot be revoked is usually defined. Such bonds are known as deffered callable bonds (Šoškić, Živković, 2006).

In contrast, the so-called. put table bonds, give this option to the bondholder. If the coupon rate of the bond exceeds the current market yield, it is logical to expect the owner to hold the bond in his portfolio. Otherwise, it is better to use the path option.

Companies can issue convertible bonds. It is a type of bond that gives the owner the opportunity to replace the bond with a predetermined number of shares of the issuer (Law on Companies of the Republic of Serbia). The conversion factor determines the number of shares for which the bonds can be exchanged, which gives the holder a significant advantage due to which these bonds have a lower coupon rate than standard corporate bonds. The promised yield to maturity of the bond is lower compared to non-convertible bonds, but at the same time, the actual yield on the convertible bond may be higher than the promised yield to maturity, if converting into shares becomes profitable (Vasiljević, 2012).

Floating rate bonds and notes were created in early 1974. They arose due to the need to protect investors in the event of rising inflation. These bonds generate interest payments that are tied to a specific current market rate of return. The main risk of this type of bond is the variability of the issuer's creditworthiness. If the issuer's financial condition deteriorates, the market will demand a higher return than offered. In that case, the bond price will fall. This means that the coupon rate is adjusted for changes in the general level of market interest rates, but not for the financial performance of the issuer.

Metodology and data sources

Information and data used for reserch in this paper, which refer to the possibilities of issuing corporate bonds as a way of financing the business of companies ..... were obtained during a detailed interview with members of the executive board of directors of a rating company from Belgrade, very experienced in providing consulting services for the assessment of the quality of securities in Serbia, researching the securities market for the assessment of business results, predictability of future cash flows and the amount of indebtedness of companies and the issuance of securities. Additional data related to foreign securities markets are the result of many years of research by authors, relevant foreign scientific and professional literature, foreign institutions that play a role in capital market operations, analysis of practical examples and publicly available information via the Internet.

The main goal of this paper is to show the potential of economic effect that arises from financing companies by issuing debt securities. The research was conducted on the Serbian market for the last two years, including the issuance of corporate bonds by a medium-sized company from Belgrade.

The economic justification for the issue of corporate bonds was determined on the basis of lower costs of selling debt securities, obtaining higher amounts of funds from a large number of buyers and in the short term.

The success of the bond issue can undoubtedly be assumed based on the reputation that the issuer has in the environment where it operates and beyond, which means the length of the issuer's business, business in the previous period, introduced good corporate governance and socially responsible business of the issuer.

Results with discussion

High grade and high yield of corporate bonds

According to credit rating, corporate bonds are divided into two main categories high grade (also called investment grade) and high yield (also called non-investment grade, speculative grade, or junk bonds). Bonds rated AAA, AA, A, and BBB are high grade, while bonds rated BB and below are high yield (Rose, Marquis, 2006). High grade and high yield bonds are traded by different trading markets and held by different investors. Given that corporate bonds have a higher credit risk than government bonds, it is logical to expect that investing in corporate bonds will generate higher earnings, but there is also a very differentiated structure among issuing companies regarding investment risk and return, which refers to the following:

- one type of risk is credit risk that may arise if the issuer fails to meet its obligations. If the credit risk is higher, the bond interest rate is higher and the price is lower. With government bonds, this risk does not exist,
- interest rate risk is the possibility of changing the interest rate on the market that determines the price of bonds in secondary turnover. The change in interest rates inversely affects the change in the price of bonds on the market,
- liquidity risk is the probability that may not be a continuous secondary market for a bond, thus leaving an investor with difficulty in selling at, or even near to, a fair price. This particular risk could become more severe in developing markets (Vuong, Tran, 2010).
- supply risk, more heavy issuance of new bonds similar to the one already issued may reduce their prices.
- inflation risk is the probability that there will be inflation that was not taken into account when forming the nominal interest rate of the bond. Inflation reduces the real value of future fixed cash flows and can reduce prices immediately.
- tax change risk, unanticipated changes in taxation may adversely impact the value of a bond to investors and consequently its market value.
- There is also a risk of changes in foreign exchange rates that arise when the issuer undertakes to make payments in one currency and the buyer of a corporate bond cannot know with certainty what the cash flow will be expressed in another currency.

Characteristics of the corporate bond market in Serbia

The capital market in the Republic of Serbia has a high degree of development in the field of government debt securities, government bonds. Government bonds are traded on the Belgrade Stock Exchange using the continuous method and are listed on the A Listing, as the highest quality securities on the stock exchange. The Republic of Serbia successfully issues bonds denominated in dinars and euros with a maturity of up to 20 years, whose buyers are domestic and foreign institutional investors. In contrast, the corporate bond market is under development and the issuers of bonds listed on the regulated market of the Belgrade Stock Exchange are some commercial banks (eg Erste Bank bonds, worth RSD 3.5 billion, issued with a maturity of 3 years) and several private

companies. As of 2020, there are a very small number of corporate bond issuers on the domestic market, a total of eight bond issuers, of which one is a bank and several companies (http://www.crhov.rs/?Opcija=5&TipHartije=kratkorocne).

During the state of emergency caused by COVID-19 in 2020, the Government of Serbia, as part of a package of measures to mitigate the economic effects of the pandemic, adopted a Decree on the procedure for issuing debt securities, with the aim of encouraging the use of an additional source of capital to provide funds for business and investment projects in the coming period, by issuing bonds. The adopted rules simplify the procedure of issuing bonds during the state of emergency and in a certain period after that and, at the same time, clearly show the interest of relevant state stakeholders to encourage the way of financing companies with bonds, but that did not contribute to the issuance of new bonds and thus to the financing of the company's operations in that way in Serbia.

The bond market in Serbia has special specifics:

- low liquidity, weak demand and high risks, instability of the entire securities market and simplified structure of financial instruments,
- high concentration of ownership in the hands of individual new capitalists, geographically dominated by the capital and regional centers,
- less transparency and effectiveness of the market, a higher degree of insider information, various forms of market fairness violations and thus weaker protection of investors' rights,
- a large role of foreign investors, without adequate reciprocity and a very weak role of the population as an investor,
- the role of the state is reduced to the creation of laws and rules, supervision over compliance with the law and transparency of information (Janković, 2006,).
- a significant contribution to strengthening liquidity and developing the corporate bond market in Serbia would be the possible participation of the National Bank of Serbia in the purchase of bonds on the secondary market (with a maximum maturity of up to 5 years and a minimum credit rating of B).

Financing companies by issuing bonds

By issuing corporate bonds directly to investors, the role of a commercial bank is actually omitted, which is why financing is often cheaper. In addition, a bond is a more useful instrument than a bank loan because a company is spared negotiating with more creditors if it borrows larger amounts - a bond is the only instrument that can borrow large amounts of capital from a large number of investors without special negotiations between the company and investors.

Also, unlike a classic loan, a debt financial instrument can be bought or sold on the secondary market. In fact, a bond is a loan that is intended to be traded on the market and earn.

The advantage of bonds in relation to bank loans is that annual installments are not paid, but interest together with the main debt is paid at the end of the repayment period, which frees up the cash flow of companies.

When issuing bonds, the issuer determines the conditions related to debt structuring and the amount of interest, which in the case of a bank loan is determined by the

commercial bank in accordance with its internal rules and law. If he wants to raise money by issuing bonds, the issuer must take care to set realistic conditions related to debt and interest structuring, so that the investor was interested in buying bonds, because from the sale of bonds, both parties, the issuer and the buyer expect to benefit (Wood, 1995). The maturity of the main debt and the interest rate of a corporate bond are determined based on the creditworthiness of the issuer (business results, predictability of future cash flows and indebtedness), as well as by comparing the yields of comparable bonds and / or as a margin in relation to the known yield of government bonds sold on the market.

Differences in the realization of bank loans and corporate bonds: (https://home.kpmg/rs/en/home/insights/2020/04/korporativne-obveznice-novi-izvor-finansiranja-)

Bank loans	**Corporate bonds**
Financial resources are provided by one or more banks	The funds are provided by the company by issuing bonds
Financing terms are agreed between the contracting parties in accordance with the rules of the bank	The issue is realized by issuing bonds through a public offer for subscription and purchase of bonds
There is no developed system of credit trading on the secondary market	The corporate bond is traded on the secondary market
There is a depreciation plan for the sale	Payment from the bond is typically a lump sum on the maturity date

Bond rating

Since investors buy bonds to make money, their goal is to invest in securities of those issuers who will pay interest and main debt at the time the corporate bond matures and assuming the existence / non-existence or elimination of other risks. The investor often does not have enough professional knowledge and experience to assess the quality of the issuer's bonds and thus how much he can earn, which is professionally done by rating agencies, which are in fact legal entities authorized to give an opinion on the issuer's future ability to fully and timely perform its obligations under the bond, based on a predefined and practice-based ranking system (Law on the Securities Market and other financial instruments). When assessing the rating of the issuer, agencies are mostly based more on the analysis of the financial position of the issuer than on how attractive the issue is on the market. The existence of the issuer's rating accelerates the issue of bonds and its sale on the market, which is why issuers are willing to pay for the services of rating agencies, which can provide them with an active market for their bonds (Bodie, Kane, Marcus, 2004).

But rating agencies do not rate all types of bonds. Government bonds (tresuries) are not subject to quality assessment because they are considered to be of the highest quality securities as the government has many instruments with which it can possibly raise funds to settle its obligations (Vasiljević, 1997). Corporation bonds are most often, subject to analysis by rating agencies, because they carry the risk of default from the bond and possible bankruptcy. The analysis of the financial situation includes the calculation of the company's financial ratios (liquidity ratios, financial leverage, profitability ratios, etc.), but also the collection of data that could affect its economic position, as well as the terms of bond issues that may affect bond quality.

If the issuer provides collateral to ensure the payment of the obligation from the bond, or forms a repayment fund (sinking fund) from which the debt will be settled in case the company cannot fulfill that obligation, the rating agency determines the higher quality of the security. High-rated bonds are safer investments, but they carry low interest rates (risk and trade conditionality).

As mentioned above, the highest quality bonds are marked with the mark AAA, the lower rating is marked with a smaller number of letters A, and even lower with the following letters of the alphabet. In the process of collecting data for the assessment of the quality of emissions, there is usually a delay because new changes occur, so that investors cannot fully rely on the assessments of rating agencies.

Therefore, whether the issuer's shares will be attractive for purchase by investors, depends on the issuer's available capabilities, which are conditioned by the financial position and financial reputation of a given company in the area.

Financial position is assessed by (Subić, 2010):

- maintaining an adequate structure of financial resources and sources of financing of the issuer;
- acceptable capital structure from the point of view of equity and debt capital;
- ability to finance simple and extended reproduction works from the issuer's own funds.

Since the business of companies in Serbia is mainly based on private companies, open and competitive market, investments of bond buyers should be realized in a way that will ensure maximum efficiency of exploitation, ie. the highest possible level of effects per unit of invested funds (Rajnovic , Subić, Zakić, 2016).

The level of economic efficiency depends on the quantity and quality, the resources used, but also the results achieved. Economic efficiency represents the ratio of the obtained effects and the made investments or as the ratio of the made investments and the obtained effects (Rajnovic, Subić, Zakić, 2016).

The formulas for determining economic effectiveness are as follows (Românu, Vasilescu, 1993):

$$e = \frac{E}{\varepsilon} \rightarrow_{maximum} \quad \text{or} \quad e' = \frac{\varepsilon}{E} \rightarrow_{minimum}$$

where are they:

e and e' - economic efficiency;
E - obtained effects;
e - investments made.

Based on the first mathematical expression, the economic effect is determined, which is realized per unit of measure of investments made and which should be the maximum (Rajnovic, Subić, Zakić, 2016).

Based on the second mathematical expression, investments are determined that are realized per unit of measure of the obtained economic effects and which are satisfactory if they are minimal (Rajnovic, Subić, Zakić, 2016).

Making investment decisions, regardless of the business conditions, should be based on strict quantitative and qualitative criteria, which will ensure investment in the

most efficient businesses. Therefore, when deciding to buy corporate bonds, the investor must use adequate methods, techniques and models to assess the economic effectiveness of investments to ensure that its funds are invested in the right way and to achieve the best possible results(Rajnovic, Subić, Zakić, 2016) .

Conclusion

Financing of companies by issuing corporate bonds is undoubtedly of great importance not only for the issuer and the investor, but also for the development of the entire securities market. Therefore, but also because of the specifics of bonds, it is necessary to adequately organize and regulate the corporate bond market, which regulates who can be a participant in the bond market, under what conditions can participate in this contractual relationship - issuance and purchase of bonds, what are the costs of trade, whose interests should be protected and why.

Bond market regulation and legal certainty depend on a number of fundamental economic and legal factors, influencing market ideology, market development and coordination, legal rules and practices, which provide legal certainty for corporate bond market participants, market regulation, control and supervision of procedures. participants, transparency and equal access to information on the issuer's risks and the prices of securities, which may be the subject of trading.

In Serbia, an active state strategy is needed, primarily to encourage and then further develop the corporate bond market, with appropriate improvement of the legal framework, laws governing companies, corporate bond markets, risk reduction and a system of economic incentives for investors and other market participants. The ultimate goals are to attract investment in the real sector of the economy and to raise the level of legal certainty in the bond market.

It is clear that the issuance and trade of corporate bonds in Serbia has been neglected and that companies are currently not represented as issuers nor do they see advantages for financing through bond issues. It is difficult for them to find a guarantor of the emission, given the general uncertain economic situation. Also, due to such a risk, financing through bonds turns out to be more expensive than taking loans from commercial banks. Numerous joint stock companies also obtain long-term financing through recapitalizations, mainly from closed issues.

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