UDC 65 ISSN 0353-443X

YEAR LXVI SEPTEMBER - OCTOBER 2018

Ekonomika preduzeća

Serbian Association of Economists
Journal of Business Economics and Management

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UDC 65 ISSN 0353-443X

EP Ekonomika preduzeća

Journal of the Serbian Association of Economists and Serbian Association of Corporate Directors
Founded in 1947 in Belgrade
Year LXVI September-October
No. 5-6 Page 283-370
Publisher: Serbian Association of Economists
Editorial Office and Administration
Dobrinjska 11/1
Bulevar Mihajla Pupina 147
11000 Belgrade, Serbia
Phone: 011/264-49-80; 361-34-09
Fax: 011/362-96-89
Account No: 205-14935-97 Komercijalna banka
Web: www.ses.org.rs
E-mail: office@ses.org.rs

Printed in 200 copies
The journal is published four times a year

We begin this edition of *Ekonomika preduzeća* with business analytics. In the first paper in the *Organization and Management* section, a duo of professors, *T. Dobrodolac Šeregelj* and *J. Brdar* explore the usage of business analytics and forecasting in supply chain optimization in Serbian companies. The authors set an economic model for sales forecasting and procurement plan to prove that the company's goal can be achieved this way while avoiding excess inventory and missed sales. In the second paper in this section, *Z. Aničić* tested the preparedness for intrapreneurship of medium-sized and large companies in Serbia using the CEAI tool. The author demonstrates that, on average, preparedness of companies for corporate entrepreneurship is not high, which is mostly caused by the lack of top management support in encouraging, developing and implementing entrepreneurial ideas, as well as by excessive bureaucratization of work procedures that suppress employees' creativity and innovation.

In their paper in the *Accounting and Auditing* section, *M. Đorđević* and *T. Đukić* are trying to determine the position of internal audit in the corporate governance system in Serbia. The authors show that internal audit in Serbian companies remains under significant influence of the regulatory obligation of companies, origin of capital and number of employees.

The *Finance* section includes three papers. The first paper written by *M. Bisić* and *S. Ranđelović* analyzes the evolution of cigarette excise duties policy in the Western Balkan countries from 2007 to 2017 and estimates respective fiscal and smoking prevalence outcomes. The authors find that in most Western Balkan countries the surge in excise yield did not fully translate into rise in tax revenues, where only part of such underperformance is explained by decline in smoking incidence, while part could potentially be attributed to the expanding illicit market. Similarly to the paper published in 2014, in the second paper a quartet of young researchers, *M. Pjanić*, *N. Milenković*, *B. Kalaš*, and *V. Mirović*, tests profitability determinants of non-life insurance companies in Serbia in the 2010-2015 period. The authors show that the increase in premiums, debt ratio, operating costs and share of profit in total revenues have the greatest impact on profitability. The last paper in this section written by *S. Živković* and *Ž. Vojinović* explores the potential and state of digital banking in Serbia through a comparative analysis, focusing on current products and services in the market with a follow-up on the same type of trends in the region and the European Union.

The last paper in this edition belongs to the *Transition and Restructuring* section. A trio of authors, *D. Rajin*, *J. Tošić* and *T. Radojević*, support the hypothesis about the importance of economic cooperation for the development of regional economy in CEFTA countries and achieving better results using advantages of joint projects and access to third markets.

Prof. Dragan Đuričin, Editor in Chief

ORIGINAL SCIENTIFIC PAPER
UDK: 005.521:334.7(497.11)
658.7
DOI:10.5937/EKOPRE1806283D
Date of Receipt: March 29, 2018

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BUSINESS ANALYTICS AND FORECASTING FOR SUPPLY CHAIN OPTIMISATION IN SERBIAN COMPANIES

Poslovna analiza i predviđanje u funkciji optimizacije procesa upravljanja lancem snabdevanja u kompanijama Srbije

Abstract

Competition, technological innovations and the intensity of business changes are characteristics of modern-day business operations. Their complexity imposes demands for new policies and approaches in all business areas. In many companies, the procurement department as a business function has become a routine where they continue to maintain long-term business relationships with suppliers and other business partners. This type of policy is becoming unsustainable. The way for a company to survive is to focus on operational efficiency. While conducting the analysis of an oil industry company and its procurement department, we have set an economic model for sales forecasting and procurement plan. Development of computer technology and quantitative methods contributes to the quality of the supply chain. It also opens up new opportunities in business application, while requiring at the same time significant changes in business thinking patterns, especially considering the importance of information, their quantity and availability. In modern business, timely and accurate information and knowledge contained therein are becoming an important business resource and a platform for survival of the company. The aim of this paper is to create a new, i.e. added value, out of the existing information. By applying quantitative methods for business forecasting, we have optimised stock levels. By analysing monthly information on procurement, sales and stock quantities for a single product over a period of 5 years, we have compiled a procurement plan based on business forecasting. With adjusted optimisation we have created an opportunity to release the capital for other purposes and new investments. We achieved the company's goal, and avoided creating excess inventory and missed sales. In our business forecasting, we used Gretl statistical package for data analysis.

Keywords: *business forecasting, inventory management, supply chain management, modelling, optimisation.*

Sažetak

Konkurencija, tehnološke inovacije i intenzitet poslovnih promena su odlike savremenog poslovanja. Njihova kompleksnost postavlja zahteve za novim politikama i pristupima na svim poslovnim područjima. U mnogim kompanijama, nabavka kao poslovna funkcija postala je rutina u kojoj nastavljaju da se održavaju dugogodišnje poslovne veze sa dobavljačima i drugim poslovnim partnerima. Takva poslovna politika postaje neodrživa. Kako bi opstale u tržišnim uslovima, kompanije u fokus svog poslovanja postavljaju operativnu efikasnost. Analizom kompanije naftne industrije i njenog odeljenja nabavke, postavili smo ekonomski model za predviđanje prodaje i plan nabavke. Razvoj kompjuterske tehnologije i kvantitativnih metoda doprinosi kvalitetu rada lanca snabdevanja. Isto tako otvara nove mogućnosti u poslovnoj primeni, zahtevajući značajne promene u poslovnom razmišljanju s obzirom na značaj informacija, njihovu količinu i raspoloživost. U savremenom poslovanju, uz kapital i rad, pravovremene i tačne informacije, znanje koje je sadržano u njima, postaju značajan resurs poslovanja i platforma opstanka kompanije. Cilj ovog rada je da od postojećih informacija stvorimo novu – dodatnu vrednost. Primenom kvantitativnih metoda za predviđanje prodaje izvršena je optimizacija zaliha. Analizom mesečnih informacija o nabavci, prodaji i količini na zalihama jednog proizvoda (početno stanje) u vremenskom periodu za 5 godina, sastavlja se plan nabavke na osnovu ekonomskog predviđanja prodaje. Optimizacijom smo stvorili mogućnost za oslobađanje i primenu kapitala za druge namene i nove investicije. Ostvarili smo cilj kompanije i izbegli stvaranje prekomernih zaliha i propuštenih prodaja. U radu za ekonomska predviđanja prodaje koristili smo statistički paket za analizu podataka Gretl.

Ključne reči: *ekonomsko predviđanje, zalihe, optimizacija, upravljanje procesom nabavke, prodaja.*

Introduction

Business environment of companies on the market and the characteristics of modern business companies set serious competitive objectives with the aim of preserving and creating profit. In the past, the area of inventory management was often neglected, but today it is gaining an increasing importance. Inventory management is a key process of supply chain management, which implies a common understanding of all processes within the company, and represents the link between the manufacturer and customer demand. By sharing this information, we come to the objective of supply chain management, which is reflected in the control of optimal inventory levels that exist among all the organizations in the chain. With proper optimisation capital is released for other purposes and new investments. Computer technology contributes to the quality of the supply chain. Moreover, it opens up new opportunities in business applications, requiring significant changes in business thinking with regard to the importance of information, the quantity and availability. In modern business, alongside capital and labour, timely and accurate information and the knowledge contained therein are becoming an important business resource and a platform for survival of the company. The aim of this paper is to create a new, i.e. added value out of existing information. Through analysis of monthly information on acquisition, sales and the amount of stock of a product (baseline) over a period of 5 years, the acquisition plan is drawn up on the basis of economic forecasting sales. The forecasting we performed was based on two samples: the shorter sample, with data for the last 5 months, and the longer sample data, with sales forecast for the next 5 months. In the economic forecasts of sales, we used the statistical package for data analysis Gretl (Gretl software package).

Overview of relevant literature

The scientific area of the process of inventory management (Supply Chain Management) is becoming increasingly important, as evidenced by numerous scientific papers in this field. In his work, Bugar [3] points out that an effective inventory management is the key factor in the efficiency of the organization. The manager's task is, in addition to defining the qualitative aspect of the stock, to ensure that a large part thereof be considered in terms of quantitative analysis as well. The success of an organization can be achieved only if the strategy combines cost strategy (importance is attached to quantitative indicators optimisation) and product diversification strategy (emphasis is placed on product quality). In a scientific paper, the authors Szymszal et al. [15] presented a method for optimising inventory management in terms of the size of the acquisition. As an optimisation tool they used MS Excel computational tables with functions for different modules. As the authors pointed out, successful optimisation requires quantitative analysis as well. Based on the research of Lapinskas [11], we became acquainted with the significance of time series and statistical indicators. In their paper, Kish et al. [10] described the basic elements of forecasting demand. They pointed out that the demand forecast is the basis for planning the logistics activities of the company, where capacities and stocks belong. Historical data on the demand for a product are an essential element of forecasting [12]. Good forecasts require that companies have a historical database, and therefore big data have a huge importance in business. In their scientific paper, Wang et al. [19] realise the importance of this area, because big data can provide unique insights into, inter alia, market trends, customers' buying patterns and maintenance cycles, as well as into ways of lowering costs and enabling more targeted business decisions. As an area that provides many opportunities, there are different possibilities of applied research and analysis of big data. In her article, Sanders [14] examines how leading companies use big data analytics to drive their supply chains and offers a framework for implementation. There are many challenges and opportunities in combining application of operational methods in the analysis of large data pointed out in the paper of Hazen et al. [9]. Data and statistical analyses provide new opportunities for competitive advantage by extracting huge value from large amounts of data [8]. Savings in capital and time are just some of the factors that are the basis of creating a method for analysing and forecasting in supply chain area [17]. Dobrodolac described

the importance of forecasting to support management in her work [6]. Based on the research of many scholars in this field, we see that the goal of our work is important for improving the business operations of companies in this field. New business conditions are characterized by complex problems, the uncertainty of the situation and because of that, planning and forecasting should provide better results in achieving the objectives of an organization. Econometric models can be used for forecasting, as they provide planning and selection of strategic goals. Ideal forecast is achieved by combining two types of methods: a group of methods based on intuition and subjective assessments, and a group of methods based on statistical and mathematical techniques, including econometric models. We needed all this theoretical knowledge to make our model for forecasting of sales, and optimise and improve inventory management modes. Our starting hypothesis is that, through application of quantitative methods in forecasting sales, better inventory can be realized in acquisition plans in comparison to unplanned (accidental) procurement.

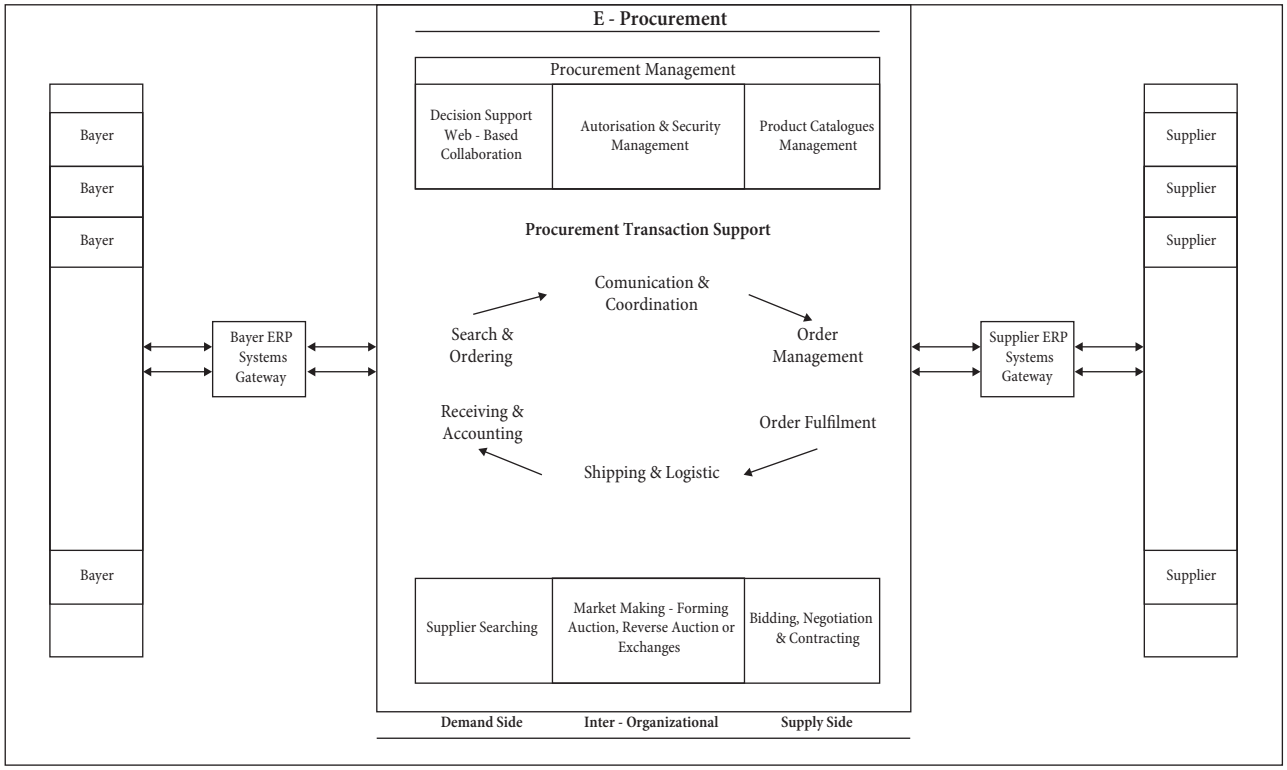
Supply chain management

Supply chain management (SCM) [7] is becoming a major component of competitive strategy for improving organizational productivity and profitability. Literature dealing with strategies and technologies for efficient supply chain management is rather extensive. Lately, this important area attracts more and more researchers and analysts. According to the definition, supply chains are linear systems for which the raw material is the input, and finished product in the hands of customers is the output. Usually the companies in this process produce large amounts of stocks in defence of the variability and volatility of demand. Due to major changes, such an approach proved to be inadequate. The introduction of supply chain management aims to reduce the cost of inventory with more accurate forecasting of requirements and needs of the participants in the process. Establishing cooperation and exchange of information between suppliers and enterprises are important because working in this way significantly reduces or eliminates the safety stock. Electronic data interchange (EDI) provides a good connection between the customer's database and the vendor's database. By accessing the database, vendors can see the information on deliveries, sale, and level of inventories. The buyer will form the electronic exchange of data with only a few suppliers. Because of this, the trend for companies is to reduce the number of suppliers in collaboration. Large companies are characterized by abundance of data and knowledge contained therein. The administration company analysed in this paper (Naftna industrija Srbije - Oil Industry of Serbia) belongs to a group of large companies. Such companies develop Enterprise Resource Planning (ERP) systems [1] for financing, forecasting, monitoring of orders, sales analysis, and quality control. The starting point of the analysis in this paper is a time series of data on the movement of stock to a sales facility operated. By predicting sales trends, we have tried to make the acquisition plan for the future. Figure 1 is an example of an advanced supply chain management system [2].

Analysis of time series in forecasting inventory sales

Time series analysis is a quantitative method, commonly used in forecasts. Forecasting is present in studies of numerous phenomena and effects in order to estimate the future values. An important assumption of most forecasting methods is that the patterns of the past are going to repeat in the future. For a good assessment it is necessary to have high-quality information. Chronologically arranged historical data represent the time series. Through the analysis of time series of historical data series of sales of the products by a single facility for a period of 5 years (e.g. in operation), we have created a model to predict sales for the past and forthcoming 5 months. Analyses of the data observed characteristics such as the development of phenomena in time unit. By forecasting time series we mean the use of models for forecasting of future values on the basis of autonomous movement of the phenomenon. Models for time series data may have a different form, and this paper presents a statistical model for forecasting (Gretl software package).

Figure 1: Improving e-procurement in supply chain through web technologies



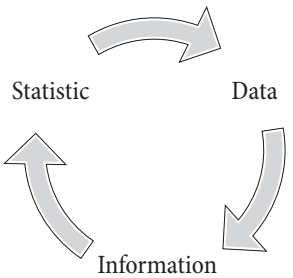
Source: Alor-Hernandez, G., Aguilar-Laserre, A. A., Cortes-Robles, G., & Sanchez-Ramirez, C. (2011). Improving e-procurement in supply chain through web technologies.

For many organizations, investment in the construction of a high-quality prediction model has a long-term impact on profitability, customer service, productivity and similar indicators. A good combination of statistical analysis and forecasting is the base for preventing problems such as lack of inventory, missing deadlines, lost sales, lost customers, and failure of strategic opportunities. Figure 2 represents the importance of statistics in the transformation of data into information, that is, knowledge.

We performed statistical analysis, stability testing and foresight in the work by assessing some of the most important statistical indicators:

The coefficient of determination R^2:

Figure 2: The importance of statistics in data analysis



Source: View of the author of the research paper, 2018.

$$R^2 = 1 - \frac{SSR}{SST}$$

$$SST = \sum_{i=1}^{N} \left(Y_i - \overline{Y}\right)^2 \qquad (1)$$

$$0 \le R^2 \le 1$$

The coefficient of determination is the proportion of the variation from the sample interpreted with linear regression relationship. It represents the ratio of the interpreted and total deviation. The height of the coefficient of determination shows the representativeness of the model – a model which is a more representative value is closer to 1. The coefficient of determination represents the percentage of the total variation phenomena that can be explained by the influence of the trend (tendency of development in time), and the other part is the impact by the model of omitted factors.

Adjusted coefficient of determination R^2:

$$\overline{R}^2 = 1 - \frac{SSR/(N-k)}{SST/(N-1)} \qquad (2)$$

The adjusted coefficient of determination (Adjusted - R-squared) adjusts the coefficient of determination in order to obtain indicators that will not unduly rise with the increase in the number of explanatory variables. The adjusted coefficient of determination is always less than the ordinary coefficient of determination. The coefficients are equal only to a simple model without a free member.

Information criteria:

Akaike information criterion (AIC)

$$AIC = exp\left(2k / N\right)\frac{SSR}{N} \tag{3}$$

(Schwarz information criterion - SIC)

$$SIC = N^{k/N}\frac{SSR}{N} \tag{4}$$

(Hannan – Quinn information criterion - HQC)

$$HQC = n\ln\frac{SSR}{n} + 2k\log\log n \tag{5}$$

Information criteria [18] are used in the selection of the optimum number of parameters in the econometric model. They contain two components: a component that is in the function of the unexplained variance of the dependent variable models, and a component which „punishes" the loss of the number of degrees of freedom due to the addition of new parameters (the so-called criminal component). An important group of criteria consists of information criteria: Akaike (AIC) and Schwarz information criterion (SIC). AIC was originally known as the Information Criterion (Akaike, 1973). Both criteria calculate the residual sum of squares, taking into account the introduction of additional parameters in the model. It is believed that the model is better for forecasting if the calculated value of AIC and SIC have smaller values. One of the ways for evaluation of criteria that is used for selection pertains to consistency. It can be shown that the AIC is an inconsistent criterion, which means that it will not choose the right model when the real model is among those that are considered likely to be closer to the sample as unit is increased. It turns out that the SIC is consistent, but not asymptotically efficient. Several variations and extensions of these information criteria were therefore created.

Many statistical packages allow the selection of a suitable model through these criteria. Specifically, we conducted an assessment of the quality of sales forecasts through analysis of some of the criteria listed in the following part of the paper.

Empirical research

Having outlined the importance of the process of inventory management, and analysed the time series data and the importance of statistical analysis, we move to research work. The goal that we want to achieve is to reduce the gap between the purchase and sale of the stock. The hypothesis that we want to prove is that economic forecasting is in the function of optimisation of inventory levels in relation to unplanned purchases. The analysis included a time series of 55 months: data on monthly acquisition, sales, initial and final state of stock of Fanta beverage (Table 1).

The research started by observing the relation between the current acquisition and sales and the sum of opening balances and purchases in relation to the sale. Figure 3 shows diagrams of the time series for the initial state, the purchase and sale over a period of 5 years.

Interdependence between observed phenomena of procurement and sales and the total amounts of inventory and sale is easiest to observe based on the dispersion diagram (Figures 4 and 5).

By observing Figure 3a we cannot conclude that there is interdependence between the procurement and sales. Based on Figure 3b, we can assume that there is interdependence in the behavioural development of the total stocks (acquisitions and initial state) and sales, but also that the gap is huge and thus creates additional costs for the company. Based on Figures 4 and 5, it can be concluded that there is interdependence between the two phenomena. Unplanned purchases drive capital spending to non-profitable purposes, making it thus captured by the impossibility of being placed into the investments that are profitable for the company. The aim of the further step in the research is forecasting demand, i.e., sales of stocks of products.

The next phase of the research is to predict demand, that is, sales stocks of products, comprising the following steps:

1. To define sample time series data and trend line (Gretl package)
2. To form a trend model and periodicity of the phenomenon movement
3. To carry out forecast within the sample data and assess the quality of forecasts (01.01.2015-01.05.2015)
4. To carry out forecast outside sample data (01.06.2015 - 01.10.2015)

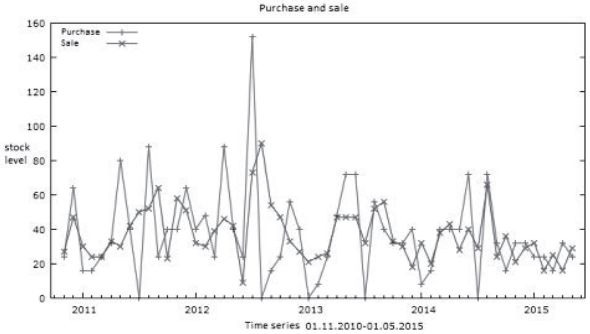
Figure 6 presents the movement of sales of juice and a trend line for the entire data set – a sample of 55 months.

Based on sale trends of juice, we can see that there is a certain dynamic in the movement, and that sales are

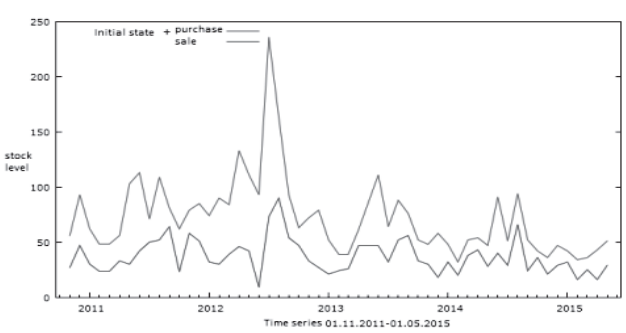
Table 1: Time series data: purchasing, sales, initial and final state

Inventory/time	Initial state	Purchase	Sale	Final state	Inventory/ time	Initial state	Purchase	Sale	Final state
11/2010	32	24	27	29	03/2013	15	24	26	13
12/2010	29	64	47	46	04/2013	13	48	47	14
01/2011	46	16	30	32	05/2013	14	72	47	39
02/2011	32	16	24	24	06/2013	39	72	47	64
03/2011	24	24	24	24	07/2013	64	0	32	32
04/2011	24	32	33	23	08/2013	32	56	52	36
05/2011	23	80	30	73	09/2013	36	40	56	20
06/2011	73	40	42	71	10/2013	20	32	33	16
07/2011	71	0	50	21	11/2013	16	32	30	18
08/2011	21	88	52	57	12/2013	18	40	18	40
09/2011	57	24	64	22	01/2014	40	8	32	16
10/2011	22	40	23	39	02/2014	16	16	20	12
11/2011	39	40	58	21	03/2014	12	40	38	14
12/2012	21	64	51	34	04/2014	14	40	43	7
01/2012	34	40	32	42	05/2014	7	40	28	19
02/2012	42	48	30	60	06/2014	19	72	40	51
03/2012	60	24	39	45	07/2014	51	0	29	22
04/2012	45	88	46	71	08/2014	22	72	66	20
05/2012	71	40	42	69	09/2014	20	32	24	26
06/2012	69	24	9	84	10/2014	26	16	36	4
07/2012	84	152	73	163	11/2014	4	32	21	15
08/2012	163	0	90	77	12/2014	15	32	29	18
09/2012	77	16	54	39	01/2015	18	24	32	10
10/2012	39	24	47	16	02/2015	10	24	16	20
11/2012	16	56	33	39	03/2015	20	16	25	11
12/2012	39	40	27	52	04/2015	11	32	16	27
01/2013	52	0	21	31	05/2015	27	24	29	22
02/2013	31	8	24	15	06-10	X	Forecast	X	X

Figure 3: Diagram of time series (01.11.2010 – 01.05.2015)



a) procurement and sales / data on the amount of procurement and sales for the period of 5 years



b) initial state + procurement and sales data on the overall state of the stock

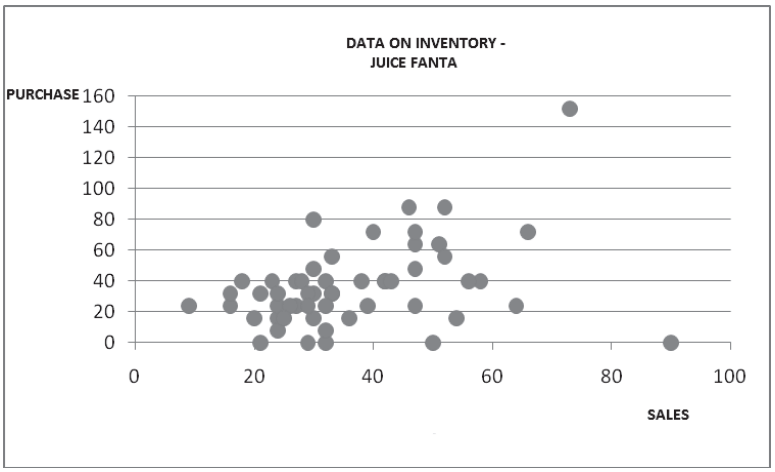
Source: View of the author of the research paper, 2018.

higher in the summer period, while decreasing in the winter period. According to the trend line, we see that the sales of goods are moving in the slightly descending direction. This information is also of importance to us while drawing up plans for the purchase in the future.

The next step in the research is to add time trend variable and temporal periodicity – dummies in Gretl statistical package.

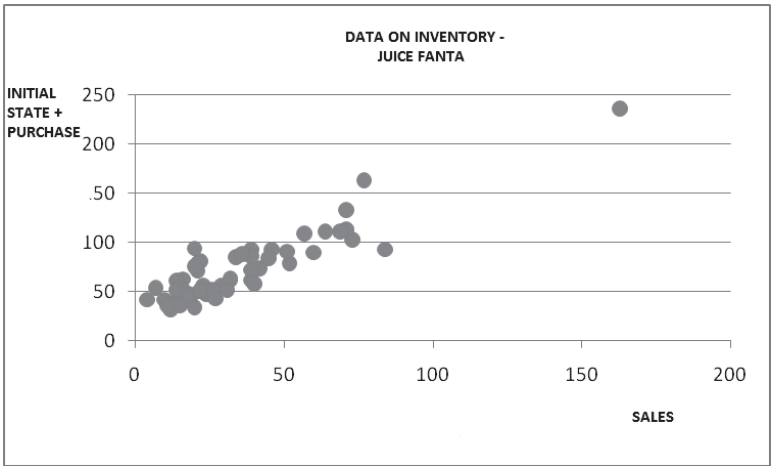
The first prediction we performed was for the last 5 months in the sample (01.01.2015 -01.05.2015).

Figure 4: Dispersion diagram of Supply – Sales



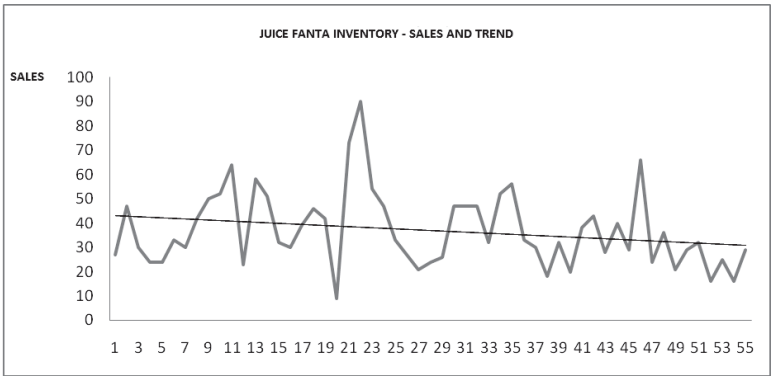
Source: View of the author of the research paper, 2018.

Figure 5: Dispersion diagram of Total inventories - Sales



Source: View of the author of the research paper, 2018.

Figure 6: Time series of sold juice inventory and trend line (01.11.2010-01.05.2015)



Source: View of the author of the research paper, 2018.

Statistical results for the first model

Model 1: OLS, using observations 2010:11-2014: 12 (T = 50)

Dependent variable: sales of juice for a truncated data sample

Table 2: Statistical results for Model 1

	Coefficient	Std. Error	T-ratio	P-value
Const	33.0375	7.00264	4.7179	0.00003
Time	-0.204167	0.128689	-1.5865	0.12113
dm2	-4.04583	9.13695	-0.4428	0.66049
dm3	3.40833	9.13966	0.3729	0.71134
dm4	14.1125	9.14419	1.5433	0.13126
dm5	8.81667	9.15053	0.9635	0.34154
dm6	6.77083	9.15867	0.7393	0.46440
dm7	18.475	9.16861	2.0150	0.05121
dm8	37.6792	9.18034	4.1043	0.00021
dm9	22.3833	9.19386	2.4346	0.01985
dm10	7.8375	9.20916	0.8511	0.40021
dm11	5.86667	8.68248	0.6757	0.50344
dm12	6.67083	8.69106	0.7676	0.44762

Table 3: Statistical results for Model 1

Mean dependent variable	38.32000	S.D. dependent variable	15.54643
Sum squared residuals	6176.575	S.E. of regression	12.92031
R-squared	0.478457	Adjusted R-squared	0.309307
F(12, 37)	2.828608	P-value (F)	0.007540
Log-likelihood	-191.3593	Akaike criterion	408.7187
Schwarz criterion	433.5750	Hannan-Quinn	418.1841
Rho	-0.096759	Durbin-Watson	2.171306

Statistical results for the second model

The second prediction we performed was for the next 5 months in the sample (01.05.2015-01.10.2015).

Model 2: OLS, using observations 2010: 11-2015: 05 (T = 55)

Dependent variable: juice sales for the entire sample of data

The first model is with the shortened time series data (T = 50), without the last 5 months. The second model includes the entire set of data (T = 55). The second model shows greater stability (higher values of the second model for determination coefficients). With the extension of the time series data we are gaining a more stable model, and therefore a greater predictive power of the model. Out of information criteria, the Akaike has the lowest value out of the three observed, both for the first and second model. F-statistics is used to test the stability of parameters and reach a conclusion about the predictive power of the model. If $F^* < F(\alpha, n2, n1-k)$, then we conclude that the predictive power of the model is satisfactory. For the calculation of F*, we use the formula:

$$F^* = \frac{\frac{\sum ei^2 - \sum (ei)^2}{n_2}}{\frac{\sum (ei)^2}{n_1 - k}} = \frac{\frac{3.45 - 2.83}{5}}{\frac{2.83}{50 - 12}} = 1.67$$

$$F^* = 1.673931 < F^1(12, 37) = 2.828608 < F^2(12, 42) = 3.451620 \quad (6)$$

Table 4: Statistical results for Model 2

	Coefficient	Std. Error	T-ratio	P-value
Const	35.6408	6.29356	5.6631	<0.00001
Time	-0.23114	0.106917	-2.1619	0.03637
dm2	-6.36886	7.90966	-0.8052	0.42524
dm3	1.46228	7.91183	0.1848	0.85426
dm4	8.29342	7.91544	1.0478	0.30074
dm5	6.72456	7.92049	0.8490	0.40069
dm6	4.86886	8.38938	0.5804	0.56477
dm7	16.6	8.38869	1.9789	0.05441
dm8	35.8311	8.38938	4.2710	0.00011
dm9	20.5623	8.39142	2.4504	0.01852
dm10	6.04342	8.39482	0.7199	0.47557
dm11	3.93772	7.91183	0.4977	0.62129
dm12	4.76886	7.90966	0.6029	0.54981

Table 5: Statistical results for Model 2

Mean dependent variable	36.98182	S.D. dependent variable	15.54264
Sum squared residuals	6567.884	S.E. of regression	12.50513
R-squared	0.496520	Adjusted R-squared	0.352669
F(12, 42)	3.451620	P-value (F)	0.001398
Log-likelihood	-209.5635	Akaike criterion	445.1270
Schwarz criterion	471.2223	Hannan-Quinn	455.2183
Rho	-0.091602	Durbin-Watson	2.159915

Table 6: Statistical results for Model 1 and Model 2

	Model 1	Model 2
R^2	0.478457	0.496520
$\bar{R}^2$	0.309307	0.352669
Akaike criterion	408.7187	445.1270
Schwarz criterion	433.5750	471.2223
Hannan-Quinn criterion	418.1841	455.2183
Sum squared resid.	6176.575	6567.884
F – test	F(12, 37) = 2.828608	F(12, 42) = 3.451620

According to the statistics for testing the predictive power, we conclude a satisfactory predictive power of the models 1 and 2.

The next step in the analysis is the use of a statistical package for the prediction. The results of forecasts for the next 5 months (01.01.2015-01.05.2015) are presented in Figures 7 and 8.

The result of sales prediction:

For the 95% confidence interval, t (37, 0.025) = 2.026

The results obtained for prediction are satisfactory. For the first and fourth month, there was the deviation of actual and predicted value. Based on the behaviour from the past, when the winter sales were smaller, the model learned that the value should be lower; for the month 4, the model gave a higher score as compared to the actual, because the previous 4 years of sales in those months were higher. In addition to the analysis of historical series, in subsequent studies we will look at the new information, data on weather conditions, the manufacturer and distributor of products and other external parameters that may have an impact on the behaviour of sales. Prediction for the second, third, and fifth month approximates the actual value of sales in that period.

Table 7: The prediction result for shorter sales time series in sample

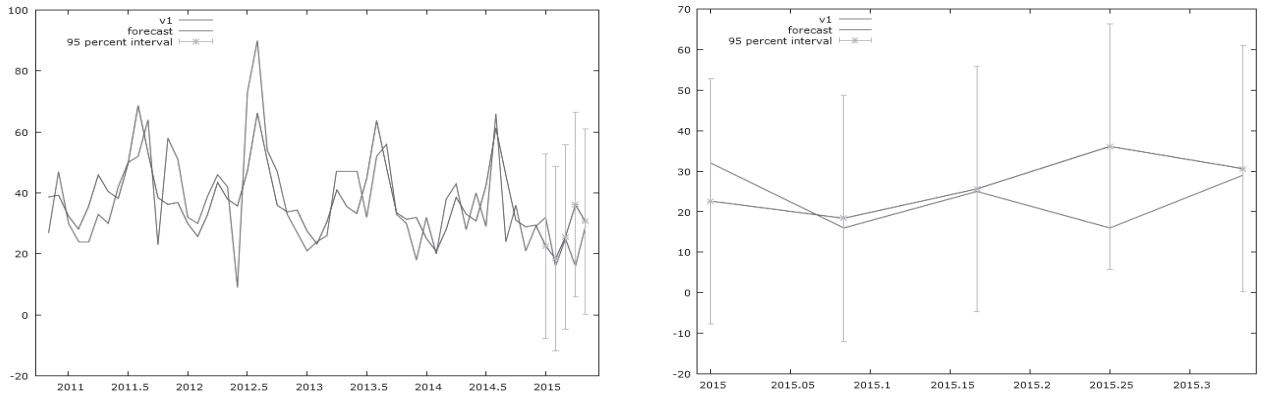
Period of time	Actual	Forecast	Standard error	95% interval
2015:01	32.0000	22.6250	14.9524	(-7.67135, 52.9214)
2015:02	16.0000	18.3750	14.9524	(-11.9214, 48.6714)
2015:03	25.0000	25.6250	14.9524	(-4.67135, 55.9214)
2015:04	16.0000	36.1250	14.9524	(5.82865, 66.4214)
2015:05	29.0000	30.6250	14.9524	(0.328650, 60.9214)

The second test is predicting outside the sample for the next 5 months (01.06.2015 - 01.10.2015) on the entire set of data (time series of 55 months). Forecast results are presented in Figures 9 and 10.

The result of sales prediction:

For the 95% confidence interval, t (42, 0.025) = 2.018

Figures 7 and 8: Prediction and results

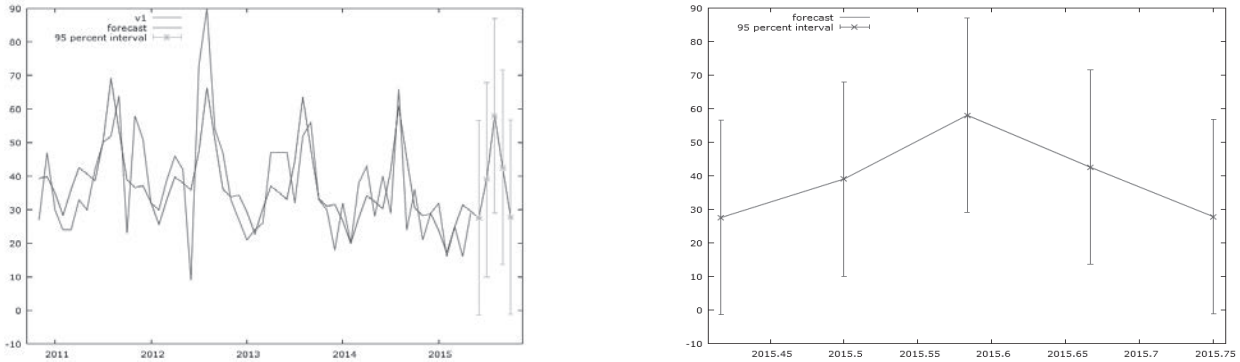


a) Prediction of the sample data

b) The result of prediction (01.01.2015 - 01.05.2015)

Source: View of the author of the research paper, 2018.

Figures 9 and 10: Prediction outside the sample and results



a) Prediction outside the sample

b) Prediction results (01.06.2015 - 01.10.2015)

Source: View of the author of the research paper, 2018.

Table 8: The prediction result for longer sales time series in the sample

Period of time	Actual	Forecast	Standard error	95% interval
2015:06	Undefined	27.5658	14.3444	(-1.38231, 56.5139)
2015:07	Undefined	39.0658	14.3444	(10.1177, 68.0139)
2015:08	Undefined	58.0658	14.3444	(29.1177, 87.0139)
2015:09	Undefined	42.5658	14.3444	(13.6177, 71.5139)
2015:10	Undefined	27.8158	14.3444	(-1.13231, 56.7639)

Results of forecasts for the next period 01.06.2015-01.10.2015 make sense, given that sales in previous periods had this trend, i.e. sales growth in the summer months. It remains to test the model with actual results of the expiration of the period. As it is highlighted, forecasting is a complex area, and for a better and more realistic result it is necessary, in addition to a series of historical data, to consider other indicators as well. With this research for sale, we could make an acquisition plan for the future and thus reduce the gap that existed at the beginning of the analysis (Figures 3a and 3b) and fulfil the initial goal of optimizing stock levels in the company and investments of capital in profitable purposes.

Conclusion

The area of supply chain planning and forecasting has experienced tremendous advances over the last 50 years. There have been significant methodological developments, such as the emergence of system dynamics, control theory and statistical forecasting methods. These developments have been mirrored by new software applications, reflecting their importance in practical situations. The pace of technological change brings the era of change for the companies as well. Companies that spent their funds uneconomically will not be able to be active market players for long. This is precisely the reason for using wealth and knowledge that quantitative analyses contain. The example analysed in the paper described how we can make savings in procurement. By applying quantitative methods and statistical programs for forecasting, we have shown that the procurement can be optimised. The results of statistical indicators for shorter and longer model gave results with which we demonstrated the stability of the model and satisfactorily predictive power. With longer sample data, the model shows greater stability. By predicting sales, we managed to reduce the gap between the procurement and sales and optimise inventory levels. The research confirmed the initial hypothesis that the results of forecasting sales using statistical methods are better than the previous unplanned procurement in the company.

Given that supply chain management is one of significant management tasks, the solution to this problem results in increase of competitive ability and sustainability of companies over a longer time interval, even in the new business setting. To achieve an increase in the efficiency of the supply chain with the least possible resource input, it is necessary to apply quantitative method in inventory management. Application of quantitative methods in inventory management results in making better decisions than in the case of using only intuitive methods.

The main contribution of this paper is a presentation of methodology for inventory level optimisation and possibility of investing capital in more profitable purposes, thus enhancing the overall efficiency of business. The research section of the paper looks into setting a sales forecasting model within a supply chain. As the environment changes rapidly, by testing the stability of parameters, we verified with certain probability that the forecasting error equals zero. We reached a conclusion that the model's predictive power is satisfactory. As higher stability of historical data produces more certain forecasts, the assessed model can be used for higher quality of decision- making. The main limitation of this model is that we did not take into account the seasonal character of the observed phenomenon. Future research should include this characteristic as well.

To maximize benefit, companies should embrace a data-driven approach because data is at the core of every supply chain transaction and is fundamental to product, information, and financial flow optimisation. Plans for future surveys are going to be included in the analysis, and other types of stock of companies to make sales forecasts. Also, we can make plans not only for the office building, but also for the rest, by observing objects according to size, geographical location, traffic, making clusters and similar objects grouped in order to facilitate forecasts. In addition to the historical data analysis, we can include other information that may be relevant depending on the

type of stocks. Our goal is to optimise inventories at the level of the whole company with the help of the explained model of economic forecasting.

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ORIGINAL SCIENTIFIC PAPER
UDK: 005.342:334.7(497.11)
005.21:334.72.021
DOI:10.5937/EKOPRE1806294A
Date of Receipt: June 22, 2018

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ORGANIZATIONAL PREPAREDNESS OF SERBIAN COMPANIES FOR INTRAPRENEURSHIP

Spremnost preduzeća u Srbiji za intrapreduzetništvo

Abstract

Entrepreneurial activities and innovations in medium-sized and large companies are explained in theory by means of the concept of corporate entrepreneurship, while in practice the term intrapreneurship is becoming gradually more accepted, as one of the most significant manifestations of entrepreneurship. Assessment of corporate entrepreneurial environment is a prerequisite for successful implementation of intrapreneurial strategies, as well as for identification of internal actions to be undertaken in support of intrapreneurship. To this end, in order to adequately implement the intrapreneurial strategy, current preparedness of companies for intrapreneurship needs to be assessed. Hence, the objective of this paper is to identify the preparedness of companies in Serbia to implement entrepreneurial ideas using CEAI (Corporate Entrepreneurship Assessment Instrument). CEAI is a tool used for assessment of the following five dimensions critical to the creation of entrepreneurial environment in medium-sized and large enterprises: management support, reward/ reinforcement, work discretion (autonomy), organizational boundaries and time available for innovation. Following the reliability analysis, which revealed that the original instrument with slight modifications can be applied to the companies in Serbia, their preparedness for intrapreneurship was assessed. The conducted research resulted in the assessment of current preparedness of medium-sized and large companies in Serbia for intrapreneurial activities. The research also identified potential variations in the extent of readiness among certain groups of companies, taking into account the dynamism of the industry in which the company operates. In addition to assessment of intrapreneurial activity at the company level, the presented instrument may be useful to managers in assessing the intrapreneurial spirit of certain organizational units, identifying its major suppressors and creating strategies for stimulation and implementation of intrapreneurial ideas.

Keywords: *intrapreneurship, corporate entrepreneurship, CEAI model, top management support, reward, work discretion, organizational boundaries, time availability.*

Sažetak

Preduzetničko delovanje i inovativnost u srednjim i velikim preduzećima u teoriji se objašnjavaju konceptom korporativnog preduzetništva, dok je u praksi sve više prihvaćen termin intrapreduzetništvo, što je jedna od njegovih najznačajnijih manifestacija. Procena korporativnog preduzetničkog okruženja je preduslov za uspešno sprovođenje intrapreduzetničkih strategija, kao i identifikovanje internih akcija koje bi trebalo preduzeti u cilju podrške intrapreduzetništvu. U tom smislu, da bi se na adekvatan način implementirala preduzetnička strategija, potrebno je oceniti trenutnu spremnost preduzeća za intrapreduzetništvo. Otuda, cilj ovog rada jeste identifikovanje spremnosti preduzeća u Srbiji za implementaciju preduzetničkih ideja primenom CEAI instrumenta (engl. Corporate Entrepreneurship Assessment Instrument). CEAI je alat koji se koristi za procenu pet dimenzija kritičnih za kreiranje preduzetničkog okruženja u srednjim i velikim preduzećima, a to su podrška menadžera, nagrađivanje, diskrecija (autonomija) u radu, organizacione granice i raspoloživo vreme za inovacije. Nakon sprovedene analize pouzdanosti, koja ukazuje da se originalni instrument sa malim modifikacijama može koristiti u preduzećima u Srbiji, izvršena je procena njihove spremnosti za intrapreduzetništvo. Sprovedeno istraživanje daje procenu trenutnog stanja spremnosti srednjih i velikih preduzeća u Srbiji za intrapreduzetničko delovanje, ali i identifikuje potencijalne razlike u njegovom nivou između pojedinih grupa preduzeća uzimajući u obzir stepen dinamičnosti industrije u kojoj preduzeća posluju. Pored ocene intrapreduzetničke aktivnosti na nivou preduzeća, predstavljeni instrument može biti korisno sredstvo menadžerima u proceni preduzetničkog duha pojedinih organizacionih sektora, u identifikovanju njegovih glavnih supresora, kao i u kreiranju strategija za podsticanje i implementaciju intrapreduzetničkih ideja.

Ključne reči: *intrapreduzetništvo, korporativno preduzetništvo, CEAI model, podrška menadžera, nagrađivanje, autonomiju u radu, organizacione granice, raspoloživo vreme za inovacije.*

Introduction

Entrepreneurial orientation and innovation are becoming gradually more significant for achieving sustainable competitive advantage on both macro and business levels. As early as 1990, Porter emphasized innovation as the main source of national competitiveness or, more precisely, the ability of a nation to create innovations more rapidly and more efficiently than other nations. The World Economic Forum defines competitiveness as the set of institutions, policies and factors that determine the level of productivity of a country [32, p. 4], and measures it on the basis of twelve pillars, innovation being one of them. According to the applicable methodology for calculation of the global competitiveness index, computation of the innovation subindex takes into account the following factors: innovative capacity, quality of scientific research institutions, corporate investments in research and development, cooperation of universities and industry in research and development, government procurement of advanced technology products, availability of scientists and engineers and the number of registered patents. In addition, at the global level innovation is expressed in terms of the Global Innovation Index, which presents the average of innovation input and output subindexes. Consequently, the assessment of the national innovation status requires assessing and monitoring innovativeness of companies using a number of instruments that are complementary to those explained above.

Entrepreneurial activities and innovativeness in medium-sized and large companies are explained in theory by means of the concept of corporate entrepreneurship, while in practice the term intrapreneurship is becoming gradually more accepted as one of the most significant manifestations of entrepreneurship. With intrapreneurship less effort needs to be devoted to creating innovation, as well as to achieving and maintaining competitive advantage. Although the growing need to understand conceptualization of intrapreneurship has resulted in numerous theoretical models over the past two decades, this has not diminished the necessity for further detailed examination of entrepreneurship in large companies. Kuratko underlines that large companies need to understand the "entrepreneurial imperative of the 21st century" [19, p. 421]. Ireland adds that the development of both current and long-term competitive advantage entails incorporating innovation-based strategies into the overall corporate business strategy [16, p. 28].

Companies in Serbia are still experiencing adverse effects of the global economic situation. Moreover, the traditional deep-rooted problems of unemployment, lack of financing, inadequate infrastructure and frequent lack of managerial skills all confirm the need of Serbian companies to mitigate the effects thereof and increase competitiveness through innovation and entrepreneurial activity. Assessment of corporate entrepreneurship environment, as well as identification of internal actions that are to be taken in support of intrapreneurship, are prerequisites for successful implementation of intrapreneurial strategies [24]. Therefore, the aim of this paper is to identify the preparedness of Serbian companies to implement entrepreneurial ideas using CEAI (Corporate Entrepreneurship Assessment Instrument). CEAI is a tool used for assessment of five dimensions critical to the creation of entrepreneurial environment in medium-sized and large enterprises. This instrument shows an entity's current ability to implement strategies based on innovation and emphasizes the areas for further improvement [18, p. 37].

The first part of this paper deals with the theoretical presentation of the intrapreneurship concept and provides a review of the existing research on assessment of the readiness of companies for intrapreneurship, with a particular focus on the instrument used both in the research and in this paper. The other, methodological part of the paper begins with the assessment of structural validity of the presented instrument. After identification of the factors that best describe the subject phenomenon in Serbia, further in the methodological analysis a comparison is made between the static and dynamic industries in Serbia in terms of their readiness for intrapreneurship. The research results ought to provide an evaluation of current preparedness of the medium-sized and large companies in Serbia for entrepreneurial activities and highlight the critical elements for its improvement. Also, the obtained instrument may be useful to managers in assessing the intrapreneurial spirit of certain organizational units, identifying its major

suppressors and creating strategies for stimulation and implementation of intrapreneurial ideas.

Literature review

Intrapreneurship

Ever since the initial theoretical insights into entrepreneurship, it has been associated with activities of independent and individual establishment of new small enterprises. Until recently, the ideas of entrepreneurship related to the efforts of large companies to create new businesses and generate new ideas have attracted little attention in the literature on the subject.

Interestingly, in the short history of dealing with entrepreneurship within large systems, authors have used different terms to explain this phenomenon in literature. While some called it corporate entrepreneurship, others used terms such as intrapreneurship or internal entrepreneurship [12], [26], [29], strategic or organizational self-renewal [34] and strategic ventures [2]. It is still unclear whether these are synonymous or simply designate different manifestations of corporate entrepreneurship. In the past few years, the prevailing view has been that corporate entrepreneurship is an area that encompasses all those elements. More precisely, when entrepreneurship in large corporations is discussed in more recent literature, the aforesaid three variables are underlined: innovation, corporate venturing and strategic renewal [11, p. 5], [39, p. 1715]. Such a more comprehensive view reconciles the long-standing debates between the advocates of entrepreneurship as an adequate combination of resources for generation of new products, processes and the like, as seen by Joseph Schumpeter, and those favoring Gater's view focused on creation of new enterprises or substantial transformation of the existing ones. Considering the objective defined in this research, special attention has been given to intrapreneurship and its most significant manifestation.

The first studies on intrapreneurship carried out in the early 1970s mostly focused on investigating the manner of developing entrepreneurship within large companies [27]. The first serious research studies on intrapreneurship took place in the 1980s and 1990s. One of the first definitions of intrapreneurship was formulated by Burgelman in 1983. He says that intrapreneurship refers to the process of company's diversification through its internal development [4, p. 1349]. Such diversification requires a completely new combination of resources to help the firm extend its activities into new spheres of business that are marginally related or fully unrelated to its current area of business activity. Pinchot is also one of the early authors using the term intrapreneurship. He defines internal entrepreneurship or intrapreneurship as an introduction of something new or a different combination of the existing resources within an organization, i.e. as creation of new business opportunities within an existing organization and its strategic renewal [29, p. 33]. Chung and Gibbons explain intrapreneurship as an organizational process of transforming individual ideas into collective actions by managing uncertainties in the process [6, p. 12]. Although Jennings and Lumpkin on one end and Schendel on the other addressed this subject simultaneously, they had opposite views on intrapreneurship. The former two authors [17, p. 487] associated intrapreneurship exclusively with creating new products and winning new markets, whereas Schendel referred to the concept as the creation of new businesses within existing companies and their strategic transformation [31, p. 1]. This is reaffirmed by Sathe, who defines intrapreneurship as a simple process of organizational self-renewal [30, p. 23]. Guth and Ginsberg provide a perhaps reconciling view on intrapreneurship identifying its two forms, one exclusively related to the birth of new business within a company called innovation, and the other to entrepreneurial venturing, which entails organizational transformation through the change of ideas underlying the company's business, referred to as strategic self-renewal. A step further in defining intrapreneurship was made by Zahra, who divided Ginsberg's first intrapreneurship dimension into innovation, which is explained as creation of new products, processes and organizational systems, and new business venturing, which entails a company entering a completely new business and expanding its activities in the existing or a completely new market [39, p. 1715]. Some years later, Dess et al. explained intrapreneurship in relation to the efforts of a company to exploit its productive and market capabilities in innovative and creative ways [7, p. 85].

In the 21st century, researchers in this field increasingly emphasize the positive correlation between intrapreneurship and company's performance [38, p. 260], as well as the contribution of intrapreneurship to gaining competitive advantage at both the national and international levels [15, p. 238], [20, p. 153]. In addition, a significant number of studies underline the need to incorporate intrapreneurship in the overall corporate business strategy. The effects may be quite the opposite to the expected ones if a company is unprepared for intrapreneurial activities. Hence, the aim of this paper is to assess the preparedness of Serbian companies to implement intrapreneurial strategies.

The Corporate Entrepreneurship Assessment Instrument

Assessment of the corporate entrepreneurship environment, as well as identification of internal actions that are to be taken in support of intrapreneurship, are prerequisites for successful implementation of intrapreneurial strategies [7, p. 57]. In this regard, in order to adequately implement an intrapreneurial strategy, it is necessary to assess the current organizational preparedness for corporate entrepreneurship (OPCE). As this is a new area of interest, authors emphasize the necessity of developing new instruments for the measurement of this phenomenon. An instrument in the focus of the existing literature is the Corporate Entrepreneurship Assessment Instrument (CEAI). Originally developed by Kuratko, Montagno and Hornsby, the instrument entailed assessment of three intrapreneurship dimensions: management support, reward/reinforcement and work discretion (autonomy) [21, p. 56]. The said instrument was subsequently elaborated on in research studies [15, p. 237] and supplemented with two more dimensions – organizational boundaries and time availability. These authors developed CEAI by combining the variables that were previously identified in the works of Miller and Friesen, and later on adapted and supplemented in the research by Ginsberg, Morris and Paula and by Covin and Slevin. The final version of the instrument, defined through the joint work of the said authors [40], was used in the presented paper. The instrument was used for the measurement of organizational factors contributing to and stimulating entrepreneurial activities in large companies.

In a number of studies after 2002, the identified five dimensions of the original instrument (Appendix 1) have been used to evaluate the preparedness of a company for intrapreneurship. The first dimension, top management support, refers to the willingness of senior managers to facilitate and promote entrepreneurial behavior within the company, including championing innovative ideas and providing resources people need for taking entrepreneurial actions. The second dimension, work discretion (autonomy), entails top managers tolerating failure of their subordinates. In addition, autonomy to a large extent means delegation of authority and responsibility, i.e. giving the middle and lower-level managers and employees decision-making responsibilities and freedom from excessive oversight. The third dimension refers to the reward system. Creation of an adequate reward system entails the development and use of rewards and promotion of significant achievements to encourage and motivate employees. A well-developed reward system is a basic source of motivation for an individual in creation of innovative solutions. The fourth dimension is time availability, i.e. ensuring time for initiating and pursuing innovation. This dimension requires assessment of employees' workload in order to give individuals and groups of employees sufficient time for innovation and structuring of their jobs in a manner that supports such efforts and achievement of both short-term and long-term organizational goals. The final dimension, organizational boundaries, pertains to precise explanations of the expected outcomes of employees' work and to the development of mechanisms for evaluation, selection and implementation of innovation. In the aforedescribed or modified form, the instrument has been used in numerous research studies worldwide [23, p. 286], [1, p. 735], [35, p. 395].

Although the instrument's reliability has been previously tested, many authors, its creators among them, recommend its further empirical validation. Hornsby underlines that, due to its novelty, additional analysis of the instrument's structure is required before establishing it as an effective measure of the corporate preparedness for entrepreneurial actions. The authors mention cultural or demographic differences as additional arguments for the instrument's

further verification [9, p. 130]. Consequently, the aim of this paper is to determine the reliability of the instrument's use, as well as to measure the preparedness of companies in Serbia for intrapreneurial strategy implementation. In the presented study, the analysis results ought to show what factors and variables within them best describe the state of entrepreneurship in Serbian companies, as well as to indicate differences, if any, in significance of the resultant factors depending on the dynamism of the industries in which they operate.

Intrapreneurship in companies in Serbia

Considering the above presented literature on the subject, the aim of this paper is to confirm the validity of the proposed CEAI in Serbia, or, more precisely, to determine how the original instrument can be applied in Serbian companies for assessment of their entrepreneurial capabilities and readiness to implement innovation. The paper's secondary goal is to determine current preparedness of Serbian companies for intrapreneurship within industries characterized by different degrees of dynamism.

The research was carried out among middle and first-line managers. These managers were selected as the target group because, as the instrument's creators themselves explained, they are the link between top managers and employees and can therefore encourage entrepreneurial activities in both formal and informal ways [40, p. 256]. Senior managers are excluded from daily activities so that the middle management can play a significant role in communicating creative ideas to the top management, as well as in the process of their evaluation in the context of the defined corporate strategy. Middle managers may thus contribute to formalizing the significance of entrepreneurship upon definition of the mission, vision and future business strategies. On the other hand, first-line managers may encourage creative thinking and innovation in informal discussions with employees.

The original CEAI questionnaire was sent to 130 managers. The response rate was 73%[1]. The questionnaires were distributed to medium-sized and large companies belonging to different industries (pharmaceutical industry, IT, beverage industry, tobacco industry, textile manufacturing, transportation industry, etc.), accompanied by a cover letter explaining the objective of the survey and prospective surveyee's role. The letter emphasized the anonymity of the surveyees and confidentiality of the data obtained in the survey. In addition to the questions taken over from the original CEAI questionnaire, questions on participants' personal characteristics were added (gender, position and duration of work within their organization), as well as the question about the industry in which the company operates. In the sample of 95 managers surveyed, 53 were women and 42 men. Mid-level managerial positions were occupied by 37% of participants, while the remaining 63% were first-line managers. Furthermore, 86% of managers had been working for less than 10 years in their respective companies, whereas the remaining 14% had been there for over 10 years. CEAI used for measuring the preparedness of companies for intrapreneurship comprised 48 statements (Appendix 1). Surveyees expressed their agreement with the offered statements via a 5-point Likert scale (1 – strongly disagree; 5 – strongly agree).

Reliability of the Corporate Entrepreneurship Assessment Instrument

The first step in the analysis is the reliability assessment of CEAI. The results of the studies conducted so far vary, ranging from a number of identified factors different from the originally defined ones [3], [13] to differing original variables describing the factors [14, pp. 942-943], [35, p. 3051]. Adhering to the methodology applied by the authors who have already examined the structure of the original instrument, this paper also makes use of Cronbach's alpha to assess the instrument's reliability.

The results of the research conducted by Hornsby et al. suggest that the 48 variables observed ought to be grouped into five factors referred to as management support, work discretion, reward/reinforcement, time availability and organizational boundaries [40, p. 269]. Nevertheless, as already stated, having carried out empirical studies, some authors concluded that organizational boundaries

1 Due to a low response rate in the first round, in the second round of obtaining information, personal contacts were used to approach corporate managers.

do not explain the phenomenon and excluded this factor from further analysis [3].

The results of the reliability analysis conducted in this research are consistent with the results of Hornsby et al. More precisely, the obtained values of Cronbach's alpha justify the use of all five factors in evaluation of the observed phenomenon with one variable (question) excluded from the organizational boundaries factor.[2] Cronbach's alpha for the top management support factor equals 0.941, 0.890 for the factor of reward/reinforcement, 0.810 for time availability and 0.817 for the work discretion factor. As for the organizational boundaries factor, the value of Cronbach's alpha with all variables included equals 0.536, which is below the limit for this reliability indicator. If one variable is excluded (*During the past year, my supervisor and I frequently discussed my work performance)*, the value of Cronbach's alpha is satisfactory and equals 0.742 (Appendix 2). The results obtained in this part of the research show that the original instrument with slight modification can be used for the assessment of preparedness of Serbian companies for intrapreneurship. More precisely, the reliability analysis results show that, in assessing company's OPCE from the sample, only one question out of 48 was excluded.

Furthermore, this paper assesses the current level of companies' readiness for intrapreneurship using the identified factors and variables that describe them, followed by the analysis of potential differences in its level among certain groups of companies taking into account dynamism of the industry to which they belong.

Assessment of the preparedness of Serbian companies for intrapreneurship

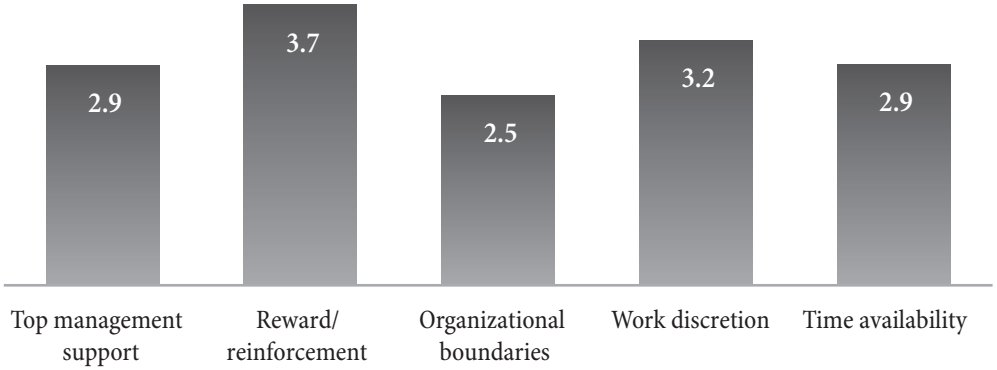
After confirming the instrument's reliability, further in the paper we analyzed the preparedness of companies in Serbia for intrapreneurship. The chart below presents all five factors of the model in the tested sample of Serbian companies.

The manner of determining the value of the aforesaid factors has been fully taken over from the original methodology implemented by the creators of the used instrument [18, pp. 45-46]. More precisely, the values of observed factors were obtained as the average of the variables describing them. The results of the analysis demonstrate that, on average, the preparedness of companies in Serbia for entrepreneurial activities is at a medium level (OPCE=3.0) mostly due to lack of management support with regard to encouraging, developing and implementing entrepreneurial ideas (2.9), lack of time for employees to develop and implement strategic innovations (2.9) and also due to excessively bureaucratic operating procedures that suppress creativity and innovative ideas of employees (2.5). On the other hand, there are no procedures in place that emphasize the significance of innovative behavior and select the best ideas for implementation. Interestingly, the best ranking factor in companies in Serbia is the factor of employee rewards, suggesting that the system of monetary incentives to reward innovation is in place.

We further examined whether there was a statistically significant difference between companies in dynamic and those in static industries in respect of these factors. According to Miller and Friesen, dynamism refers to the

2 Nunnaly (1978) has indicated 0.7 as an acceptable reliability coefficient.

Figure 1: Organizational preparedness for corporate entrepreneurship (OPCE) in Serbian companies



Source: Results of the present research.

presence of changes in the environment, or more precisely, dynamism of the environment creates opportunities for a firm within the existing markets and related fields [22, p. 3]. Zahra and Ellor find that a dynamic environment will encourage companies to exploit opportunities in the current or a new market [37, p. 9]. Certain studies stress that firms in a turbulent environment tend to be more innovative, proactive and less averse to risk than those in a stable environment [25, p. 137]. Miller and Friesen confirm the hypothesis that, unlike the firms with low standing, the more successful ones have higher correlation between the dynamism growth and the innovation growth [22]. For all the aforesaid reasons, the following hypothesis was examined:

H1: There is a statistically significant difference in top management support (work discretion, reward/ reinforcement, time availability, organizational boundaries) between the companies operating in dynamic industries and those operating in static industries.

More precisely, companies in dynamic industries have higher operational preparedness for corporate entrepreneurship (OPCE) than those in static industries.

Before testing the hypothesis, the companies from the sample were classified into two groups, i.e. into those operating in dynamic industries and those operating in static industries, using the methodology developed by Dess and Beard (1984) and further improved by Sharfman and Dean a few years later [8], [33]. These authors measure the dynamism of a particular industry by assessing its market and technology instability indicators. The number of employees and the number of companies within the industry were used as market indicators, while their instability was determined based on the deviation of the real values from the linear trend estimation over a five-year period. The standard error of the deviations obtained was divided by the mean of the observed indicator during the said period in order to arrive at the so-called instability index of the particular market indicator for the industry observed. On the other hand, blended data on the number of technologically innovative companies relative to the total companies within the analyzed industry over a period of the past five years were used as technological instability indicators. All the data used for these purposes were obtained from the Statistical Office of the Republic of Serbia. Following the methodology of the aforesaid authors, the obtained values of market and technology indicators were standardized since they were not measured using the same measurement scales, and the sum of the two groups of indicators was increased by 3 to ensure the positive values of the resulting industry instability indexes. Based on the results obtained and taking into account the mean of the dynamism index of the overall economy, all industries were classified into two groups – dynamic and static. In the sample used for the purposes of the present research, 59% of companies belong to dynamic, while the remaining 41% to static industries. The formula for calculation of the industry instability index is provided in Appendix 3, as well as the analysis results obtained for all industries in Serbia for which the required data were available.

After defining two groups in the sample, an independent samples t-test for comparing means was used to test the hypothesis. Based on the test results presented in detail in Table 1, we came to a conclusion that we cannot claim that there is a statistically significant difference in total OPCE between the companies operating in dynamic and static industries (p=.156). However, once we look for and test the differences in specific factors of OPCE, takeaways are quite different. Based on the results, it was concluded that there is a statistically significant difference between the companies operating in static and dynamic industries in respect of top management support (p=.021), reward system (p=.026), work discretion (p=.043) and time availability (p=.003) factors, at the significance level of 5%. With regard to the organizational boundaries factor (p=0.832), no statistically significant difference was identified between the observed two categories of companies.

Although we cannot maintain with certainty that there is a statistically significant difference between these two groups of companies in respect of the overall organizational preparedness for corporate entrepreneurship, differences were still identified per its constructs. For a more detailed examination of the direction and causes of the differences identified, a comparative overview of all five OPCE factors for the two groups of companies observed is provided further in this paper. As presented in Figure

2, companies operating in dynamic industries exhibit better preparedness for intrapreneurship than those in static industries with regard to top management support, rewards and work discretion. When it comes to the time availability factor, the situation is quite the opposite. More precisely, on average this factor had much better scores in companies operating in static industries than in those in dynamic industries. Finally, organizational boundaries as an OPCE construct were evenly ranked with rather low scores in both groups of companies.

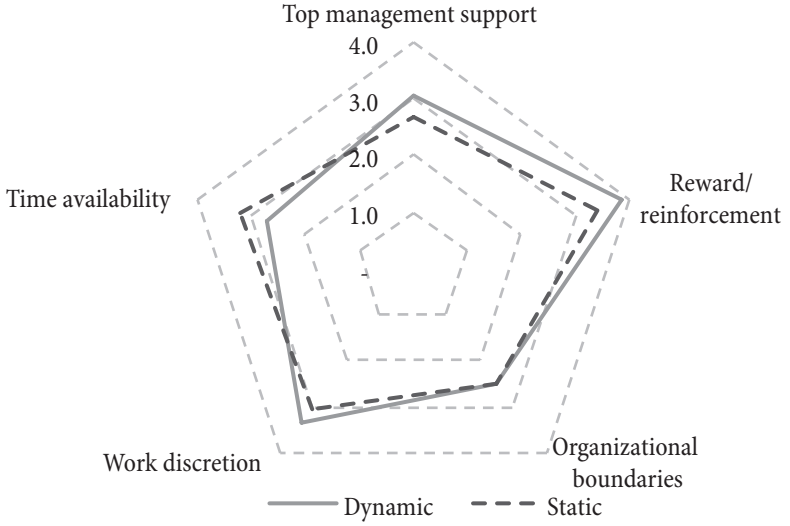
In dynamic industries, work discretion and reward factors on average show the best scores. In static industries, the best scores on average pertain to the reward/reinforcement and time availability factors while all the other factors had low scores. Organizational boundaries, which entail precise explanations of the expected outcomes of employees' work and development of mechanisms for evaluation, selection and implementation of innovation, had low scores in both groups, which certainly ought to be considered when creating future strategies of all types of companies. In fact, among the biggest problems regarding low innovative activity of individuals in both static and dynamic industries are the rigidity of work processes and a great number of bureaucratic procedures

Table 1: Independent samples t-test

		Levene's test for equality of variances		T-test for equality of means						
									95% confidence interval of difference	
		F	Sig.	T	Df	Sig. (2-tailed)	Mean difference	Std. error difference	Lower	Upper
Top management support	Equal variances assumed	5.659	.019	2.464	93	.016	.4108516	.1667613	.0796967	.7420066
	Equal variances not assumed			2.368	69.902	.021	.4108516	.1734854	.0648375	.7568658
Rewards	Equal variances assumed	6.035	.016	2.392	93	.019	.4694093	.1962580	.0796799	.8591388
	Equal variances not assumed			2.279	67.263	.026	.4694093	.2059703	.0583204	.8804983
Organizational boundaries	Equal variances assumed	.664	.417	-.220	93	.827	-.0343727	.1565671	-.3452839	.2765384
	Equal variances not assumed			-.213	73.192	.832	-.0343727	.1611399	-.3555099	.2867645
Work discretion	Equal variances assumed	.815	.369	2.085	93	.040	.2923535	.1402133	.0139178	.5707892
	Equal variances not assumed			2.058	78.033	.043	.2923535	.1420522	.0095512	.5751558
Time availability	Equal variances assumed	1.179	.280	-2.949	93	.004	-.4800870	.1627798	-.8033355	-.1568385
	Equal variances not assumed			-3.029	88.781	.003	-.4800870	.1584733	-.7949809	-.1651931
OPCE	Equal variances assumed	1.613	.207	1.463	93	.147	.1315797	.0899469	-.0470371	.3101964
	Equal variances not assumed			1.434	75.830	.156	.1315797	.0917846	-.0512319	.3143912

Source: Results of the present research.

Figure 2: Comparative illustration of OPCE factors in dynamic and static industries



Source: Results of the present research.

that restrict and suppress creativity of individuals. This factor can be further improved through stimulation of both vertical and lateral communication, creation of interdisciplinary work teams, strengthening of supervision and creation of small organizational units. Apart from organizational boundaries, time availability proved to be a factor with adverse effects on preparedness of companies in dynamic industries for corporate entrepreneurship. This particularly refers to tight time frames defined for completion of tasks, which leads to insufficient time available for dealing with broader strategic issues of companies. Given the better scores this factor showed in entities within static industries, we may assume that the reason for such divergent results resides in the volume and frequency of changes in the environment. More precisely, companies operating in dynamic environments are constantly exposed to changes, which, if such companies wish to remain competitive, must be monitored and adapted to. Consequently, managers permanently create new tasks and give employees tighter deadlines for their realization. Such continuous adaptation of employees to new activities does not leave them much time for contributions of a strategic nature.

On the other hand, besides organizational boundaries, the lack of top management support is distinctly the main cause of unpreparedness of companies in static industries for intrapreneurship. Such lack is evident in driving employees' creativity, as well is in implementation and promotion of their ideas. The reason for this may be the fact that the managers in static industries are less aware of the significance of innovation. Such behavior may be justifiable in the observed static environment since, as presented in the previous studies, excessive innovation is a feature much more typical of dynamic than of static industries [22]. In other words, high level of innovation is associated with the high performance of companies operating in an environment where changes are hard to anticipate. In an environment characterized by low volume of change, rigid competition and the like, high costs of implementing innovative ideas are probably less necessary than in dynamic environments. Expenditures necessary for the realization of an idea may frequently exceed the benefits such idea will bring.

Bearing in mind the aforesaid studies that consider corporate entrepreneurship activities justified exclusively in highly dynamic circumstances [22], [25], we cannot claim with certainty that higher levels of all five OPCE factors are desirable for both groups of companies observed. According to those studies, high levels of all OPCE factors are more desirable in dynamic industries. Hence, low values of top management support, organizational boundaries and work discretion are desirable in the group of static industry companies as they are not motivation drivers of employees' entrepreneurial behavior. However, the time availability factor and well-developed reward systems may be redirected toward achievement of higher efficiency in current operations rather than toward discovery and implementation of innovation. Quite contrarily, in companies operating within dynamic environments, improvement of organizational boundaries and time availability may create an internal atmosphere suitable and stimulating for employees' entrepreneurial activities. The aim of this research was merely to identify the current preparedness of companies for intrapreneurial activities and not to define the level of preparedness that is desirable or recommended for different conditions of business operations. In order to define the required levels of five OPCE factors and thereby confirm the above presented conclusions, it is necessary to determine the level of entrepreneurial activities that contributes the most to the performance of companies in dynamic industries, as well as in static industries.

Conclusion

The research conducted and presented in this paper is a response to the invitation of Hornsby et al. to further examine the structural validity of the proposed instrument for measurement of intrapreneurship (CEAI). As the reason for the required additional investigation, the authors specified a relatively short period of use of the proposed instrument worldwide, as well as the need to identify the impact of cultural differences on its structural diversification. The results of the instrument's reliability analysis confirmed the existence of five factors that best describe the observed phenomenon in Serbian companies. Those five factors, with a single question excluded, structurally match the factors of

the originally set model, referred to as management support, rewards, work discretion, organizational boundaries and time availability.

By evaluating all five factors in the sample of medium-sized and large companies in Serbia, the preparedness of Serbian companies for intrapreneurship was identified. The analysis results demonstrate that, on average, the level of preparedness of companies for corporate entrepreneurship is not high, which is mostly caused by the lack of top management support with regard to encouraging, developing and implementing entrepreneurial ideas, as well as by the excessive bureaucratization of work procedures that suppress employees' creativity and innovation. On the other hand, there are no procedures in place that emphasize the significance of innovative behavior through stimulation, evaluation, selection and implementation of ideas. It is interesting that in companies in Serbia the best ranking factor is the reward factor, suggesting that the system of monetary incentives to reward innovation is in place.

In addition, the results of the present research demonstrate that there are significant differences in respect of the top management support, rewards, work discretion and time availability between the companies operating in different environments in terms of dynamism. However, when it comes to organizational boundaries, we cannot claim that a statistically significant difference between the two groups exists. At the same time, this factor was evaluated as the least reliable using Cronbach's alpha. Higher management support in creation and implementation of innovative activities, better employee reward systems and higher levels of work autonomy (discretion) were identified in companies operating in dynamic industries. With regard to the time availability factor, the results of the conducted research suggest that this factor shows better scores in companies belonging to static industries. In both groups, the least contributing to the entrepreneurial activity implementation is the organizational boundaries factor, implying that the governing structures of both static and dynamic companies need to create a system in which employees know what is expected of them in the context of innovation, as well as to establish procedures for selection, evaluation and successful implementation of ideas.

The presented CEAI can be useful to managers in the process of diagnosing current preparedness of Serbian companies for intrapreneurship, as well as in assessing what actions need to be taken in order to improve entrepreneurial activities. In addition, the instrument is helpful in identifying elements that may have destructive influence on intrapreneurship and employees' motivation for entrepreneurial behavior. Hence, ongoing monitoring and improvement of intrapreneurship create a company that permanently seeks new business opportunities and whose environment facilitates exploitation of unique business opportunities for development and achievement of sustainable competitive advantage. However, the results of the present research cannot demonstrate the necessity of a high level of entrepreneurial activity in the observed groups of companies, which is certainly important as the subject of future investigation. As emphasized above, there are certainly factors likely to stimulate an adequate level of entrepreneurial activity. One of those factors may be the environment a company operates in, viewed through changes in the market requirements, behavior of competitors, technology development and the like. More precisely, it is important to assess if the high level of entrepreneurial activities is desirable in both static and dynamic environments. If not, improvement in these organizational factors needs to be aligned with the company's specific optimal level of entrepreneurial activities.

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Appendices

Appendix 1: Original CEAI survey distributed to corporate managers

Management support
1. My company promptly adopts new work methods and procedures.
2. My company promptly adopts new work methods and procedures proposed by employees.
3. Upper management levels accept my ideas and suggestions.
4. Upper management levels are known to have experience with the innovation process.
5. Individuals whose individual innovation projects prove successful are paid in cash.
6. Employees in my firm are encouraged to assume risks.
7. Funds for financing new projects are available.
8. An employee can get time off work in order to develop his/her idea.
9. Senior management levels encourage innovators to implement their ideas without rigid procedures.
10. In my organization, developing one's own ideas and working on projects with colleagues from other departments (units) are encouraged.
11. My organization supports the realization of new ideas even if some of them are likely to fail.
12. In my company, individual risk-takers are recognized for their willingness to champion new projects even though the successful outcome thereof may not be certain.
13. Employees who successfully implement their ideas within the company get promoted in any department.
14. My company encourages creativity of its employees.
15. Employees working on a project may make decisions without complying with the rigid company procedures.
16. There are several options for financial support of individuals with innovative projects in the company.
17. Employees are often encouraged to take calculated risks regarding the implementation of their ideas within the company.
18. The term "risk-taker" is considered a positive attribute for people in my company.
19. In my organization, there is considerable desire among employees to create and implement ideas in collaborative effort, irrespective of the department or function they belong to.
Employee reward/reinforcement
20. Whenever I come across an obstacle in my work, my manager always helps me to overcome it.
21. The rewards I receive depend on my performance at work.
22. My supervisor will increase my scope of work if I am assessed as a good performer.
23. My supervisor will propose that I should be rewarded if I perform well.
24. My supervisor will praise my work before his/her boss if my achievement is outstanding.
25. There is a lot of challenge in my work/job.
Organizational boundaries
26. There is little uncertainty in my work/job.*
27. In the past three months, I have followed standard operating procedures in carrying out my tasks.*
28. I clearly know how well and in what time I am expected to complete my tasks.*
29. I always know exactly what is expected of me in doing my job.*
30. There is a precise description of my job.*
31. There are many written rules and procedures that I must follow to carry out my tasks.*
32. During the past year, my supervisor and I have frequently discussed my work performance.
Work discretion
33. At work, I feel as my own boss.
34. Criticism and punishment I receive at work are the consequences of the mistakes I make.*
35. This company encourages my creativity and supports implementation of my own methods of work.
36. This company gives me freedom to use my own judgment during work.
37. This company allows me to make maximum use of my abilities.
38. I have the freedom to decide how to carry out my tasks.
39. It is my responsibility to decide how my job will be done.
40. I almost always get to decide what I will do in my job.
41. I have full autonomy in carrying out my work.
42. At work, I do not follow numerous work procedures and steps on a daily basis.
Time availability
43. I always have enough time to get everything done efficiently.
44. Deadlines for completion of my tasks are reasonable.
45. My coworkers and I always find time for long-term problem-solving at work.
46. I feel that I am under pressure due to deadlines for completion of my work.*
47. For the past three months, my current workload has prevented me from developing new ideas at work.*
48. I do not have much time to think about wider organizational problems due to the structure of my job.*

*reversed questions

Appendix 2: Results of reliability testing of the measurement instrument used

Table 1a: Cronbach's alpha for the management support factor

Reliability statistics		
Cronbach's alpha	Cronbach's alpha based on standardized items	No. of items
.941	.941	19

Table 1b: Cronbach's alpha for the reward/reinforcement factor

Reliability statistics		
Cronbach's alpha	Cronbach's alpha based on standardized items	No. of items
.890	.889	6

Table 1c: Cronbach's alpha for the organizational boundaries factor

Reliability statistics		
Cronbach's alpha	Cronbach's alpha based on standardized items	No. of items
.536	.587	7

Item-total statistics				
	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted
VAR00026	14.858586	13.878	.206	.523
VAR00027	16.070707	12.679	.514	.410
VAR00028	16.111111	11.875	.542	.383
VAR00029	15.909091	11.818	.564	.375
VAR00030	15.888889	12.896	.351	.462
VAR00031	15.959596	12.468	.414	.435
VAR00032	15.020202	19.755	-.365	.742

Reliability statistics		
Cronbach's alpha	Cronbach's alpha based on standardized items	No. of items
.742	.749	6

Table 1d: Cronbach's alpha for the work discretion factor

Reliability statistics		
Cronbach's alpha	Cronbach's alpha based on standardized items	No. of items
.817	.821	10

Table 1e: Cronbach's alpha for the time availability factor

Reliability statistics		
Cronbach's alpha	Cronbach's alpha based on standardized items	No. of items
.810	.810	6

Appendix 3: Industry dynamism index

Formula for calculating the dynamism index $D = Z(Emp + Comp) + Z(Tech) + 3$, where *Emp* refers to the number of employees instability indicator, *Comp* refers to the number of companies instability indicator and *Tech* represents technology instability indicator. Letter *Z* in front of the indicators suggests that the values of the indicators have been standardized.

Table 1: Dynamism index

Industry	Instability indicators			Dynamism index	Industry classification
	Market instability indices		Technology		
	# Employees	# Companies			
Manufacture of computer, electronic and optical products	1,6%	1,3%	66%	6,11	D
Manufacture of tobacco products	2,6%	1,9%	50%	5,89	D
Financial and insurance activities	1,9%	0,8%	34%	3,71	D
Manufacture of electrical equipment	1,0%	0,8%	36%	3,41	D
Manufacture of basic pharmaceutical products and pharmaceutical preparations	1,0%	1,6%	29%	3,36	D
Manufacture of weapons and ammunition	0,7%	0,4%	39%	3,22	D
Information and communication	1,1%	0,7%	33%	3,17	D
Manufacture of food products	0,7%	0,5%	36%	3,06	D
Professional, scientific, innovation and technical activities	0,8%	0,2%	35%	2,89	D
Manufacture of wearing apparel	0,4%	0,7%	34%	2,84	D
Administrative and support service activities	0,8%	0,3%	32%	2,73	S
Manufacture of chemicals and chemical products	0,2%	0,2%	35%	2,57	S
Construction	0,6%	1,1%	26%	2,57	S
Manufacture of leather and related products	0,4%	1,3%	24%	2,51	S
Accommodation and food service activities	0,9%	0,3%	28%	2,47	S
Manufacture of basic metals	0,3%	0,1%	38%	2,74	S
Electricity, gas, steam and air conditioning supply	0,2%	0,2%	38%	2,69	S
Manufacture of rubber and plastic products	0,4%	0,3%	29%	2,31	S
Water supply; sewerage, waste management and remediation activities	0,4%	1,1%	22%	2,26	S
Wholesale and retail trade; repair of motor vehicles and motorcycles	0,7%	0,3%	22%	1,96	S
Printing and reproduction of recorded media	0,6%	0,4%	21%	1,89	S
Transportation and storage	0,2%	0,3%	25%	1,86	S
Manufacture of beverages	0,6%	0,4%	20%	1,76	S
Agriculture, forestry and fishing	0,1%	0,4%	23%	1,74	S
Manufacture of paper and paper products	0,7%	0,7%	10%	1,38	S

Appendix 4: Results of the independent samples t-test

Table 1: OPCE of companies in Serbia

Descriptive statistics									
	No.	Minimum	Maximum	Mean	Std. deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. error	Statistic	Std. error
Top management support	95	1.0000	4.7900	2.895263	.8208556	-.369	.247	-.430	.490
Rewards	95	1.0000	5.0000	3.687474	.9643441	-.831	.247	.114	.490
Organizational boundaries	95	1.0000	5.0000	2.501789	.7468871	.390	.247	.318	.490
Work discretion	95	1.8000	4.7000	3.221053	.6841511	-.048	.247	-.503	.490
Time availability	95	1.1700	4.6700	2.909053	.8118171	-.089	.247	-.326	.490
OPCE	95	2.0400	3.9800	3.042947	.4338788	-.237	.247	-.473	.490

Table 2a: Comparative overview of OPCE factors in dynamic vs. static industries (dynamic industries=1, static industries=0)

Group statistics					
	Dyn	N	Mean	Std. deviation	Std. error mean
Top management support	1	56	3.063929	.7214598	.0964091
	0	39	2.653077	.9007195	.1442305
Rewards	1	56	3.880179	.8261972	.1104052
	0	39	3.410769	1.0858840	.1738806
Organizational boundaries	1	56	2.487679	.6986376	.0933594
	0	39	2.522051	.8202156	.1313396
Work discretion	1	56	3.341071	.6519277	.0871175
	0	39	3.048718	.7007033	.1122023
Time availability	1	56	2.711964	.8252326	.1102763
	0	39	3.192051	.7107490	.1138109
OPCE	1	56	3.096964	.4106709	.0548782
	0	39	2.965385	.4594553	.0735717

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ORIGINAL SCIENTIFIC PAPER
UDK: 005.21:334.72.021(497.11)
657.6
DOI:10.5937/EKOPRE1806309D
Date of Receipt: December 29, 2017

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POSITIONING INTERNAL AUDIT IN THE CORPORATE GOVERNANCE SYSTEM: CASE OF THE REPUBLIC OF SERBIA

Pozicioniranje interne revizije u sistemu korporativnog upravljanja u Republici Srbiji

Abstract

The aim of this paper is to determine the position of internal audit in the corporate governance system in the Republic of Serbia. In this regard, it analyzes the achieved level of internal audit establishment in companies, with special focus on different factors affecting it, to provide a clearer view of the current situation. Given the fact that the internal audit position is determined by the scope and role of this function, the study also covers these issues. Empirical research focuses on a sample of 113 companies from the private sector. Research results indicate that the establishment of internal audit in companies in the Republic of Serbia is at a satisfactory level, as it is significantly influenced by regulatory obligations, origin of capital, and number of employees. Also, research reveals that internal audit has exceeded its traditional assurance role, and that, by auditing all the processes and activities in a company, it provides advisory services to managers.

Keywords: *establishment of internal audit, role and activities of internal auditors, creating added value, Republic of Serbia.*

Sažetak

Cilj autora ovog rada jeste utvrđivanje pozicije interne revizije u sistemu korporativnog upravljanja u Republici Srbiji. U tom smislu, analiziran je ostvareni nivo uspostavljenosti interne revizije u privrednim društvima, i posebno je ispitivana njegova uslovljenost različitim faktorima kako bi se obezbedilo jasnije sagledavanje postojećeg stanja. Činjenica da je pozicioniranje interne revizije determinisano delokrugom rada i ulogom koju ova funkcija preuzima, istraživanjem su obuhvaćena i ova pitanja. Empirijsko istraživanje sprovedeno je na uzorku koji je činilo 113 privrednih društava iz privatnog sektora. Rezultati istraživanja ukazuju na to da je nivo uspostavljenosti interne revizije u privrednim društvima u Republici Srbiji na zadovoljavajućem nivou, pri čemu značajan uticaj na to ima regulatorna obaveza društava, poreklo kapitala i broj zaposlenih. Takođe, istraživanjem je utvrđeno da je interna revizije prevazišla svoju tradicionalnu ulogu uveravanja i da revidirajući sve procese i aktivnosti u privrednom društvu, upravljačkim strukturama pruža i savetodavne usluge.

Ključne reči: *uspostavljanje interne revizije, uloga i aktivnosti interne revizije, kreiranje dodate vrednosti, Republika Srbija.*

Introduction

If, in the broadest sense, corporate governance is defined as a structure and process of management and control of an enterprise, and if internal audit is defined as an internal control mechanism of an enterprise, it can be reliably concluded that the interrelation of the two is not a new phenomenon. Internal audit has always been focused on evaluation of effectiveness, efficiency and legitimacy of business processes and activities in an enterprise, and therefore it has significantly influenced quality and business outcomes. However, at the end of the 20th century, it became clear that the previous practices of corporate governance are not suitable for responding to the increasingly complex business environment. This was additionally confirmed at the beginning of the 21st century, when poorly established mechanisms of corporate governance and control have been identified as two causes of financial and economic crisis. The need for overcoming these problems has, among other reasons, caused setting new requirements that internal audit must satisfy.

In addition to a significant improvement of services related to assurance about outcomes and implementation of strategic processes, internal audit was expected to get involved in their development and advancement as well. The management of any enterprise was in need of greater support from internal audit in terms of getting constructive solutions for business enhancement and overcoming identified problems. Thus, requirements for the development of internal audit were oriented toward defining consultative services, based on which internal audit would assist managers in corporate governance. Since internal audit has accepted these challenges, its place, role and activities in the system of corporate governance, as well as its relationship with corporate governance, have attracted interest of both theorists and practitioners.

Today, internal audit, as an independent organizational function, provides assurance about effectiveness of all business functions in an enterprise, and it also provides advice to managers in fulfilling their responsibilities.

Internal audit continuously performs activities which are proactively oriented toward creating additional value for an enterprise, which is why it has a strategic role in managing its business operations. More precisely, internal audit is integrated into corporate governance system, and its activities are directed toward providing support to other participants in the corporate governance by evaluating the best business practice and reviewing possibilities for its adoption. By performing the described role and activities, internal audit becomes connected to all participants in the processes of management and control of an enterprise, and therefore its position in the corporate governance system is considered unique. Recognition of the value of support it provides to the abovementioned participants in fulfilling their own responsibilities made internal audit a common practice in an increasing number of enterprises.

The paper, comprising three parts, is structured as follows. The first part includes a short revision of internal audit's role and activities which made it the key participant in the corporate governance system. Empirical research on positioning of internal audit in the corporate governance system in Serbian enterprises, including the main results, is described in the second part of the paper. The third part provides recommendations related to raising the level of awareness about the importance of internal audit and the contribution it could provide to the management, which would surely strengthen its position in the corporate governance system.

Theoretical basis of the research: Internal audit's position in the corporate governance system

Internal audit, according to the definition of the Institute of Internal Auditors (IIA), a professional organization with the greatest impact on its development and organization, is "*an independent, objective assurance and consulting activity, designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes*" [14]. With this definition, IIA emphasizes that internal audit plays the role of: (1) provider of objective and independent assurance of adequacy of the established management structure and efficiency in carrying out specific management activities; and (2) catalyst

for change by providing advice and guiding activities, with the aim of improving corporate governance structure and practice [15, p. 4]. Its function is characterized by 3R:

- Referencing – determining observation parameters, i.e. translating strategic objectives into parameters that the audited entity should adopt;
- Representing – providing details about the observed parameters that have been previously defined, and thus giving a clear picture of the audited entity, and
- Recommending – providing recommendations depending on the real situation of the audited entity [3].

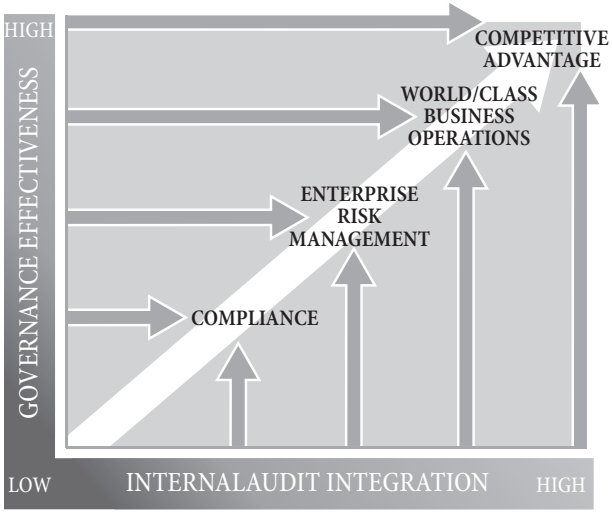
In addition, internal audit activities aim at: promoting appropriate ethics and values in the company; providing assurance about the effectiveness of management performance and responsibilities; communication of information on risk and control and the extent to which risks are controlled; coordinating activities and communicating information between board of directors, external auditors and management; evaluating the design, implementation, and effectiveness of achieving ethical goals, programs, and activities; checking and verifying the level of company's business compliance with policies and procedures; providing recommendations for improving policies and procedures when there is an adequate opportunity to improve performance [1, p. 165], [7].

By doing this, internal audit is able to provide very important information for more reliable, safer, and faster business decision-making or to provide assistance to management in carrying out their obligations. Therefore, the work of internal auditors, materialized in the form of analyses, recommendations, assessments, relevant comments on audited activities, etc., is considered to be the work aimed at creating added value and represents "the necessary assistance in collecting the information necessary for effective management" [6, p. 37]. In fact, the IIA clearly advocates the view that the fundamental concept of modern internal audit is the creation of added value for the company in a way that "ensures the achievement of company goals, identifies opportunities for improvement, and reduces risk exposure through assurance and consulting services" [16]. It is understood that internal audit creates added value by integrating itself into the corporate governance system, and the achieved level of integration, again, determines the value this function is able to provide (Figure 1).

Certainly, in order for internal audit to be proactive – the driver of changes in a company, innovative – creating opportunities to increase value, focused – on the management and the company within which it operates, and motivated to offer suggestions that lead to continuous improvement, it needs to be functionally independent (planning activities independently, carrying out work and reporting on performed audits without any influence) and organizationally independent (independence in relation to other organizational parts of the company and smooth access to them). Such independence implies the organization of internal audit as a separate function in a company, occupying the very top of the management hierarchy, while carrying out work under the direct control of the appropriate board of directors (administrative or supervisory).

Previously described internal audit action defines it as a frontal function which, by applying the partnership approach to management, becomes a link vital to the company. Its position is strategically important, allowing it to greatly improve company's performance [5, p. 81]. However, although there is no doubt that internal audit is, due to its dual role (assurance and consulting) which covers the functioning of the entire business system, one of the key players in the corporate governance system, in

Figure 1: Increased organizational value through the integration of internal audit and governance



Source: [8].

practice it is only experiencing its expansion. This is due to the fact that its development from "management audit" to "corporate governance audit" [13, p. 3] is associated with relatively recent past. More precisely, for a long time, internal audit was characterized as "the subfunction of the accounting function which it audits" [11, p. 51]. By the 1980s, the scope of its work reached a high level of control over all business functions in a company, and internal audit became a combination of [4, p. 54]: financial audit, compliance audit, operational audit and management audit. As such, its role was significant, but at the same time it provided only partial benefit to the management. The development of an additional role, the role of consulting, which ensures that internal audit is not seen as a "policeman" whom management is avoiding, but rather as an expert sought by the management [9, p. 33], is related to early 1990s. That is when, in fact, the affirmation of internal audit as the key participant in the corporate governance system and the esteemed part of the company's management has begun [2].

Recognizing the importance of internal audit and its establishment in the company surely requires an appropriate temporal distance, not only in countries in transition, but also in those in which this profession is most developed. As a result, efforts have been made in this regard by a number of professional bodies, which deal with the issues of internal audit organization and functioning in their reports. Also, legislative bodies of all countries are increasingly obliging companies to establish internal audit and regulate its position and role. Thus, in the United States, the Treadway Commission and the Blue Ribbon Committee reports have made significant contribution to the development of the role of internal audit in the corporate governance system. In addition to these reports, the Sarbanes-Oxley Act, a radical corporate governance law, has a significant impact on internal audit practice, although it does not contain specific provisions that point to its position and role. In the EU member states, the report issued by the European Confederation of Institutes of Internal Auditing (ECIIA) and the Eighth Directive (2006/43/EC) showed a significant shift in the positioning of internal audit in the corporate governance system. In this respect, in most countries today, internal audit is mandatory in companies listing their shares, as well as in financial organizations.

In the context of the Republic of Serbia, it can be said that today's regulatory solutions are satisfactory, since the first institutional framework was set by the National Bank of Serbia in the mid-1990s, passing decisions binding banks to establish an internal audit service. It was not until the beginning of the 21st century that the situation changed significantly with the adoption of the Law on Banks, the Insurance Law and the Law on Companies. More specifically, the Law on Banks and Insurance Law oblige these organizations to establish internal audit. However, the 2004 Law on Companies did not place internal audit in an affirmative position that allows it to capitalize on its potentials. This is because the law saw internal audit, supervisory board, and audit committee as three identical, equal, and mutually interchangeable forms of internal control, with the same objectives and scope of work [17], which is why internal audit did not need to be established. The described shortcoming of the 2004 Law on Companies was remedied by the new Law on Companies adopted in 2012. More specifically, according to Article 451 of the new Law, the company regulates the way of conducting and organizing internal control by its acts, whereby only public joint stock companies undertake that at least one person in charge of internal control must meet the requirements prescribed for the internal auditor. In other companies, there is no obligation to establish internal audit, and the Law on Companies only encourages them to do so.

The relevant laws also define internal audit's responsibilities (Table 1).

In addition to legislation, a more specific definition of the role and scope of internal audit in companies is determined by the Corporate Governance Code adopted by the Serbian Chamber of Commerce. The recommendation of the Code which, truthfully, does not have a binding character, is that "the company should establish an internal audit function which, in addition to assurance, can provide the management with advisory services and objective, independent opinions on numerous issues related to corporate governance, risk management and internal control processes, adding value and contributing

Table 1: Internal audit regulatory framework in the Republic of Serbia

Law on Companies	Article 452 specifies the tasks performed by internal auditors: • control the compliance of a company with the law, other regulations and corporate acts, • oversee the implementation of accounting policies and financial reporting, • check the implementation of risk management policies, • monitor compliance of the organization and activities of the company with the corporate governance code and • evaluate policies and processes in a company, as well as proposals for their improvement
Law on Banks	According to Article 85, internal audit is obliged to: • assess the adequacy and reliability of the bank's internal control system and the compliance function, • ensure that risks are appropriately identified and controlled, • identify weaknesses in the operations of the bank and its employees, as well as non-execution of obligations, overstepping of authorizations and preparation of proposals for removing these weaknesses
Insurance Law	Article 137 stipulates that the internal audit of the insurance company shall carry out a permanent and comprehensive control of all business activities, in particular: • continuous monitoring, checking and improving the system of internal control and compliance, • identification of risks to which the company is exposed or can be expected to be exposed, • assessment and evaluation of the established internal control system, • issuing appropriate recommendations for remedying detected irregularities and deficiencies and for improving the procedures and work procedures applied

Source: [18], [19], [20].

to increasing the overall efficiency and improvement of a company" [10].

Achieved position of internal audit in the corporate governance system in the Republic of Serbia – empirical research

Research description

Subject, objective, and methodology of research

The research subject in this paper is the position of internal audit in corporate governance in the context of the Republic of Serbia. The research objective is to provide an answer to the question whether internal audit is incorporated into the corporate governance system in the Republic of Serbia and how it contributes to the said system. For the purpose of achieving this goal, the following research questions have been defined:

(1) What is the level of internal audit establishment in companies in the Republic of Serbia?
(2) What are the factors that determine internal audit establishment in companies? and
(3) What is the scope of internal audit and does it, in addition to traditional assurance services, also provide advisory services?

With the aim of determining the level of internal audit establishment in companies in the Republic of Serbia and the factors affecting it, two-level research was carried out. The representation of internal audit was examined based on several criteria, first in all companies from the sample, and then in different groups of companies. This way, it was possible to obtain more detailed findings and a better insight into the level of internal audit organization in different types of companies. The research relied on data referring to the obligation of organizing internal audit, on the one hand, and actual situation in companies in the Republic of Serbia, on the other. In particular, the position of internal audit in the corporate governance system is determined by the level of (non)establishment of internal audit in companies in the Republic of Serbia with regard to (1) the obligation arising from the provisions of relevant laws and other regulations, and (2) the existence of managers' awareness of benefits and contributions this function provides.

Also, internal audit position is significantly determined by its scope and role. In addition to providing assurance about efficiency and effectiveness of all processes and activities in the company, internal audit is also better positioned since it provides advice to the management aimed at improving their activities and processes, and, in general, the overall company operations. In this sense, the achieved extension of the role and scope of internal audit will be determined by comparing the actual role and activities of internal audit in companies, on the one hand, and regulatory solutions and theoretical settings, on the other.

Data collection and sample

The initial research was conducted in the period from July to November 2015, and again from February to April 2016. The sampling frame, comprising active companies in financial and non-financial sectors registered with the Business Registers Agency (BRA), was limited to:

- Limited liability companies and joint stock companies in which the ownership function is separated from the management function[1]
- Companies in the private sector[2].

First, the research included collecting data on whether internal audit was established in companies. The relevant data were obtained for 113 out of 372 randomly selected companies meeting the predefined selection criteria, both from companies' official websites and in direct contact with them – either by e-mail or telephone. The response rate, which in this case was 30.37%, can be considered acceptable for this type of research, and therefore research requirements fulfilled. Internal audit was established in 68 (60.18%) out of the total number of companies from the sample, while in 45 (39.82%) it was not. Descriptive statistics of companies are presented in Tables 2 and 3, for those with established internal audit and for those without it, respectively.

Due to the fact that 39.82% of companies in the sample did not have internal audit established, we considered it important to identify reasons for this by collecting and analyzing the data, as well as to determine future tendencies regarding its potential establishment. Accordingly, the questionnaire was sent to the managers of these companies. At the same time, in companies with internal audit established, the questionnaire was sent to chief audit executives to collect data on its scope and roles.

1 Internal audit is established in companies where the ownership and management functions are separated. This is because the company owners who at the same time act as managers perceive internal audit as unnecessary expense because they "know" what they did and do not need confirmation.

2 The specifics of public companies compared to private ones (in terms of organization, functioning, and responsibilities) also condition the specifics of internal audit in this sector, which is why these companies are excluded from the research.

Table 2: Characteristics of companies in which internal audit is established

Sector affiliation and form of companies	Non-financial sector			Financial sector		Σ
	Public JSC	JSC	LLC	Banks	Insurance companies	
Frequency	18	11	9	18	12	68
Relative participation	26.47%	16.18%	13.24%	26.47%	17.65%	100%

Origin of capital	Domestic	Foreign	Mixed, majority domestic	Mixed, majority foreign	Σ
Frequency	9	35	16	8	68
Relative participation	13.24%	51.47%	23.53%	11.76%	100%

Number of employees	$X \leq 50$	$50 < X \leq 250$	$250 < X \leq 500$	$X > 500$	Σ
Frequency	8	19	16	25	68
Relative participation	11.76%	27.94%	23.53%	36.74%	100%

Source: Results of authors' research.

Table 3: Characteristics of companies in which internal audit is not established

Sector affiliation and form of companies	Non-financial sector			Financial sector		Σ
	Public JSC	JSC	LLC	Banks	Insurance companies	
Frequency	4	24	17	/	/	45
Relative participation	8.89%	53.33%	37.78%	/	/	100%

Origin of capital	Domestic	Foreign	Mixed, majority domestic	Mixed, majority foreign	Σ
Frequency	25	7	7	6	45
Relative participation	55.56%	15.56%	15.56%	13.33%	100%

Number of employees	$X \leq 50$	$50 < X \leq 250$	$250 < X \leq 500$	$X > 500$	Σ
Frequency	9	16	11	9	45
Relative participation	20%	35.56%	24.44%	20%	

Source: Results of authors' research.

Analysis and discussion of research results

Determining internal audit position in the corporate governance system implied, firstly, an analysis of internal audit establishment in companies in the Republic of Serbia. The results of this analysis revealed, as already mentioned, that internal audit was established in 68 out of 113 companies (60.18%), which makes a rather high share. In contrast, in 45 companies, or 39.82%, internal audit was not established. In order to examine the existence of specifics or particular characteristics of companies in such defined groups (those in which internal audit was established and those in which it was not), the analysis was expanded and companies from both groups were additionally classified according to supplementary criteria. The characteristics based on which these two groups of companies were observed and which were used to define independent variables, assuming that they are the ones with the greatest influence on internal audit establishment (taken as dependent variable), are as follows:

(a) Sectoral affiliation and legal form (established variable being regulatory obligation – RegOb[3])
(b) Origin of capital (OrCap), and
(c) Number of employees (NumEmp).

In order to confirm the assumption of influence of regulatory obligation on the establishment of internal audit, a correlation analysis was conducted and the Pearson correlation coefficient calculated in Table 4.

Data in Table 4 indicate that the correlation analysis of regulatory obligation and internal audit establishment confirms the positive correlation between these variables, i.e. the assumption that the regulatory obligation affects internal audit establishment in companies in the Republic of Serbia. In fact, this is a moderately strong correlation, since r = 0.606. The clarification of this strength with a more detailed presentation of internal audit positioning in companies in the Republic of Serbia is given in descriptive statistics. Specifically, 48 out of 68 companies (70.59%) in which the internal audit was established had a regulatory obligation to do so, while the remaining 20 companies did not have this obligation. In almost 1/3 of the identified companies internal audit was established as a result of management's awareness of the contribution this function can provide, and it is precisely this fact that indicates that internal audit has the opportunity to capitalize on its potentials to improve the corporate governance. On the other hand, among the companies where internal audit was not established, the vast majority (91.11%) was not obliged to do so. In fact, in this group, there were 4 public joint stock companies legally obliged to establish internal audit, which is certainly a matter of concern. However, a deeper look into the issue revealed that in these companies internal audit formally existed, foreseen by work systematization, but the process of appointing an internal auditor and organizing their work was in progress.

The impact of the remaining two factors (the origin of capital and the number of employees) on the establishment of internal audit was observed in a narrow context – only in those companies not obliged by legislation to establish internal audit. This is because financial organizations (banks and insurance companies) and public joint stock companies, regardless of the origin of capital and the number of employees, need to have internal audit, and it is not very useful to analyze the impact of other factors. Therefore, financial organizations (40) and public joint stock companies (22) were excluded from the impact analysis of these two factors.

3 According to the relevant laws in the Republic of Serbia, and taking into account the defined research subject, only financial organizations (banks and insurance companies) and public joint stock companies have the obligation to establish internal audit.

Table 4: Correlation analysis of the establishment of internal audit and regulatory obligations

		RegOb	Establishment
RegOb	Pearson's correlation	1	.606(**)
	Significance of the difference		.000
	N	113	113
Establishment	Pearson's correlation	.606(**)	1
	Significance of the difference	.000	
	N	113	113

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

The study of the influence of the origin of capital on the establishment of internal audit included conducting the correlation analysis and the calculation of the Pearson correlation coefficient, as shown in Table 5.

Data in Table 5 indicate that the origin of capital had influence on the establishment of internal audit ($r = 0.338$, $N = 61$, $p < 0.05$). In companies where internal audit was established, foreign capital was dominant (87% have exclusively foreign capital or mixed, mostly foreign). In contrast, predominantly domestic capital (73.19% exclusively domestic or mixed, mostly domestic) was found in companies in which internal audit was not established. In addition, the fact that foreign capital was dominant in all 20 companies that did have internal audit although they were not obliged to have it, further points to the conclusion that internal audit practice in companies in the Republic of Serbia is largely carried out and developed under the influence of good practice in countries from which the capital originates.

Investigating the impact of the number of employees on the establishment of internal audit was done by comparing the arithmetic mean of the number of employees between the groups of companies that have and those that do not have internal audit. A statistical t-test was used, along with the Levene's equality of variances test, and the results obtained are shown in Table 6.

Table 6 shows that enterprises with internal audit had a significantly higher average number of employees (829.93) than those in which this function was not established (430.95). The difference between the average number of employees is 467.88, and the investigation revealed that this difference was statistically significant (Sig = 0.01). A linear relationship between the number of employees and the establishment of internal audit was confirmed by the Pearson correlation coefficient, as shown in Table 7.

The data presented in Table 7 shows that the increase in the number of employees (in enterprises within the research sample) influences the increase, of the same degree, in the number of enterprises in which the internal audit is established. This further suggests that the management of a company with a larger number of employees recognized the need to establish partnership relations with internal audit in business management.

The presented results of the conducted empirical research provide a sufficient basis for expressing the opinion that internal audit establishment in companies in the Republic of Serbia is at a satisfactory level. This opinion is further confirmed by the fact that internal audit, although a profession with a long history, has experienced its expansion even in the most developed countries of the world in the last twenty years, and its institutionalization in the Republic of Serbia is linked to relatively recent past. Also, recognition of this function's potential and the adoption of the best practice certainly require a certain temporal distance, especially if the general economic situation in our country is taken into account.

Table 5: Correlation analysis of the establishment of internal audit and origin of capital

		OrCap	Establishment
OrCap	Pearson's correlation	1	.338(**)
	Significance of the difference		.005
	N	61	61
Establishment	Pearson's correlation	.338(**)	1
	Significance of the difference	.005	
	N	61	61

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

Table 6: The difference in the number of employees in companies that have/do not have internal audit

Establishment of internal audit	Number of companies	Mean	Std. deviation	Std. error of mean
Yes	20	829.93	861.83	157.91
No	41	362.05	430.95	69.91

	Mean difference	Std. error of difference	t	df	Sig. (2-tailed)
Employment	467.88	172.18	2.717	40.35	0.01

This is indicated by the data obtained from companies in which internal audit was not established, related to future tendencies to establish internal audit and the existence of reasons for which it has not yet been established (Table 8).

Data in Table 8 show that 9 out of 45 companies (4 due to legal obligations and 5 aware of the importance of this function) plan to introduce internal audit in the upcoming period, which does not present a particularly enviable situation. However, an additional analysis of the reasons why the remaining companies do not plan to establish this function provides further clarification of the matter. Specifically, the respondents were given the opportunity to provide multiple answers as to why they do not plan to set up internal audit in their companies. Most of them pointed out that the introduction and operation of internal audit would incur high costs and require large organizational efforts (which would again bring corresponding costs), which the company could not bear. A relatively small number of respondents did not recognize the benefits of internal audit, and there was also a small number of those whose answers ("The company has internal control", "Existing controls of production processes through the application of HACCP quality control systems are sufficient", "Application of SRPS ISO 9001, SRPS ISO 14001, OHSOS 18001, SRPS ISO 27001 standards sufficiently regulates operations"), in fact indicate that these are the companies where internal audit is not properly understood. Based on this data, it can be concluded that managers of the vast majority of these companies understand the importance of internal audit, which implicates a positive attitude. However, the behavioral aspect, which includes internal audit establishment and implementation activities, is now in most cases lacking, not because of the lack of understanding of its importance and lack of will, but because of organizational constraints.

Previous data indicate that a satisfactory number of Serbian companies in the sample incorporated internal audit into their organizational structure. In the majority of companies (61 out of 68, i.e. 89.71%), internal audit is organized as a separate function in the company, while in other cases (7 out of 68, i.e. 10.29%) it is organized within the function of accounting and finance. Furthermore, in addition to organizational independence, appropriate functional independence was established (internal audit

Table 7: Correlation analysis of the establishment of internal audit and number of employees

		NumEmp	Establishment
NumEmp	Pearson's correlation	1	.266 (**)
	Significance of the difference		.028
	N	61	61
Establishment	Pearson's correlation	.266(**)	1
	Significance of the difference	.028	
	N	61	61

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

Table 8: Prospects for the establishment of internal audit in the future

Future tendencies for establishment of internal audit

	Number of companies	%
Establishment is planned in the upcoming period	9	20
Establishment is not planned in the upcoming period	36	80
Total:	45	100

Reasons why internal audit establishment is not planned

	Number of companies	%
They do not recognize the benefits	6	10.00
Great organizational efforts	19	31.67
High operating costs	27	45.00
Other	8	13.33
Total:	60	100

Source: Results of authors' research.

independently planned its activities, which in 77.4% of cases were approved by the relevant management body – administrative or supervisory board, and in 84.9% of cases it was responsible for its work to the administrative/ supervisory board). However, the fact is that mere establishment of internal audit does not necessarily imply that the management places a lot of trust in it. The significance of its position in the corporate governance system, among other things, also depends on its scope and the services it provides to management structures.

The role and activities of internal audit in companies in the Republic of Serbia have been examined in the conducted research. The results point to a high level of compliance of Serbian companies' internal audit practice with legal provisions and contemporary trends in the development of this profession. More precisely, in addition to performing various administrative tasks (5.9% of share in their everyday work), internal auditors are significantly focused on:

- Financial audit, i.e. verification of the reliability of the accounting and information systems, and the annual reports that result from it (31.7%),
- Audit of risk management processes and policies (46.12%), and
- Audit of efficiency and effectiveness of business processes (16.58%).

In addition, the abovementioned audits include the verification of consistent application of regulations and the efficiency and effectiveness of established internal controls related to the given areas. As expected, there are differences in the share of individual activities of internal auditor's everyday work between companies in non-financial and financial sectors. More precisely, audit in financial organizations predominantly includes the audit of risk management processes and policies with 51.02%, while in the non-financial sector internal auditors still mostly focus on the adequacy of accounting policies and financial reporting (64.28%).

Also, the research findings indicate that in almost all companies internal audit provides advice on the elimination of the identified deficiencies, i.e. further improvement of the audited processes and activities, which consequently contributes to the improvement of the overall business operations of the company.

Instead of conclusion

The results of the conducted empirical research indicate that the development of internal audit practice in the Republic of Serbia is at a satisfactory level. Nevertheless, further improvement of its position in the corporate governance system is, of course, possible.

Regarding internal audit establishment, the fact is that the existing legislation in Serbia does not differ from that in developed countries, and according to it, this function is mandatory only in public companies and financial organizations, while in others it is recommended. For these reasons, raising the level of internal audit establishment may be aimed at raising the company management's awareness about its significance. This can be ensured by the continuous promotion of this profession, its scope, as well as by presenting information on the best practice. An important role, most certainly, has already been taken over by the Association of Internal Auditors of Serbia. This association accomplishes its mission of promoting internal audit in Serbia, supporting professional development of its members, and strengthening their influence in the corporate environment by organizing professional seminars, conferences, roundtable discussions, etc., providing translations of foreign literature, announcing regional events in public, etc. For these reasons, greater support of state institutions to this professional organization would certainly have positive influence on the development of internal audit profession and practice in Serbia.

At the same time, although the research results suggest that internal audit respects the adopted professional regulations by assuming a dual role directed at the entire company operations, improvements are possible in this direction. More precisely, it is not enough to align internal audit functioning with standards, but it is also necessary to make additional efforts that will enable it to reach its full potential. The best practice indicates that an important condition of the proper functioning of internal audit is, among other things, the establishment of an organizational culture in a company that would lead to employees' awareness of the significance and possible contribution of internal audit. This would lead to a true understanding of the purpose of this function and eliminating the view that it is an activity carried out to detect errors and find

the culprits. Significant efforts in this direction include the improvement of communication between internal audit and stakeholders because, through open communication, this function would properly assess their needs and direct its activities toward delivering the required value, not only toward legally required activities.

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ORIGINAL SCIENTIFIC PAPER
UDK: 339.543(4-672EU)
336.226.331(497-15)"2007/2017"
DOI:10.5937/EKOPRE1806320B
Date of Receipt: August 7, 2018

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CIGARETTE EXCISE TAX POLICY IN THE WESTERN BALKANS: TRENDS, EFFECTS AND CHALLENGES

Politika akciza na cigarete na Zapadnom Balkanu – trendovi, efekti i izazovi

Abstract

In this paper we analyse the evolution of cigarette excise duties policy in the Western Balkans Countries (WBCs) from 2007 to 2017 and estimate respective fiscal and smoking prevalence outcomes. We also identify key expected changes in the future required to align with the EU directives. Driven by fiscal motives, all WBCs have been increasing the cigarette excise duties rates from 2007 to 2017, which is why the average excise yield soared by 4.1 times, from 15.3 to 58.8 Euro/1,000 pieces of cigarettes. This resulted in nominal rise of cigarette excise duties revenues by 2.5 times. Over the same period, smoking incidence in the WBCs declined on average by approx. 7%. These results suggest that increase in cigarette excise duties in the WBCs had some fiscal effects, while the health effects were mild. In most WBC countries, surge in excise yield was not fully reflected into rise in tax revenues, only part of that underperformance being explained by decline in smoking incidence, while a part of underperformance could potentially be attributed to a widening illicit market. In the most WBCs, except in Albania, structure of cigarette excise duties scheme is aligned with the EU directives, while in all WBCs excise yield being considerably below the EU minimum threshold. Therefore, full harmonisation with the EU directives would imply strong rise in cigarette excise tax burden in the WBCs, on average by 76%. The required increase in excise yield (comparing to 2017) would range from 14% in BIH, 49% in Montenegro, 54% in Serbia, 117% in Albania, to 145% in Macedonia. Lessons learned in the past 10 years suggest that gradual harmonisation of excise duties rates with the EU directives in the WBCs must be accompanied by significant improvement of tax enforcement efficiency. Otherwise, tax harmonisation may fail to meet its economic and health objectives and contribute to further widening of the shadow economy.

Keywords: *excise duties, taxation of cigarettes, shadow economy, Western Balkans, harmonisation of excise duties in the EU.*

Sažetak

U ovom radu se analiziraju trendovi u politici akciza u državama Zapadnog Balkana (ZB), od 2007. do 2017. godine i procenjuju se njeni fiskalni efekti, kao i trendovi u pogledu broja pušača. U radu se takođe identifikuju najznačajnije buduće promene koje će biti neophodne u ovom domenu, kako bi se akcizna politika uskladila sa direktivama EU. Vođene fiskalnim motivima, sve zemlje ZB su u period od 2007. do 2017. godine znatno povećavale stope akciza na cigarete, tako da je akcizni prinos u proseku povećan 4,1 puta, sa 15,3 na 58,8 evra na hiljadu cigareta. U istom periodu, relativni broj pušača je opao u proseku za 7%. Ovi rezultati ukazuju da je povećanje akciza na cigarete imalo određene fiskalne efekte, dok su efekti na rasprostranjenost upotrebe cigareta bili skromni. U većini zemalja ZB, znatan rast akciznog prinosa nije se u celosti odrazio na rast poreskih prihoda, pri čemu se samo deo odstupanja može objasniti padom broja pušača, dok bi se deo neobjašnjenog odstupanja mogao objasniti rastom sivog tržišta cigareta. U svim zemljama ZB, osim u Albaniji, struktura akciza na cigarete je usklađena sa EU direktivama, ali je istovremeno u svim zemljama ZB akcizni prinos znatno manji od minimuma propisanog direktivom. Stoga, potpuna harmonizacija sa direktivama EU bi implicirala snažan rast akciznog opterećenja na ZB, u proseku za 76% (u odnosu na 2017), pri čemu bi taj rast bio u rasponu od 14% u BiH, 49% u Crnoj Gori, 54% u Srbiji, 117% u Albaniji, i 145% u Makedoniji. Iskustvo iz prethodnih 10 godina ukazuje na to da bi postepeno usklađivanje stopa akciza sa direktivama EU u zemljama ZB trebalo da bude praćeno značajnim unapređenjem efikasnosti naplate akciza. U suprotnom, harmonizacija sa pravilima EU ne bi obezbedila punu realizaciju odgovarajućih ekonomskih i zdravstvenih ciljeva i mogla bi doprineti daljem širenju sive ekonomije u ovom domenu.

Ključne reči: *akcize, oporezivanje cigareta, siva ekonomija, Zapadni Balkan, harmonizacija akciza u EU.*

Introduction

Actual EU excise duties rules suggest that cigarettes could not be considered as a product for which the main aim of the fair competition - "the best quality at the lowest price" - could be valid any more. The term "quality" is not applicable due to health harmfulness of cigarettes consumption, while the regulation is pushing up the "lowest" price to discourage consumption. This is a result of a broader scope of tobacco control initiatives, comprehensively formalised within the WHO Framework Convention on Tobacco Control (FCTC)[1]. It was developed to provide an international legal instrument to combat tobacco consumption and exposure to tobacco smoke. Within measures aimed at reducing demand for tobacco, it "especially encourages price and tax measures, as effective means to reduce demand for tobacco. These include tax increases that result in an increase of the sales price of tobacco products."[2] Hence, it may be concluded that, from the FCTC and EU regulation perspective, consumption of cigarettes has negative effects, while its reduction has positive welfare impact per se.

The WBCs[3] started economic transition later than the other Central and Eastern European (CEEs) countries. As part of economic consolidation, a majority of these countries introduced the coherent excise duties systems in the early 2000s. Since the onset of the world economic crisis, these countries have been facing a widening fiscal deficit. For political economy reasons, these countries were usually more prone to tackle the fiscal deficit using the revenue instruments, rather than cutting the expenditures. High smoking prevalence, political economy factors and wider, European trend of rising tobacco taxes, have incentivized WBCs to use tobacco excise taxes as an important instrument in improving fiscal sustainability. In addition to that, WBCs are in different phases of the EU accession process, which makes the respective EU directives on tobacco taxation a relevant benchmark for redesign of their tax systems in the mid run. Empirical literature on the impact of excise tax hikes on tax revenues in developed countries provides intuitive results, meaning that increase in tax rates is usually associated with the proportionate increase in tax revenues, adjusted for behavioural response in terms of consumption patterns (Chaloupka, 2017). However, in the countries with relatively weak formal institutions and widespread informal practices, reduction in actual consumption is not the only behavioural response to increase in tax rates.

Tobacco excise revenues in the WBCs amount to approximately 2% of GDP, which is far above the EU-28 average (0.6% of GDP), as well above the CEE average (approximately 1.1% of GDP), although some indicators of tax burden are below the minimum threshold stipulated by the EU. This is to a large extent explained by significantly higher smoking prevalence in the WBCs than in the EU member states. Widespread use of tobacco products and high fiscal relevance of tobacco products' taxation makes the issue of cigarette excise duties relevant, both from economic, health and welfare perspective. In spite of that, empirical literature on excise duties in the WBCs is scarce. The aim of this paper is to provide a comprehensive overview and analysis of changes in the cigarette excise tax policy in the WBCs in the past decade, to evaluate respective fiscal and health effects and to identify key changes that would have to be implemented in order to align the national practices in these countries with the EU directives, thus setting the scene for evaluation of impact of tax harmonisation on future fiscal and health objectives.

The results suggest that from 2007 to 2017, on average WBCs increased cigarette excise duties yield by approx. 4.1 times, while the tax revenues rose by 2.1 times and the smoking incidence declined by 7%. These results may suggest that in the meanwhile, part of supply has been shifted to the shadow economy. Our results also indicate that harmonisation with the EU directives would imply significant increase in the excise yield in the WBCs, by 76% on average. In order to mitigate the incentives for further shift of supply to the informal sector, due to rising

1 FCTC entered into force in 2005 and currently is accepted by 180 countries. http://www.who.int/fctc/cop/about/en/

2 The summary of the intention of Article 6 of the FCTF, http://www.who.int/fctc/about/WHO_FCTC_summary_January2015.pdf?ua=1&ua=1

3 In this paper WBCs include Albania (ALB), Bosnia and Herzegovina (BIH), FYR Macedonia (MKD), Montenegro (MNE) and Serbia (SRB). Territory of Kosovo, as defined by the Resolution 1244 of the UN Security Council, has its own cigarette excise policy, but is not included into the analysis due to unavailability of reliable and complete data on relevant indicators.

tax burden, in parallel to gradual alignment with the EU directives, the WBCs should make significant efforts on improvement of tax enforcement efficiency.

The rest of the paper is structured as follows. Section 2 provides overview of evolution and current state of harmonised cigarette excise duties rules in the EU. Section 3 provides empirical insight into the evolution of institutional framework and fiscal outcome of cigarette taxation in the WBCs from 2007 to 2017. The same section also provides benchmark analysis of the cigarette taxation institutional framework in the WBCs in 2017 with the EU directives. Section 4 provides gap analysis and concludes.

Harmonisation of cigarette excise tax policy in the EU: Literature review and institutional framework

Literature review

Creation of the single market in the EU was one of the driving forces of convergence of national tax policies in the member states. This is explained by simultaneous impact of several mechanisms: i) stronger incentives for tax competition between the member states (facilitated by the four basic freedoms); ii) imposed policy coordination from the supra-national (EU) level; and iii) learning effect - facilitated exchange of knowledge and information on comparative policies (Holzinger and Knill, 2005). This is in accordance with the findings of Genschel and Jachtenfuchs (2009) that frequency of legislative acts on tax issues surged over time, especially since formation of the single market. Although, taken in total, convergence in tax policy has been captured, empirical literature indicates different patterns with regards to convergence of direct and indirect taxes. Namely, Kemmerling (2010) finds that direct taxation in the EU is still predominantly shaped by domestic politics and preferences, while international competition and diffusion has made significant impact on indirect taxes, which is why convergence in terms of indirect taxation was very strong. This means that creation of the single market and closer integration of the EU member states accelerated strong convergence of VAT and excise duties, which is explained by the role of learning and use of the EU as a 'legitimatory' argument for increase in consumption taxes. Literature also suggests that tax harmonisation in the EU promoted convergence across the countries on rising tax rates, while convergence on falling tax rates was much weaker (Kato, 2003).

Transition from communist to market-based economic model and preparations for the EU accession encouraged greater reliance of the CEE countries on indirect taxes (Appel, 2011). This was an attractive policy option also because indirect taxes are more difficult to evade, which makes them a relatively reliable source of revenue (Heimann, 2001). In that respect, through the pre-accession reforms, the CEE countries have introduced the VAT model already applied in the Western Europe – the first one to introduce VAT was Lithuania (1992) and the last one Serbia (2005). This has also narrowed the gap in terms of the VAT rates in the Western and Eastern Europe. By 2003, the average VAT standard rate in the candidate countries was only by 0.02 points below the EU average (Appel, 2011).

Almost simultaneously, CEE countries have been adapting their excise duties systems to the Western European standards, reflected in the EU directives. Studies suggest that already by the end of 1990s, the CEE countries (except for the WBCs) achieved the EU-level excise tax rates for all products except tobacco (Martinez-Serrano and Patterson 2003). It took a few more years (until 2009) to fully harmonise the taxation of tobacco products in the CEE with the EU directives. In order to meet the EU requirement of a 57% tax minimum, the cost of cigarettes for the most popular brand should have increased by about 85%. This is why the candidate countries attempted to negotiate a transitional period, although the old member states were rather tough on that issue, fearing cross-border tax arbitrage. Therefore, all new member states (which joined the EU in 2004 and 2007), except for Slovenia and Malta, negotiated transitional arrangement for taxation of cigarettes by 2007 (Czech Republic), 2008 (Hungary) and 2009 (other new member states). It is also noted that Bulgaria and Romania, which joined the EU in 2007, managed to negotiate the transitional period for harmonisation of excise tax on cigarettes of 2 years only, while for the states which joined the EU in 2004, the transitional period was ranging from 3 to 5 years.

This suggests that after the first wave of enlargement, the EU member states became increasingly restrictive in negotiating transitional regimes.

Institutional framework

Adoption of common rules of excise taxation in general, and excise taxation of cigarettes in particular, was the integral part of indirect tax harmonisation in the European Economic Community (EEC) since the beginning of the integration process.

The first directive on taxes other than turnover taxes, which affect the consumption of manufactured tobacco, was adopted in 1972 [7, p. 3]. It has established a mandatory tax base structure as a mix of specific and ad valorem component, specified the tax base for ad valorem excise as maximum retail selling price and mandated that the rate of the ad valorem (ADV) and the amount of the specific excise duty (SPC) must be the same for all cigarettes. It also asked member countries to refrain from subjecting manufactured tobacco to any tax other than the excise and the value added tax.

The first directive regulating approximation of excise burden on cigarettes was adopted in 1992 [8, p. 8]. It mandated that the incidence of excise duty (specific plus ad valorem duty excluding VAT) must not be less than 57% of the retail selling price (inclusive of all taxes) for cigarettes of the price category most in demand (most popular price category - MPPC), and established a mechanism for the European Commission to propose further approximation of tobacco excises in the EEC.

The objectives of excise tax policy on cigarettes in the EU could be grouped in the two main categories: economic and public health protection. The economic objectives are related to proper functioning of the internal market and cover two main areas: i) securing of fiscal revenues attribution to the country of consumption and ii) enabling level playing field for market players, including a fair competition. The health-related objectives are aimed at decreasing affordability of the product, i.e., to increase the retail sales prices via tax increases, thus reducing the consumption of the product that can cause serious harm to consumers' health. In that respect, the common excise tax structure and base, as well as minimum excise incidence are mostly introduced to achieve internal market related objectives. On the other hand, a minimum share of the specific component, minimum yield and minimum excise tax, which were introduced in later stages, are predominantly seen as tools to attain health-related objectives. The chronology of changes in mandatory rules regarding the minimum excise tax burden on cigarettes is presented in Table 1.

Development of excise duties directives in the EU, presented in Table 1, suggests that since the year 2002,

Table 1: Evolution of the EU cigarette excise tax policy regarding minimum excise tax burden

Directive	Mandatory rule description
1992/79/EEC [8, p. 8]	*Excise incidence* (INC), at that time defined as the share of total excise tax in MPPC, cannot be less than 57%. No other rules.
1995/59/EC [9, p. 40]	Introduces: • *Share of specific component* (SSC), which is the share of specific excise in total tax (excise + VAT), cannot be lower than 5% and cannot be more than 55% of total tax (applied to MPPC); • Countries can levy the *Minimum excise tax* (MET), which is a lump-sum amount that must be paid on a fixed quantity of cigarettes. MET is limited to 90% of the total tax (applied to MPPC).
2002/10/EC [4, p. 26]	Introduces *Excise yield* (YLD) rule, defined as a monetary amount of total excise paid on 1,000 cigarettes (applied on MPPC): • not less than EUR 60 per 1000 cigarettes until 1 July 2006; • not less than EUR 64 per 1000 cigarettes as of 1 July 2006; New rules redefine limitation on MET, requiring that it should not exceed excise duty levied on MPPC.
2010/12/EU [5, p. 1]	Sets the WAP instead MPPC as a referent price which indirectly increases the necessary excise duty level to achieve minimum INC rule; Changes the SSC range in favour of the specific component: • SSC range until 31 December 2013: not less than 5% and not more than 76.5%; • SSC range as of 1 January 2014: not less than 7.5% and not more than 76.5%. Increases INC and YLD, as of 1 January 2014: • INC minimum increased to 60% of WAP • YLD minimum increased to EUR 90 per 1000 cigarettes regardless of price. Removes all limitations on MET.

the EU policy has been getting more oriented on increase of excise incidence and yield, as well on refinement of the specific component range, which implies that evolution of harmonised excise tax policy in the EU is increasingly driven by the health-related objectives.

Excise taxation of cigarettes is currently regulated by the Council Directive on the structure and rates of excise duty applied to manufactured tobacco adopted in 2011 (Tobacco Tax Directive) which codifies earlier directives regulating tobacco excises by assembling them into a single act [6, p. 24]. The Tobacco Tax Directive for cigarettes requires[4]: i) mixed tax structure (both specific and ad valorem excise component must exist); ii) the base for the ad valorem excise must be the retail selling price; iii) share of specific component should be in the range from 7.5% to 76.5% of total tax (VAT included); iv) excise incidence should not be less than 60% of WAP; and v) excise yield should not be less than EUR 90 per 1000 cigarettes irrespective of retail selling price. It also allows, but not mandates, member states to levy MET.

Cigarette excise tax policy in the WBCs: Evolution of institutional framework and fiscal relevance

WBC countries are not EU member states, but rather candidates and potential candidates for EU membership. Most of these countries have commenced the EU accession process in the early 2000s, so that nowadays Montenegro and Serbia are candidate countries that have commenced the chapter negotiations with the EU, while Albania and Macedonia are the candidate countries that have not yet commenced official negotiations on the accession. Bosnia and Herzegovina is the potential candidate country.

In 2004, 2007 and 2013, countries neighbouring the WBCs (Croatia, Slovenia, Bulgaria, Romania and Hungary) entered the EU, which has also triggered the alignment of their tax policies with the EU directives. Accession of the neighbouring countries to the EU and the progress of the WBC countries at the EU accession process make the EU-level harmonised institutional framework for indirect taxes relevant also for the WBC countries. These, together with fiscal issues, are some of the drivers behind the significant reform of cigarette taxation legislation in the WBC countries, which took place in the last 10 years. Excise tax reforms in the WBCs have had a considerable impact on their fiscal stance, but also on the efficiency and structure of the local markets.

In that respect, in this section the evolution of the cigarette excise tax policy in the WBCs and its impact on fiscal and health-related outcomes are presented and discussed. The analysis encompasses the timeline from 2007 to 2017. All indicators of excise tax burden are based on WAP, while all growth rates of monetary terms are calculated based on their Euro values. Mapping that gap is important, as the harmonised tax policy rules at the EU level are still seen as the framework for the forthcoming changes of excise tax policy in the WBCs. The WBC data sources for tax rates were national legislation, for GDP - national statistical offices, for national currency exchange rate vs. EUR - national central banks, for excise tax revenues - national authorities or authors' estimation based on available official public data and/or industry data on sales volumes and WAP, and for smoking incidence - the World Health Organization. Data on EU countries are sourced from the Eurostat and EU official websites.[5]

Albania

Excise duties structure in Albania is relatively simple, as it has introduced only the specific tax rate. Starting from 2007, cigarette excise duties have been increased four times - in 2009, 2011, 2014 and 2017. As a result of such dynamics, the specific tax rate in 2017 was by 2.5 times (350%) higher than in 2007. In addition to that, the existing cigarette excise tax plan for the period 2017-2020 envisages tax increases in each year, of approx. 6% on average.

As a result, excise yield in 2017 was more than 2.5 times higher than in 2007, amounting to EUR 41.4 per 1,000 cigarettes. Consequently, the fiscal relevance of

4 Further details on excise tax harmonisation in the EU, see: [1, p. 239-244].

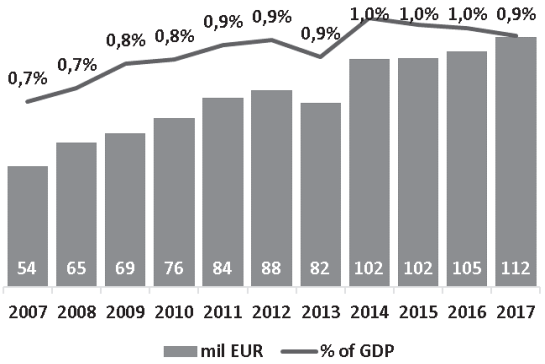
5 The data for smoking incidence presented for the year 2007 are in fact WHO estimations for 2005, since the WHO estimation for 2007 is not available.

Table 2: Albania - cigarette excise tax policy 2007-2017

Indicator	Unit	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Ad valorem t.r.	% RSP	-	-	-	-	-	-	-	-	-	-	-
Specific t.r.	EUR/000	16.4	16.4	18.1	18.1	25.2	25.2	25.2	39.3	39.3	39.3	41.4
Minimum e.t.	EUR/000	-	-	-	-	-	-	-	-	-	-	-
Incidence	% WAP	33.3	31.2	33.7	32.6	38.1	34.7	33.9	47.1	44.7	43.7	45.2
Yield	EUR/000	16.4	16.4	18.1	18.1	25.2	25.2	25.2	39.3	39.3	39.3	41.4
Share of specific comp.	% of total tax	66.6	65.2	66.9	66.2	69.6	67.6	67.0	73.9	72.9	72.4	73.1
FX Rate	EUR/ALL	121.8	123.8	138.0	138.8	138.9	139.6	140.2	140.1	137.3	135.2	133.0

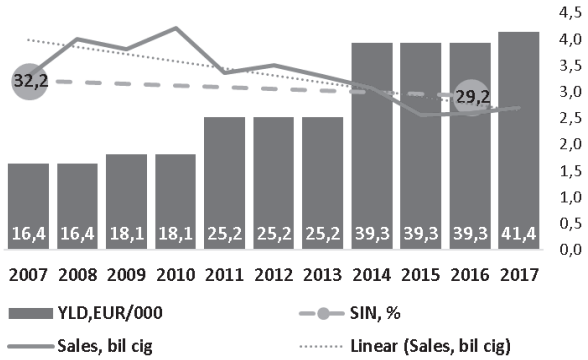
Source: Authors' calculations.

Figure 1: Albania – cigarette excise tax revenues



Source: Authors' calculations.

Figure 2: Albania – yield, smoking incidence and sales of cigarettes



Source: Authors' calculations.

cigarette excise duties increased considerably, from 0.7% of GDP in 2007 to 0.9% of GDP in 2017.

In parallel to a strong increase in tax incidence, formal volume of sales of cigarettes declined by 18%, while the smoking incidence dropped by 9%, amounting to 29.9% of 15+ population in 2016. Decline in sale of cigarettes was steeper than decline of smoking incidence, while rise in excise tax revenues was slower than the increase in the tax rates, which may suggest that in this period, illicit trade was widening.

Bosnia and Herzegovina

Cigarette excise tax structure in BIH is mixed. Its ad valorem rate is the highest in the WBCs, and among the highest compared to the EU member states. The specific excise has been increasing each year since 2009, when the major excise tax policy change took place. Apart from the strong tax hike, simultaneously increasing ad valorem tax rate by 42.3% and introducing specific excise, BIH has designed the tax plan that envisaged continuous increase in the specific component by approx. 3.8 EUR per thousand of cigarettes effective as of the beginning of the respective year until excise yield reaches the EU minimum requirement.

As a result of the one-off sharp increase in the ad valorem rate as well as of continuous growth of the specific tax, over the sample period excise yield increased more than 6.5 times, triggering a rise in absolute amount of tax revenues from cigarette excise duties by more than 2.3 times. In 2017, cigarette excise tax revenues in BIH amounted to 2.6% of GDP, which was by 1.1% of GDP higher than in 2007.

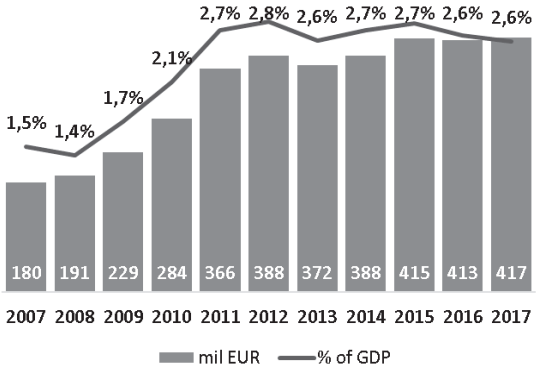
Although rise in cigarette excise tax revenues was strong (2.3 times), it was much slower than the rise in yield (6.5 times). At the same time, legal sales of cigarettes are sharply declining from 2010, so in the period 2010-2017 the registered volume of sales of cigarettes dropped by more than 50%, although the smoking incidence declined by approximately 7.5%. These results suggest that strong increase in cigarette excise tax burden was associated with a widening illicit trade of cigarettes, both internally

Table 3: BIH – cigarette excise tax policy 2007-2017

Indicator	Unit	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Ad valorem t.r.	% RSP	29.5	29.5	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.1
Specific t.r.	EUR/000	-	-	3.8	7.7	11.5	15.3	19.2	23.0	26.8	30.7	34.5
Minimum e.t.*	EUR/000	-	-	-	20.5	27.6	42.2	46.5	53.4	51.3	56.7	60.9
Incidence	% WAP	29.5	29.5	49.1	55.3	59.3	62.9	65.4	67.0	69.1	70.5	72.0
Yield	EUR/000	12.7	13.0	26.4	31.8	39.4	46.1	53.5	61.7	68.4	75.8	82.8
Share of specific comp.	% of total tax	0.0	0.0	11.2	19.1	23.4	27.0	29.3	30.7	32.4	33.5	34.7
FX Rate	EUR/BAM	1.91	1.91	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96

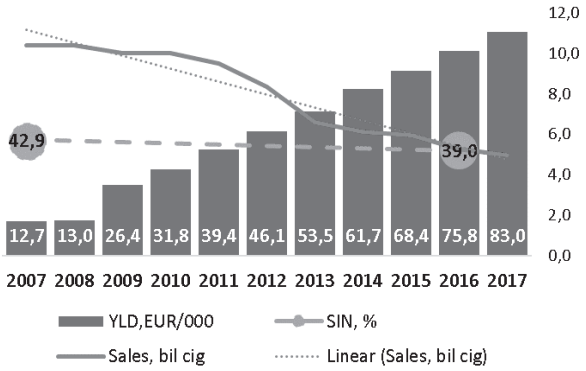
Source: Authors' calculations.
* Being defined as 60% of officially declared WAP, which is lower than actual WAP, in BIH MET is ineffective, meaning that the lowest price cigarettes at the market pay excise higher than prescribed MET.

Figure 3: BIH – cigarette excise tax revenues



Source: Authors' calculations.

Figure 4: BIH – yield, smoking incidence and sales of cigarettes



Source: Authors' calculations.

and externally. As the tax burden in BIH is higher than in the neighbouring countries, it also creates incentives for cross-border tax arbitrage.

In an attempt to prevent further deterioration of excise tax revenues, BIH authorities recently recommended[6] freezing cigarette excise tax at the 2018 level for the period 2019-2021. The illegal market, busted due to tax-driven legal cigarettes price increases, has been marked as the main cause of revenue deterioration. However, there is no official estimation of the size of informal market, neither in BIH nor in other WBC countries.

Macedonia

Macedonia applied a mixed cigarette excise structure, consisting of specific and ad valorem tax. The major change in excise tax policy took place starting from 2013. Namely, in 2013 Macedonia lowered ad valorem tax rates and increased specific tax. At the same time, Macedonia introduced the minimum excise tax and set a plan for increases in specific excise. Starting from 2013, specific tax rates are increased every year. The last revision of the tax plan, adopted in 2016, envisages continuous increases of specific excise by 3.3 EUR per thousand of cigarettes in each year, until July 2023.

As a result, the excise yield (based on WAP) in 2017 was by 2.3 times higher than in 2007, reaching 39.4 Euro per 1,000 cigarettes. During the same period, in nominal EUR terms excise tax revenues increased even more – by 2.8 times, thus amounting to 1.8% of GDP (in 2017). This makes Macedonia different than other WBCs, in which revenues grew at a slower pace than excise yield.

In the same period, cigarette sales decreased by 22%. However, as there are no data available in the WHO database on smoking incidence in Macedonia, it is not possible to derive a conclusion on the evolution of the shadow economy in trade of cigarettes in that country.

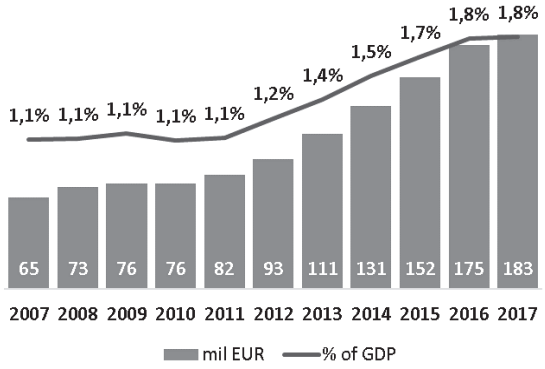
6 Management Board of Indirect Taxation Authority (ITA) of BIH adopted recommendations to freeze excise tax at the level in 2018 prepared by ITA specialist and external experts in May 2018; https://www.nezavisne.com/ekonomija/trziste/UIO-BiH-usvojio-zabranu-na-povecanje-akcize-na-cigarete/479566.

Table 4: Macedonia – cigarette excise tax policy 2007-2017

Indicator	Unit	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Ad valorem t.r.	% RSP	35.0	35.0	35.0	35.0	35.0	35.0	9.0	9.0	9.0	9.0	9.0
Specific t.r.	EUR/000	1.6	1.6	1.6	1.6	1.6	1.6	21.1	23.6	26.9	30.1	33.4
Minimum e.t.	EUR/000	-	-	-	-	-	-	24.4	26.8	30.1	33.4	36.6
Incidence	% WAP	38.7	38.4	38.4	38.3	38.3	38.3	51.7	54.0	55.5	56.2	58.6
Yield	EUR/000	17.2	18.2	18.5	18.6	18.9	18.8	25.6	28.3	32.1	35.9	39.4
Share of specific comp.	% of total tax	6.8	6.4	6.3	6.2	6.2	6.2	63.8	65.0	65.7	66.1	67.2
FX Rate	EUR/MKD	61.2	61.4	61.2	61.5	61.5	61.5	61.5	61.5	61.5	61.5	61.5

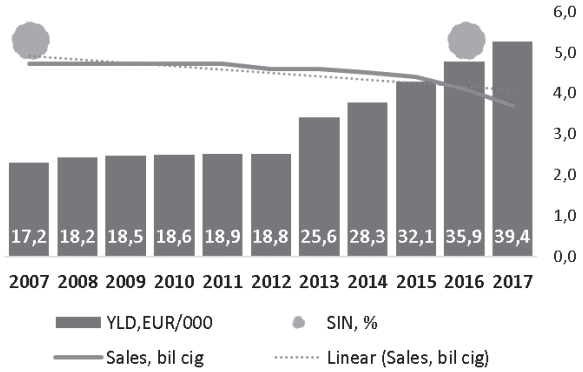
Source: Authors' calculations.

Figure 5: Macedonia – cigarette excise tax revenues



Source: Authors' calculations.

Figure 6: Macedonia – yield, smoking incidence and sales of cigarettes



Source: Authors' calculations.

Montenegro

Montenegro has a mixed cigarette excise tax structure. Until 2011 ad valorem was dominant, while since 2012 the specific component started increasing in its relative significance. In a response to a widening fiscal deficit at the beginning of the world economic crisis, a large cigarette tax increase happened in 2009, when ad valorem tax was increased by 35%, while specific tax was five-folded. The next excise tax hike took place in 2011, when ad valorem tax was increased by 2 pp and the specific tax rate was doubled. Since then, specific tax rates are being significantly increased annually, while from 2015 the ad valorem tax rate is being slightly lowered. According to the tax plan, specific tax rates should further increase by 33.3% in 2018. Strong rise in excise tax rates in Montenegro is an attempt of the government to narrow the fiscal deficit, caused by strong rise in government expenditures, mostly due to investments in highway infrastructure.

As a result of numerous tax hikes, cigarette excise yield in 2017 was 6 times higher than in 2007, while nominal revenues increased 4.3 times. In relative terms, tax revenues from cigarette excise duties rose 2.6 times, from 0.5% of GDP in 2007, to 1.3% of GDP in 2017. However, since 2013 fiscal revenues and yield post diverging trends. Excise tax revenues growth is slowing down, while excise yield is strongly growing. Thus in 2017 cigarette excise revenues were by 20% higher than in 2013, although excise yield rose by 53%. As the smoking incidence in 2016 is at the same level as it was in 2007 (approx. 46%)[7], diverging trends in tax revenues and excise yield may suggest strong widening of the shadow economy in trade of cigarettes in Montenegro, although there are no formal empirical evaluations of the size of the shadow economy in this field.

The 2018 specific excise duties in Montenegro are increased by 33.3%, while the respective tax revenues decreased by 33% in the first quarter of 2018 compared with the same period of 2017[8]. This may also suggest that the strong rise in tax burden in the country with weak tax enforcement institutions and long tradition in development of informal channels of tobacco products

7 SIN data for Montenegro in WHO database exist only for 2016.

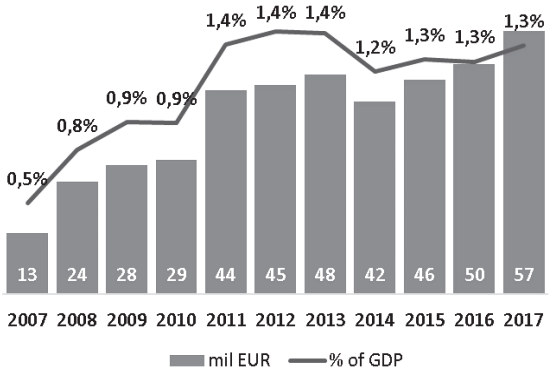
8 http://www.upravacarina.gov.me/rubrike/aktuelnosti/149759/Pregled-naplate-phrihoda-Uprave-carina.html

Table 5: Montenegro – cigarette excise tax policy 2007-2017

Indicator	Unit	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Ad valorem t.r.	% RSP	26.0	26.0	35.0	35.0	37.0	36.0	35.0	35.0	34.0	33.0	32.0
Specific t.r.	EUR/ 000	1.0	1.0	5.0	5.0	10.0	15.0	17.5	19.0	20.0	22.0	30.0
Minimum e.t.	EUR/000	-	-	-	-	-	36.3	42.5	46.1	48.9	51.7	60.4
Incidence	% WAP	28.5	28.2	45.0	44.3	52.0	56.0	57.6	57.4	56.2	56.2	57.0
Yield	EUR/000	11.4	12.7	22.5	23.8	34.7	42.0	44.6	48.8	50.6	53.4	68.4
Share of specific comp.	% of total tax	5.8	5.2	16.8	15.8	22.5	28.4	30.7	30.5	30.8	32.1	34.3
FX Rate	EUR/EUR	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

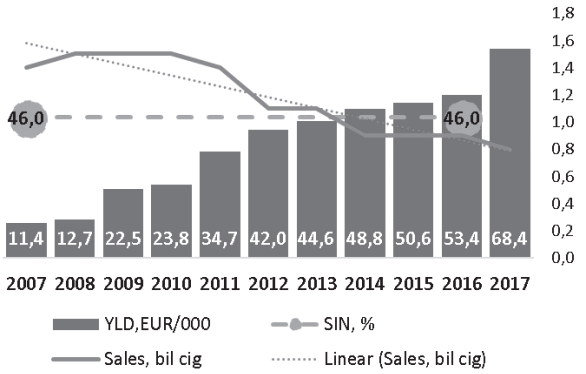
Source: Authors' calculations.

Figure 7: Montenegro – cigarette excise tax revenues



Source: Authors' calculations.

Figure 8: Montenegro – yield, smoking incidence and sales of cigarettes



Source: Authors' calculations.

trade, creates incentives for shift of supply from the formal into informal economy. These incentives are magnified by the fact that the larger neighbouring countries (Albania and Macedonia) apply lower tax burden on cigarettes, which creates incentives for cross-border tax arbitrage.

Serbia

The cigarette excise structure in Serbia is mixed, with a prevailing ad valorem component. The cigarettes excise burden has been increasing each year over the whole sample period, mostly through the increase of specific tax. In 2009 ad valorem rates also increased from 33% to 35%, but in 2012 it was reverted back to 33%. The single largest tax hike took place in 2011, in a response to a widening fiscal deficit, when the increase of the specific rate brought to the overall increase of the tax rate by 46%.[9]

Serbia has multi-year tax plans of cigarette excise increases, starting from 2003, usually envisaging increase in the specific tax twice a year, in January and July. Minimum excise tax was introduced in 2005. Current tax plan adopted at the end of 2016 and ending with July 2020 sets annual increases of specific tax of approx. 1.3 EUR per thousands of cigarettes.

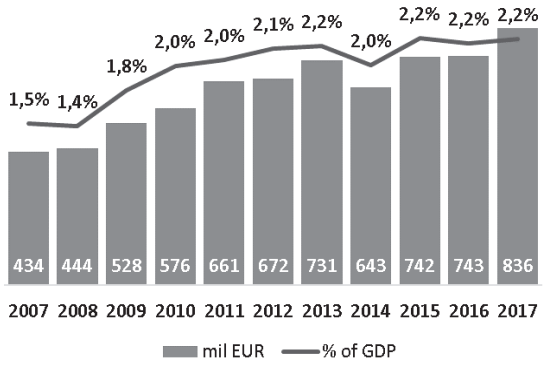
9 Further details on institutional framework for excise duties in Serbia see in [2, p. 367-384]

Table 6: Serbia – cigarette excise tax policy 2007-2017

Indicator	Unit	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Ad valorem t.r.	% RSP	33.0	33.0	35.0	35.0	35.0	33.0	33.0	33.0	33.0	33.0	33.0
Specific t.r.	EUR/000	3.4	4.8	6.3	8.2	12.4	18.9	19.6	20.8	22.9	25.0	27.6
Minimum e.t	EUR/000	13.9	15.0	17.5	22.3	29.2	33.4	44.0	48.6	49.4	54.0	58.6
Incidence	% WAP	40.3	42.8	48.2	51.4	57.3	59.5	56.5	58.9	58.6	59.6	59.7
Yield	EUR/000	18.9	20.9	22.9	25.7	32.0	42.4	47.2	47.2	52.3	56.0	61.8
Share of specific comp.	% of total tax	13.2	17.0	20.8	24.6	30.7	34.8	32.1	34.3	34.0	34.9	35.0
FX Rate	EUR/RSD	79.2	88.6	95.9	105.5	104.6	113.7	114.6	120.6	121.6	123.5	118.5

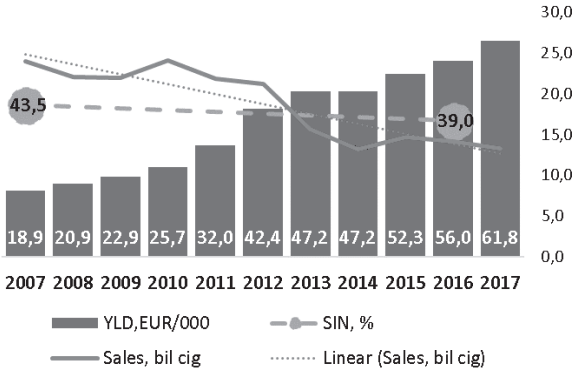
Source: Authors' calculations

Figure 9: Serbia – cigarette excise tax revenues



Source: Authors' calculations.

Figure 10: Serbia – yield, smoking incidence and sales of cigarettes



Source: Authors' calculations.

Over the period (2007-2017), excise yield increased by 3.3 times, while revenues almost doubled, reaching 2.2% of GDP in 2017. In the same period, cigarettes sales through formal channels decreased by 44% - in particular in 2013 and 2014. Thus, in 2014 sales of cigarettes was by 45% lower than in 2012, which resulted in an absolute fall in revenues in this year in spite of tax rates increase. Decline in formal sales of cigarettes was considerably stronger than decrease in smoking incidence, which dropped by approx. 10% over the whole period. Such trends may indicate that in the meanwhile, the illicit cigarette market strongly emerged.

Excise tax indicators in 2017: WBCs vs. EU rules

The analysis of evolution and institutional framework for cigarette excise tax policy in the WBCs in 2017, summarised in Table 7, provides several important insights. First, all WBCs, except Albania, already apply the mixed structure, i.e. both specific and ad valorem excise duties rates are charged, as stipulated by the EU directives. Second, share of specific tax rate in the total tax rate in all WBCs fall within the range stipulated by the EU directives. Third, except Albania, all WBCs have introduced the minimum excise tax, although according to the EU directives it is not mandatory, but rather an option. Fourth, in terms of excise incidence, only Bosnia and Herzegovina and Serbia comply with the minimum threshold (60% of weighted average price), Macedonia and Montenegro being close to this threshold, while excise incidence in Albania being still far below the limit imposed by the EU directives. Fifth, excise yield in all WBCs is far below the minimum threshold imposed by the EU directives, the closest to the threshold being Bosnia and Herzegovina, while all other WBCs are far below in this respect. The results also suggest that the fiscal relevance of the cigarette excise duties in all WBCs is above the EU average, ranging from 1% of GDP in Albania, to 2.6% of GDP in Bosnia and Herzegovina.

These results suggest that the main challenge in future harmonisation with the EU rules in all WBCs will be the achievement of minimum yield requirement, as it will imply considerable increase in excise tax burden (from

Table 7: Excise tax indicators – WBC countries vs. EU rules (2017)*

Indicator	EU rule	ALB	BIH	MKD	MNE	SRB
Mixed structure	mandatory	no	yes	yes	yes	yes
Share of specific component range	7.5%-76.5%	73%	35%	67%	34%	35%
Minimum excise tax	optional	no	yes	yes	yes	yes
Excise incidence (%WAP)	min 60%	45%	72%	59%	57%	60%
Yield (EUR/000 pcs)	min 90	41	79	37	60	59
Tax revenues (% GDP)	no rule (mean: 0.9% of GDP)	1.0%	2.6%	1.8%	1.3%	2.2%

Source: Authors' calculations.

* Excise tax indicators are calculated as prescribed by actual EU rules, which means that yield presented in Table 7 is based ether on minimum price at the market or is equal to minimum excise tax.

14% in Bosnia and Herzegovina, to 143% in Macedonia). Albania, Macedonia and Montenegro will have to make an effort to comply also with the incidence criteria, which will be particularly challenging for Albania. As the most of WBCs already comply with the mixed structure criterion, no changes in that respect will be required, except in Albania, which will have to introduce ad valorem rate.

Conclusions

The main common feature of excise tax policy in the period 2007-2017 in all WBCs was the constant increase of cigarettes excise tax, mostly channelled through its specific component. At the same time, all WBCs also had tax plans for future increases of cigarette excises in 2017, which was favourable from a predictability point of view. Consequently, excise yield in all WBCs in 2017 was substantially higher than in 2007 (on average, by 313%), the lowest rise being in Macedonia and the strongest rise in Montenegro (Table 8). Increase in excise incidence was also significant, the average increase in WBCs amounting to 76%, BIH being the country with the strongest rise in incidence. Consequently, cigarette excise tax revenues (stated in Euro) in WBCs on average rose by 168% from 2007 to 2017, the largest increase being posted in Montenegro.

Results also suggest that rise in revenues was notably lower than the increase in tax rates in all WBCs, except in Macedonia and, to a certain extent, in Albania. This was a consequence of a substantial drop in registered sales of cigarettes in Bosnia and Herzegovina, Montenegro and Serbia, drop in sales in the last two countries being particularly strong in 2012 and 2014. Decline in registered sales of cigarettes in all WBCs was stronger than decrease in smoking incidence. This insight suggests that decline in registered sale of cigarettes may be the consequence of behavioural reaction of consumers to rising prices, in terms of the volume of consumed cigarettes, but also may indicate shift of supply into the informal sector. It is the matter of further empirical research to evaluate the size of these two effects.

The main challenge in future harmonisation with the EU requirements in all WBCs will be to reach the minimum yield requirement. As shown in Figure 11, harmonisation with the EU minimum yield would require increase in the excise tax yield on cigarettes, ranging from 14% in Bosnia and Herzegovina, to 49% in Montenegro, 54% in Serbia, all up to 117% in Albania and 145% in Macedonia. On average, WBC countries would need to increase the excise tax yield by 76%, in order to reach the EU minimum yield.

Experience from the previous rounds of EU enlargement suggests that the EU is becoming increasingly restrictive in allowing for transitional derogations, meaning that the WBCs may be expected to close a majority of the gap before joining the EU. As the WBCs are at the different phases of EU accession, some of them being expected to join the EU sooner than others, full harmonisation of excise regimes in these countries with the EU directives, would create strong incentives for cross-border arbitrage and tax evasion. Therefore, in parallel to gradual increase in the excise rates, these countries should be working effectively on improvement of efficiency of tax enforcement institutions, in order to mitigate the risk of widening the shadow economy.

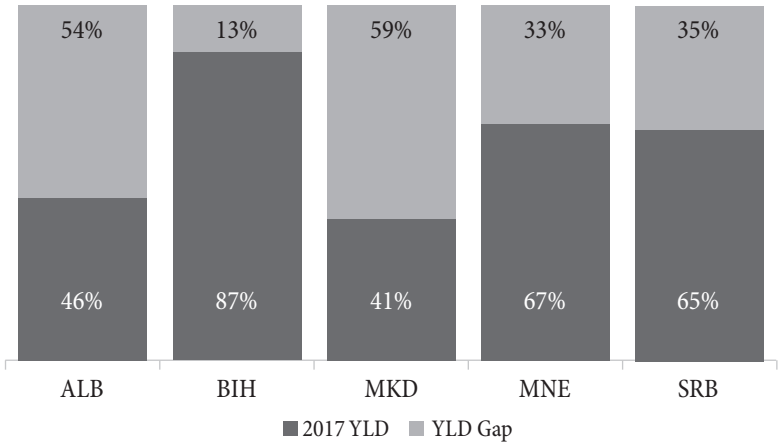
Both health and economic (fiscal) effects of excise duties depend on the cigarette consumption reaction to change in price due to taxation. In the last decade, strong increase in the cigarette excise tax rates in all WBCs was associated with only mild decline in smoking prevalence, while the fiscal effects in the most of these countries,

Table 8: Change in excise tax burden, revenues, cigarettes' sales and smoking incidence from 2007 to 2017 (in %)

	ALB	BIH	MKD	MNE	SRB	WBC mean
Excise incidence	36%	144%	52%	100%	48%	76%
Excise yield	152%	551%	129%	500%	227%	312%
Excise revenues	106%	132%	180%	329%	93%	168%
Sales of cigarettes	-18%	-52%	-22%	-43%	-44%	-36%
Smoking incidence	-8%	-8%	n/a	0%	-10%	-7%

Source: Authors' calculations.

Figure 11: Yield gap in the WBCs comparing to the EU minimum (% of EU minimum yield)



Source: Authors' calculations.

although positive, are considerably lagging behind the scale of tax hikes. Modest impact of tax hikes on smoking behaviour may be the consequence of specificities of cultural and other institutional arrangements in the WBCs. On the other hand, underperforming revenue effects of increase in the tax rates, may to some extent be the consequence of a widening illicit cigarettes market. Presence of the illegal cigarettes market, a part of its devastating impact on fiscal and health objectives, has much broader and very serious negative social consequences, as it represents a fertile soil for organised crime and corruption.

As WBCs progress in the EU accession process, they would have to gradually increase cigarette excise duties yield. In order to make the tax harmonisation beneficial, both from economic (fiscal) and health point of view, the WBCs would have to put a significant amount of effort on development of efficient tax enforcement capacities. Otherwise, without considerable leap in terms of tax collection and enforcement efficiency, harmonisation of tax rates with the EU directives may imperil both fiscal and health objectives.

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ORIGINAL SCIENTIFIC PAPER
UDK: 658.155:368.1(497.11)"2010/2015"
DOI:10.5937/EKOPRE1806333P
Date of Receipt: June 11, 2018

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PROFITABILITY DETERMINANTS OF NON-LIFE INSURANCE COMPANIES IN SERBIA

Determinante profitabilnosti neživotnih osiguravajućih kompanija u Srbiji

Abstract

Taking into account the specifics of the Serbian insurance market, the insurance sector in Serbia is still underdeveloped and, if we take the degree of development into account, it is well below the average for European Union member states. The insurance market in Serbia is developing and has great potential opportunities. Profitability is one of the most important goals of financial management. The aim of this research is to examine the impact of internal factors of non-life insurance business operations such as: asset size (company), asset growth, premium growth, liquidity ratio, debt ratio, underwriting risk, operating costs, financial leverage, and total revenues of the profitability of non-life insurance companies in Serbia. The results of the research were obtained using the multi-linear regression model, where the representativeness of the model was tested by calculating the coefficient of correlation, the determination coefficient and the corrected determination coefficient. Also, a variance analysis (ANOVA) was carried out, in order to test the significance of the observed variables in the model and examine the impact of these independent variables on ROA profitability as a dependent variable. The fundamental results are placed on giving an empirical basis for reaching the conclusion that the greatest impact on the profitability of non-life insurance companies is exerted by the increase in premiums, the debt ratio, operating costs and the share of profit in total revenues.

Keywords: *non-life insurance companies, determinants of profitability, insurance, regression.*

Sažetak

Uzimajući u obzir specifičnosti srpskog tržišta osiguranja, sektor osiguranja u Srbiji je i dalje nerazvijen i po stepenu razvijenosti nalazi se znatno ispod proseka zemalja članica Evropske unije. Tržište osiguranja u Srbiji je u razvoju i ima ogromne potencijalne mogućnosti. Profitabilnost je jedan od najvažnijih ciljeva finansijskog upravljanja. Cilj ovog istraživanja je ispitivanje uticaja unutrašnjih faktora poslovanja neživotnih osiguravajućih kompanija kao što su: veličina aktive (kompanije), rast aktive, rast premije, racio likvidnosti, racio zaduženosti, poslovni rizik (underwriting risk), operativni troškovi, finansijski leveridž, učešće dobiti u ukupnim prihodima na profitabilnost neživotnih osiguravajućih kompanija u Srbiji. Rezultati istraživanja su dobijeni primenom modela višestruke linearne regresije gde će se reprezentativnost modela ispitati proračunom koeficijenta korelacije, koeficijenta determinacije i korigovanog koeficijenta determinacije. Takođe, biće sprovedena i analiza varijanse (ANOVA), kako bi se testirala značajnost posmatranih varijabli u modelu i sagledao uticaj navedenih nezavisnih varijabli na profitabilnost ROA kao zavisne varijable. Temeljni rezultati sastoje se u davanju empirijske podloge za donošenje zaključka da najveći uticaj na profitabilnost neživotnih osiguravajućih kompanija imaju rast premije, racio zaduženosti, operativni troškovi i učešće dobiti u ukupnim prihodima.

Ključne reči: *neživotne osiguravajuće kompanije, determinante profitabilnosti, osiguranje, regresija.*

Introduction

The insurance sector plays an important role in the industry of financial services, as it contributes to economic growth, enables efficient allocation of resources, affects the reduction of transaction costs, contributes to the creation of liquidity, and increases the economies of scale in investments. The insurance sector is a relatively stable segment of the financial system, where the interaction between insurance companies and other financial market participants, such as banks, pension funds and other financial intermediaries, is growing considerably over time [13, pp. 405-431].

The global economic crisis did not jeopardize the survival of insurance companies in the global financial market, because these institutional investors have invested available funds in a conservative, i.e., secure way. The deep recession, as the main characteristic of the macroeconomic environment of Serbia in which insurance companies operate, is the result of both the domestic socio-economic crisis, as well as the global financial crisis. The insurance industry in Serbia faces great challenges in gaining as many insurance clients as possible, retaining existing insurance clients, providing innovative insurance services, and making their distribution more efficient. In addition to the challenges presented by insurance companies, it is also certainly a challenge to improve performance in order to achieve greater profitability of insurance companies.

The business areas of insurance companies in Serbia, whose importance is expressed in terms of further creating of conditions for development of insurance are: corporate governance, adequate internal control system, improvement of investment and asset valuation techniques, transparency and activities for the development of insurance culture. These areas should be subject to continuous improvement by insurance companies in the coming period. In particular, the importance of strict compliance with the regulations in the field of compulsory (non-life) insurance by insurance companies is emphasized, especially with regard to the promptness of paying claims costs, the costs of conducting the insurance and the application of the bonus-malus system.

Financial performance is crucial for the survival and further growth and development of insurance companies. In addition, the financial performance of insurance companies has direct implications for a wide range of audiences, from insurers to stockholders, from employees to brokers, from regulatory authorities to potential investors [18, pp. 55-160]. Key indicators of a company's performance are profitability, size and continuity of the company's operations. Factors that affect the profitability of insurance companies can be classified as internal factors, insurance industry factors and macroeconomic factors.

Profit is a very important prerequisite for increasing the competitiveness of a company operating on the global market. In addition, profit attracts investors and improves the level of solvency, and in this way, increases the consumers' confidence. Financial analysis of companies is an important tool used by officials in the decision-making process on taking over the risks and investment activities of the insurance company. The financial performance of insurance companies is also relevant in the macroeconomic context, because the insurance industry is one of the parts of the financial system, which contributes to fostering economic growth and stability [3, pp. 299-308].

Most financial literature dealing with the profitability of insurance companies analyzes profitability from the aspect of the impact of internal factors. The variation between the profits of insurance companies over the years in a country depends on both domestic and specific internal factors that play a key role in determining profitability. For this reason, it is very important to define what are the internal factors and the nature of their impact, so that insurance companies can take all the necessary measures to increase profitability. Also, identifying factors that contribute to the profitability of insurance companies is very important for investors, researchers, financial analysts and supervisors. In order to obtain a more precise analysis of the profitability of insurance companies, it is important to take into account the total profit or loss arising from business over several years.

Upon realizing the significance of the financial institutions in the country's economy, and especially the importance of insurance companies in financing and securing economic activity, the survey will answer the

following questions: What factors influence the profitability of insurance companies; What is the correlation between profitability factors; Which factors do not affect profitability of insurance companies and why?

Literature review

In international literature, numerous studies have dealt with the profitability of not only insurance companies, but also other financial institutions, primarily banks. Studies on the profitability of insurance companies are usually divided into two categories. The first study focuses on the profitability of life insurance companies, while another study focuses on the profitability of non-life insurance companies. In both studies, internal factors were most commonly used to examine their impact on the profitability of insurance companies. The different results of the studies conducted in a large number of countries are contradictory, which is explained by the consequences of macroeconomic changes – which represent external factors that are specific for each country.

The authors analyzed the profitability determinants of Croatian composite insurance companies in the period from 2004 to 2009. For the analysis of profitability, specific internal factors were used for insurance companies in the Croatian market as well as external factors, which characterized the given economic environment. By applying the panel data technique, the authors proved that company size, underwriting risk, inflation and return on equity have a significant impact on the profitability of insurance companies in the Croatian insurance market. The final results show that the Croatian insurance market has a low level of development, but it is very dynamic [9, pp. 136-142].

Using CARMEL indicators and multiple regression in the 2006-2013 period, the authors analyzed the performance of non-life insurance companies in the insurance market in Serbia. The panel data model indicates a significant negative influence of the financial leverage, retention rate on the profitability of non-life insurers and combined ratio measured by ROA, while the influence of the written premium growth rate, return on investment and company size is significant and positive [17, pp. 367-381].

In the United Kingdom, the profitability determinants of insurance companies were analyzed in the period from 1986 to 1999, using three key indicators: investment yield, percentage change in shareholders' funds and return on shareholders' funds. Based on a panel data set, the author tested twelve changeable variables empirically and demonstrated that the performance of insurers has a positive correlation with interest rate, return on equity, solvency margins and liquidity, as well as a negative correlation with inflation and reinsurance dependence [32, pp. 1079-1110].

In the period from 2002 to 2009 [16, pp. 02-787], three profitability determinants were analyzed (technical profitability, profitability of investment activity and sales profitability) for twenty-five insurance companies dealing with non-life insurance. The author proved that the volume of gross premiums is especially significant and positively affects the profitability of insurance companies. Reducing operating costs has a positive impact on the increase in technical profitability of insurance companies. Also, the participation of motor vehicle insurance in the portfolio of insurance companies has a negative impact on their profitability.

Examined results of 198 insurers in nine EU countries for the years 2004 through 2012 [22, pp. 159-177] determined that ROA is affected by variables related to operation of companies. It is negatively influenced by asset size, combined ratio and variable referred to as internationalization (when shareholders are foreign companies or groups) and diversification (mixed companies operating both in non-life and in life insurance), while a positive impact was found for variables defined as reserves' dimension and asset turnover. Similar variables significantly influenced the size of ROE.

The author evaluated the performance of five life insurance companies in the time period from 2002 to 2003 in terms of various plans and policies on the basis of annual growth rate. The study concluded that life insurance companies in the public sector were lagging behind due to competition faced by private insurers, whereas private life insurance companies performed well in terms of financial aspects [25, pp. 233-258].

At the moment, the insurance industry in India is in a state of change of regulations by the Insurance Regulatory Development Authority (IRDA), aiming to regulate and develop the insurance industry. Analyzing a large number of determinants, it has been concluded that the insurance industry has been extensively expanded since 2000 in terms of number of offices, number of agents, new business policies, insurance products, premium payments, etc. [5, pp. 146-150].

There are many factors that can be related to the financial performance of insurance business operations. This includes the growth of the company, which is expected to be in a negative correlation – the higher the growth rate, the lower the financial impact. The expected relationship between size and financial insurance business is positive due to economies of scale. The relationship between the retention ratios of financial operations is not definitive and requires empirical determination. This is because two insurers can have very different ratios and yet record similar financial performance, depending on the classes of insurance that they transact. The more allocation of available resources to productive investments, the higher the expected financial performance. Similarly, the higher the return emanating from the investments, the better the financial performance. Claims erode earnings, and hence the lower the loss ratio, the higher the financial performance. Also the higher the relative costs, and hence the cost ratio, the worse the financial performance [6, pp. 207-224].

The financial performance of insurance companies business will depend on how, to what extent and where available funds are invested, and how much the return rate on invested funds is [7, pp. 469-499]. Losses or total claims costs in relation to the premium indicate the results of the insurance or essentially the quality of the undertaken activities. Cost ratio, as a ratio of total costs (without claims) and premiums, basically points to operational efficiency in the management of insurance companies. Higher cost coefficient means that the financial impact is lower [20, pp. 1510-1524].

The author analyzed the impact of the factors on the profitability of insurance companies in the period from 2005 to 2010 in the insurance market of Bosnia and Herzegovina, which experienced enormous changes at that time. The analysis was carried out using a dynamic panel model where the obtained results indicate the significant and negative impact of loss on the profitability of insurance companies and the significant and positive impact of the number of years in business, market share, and earlier performance in relation to the existing situation. The results show that diversification did not have a positive impact on the profitability of insurance companies, and that foreign-owned companies were more successful business-wise [29, pp. 158-163].

The results obtained by applying specific panel techniques in the insurance market in Romania in the period from 2008 to 2012 show that the key determinants influencing the financial performance of insurance companies in Romania are the financial leverage in insurance, company size, growth in gross written premiums, underwriting risk, risk retention ratio and solvency margin. The insurance financial leverage reflects the potential impact of technical reserves on capital deficits in the event of unexpected losses and has a negative impact on the financial performance of insurance companies. The size of insurance companies positively influences financial performance as larger companies have more funds, which enables them to diversify risks better and manage the costs of the company more effectively. Gross premium growth has a negative impact on the financial performance of the company because, in some cases, excessive growth of underwritings generates higher risk and creates the need to increase technical resources. The underwriting risk has a negative impact on the financial operations of insurance companies since an over-estimation of underwriting risk can destabilize the company through an increase in costs. The retained risk ratio has a positive impact on the financial performance of companies, as reinsurance involves a certain cost. The solvency margin has a positive impact on the financial performance of insurance companies, because their financial stability is important for potential clients [3, pp. 299-308].

For the period from 2007 to 2012 the authors used multiple linear regression models to analyze which factors affect the profitability of insurance companies in India. The results show that the values of variables such as current

liquidity, size of the company and equity are statistically significant, at the level of 10%, which means that there is a significant relationship of profitability with current liquidity, company size and equity. There is a significantly positive relationship between the profitability of insurance companies and current liquidity. Also, there is a positive relationship between the profitability and the size of the insurance companies, but there is a significantly negative relationship between profitability and capital. The results indicate that solvency ratio and insurance leverage are not statistically significant and do not affect the profitability of insurance companies [31, pp. 44-52].

The results of the study conducted in Kenya in the period from 2010 to 2012 [24, pp. 210-215] show that the higher the ratio of earning assets to total assets, the better the financial performance of general insurance companies in Kenya. Also, a higher return on investment contributes to the better financial performance of insurance companies. The higher the loss and expense ratios, the worse the financial performance. The growth rate, size and retention ratio would not help determine the financial performance of general insurance companies in Kenya.

In Pakistan, in the period from 2005 to 2009, the authors determinants of the profitability of insurance companies on a sample of 34 insurance companies, using a multiple linear regression [21, pp. 315-321]. The variables tested in this paper are the age, size and volume of capital, leverage and loss ratio. The result shows that there is no link between profitability and age of insurance companies. There is a significantly positive relationship between the profitability and the size of insurance companies. The result of the survey also shows that the volume of capital significantly and positively affects the profitability of insurance companies in Pakistan.

Also, in the period from 2005 to 2013, the authors analyzed the financial performance of 24 insurance companies that deal with non-life insurance, using panel regression [30, pp. 354-361]. The results show that age and loss ratio proved to be significant in determining the financial performance, while the growth of premium, size of firm, debt and expense ratio proved insignificant.

In Poland, in the period from 2006 to 2013, the authors analyzed the determinants of the profitability of insurance companies and proved that the variables measured in terms of natural log of gross written premiums, natural log of total assets or natural log of total investments have a positive relationship with profitability ratio of technical activity, ROA, ROE, but at the same time negative relationship with the natural log of total assets, sales profitability ratio, profitability of subscribed capital and negative impact on the profitability of gross written premiums [27, pp. 53-66].

The analysis of the financial performance of non-life insurance companies in Turkey in the period from 2010 to 2014 [14, pp. 277-288] takes into account capital adequacy, liquidity ratio, operating ratios and profitability ratios. The non-life insurance companies that were the subject of the analysis were ranked according to the results of the gray relational analysis (GRA) method. The results of the analysis showed that profitability ratios have the greatest impact on the financial performance of non-life insurance companies. Also, the results show that the loss ratio and technical profitability ratio have come to the forefront among profitability ratios. Based on the obtained results, non-life insurance companies can ensure sustainable profitable growth and competitiveness in the market by applying adequate risk-taking strategies, rational pricing policies, efficient control and optimization of operating costs. Insurance companies are expected to improve their financial results in terms of ensuring capital adequacy for exposure to all risks in business, setting up an investment policy that will ensure optimum liquidity and profitability of insurance companies, reducing loss of funds by more efficient risk taking and determining the price of the assumed risk and company growth strategy based on a sustainable level of profitability.

The main results of the study which analyzed key factors that affect the profitability of non-life insurance companies in the period from 2006 to 2013, by using data from publicly available corporate reports of various companies, show that the profitability of non-life insurance is statistically significant and in a positive correlation with the size of the company's growth rate and premium, while profitability is statistically significant and in a negative correlation with the company's age, loss ratio and current ratio. The results of the study have several implications for

Turkish non-life insurance. They show that larger non-life insurance companies have higher profitability compared to smaller insurance companies. Low underwriting risk companies have higher profitability than companies with higher underwriting risk. The obtained results for current ratio indicate that insurance companies for non-life insurance with lower liquidity have higher profitability than companies with higher liquidity [15, pp. 510-529].

The authors analyzed a sample of 2,176 property insurance companies that operated in 91 countries in the period from 2005 to 2009. They observed specific factors which affect the profitability of insurance companies. The results show that higher GDP growth, lower inflation rates, lower inequalities, and developed stock exchange operations positively affect the performance of non-life insurance companies [10, pp. 155-170].

In Ethiopia, in the period from 2005 to 2009 [23, pp. 245-255], the authors analyzed the impact of specific factors on profitability of insurance companies such as: company size, leverage, tangibility of assets, loss ratio, growth in writing premium, liquidity, and age of the company. According to the results of the survey, a significantly positive influence on the profitability of insurance companies includes the factors such as: the size of the company, tangibility of assets and leverage, while the loss ratio has a significantly negative impact on the profitability of insurance companies. The results also show that the age of the company, growth in premium writing and liquidity did not significantly affect the profitability of insurance companies.

Also, in Ethiopia [12, pp. 45-53], the authors analyzed the performance of insurance companies in the period from 2004 to 2013 using the panel regression model. The results prove that firm leverage, size, tangibility and business risk have a positive impact on the financial performance of insurance companies. The result proves that the increase in leverage negatively affects the performance of Ethiopian insurance industry.

Using data from all insurance companies listed in the Amman Stock Exchange in the period from 2002 to 2007 [1, pp. 266-289], the authors investigated factors that affect the financial performance of the Jordanian insurance companies. The results of regression analysis prove that leverage, size of the company, and management competence index have a significant and positive effect on the financial performance of Jordanian insurance companies. The results also show that there is no significant link between the age of the company and ROA.

There is a great number of relevant studies related to the determinants of the overall financial performance of insurance companies in the developed countries, while relatively few studies focus on the determinants of the financial operations of insurance companies in developing countries [2, pp. 133-143].

It is believed that there is a significantly negative relationship between the financial operations of insurance companies with leverage and equity capital. Size and liquidity have a significantly positive influence on the financial operations of insurance companies, whereas underwriting risks do not have a significant impact on the financial operations of insurance companies [8, (2012)].

The study [26, pp. 7-12] proved that the size of the company significantly and positively affected the financial performance of insurance companies, while the tangibility of assets and liquidity had a positive impact on financial operations but were not significant statistically.

A large number of surveys conducted in a number of European countries on the impact of certain factors on the profitability of insurance companies indicate that the greatest impact on the profitability of insurance companies is exerted by size, diversification, leverage and reinsurance activity [11, pp. 444-466].

Size has many potential benefits for insurers, including diversification. Basically, larger firms have a lower risk of insolvency, because the cost of receivables tend to be less variable, they have higher market power and therefore can charge higher prices and have higher revenue efficiency. Accordingly, the size should be positively related to financial performance. This indicates a positive relationship between the size and performance of insurance companies [4, pp. 15-53].

A survey conducted in Ghana [19, pp. 19-37] analyzed the impact of a number of factors on the profitability of non-life insurance companies in the period from 2009 to 2013. The results of the survey show that the firm growth, gross written premium and size significantly influence the

profitability of insurance companies statistically-wise. The results also show that liquidity and leverage have a positive impact, while the claim has a negative impact on the profitability of insurance companies.

A study conducted in Bangladesh [33, pp. 138-147] in the period from 2004 to 2014 using the panel regression analyzed the impact of selected variables on the profitability of insurance companies. By analyzing the impact of independent variables – underwriting risk, expense ratio, solvency margin, premium growth, asset growth and company size, using an Ordinary Least Squares (OLS) regression model, it was shown that there was an inverse relationship between underwriting risk, size, and profitability. The results also show that all independent variables, except for premium growth, have a significant impact on the profitability of insurance companies. The underwriting risk and size have a negative relationship with ROA. More specifically speaking, underwriting risk has a moderately significant impact, while size has a weak impact. Solvency margin and growth have a positive relationship with ROA.

The authors [28, pp. 231-238] analyzed the impact of independent variables on the profitability of non-life insurance in the Republic of Croatia in the period from 2003 to 2009. The results of the study prove that ownership, expense ratio and inflation have a negative and significant influence on profitability. Also, average profitability has a positive and significant impact on the profitability of Croatian non-life insurance companies.

Methodology and model specification

The research applied the model of multiple linear regression without panel analysis for non-life insurance companies in the 2010-2015 period with the number of observations at 95, due to the fact that the number of insurance companies changed in the observed period. In some years, the operations of individual insurance companies have also been scattered by liquidation, the purchase of individual insurance companies by other insurance companies, and the simultaneous entry of other foreign insurance companies, which limited access to data for the application of panel analysis.

In this study, a multi-linear regression model was used to evaluate the nature and strength of the bond between a dependent variable, and independent variables that are denoted by K. The regression analysis examines the relationship between the profitability of non-life insurance companies as a dependent variable and K independent variables. Regression is basically a statistical technique that predicts the value of a dependent variable based on one or more independent variables. A multi-linear regression model has been developed to measure the profitability of non-life insurance companies:

$$ROA=\alpha+\beta1X1+\beta2X2+\beta3X3+\beta4X4+\beta5X5 +\beta6X6+\beta7X7+\beta8X8+\beta9X9+X10+\varepsilon$$

Representativeness of the model is examined by calculating the coefficient of correlation (r), the coefficient of determination and the corrected determination coefficient $\bar{R}^2$. If the stated coefficient is greater than 50%, the model

Table 1: Dependent and independent variables

Notation	Variable	Measurement method
X1	Return on assets (ROA)	Profit after tax/total assets
X2	Asset growth (A)	Log of total assets
X3	Company growth	Assets growth
X4	Premium growth	(Premium t – premium t-1)/ premium t-1
X5	Liquidity ratio	Current assets/Current liabilities
X6	Debt ratio	Total equity/Total assets
X7	Operating costs	Salary costs/Written premium
X8	Underwriting risk	Gross (net) premiums/Equity
X9	Financial leverage	Total debt/Equity
X10	Profit growth	Net result/ Total revenue
A	Constant	-
E	Error	-

Source: Authors' calculation.

is representative. Also, a variance analysis (ANOVA) is conducted, where the significance of the observed variables in the model is tested. The significance of the model is present if Sig. <0.05. The correlation coefficient can have values in the range of -1 to +1.

The correlation coefficient shows the strength of the relationship between the two observed variables. When the value of the coefficient is zero, then there is no correlation between the variables. The coefficient value of 1.0 shows that the correlation is complete and positive, while the coefficient -1.0 indicates that the correlation is complete and negative. The absolute value of the coefficient of correlation shows the strength of the relationship between the variables. When ρ is closer to zero, the connection is weaker, and the closer the unit is to 1, the connection is stronger.

In the risk analysis, Pearson's linear correlation coefficient is used as a measure of the relationship between the two variables. This study analyzes which variable has a positive impact on ROA, and which variable has the greatest negative impact on ROA and why. It is denoted by r and is obtained using the following equation:

$$r = \frac{\sum_{i=1}^{N} X_i Y_i - N \times \overline{X} \times \overline{Y}}{\sqrt{(\sum_{i=1}^{N} X_i^2 - N\overline{X}^2)(\sum_{i=1}^{N} y_1^2 - N\overline{Y}^2)}}$$

By using the determination coefficient and the adapted determination coefficient , this study deals with the model description and the deviation of independent variables. The Durbin-Watson statistic is used to provide an autocorrelation overview of the observed variables.

Empirical data and analysis

This study analyzes the determinants of profitability of non-life insurance companies in the Serbian insurance market. So far, only few studies have been carried out on determinants of the profitability of non-life insurance companies in the Serbian insurance market. Therefore, this analysis aims to contribute to a more detailed analysis of the Serbian insurance market and at the same time provide useful information for all insurance companies in the Serbian insurance market, as well as for investors, experts from the aforementioned area and state supervisory authorities. The analysis is based on available data from official financial statements of insurance companies, as well as reports by competent state authorities.

Table 2 shows descriptive statistics for all variables taking into account 95 observations. Based on the data obtained in the Table, it can be noted that the income on total assets fluctuates between -81.15% and 19.40%, with an average value of -1.96%. Due to the fact that some insurance companies had negative financial results in the observed period, the ROA deviates from an average value of around 11.10%.

Results obtained by regression analysis indicate that the correlation coefficient is R = 0.919. The determination coefficient is R Square = 84%, and the adjusted coefficient

Table 2: Descriptive statistics of insurance companies for the 2010-2015 period

	Size of company	Company growth	Premium growth	Liquidity ratio	Debt ratio	Operating costs	Underwriting risk	Financial leverage	Profit growth
N	95	95	95	95	95	95	95	95	95
Mean	6.5966	21.3%	13.5%	26.0%	35.8%	24.6%	222.5%	35.6948	-6.9%
Median	6.5328	9.4%	8.9%	12.5%	26.1%	6.5%	200.0%	19.2800	0.9%
Mode	5.8355	-27.9%	-63.8%	0.3%	4.4%	4.3%	0.2%	1.19	0.3%
Std. Deviation	0.5353	101.3%	35.6%	35.0%	24.6%	115.1%	218.9%	55.7879	45.6%
Minimum	5.8355	-27.9%	-63.8%	0.3%	4.4%	0.3%	0.2%	1.19	-266.3%
Maximum	7.6406	969.8%	178.6%	245.4%	97.4%	1125.2%	1716.7%	350.59	89.7%

Source: Authors' calculation.

Table 3: Model summary

Model	R	R Square	Adjusted R square	Std. error of the estimate	Durbin-Watson
1	.919	.844	.827	4.66031	1.998

Source: Authors' calculation.

of determination is 0.83. The result of the Durbin-Watson's multicollinearity test of 1.998 (it should be close to 2) confirms the validity of the model.

The result of the multiple linear regression model: p = .000 is less than p = 0.05, which means that there is a significant influence of independent variables on the start of ROA, i.e., the presented model is statistically significant.

It is evident from Table 5 that almost half of the explanatory variables slightly positively correlate with one another, while the other half slightly negatively correlate with each other. Given that the subject of the analysis is the influence of independent variables on the dependent variable and the profitability of non-life insurance companies, it can be noted that the strongest positive correlation between ROA and profit growth (0.844), for a significant level of 0.01, indicates the fact that profit grew faster than the income of insurance companies. On the other hand, the strongest negative correlation is noted between the ROA and the financial leverage, as there was an increase in the indebtedness of the insurance companies and the shifting of the capital structure in favor of borrowed capital.

Table 4: ANOVA

Model		Sum of squares	Df	Mean Square	F	Sig.
1	Regression	9769.015	9	1085.446	49.978	.000b
	Residual	1802.632	83	21.718		
	Total	11571.648	92			

Source: Authors' calculation.

Table 5: Pearson correlation

		ROA	Size of company	Company growth	premium growth	Liquidity ratio	Debt ratio	Operating costs	Underwriting risk	Financial leverage	Profit growth
ROA	Pearson correlation	1	.260	.049	-.005	-.114	-.108	-.029	-.133	-.182	.844**
	Sig. (2-tailed)		.011	.642	.959	.270	.295	.778	.199	.077	.000
	N	95	95	95	95	95	95	95	95	95	95
Size of company	Pearson correlation	.260	1	.105	-.133	-.378**	-.716**	-.219*	.296**	.154	.239
	Sig. (2-tailed)	.011		.319	.202	.000	.000	.033	.004	.135	.020
	N	95	95	93	93	95	95	95	95	95	95
Company growth	Pearson correlation	.049	.105	1	.108	.129	-.118	-.033	.078	.042	.021
	Sig. (2-tailed)	.642	.319		.303	.217	.259	.752	.459	.687	.839
	N	93	93	93	93	93	93	93	93	93	93
Premium growth	Pearson correlation	-.005	-.133	.108	1	-.086	.140	.227	-.051	-.051	-.242
	Sig. (2-tailed)	.959	.202	.303		.412	.180	.029	.628	.625	.019
	N	95	95	93	95	95	95	95	95	95	95
Liquidity ratio	Pearson correlation	-.114	-.378**	.129	-.086	1	.505**	.094	-.345**	-.234*	-.097
	Sig. (2-tailed)	.270	.000	.217	.412		.000	.365	.001	.023	.349
	N	95	95	93	93	95	95	95	95	95	95
Debt ratio	Pearson correlation	-.108	-.716**	-.118	.140	.505**	1	.350**	-.646**	-.473**	-.175
	Sig. (2-tailed)	.295	.000	.259	.180	.000		.001	.000	.000	.089
	N	95	95	93	93	95	95	95	95	95	95
Operating costs	Pearson correlation	-.029	-.219	-.033	.227	.094	.350**	1	-.159	-.095	-.147
	Sig. (2-tailed)	.778	.033	.752	.029	.365	.001		.125	.358	.154
	N	95	95	93	93	95	95	95	95	95	95
Underwriting risk	Pearson correlation	-.133	.296**	.078	-.051	-.345**	-.646**	-.159	1	.824**	.039
	Sig. (2-tailed)	.199	.004	.459	.628	.001	.000	.125		.000	.709
	N	95	95	93	93	95	95	95	95	95	95
Financial leverage	Pearson correlation	-.182	.154	.042	-.051	-.234	-.473**	-.095	.824**	1	-.025
	Sig. (2-tailed)	.077	.135	.687	.625	.023	.000	.358	.000		.813
	N	95	95	95	95	95	95	95	95	95	95
Profit growth	Pearson correlation	.844**	.239	.021	-.242	-.097	-.175	-.147	.039	-.025	1
	Sig. (2-tailed)	.000	.020	.839	.019	.349	.089	.154	.709	.813	
	N	95	95	95	95	95	95	95	95	95	95

Source: Authors' calculation.

Table 6: Regression analysis of the coefficients of non-life insurance companies in the Republic of Serbia

Coefficients[a]								
Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-13.647	10.440		-1.307	.195		
	Size of company	2.507	1.389	.118	1.805	.075	.437	2.291
	Company growth	.000	.005	-.003	-.075	.940	.894	1.118
	Premium growth	.060	.015	.192	4.121	.000	.861	1.161
	Liquidity ratio	-.018	.022	-.044	-.812	.419	.653	1.531
	Debt ratio	-.128	.046	-.269	-2.803	.006	.204	4.895
	Operating costs	.268	.059	.329	4.522	.000	.354	2.822
	Underwriting risk	-.009	.005	-.173	-1.918	.059	.229	4.360
	Financial leverage	-.015	.016	-.075	-.959	.340	.305	3.277
	Profit growth	.237	.012	.969	19.006	.000	.722	1.386

Source: Authors' calculation.

On the basis of the data obtained from Table 6, it can be concluded that the obtained VIF is lower than the reference value of 5, which means that there is no multicollinearity present. Taking into account the individual impact of independent variables on the profitability of non-life insurance companies, it can be concluded that the following variables: growth in premiums, debt ratio, operating costs and profit share in revenue (profit growth), had a significant impact on the profitability of insurance companies.

Results and discussion

Based on the results obtained by applying multiple linear regression, it can be concluded that the resulting correlation coefficient of 0.919 indicates that there is a complete correlation between the dependent variable, i.e., ROA and independent variables: size of company (A), company growth, premium growth, liquidity ratio, debt ratio, operating costs, underwriting risk, financial leverage and profit growth.

The coefficient of determination R = 84%, and the custom determination coefficient of 0.83, indicates that 83% of the deviations of independent variables are described in this model, which makes the model relatively representative. The obtained results indicate that the growth of premiums of non-life insurance companies influences ROA in a statistically significant way, since Sig. = .000, which is less than 0.05. Also, the growth of the premium positively influenced the growth of ROA. The debt ratio affected ROA in a statistically significant way, as Sig. = .006, which is less than 0.05. However, the increase in debt ratio affected the decrease of the value of ROA of non-life insurance companies, which is the result of the rise in the indebtedness of insurance companies in the observed period. Operating costs also have a statistically significant impact on ROA insurance companies, as Sig. = .000, which is less than 0.05. The increase in this value positively influenced ROA, which is explained by a steady increase in the premium of insurance companies compared to the increase in the cost of earnings. The share of profit in revenues (profit growth) affected ROA of non-life insurance companies in a statistically significant way, since Sig. = .000, which is less than 0.05. The change in this value positively affected the movement of ROA, which is a consequence of faster growth of profit compared to the total revenues.

The size of the insurance companies positively influenced ROA, however this influence is not statistically significant because Sig = .075, which is greater than 0.05. The increase in the size of the insurance companies did not affect ROA of insurance companies, nor did the increase affect ROA in a statistically significant way, as Sig. = .940. The liquidity ratio of insurance companies did not affect ROA significantly, as Sig. = .419 – the increase in this value negatively affected the value of ROA. This impact indicates that there has been a faster rise in short-term liabilities compared to the working capital of insurance companies. Underwriting risk and financial leverage did not affect ROA in a significant way since Sig. = .059,

or Sig = .340. These two variables negatively influenced the value of ROA, which was caused by faster growth of borrowed capital in relation to the total premium and the total liabilities of non-life insurance companies in the observed period.

Conclusion

The results of the analysis regarding these hypotheses show that the profitability of non-life insurance companies in Serbia in the observed period varied from year to year. The analysis confirms the starting hypotheses that the statistically significant impact on the profitability of non-life insurance companies is achieved by the increase in premiums, the debt ratio, operating costs and revenue sharing. Other variables, such as company size, company growth, liquidity, underwriting risk or financial leverage, do not have a statistically significant impact on the profitability of non-life insurance companies. These results contribute to the scarce empirical research regarding the profitability of non-life insurance companies in Serbia, given the much higher share of non-life insurance in relation to life and other types of insurance in the overall insurance portfolio.

The previous literature and empirical research indicate that in most countries, the size of the company has a considerable influence on the profitability of insurance companies, especially in the case of more developed countries. Growth and size of companies have given them numerous benefits, including diversification, insolvency reduction, lower costs, higher revenue efficiency and higher market power. The results of this analysis show that the size of a company as well as its growth do not have a statistically significant impact on the profitability of insurance companies in the insurance market of Serbia, and that the structure of the capital of insurance companies is shifted in favor of borrowed capital, which has led to financial difficulties for a number of insurance companies.

However, this analysis has certain limitations that are reflected in the uncertainty of the operations of individual insurance companies, whose business performance had dynamic movements, resulting in the liquidation of individual insurance companies, purchase of individual insurance companies by other insurance companies, and the simultaneous entry of other foreign insurance companies to the insurance market of Serbia. Given that the insurance market in Serbia is in development and relatively lagging behind the markets of other European countries, the implementation of Solvency II will be a major challenge for insurance companies.

The basis of the new regulation will be estimating the necessary amount of capital, where there will be a change in the necessary amount of capital for ensuring solvency in all types of insurance, changes in the ways of calculating the solvency margin, the application of internal models and the standard formula. All this will represent a special challenge for the insurance companies in the insurance market in Serbia, which will affect the changes in many variables of the profitability of insurance companies, where other variables will have to be taken into account, especially for those companies which had an insufficient or inadequate risk taking system in the past.

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ORIGINAL SCIENTIFIC PAPER
UDK: 004.738.5:336.71(497.11)
DOI:10.5937/EKOPRE1806346Z
Date of Receipt: January 18, 2018

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THE POTENTIAL AND STATE OF DEVELOPMENT OF DIGITAL BANKING IN SERBIA

Potencijal i stanje razvoja digitalnog bankarstva u Srbiji

Abstract

Digitization of processes and services is one of the biggest challenges of modern banking. Driven by the principles of profitability and maximizing user experience, banks conduct the implementation of digital products and services, which affects reorganization of resources and all activities of the banks. Rapid changes in clients' behavior and new technological possibilities are directing banks to the goal of ensuring prompt availability of resources, through real time transactions and loan approval. This paper presents a comparative analysis of the digital banking development in the banking sector in Serbia, focusing on availability of products and services that are current on the market, with follow-up on the same type of trends in the region and the European Union. It also discusses the potential and limitations in the application of a digital concept in banking, such as application of digital signature, demographic characteristics, regulation, technological capabilities and general features of the domicile economy.

Keywords: *digital banking, comparative analysis, digital transformation, digitization, Serbia.*

Sažetak

Digitalizacija procesa i usluga predstavlja jedan od najaktuelnijih izazova u savremenom bankarstvu. Uvažavajući principe profitabilnosti i maksimizacije korisničkog iskustva, implementacija digitalnih usluga i proizvoda u bankarstvu sprovodi se sa ciljem razvoja preorijentisanog pristupa koji pretpostavlja reorganizaciju resursa i aktivnosti na nivou banaka. Izuzetne promene u navikama klijenata i nove tehnološke mogućnosti usmeravaju banke ka cilju obezbeđivanja promptne dostupnosti resursa, kroz trenutnu realizaciju transakcija i odobrenje kredita. U radu je predstavljena komparativna analiza razvoja digitalnog bankarstva na nivou bankarskog sektora Srbije, sa fokusom na zastupljenost proizvoda i usluga koji su aktuelni na tržištu i osvrtom na istovrsne trendove u zemljama regiona i Evropskoj uniji. Takođe, razmatraju se potencijali i ograničenja u primeni digitalnog koncepta u poslovanju banaka, poput primene digitalnog potpisa, demografskih karakteristika, regulacije, tehnoloških mogućnosti i opštih karakteristika domicilne privrede.

Ključne reči: *digitalno bankarstvo, komparativna analiza, digitalna transformacija, digitalizacija, Srbija.*

Introduction

The strategic determination of banks towards digital transformation is a necessity for many reasons. Intense competition, increasingly demanding needs of clients and new technology platforms create an environment in which the survival of banks' operations is questionable, unless all dimensions of the market approach are adapted to the new digital concept. The majority of foreign-owned banks in the banking market of Serbia (76.1% according to the balance sheet assets criteria) contributed to the boom of application of new technologies and the introduction of the most up-to-date services that provide clients with speed, simplicity and significantly lower fees. On the global and domestic market, mobile banking has become a priority in further development of digital banking channels.

Comparative analysis of digital banking market in Serbia

The expansion of digital products and services is more pronounced in retail banking - 29 out of 31 banks offer Internet banking service, 24 banks mobile banking service and 30 banks SMS service (Table 1). In order to improve clients' satisfaction, special functionalities of mobile banking applications have been developed and presented to the market. Telenor banka introduced itself in 2013 as the first mobile bank in Serbia and induced a more intense approach of competitors when it comes to addressing clients' needs on digital platforms. The possibility of paying checks by photographing them (Erste Bank and Addiko Bank), withdrawing cash from ATMs using a mobile application (Telenor banka and Komercijalna banka), mobile contactless payments at POS terminals (Banca Intesa and Komercijalna banka) are just some of the most current innovations in the area of mobile banking in Serbia. Physical presence of clients in banks' premises while making payments is not a necessity, but in the case of signing a loan contract or opening an account there is no an end-to-end online process. According to Article 13 of the Law on the Prevention of Money Laundering and Terrorist Financing, for the identification of a client by the bank, its physical presence is required. The obligation to physically identify clients is imposed in the case of concluding a current account contract and a loan agreement, and regulatory restrictions of this kind prevent banks from fully developing digital lending services.

Online account opening is offered by 9 out of a total of 31 banks, with the process reflected in filling out the form with data necessary for preparation of contract documents and physical identification of the client in the banks' premises. By introducing the courier service, Telenor banka adapted online current account process by avoiding regulatory restrictions, and enabled conclusion of current account and loan agreements without the necessary presence of a client in the business units of the bank.

Online loan application has been developed by 17 banks on the market, out of which 10 banks offer a process which consists of filling out the form on a public website (Table 1), a call from an advisor and at least two visits to the branch for the purpose of submitting a loan application and necessary documentation, and signing of the loan agreement. Filling out the form on the website is available to both clients and non-clients, which makes this type of digital service also a significant acquisition channel.

Banca Intesa, Direktna banka, Société Générale banka Srbija and Telenor banka have developed an online loan application submission exclusively for bank clients on the Internet banking (web-based) application. Société Générale banka Srbija is also the only bank on the market that has introduced the use of a qualified electronic signature for signing contractual documents, which allows clients to access their loan funds instantly from the moment of placement. Sending documentation by uploading it via website or by e-mail is a part of online loan application process in Erste Bank, Raiffeisen banka and VTB banka, which encourages clients to use reliably Internet and mobile devices in interaction with the bank. The most common forms of preferential pricing for online loan application are lower interest rates and/or processing fees.

In corporate banking, all banks on the market offer Internet banking services, except for Telenor banka and Bank of China Srbija. Mobile banking application for entrepreneurs and legal entities is offered by Eurobank, ProCredit Bank, Raiffeisen banka and Sberbank Srbija. Given that the primary focus in digital banking market

is oriented to further development of mobile banking, an even greater presence of mobile banking services for legal entities in the Serbian market can be expected. The availability of banking services provided by the development of digital services and products also presupposes the use of multifunctional ATMs (terminals). In addition to classical functions, such as cash withdrawal and insight into account balance, cash payment and payment of invoices are becoming more and more pronounced services at ATMs in Serbia. Multifunctional ATMs take up a significant amount of work that traditionally took place in branches and sub-branches, with the aim of reorienting the role of the branch from the service and administration to the advisory role.

In 2015, ProCredit Bank opened the first self-service zones in Serbia. In 34 business units, the use of currency exchange ATMs, transaction terminals (which include services such as payment of bills and currency conversions), account terminals and deposit boxes [28] are available to retail and corporate clients. The self-service zone is a separate part of the branch, which clients can access at any time. Eurobank, Raiffeisen banka, Telenor banka,

Table 1: Comparative analysis of the digital banking market in Serbia

Bank	Retail banking					Corporate banking	
	Internet banking	Mobile banking	SMS banking	Online loan application*	Online current account opening	Internet banking	Mobile banking
Addiko Bank							
AIK banka							
Alpha Bank Srbija				Form			
Banca Intesa				Clients only			
Banka Poštanska štedionica							
Bank of China Srbija							
Crédit Agricole banka Srbija				Form			
Direktna banka				Clients only			
Erste Bank							
Eurobank				Form			
Findomestic banka							
Halkbank							
JUBMES banka							
Jugobanka Jugbanka							
Komercijalna banka							
Marfin banka							
MIRABANK							
MTS banka							
NLB banka				Form			
Opportunity banka							
OTP banka Srbija				Form			
Piraeus Bank				Form			
ProCredit Bank				Form			
Raiffeisen banka							
Sberbank Srbija				Form			
Société Générale banka Srbija				Clients only			
Srpska banka							
Telenor banka				Clients only			
Unicredit Bank Srbija				Form			
Vojvođanska banka				Form			
VTB banka							
Total number of digital products/services	29	24	30	17	9	29	4

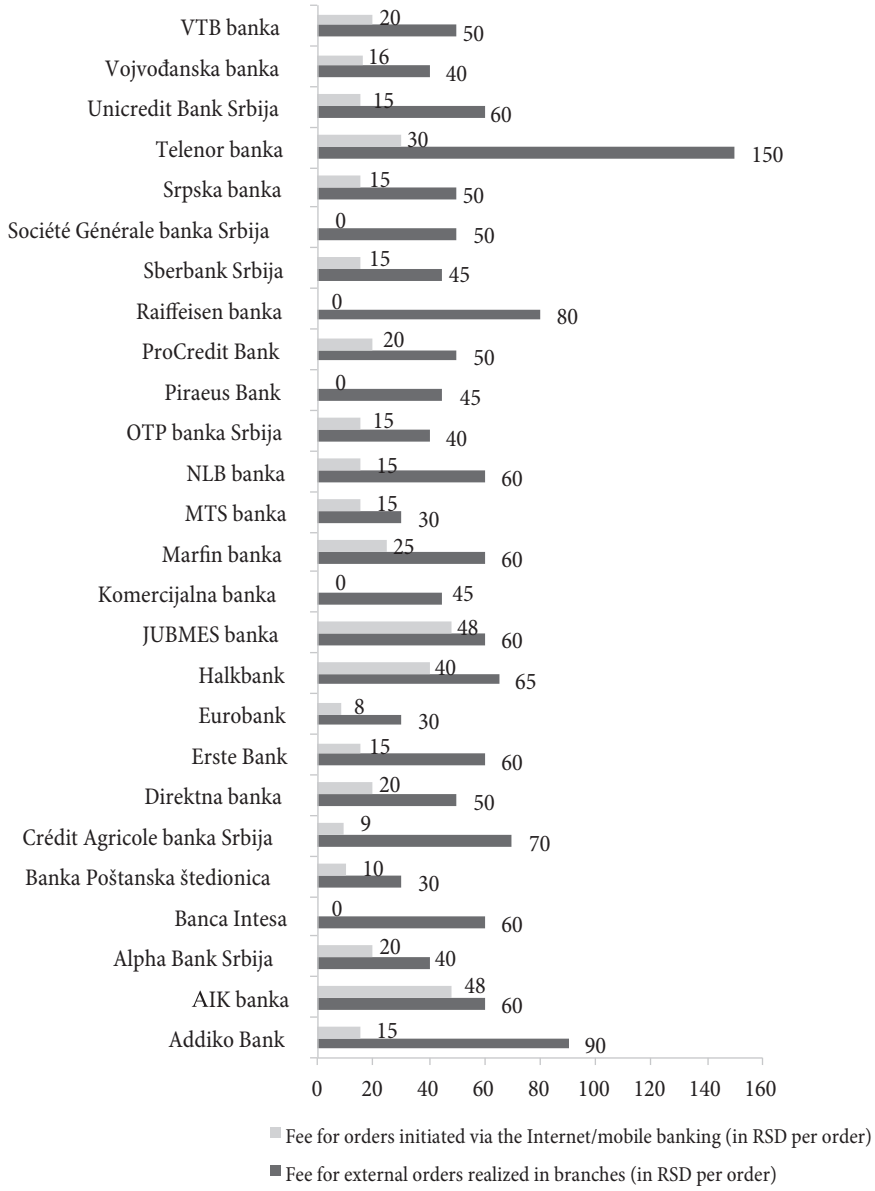
*Form - End-to-end application process is not present, but the user completes a short form and the process continues in the branch office;
Clients only - The application is only available to the bank's clients and does not represent an acquisition channel;
Blank – Full online application process.
Source: Authors' own illustration based on [1] and [2], [3], [5], [6], [7], [9], [10], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21], [24], [25], [26], [27], [28], [29], [32], [38], [39], [40], [41].

Unicredit Bank Srbija and Vojvođanska banka also have a network of multifunctional ATMs.

One of the advantages of using digital products and services are significantly lower fees for payment orders in relation to the ones realized in the branch. Observed individually at the level of each bank on the Serbian market (Figure 1), the difference in the minimum fee charged for external non-cash orders and the minimum fee for orders executed via the Internet/mobile application ranges from 12 dinars (AIK banka and JUBMES banka) up to 120 dinars per payment order (Telenor banka).

Fees for external non-cash orders realized in the branch are higher by 1.3 to 7.8 times compared to orders initiated via the Internet/mobile application. Analysis of income statements of the 10 biggest banks on the market indicates that the share of fee and commission income in total revenues is at the level of 80.4% (Figure 2). High contribution of fee and commission income to profitability and their expressed variability indicates that a massive use of digital channels for payments and other services represents a potential risk to the profitability of banks. Maintaining the principle of economies of scale and

Figure 1: Comparison of fees for external orders realized in branches and fees for orders initiated via the Internet/mobile banking (in RSD per order)



Source: Authors' calculation and illustration based on [1] and [2], [3], [5], [6], [7], [9], [10], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21], [24], [25], [26], [27], [28], [29], [32], [38], [39], [40], [41].

reduction of administrative costs at the level of business units (branches and back office units), increase in volume and number of transactions with a decrease in the number of employees, are certain consequences of digitization in the long run.

In spite of the pronounced variability of the share of fee and commission income in the total net operating income, considering banks separately - from 8.5% in Société Générale banka Srbija to 54% in AIK banka (Figure 2), the value of Herfindahl - Hirschman's fee concentration index (877) on a level of the top 10 banks in Serbia indicates a non-concentration of fee income. Income variability is complementary to the significant differences in fees at the level of individual external payment order (Figure 1), taking into account the different pricing policies of banks in the process of implementing an individual digital transformation strategy.

Relevant indicators for further development of digital products and services and the strategic determination of banks in the process of internal and external digitization are also the relationships between the number of employees, the number of business units and the ATM network (Table 2). Traditional banking is characterized by a diversified network of business units, which is complementary to a larger number of employees in the banking sector. The presence of ATMs and related services that supersede the need for a physical presence of banks in the form of branches points to the development of a digital approach in management of Serbian banks.

The ratio of the number of ATMs to the number of business units ranges from 1.09 in the case of Société Générale banka Srbija to 2.46 in the case of AIK banka. The ratio of the number of employees in relation to the number of business units ranges from 10.61 in the case

Figure 2: Concentration of fee and commission income

Source: Authors' calculation and illustration.

Table 2: Comparative analysis of the indicators of the digital banking market in Serbia

Bank	Number of business units	Number of ATMs	Number of employees	Rank according to the criteria of balance sheet assets	Number of ATMs/ Number of business units	Number of employees/ Number of business units
Banca Intesa	187	270	3,025	1	1.44	16.18
Komercijalna banka	228	269	2,852	2	1.18	12.51
Unicredit Bank Srbija	71	99	1,204	3	1.39	16.96
Raiffeisen banka	86	125	1,566	4	1.45	18.21
Société Générale banka Srbija	97	106	1,336	5	1.09	13.77
AIK banka	57	140	605	6	2.46	10.61
Eurobank	72	126	1,447	7	1.75	20.1
Banka Poštanska štedionica	149	261	1,885	8	1.75	12.65
Erste Bank	76	157	1,027	9	2.07	13.51
Vojvođanska banka	105	137	1,468	10	1.3	13.98
Total	1,128	1,690	16,415	-	-	-

Source: Authors' calculation and illustration based on [1] and [2], [3], [5], [6], [7], [9], [10], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21], [22], [24], [25], [26], [27], [28], [29], [32], [38], [39], [40], [41].

of AIK banka to 20.10 in the case of the Banka Poštanska štedionica (Postal Savings Bank). The mentioned banks belong to the second half of the ranking according to the size of the balance sheet assets. On the other hand, the largest banks are characterized by lower values of the number of ATMs per business unit and higher values of the number of employees to the number of business units ratio, indicating a significant physical presence of banks on the market and potential further consolidation of the banking sector in the process of digital transformation of the traditional banking.

Potentials and restrictions in further development of digital banking in Serbia

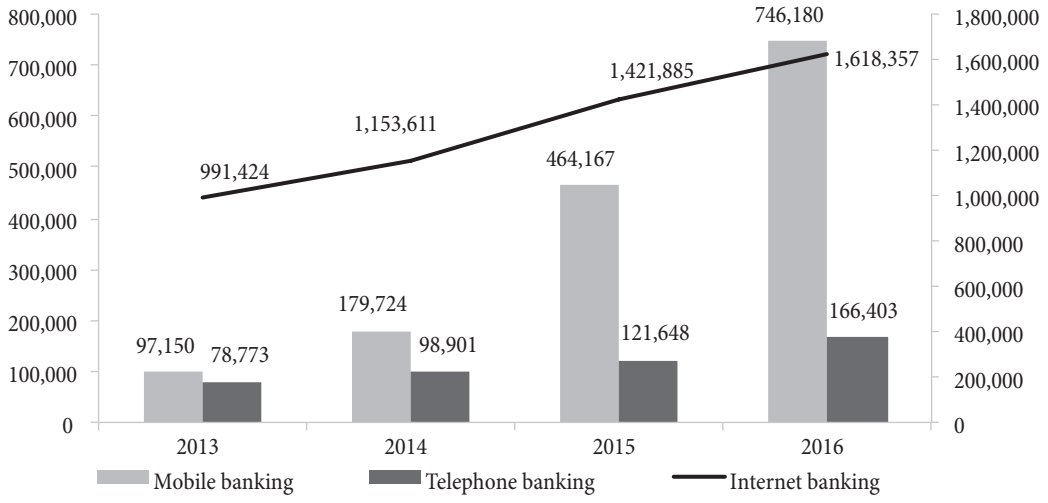
Digital transformation assumes the implementation of a long-term strategy at the level of individual banks, which is manifested in the form of certain tendencies at the level of the banking sector. Structural capital, as a component of overall intellectual capital, is under the greatest influence of the digital transformation of banks. Structural capital plays an important role in value creation that results in higher values of total assets and ROE of Serbian banks [8, p. 297]. Taking into account the movement of certain indicators, it can be concluded that the potential for further development of digital banking in Serbia is reflected in:

- Increase in the number of users of mobile and Internet banking services,
- Increase in the number and volume of payments initiated using digital channels (Internet, mobile banking and ATMs)
- Increase in the number of Internet users, computers and the use of mobile phones.

Acceptance of digital banking services by clients has a growing tendency, especially in the area of mobile banking (Figure 3). In the period from 2013 to 2016, the number of mobile banking users in Serbia has increased by 649,030, and Internet banking users by 626,933. A positive trend confirms that mobile banking will represent the dominant digital channel in the future and that a justified focus of development is the one oriented on the functionalities and possibilities of using a mobile phone in banking. Phone banking also recorded growth in the observed period (from 2013 to 2016), but significantly lower - by 87,630 users.

The trend of the reduced number and volume of cash payments followed by increase in the number and volume of transactions initiated using digital channels also pose positive trends in Serbia's digital banking market (Figure 4). In the period from 2013 to 2016, the number of cash payments decreased by 6.7 million transactions, while mobile banking transactions increased from 188,518 in 2013 to 2,085,549 in 2016. Also, transactions through Internet banking increased by 20%, and ATM payments grew by 2000% (from 5,658 in 2013 to 117,540 in 2016). Cash transfers initiated by clients in a branch are reduced

Figure 3: Number of users by type of payment service



Source: Authors' illustration based on [23].

by 15%, indicating that clients have potentially migrated to digital channels. Greater availability of computers, the Internet and the use of mobile phones are a precondition for the development of digital banking (Table 3). The potential is manifested in the increase of household computers by almost 40% over a period of 10 years, the increasing access to the Internet by 46% and the increasing use of the mobile phone by 22%. Also, Internet usage for Internet banking has increased from 12.9% in 2015 to 19.2% in 2016. The Internet is mostly accessed from the smartphones (76.5%) and computers (72%), which makes the expansion of mobile phones in digital banking services once again confirmed by the presented tendencies in the banking market of Serbia. Benefits for banks in the massive use of mobile banking are reflected in [35, p. 98]:

- Increasing market share,
- Reduction in operating costs,
- Acquisition of new clients and deposits,
- Personalized contact with the client,
- Better positioning on the market.

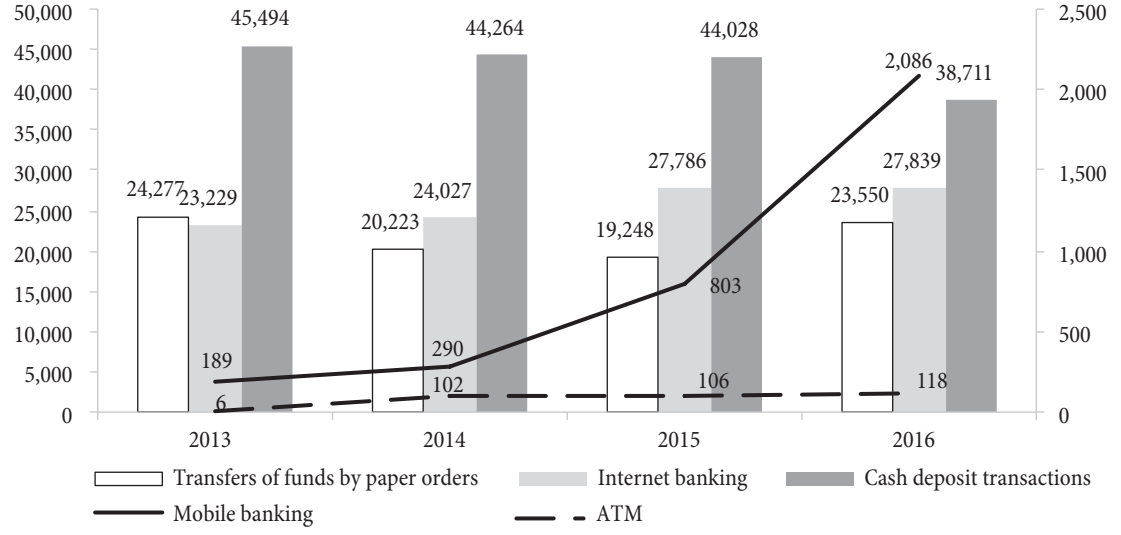
Factors that may have a limiting impact on the digital transformation of banks in Serbia are:

- Technical and technological,
- Regulatory,
- Education of users,
- Gray economy and living standard.

The dominant limiting factor is technical and technological aspect for further development of digital banking. The development of digital products and services presupposes long-term investments that require the investment of significant assets. Banks that do not invest in the development and implementation of the digital concept are at risk of significant loss of clients, and accordingly, the risk of decrease of business volume and profitability. New technology enables strategic planning by superior data mining through collection, analysis, and sharing of huge amounts of longitudinal data generated inside and outside the company, which has never been available before [11, p. 244]. In this context, the application of new technologies to the process of digital transformation of the bank implies education, pre-qualification and investment in human capital. Successful digital transformation means that banks will need to continue with existing services, while developing strategies to manage the shift in the service mix (e.g. support more self-directed clients) [36, p. 37].

Regulatory constraints also primarily affect banks as providers of digital services - the inability of laws and regulations to be modified at the speed of rapid changes on the market are most pronounced in the domain of digital signature application and clients' identification based on their physical presence. User education is also a significant factor that affects the acceptance of digital products and services. Digital literacy is also reflected in the use of Internet and, according to the Statistical Office of the Republic of Serbia, 29.2% of citizens in Serbia never used the Internet [34, p. 37]. Individuals who do not use

Figure 4: Number of transactions by type of payment service (in 000)



Source: Authors' illustration based on [23].

the Internet are predominantly older than 55 years of age and have a lower level of education.

Investing in digital literacy and education represents the potential of banks to acquire new clients through the channels of digital banking products and services. The prerequisite for expansion of digital banking is also the reduction of the gray economy and the increase in the purchasing power of clients. Estimation of the share of gray economy in gross domestic product in 2010 was 30.1%. The gray economy directly affects the illegal cash flows, which indicates that a certain part of the earnings are received in cash, which in turn implies a lack of need for opening a current account and making payments through digital channels. The higher costs of personal consumption in relation to the average income of population in Serbia - 56,624 to 60,720 RSD [33] indicates a big challenge for banks in enrollment of new and existing customers in digital banking and in increasing profitability.

Enterprises that excel in digital transformation process are distinguished by: strong overarching digital vision, excellent governance across silos, many digital initiatives generating business value in measurable ways, strong digital culture [37, p. 25]. The challenges of banks in Serbia on the path to digital transformation are identical when it comes to the banking systems of the countries in the region, including the ones in the European Union. Employees in banks in Croatia, Slovenia, Serbia, Bosnia and Herzegovina and Bulgaria have similar attitudes to some aspects of digital transformation (Figure 5).

The biggest identified challenges of the digital transformation process are the development of technology and implementation of a new technology platform that integrates digital channels into a unique multifunctional ecosystem. Bankers in Bosnia and Herzegovina (88%) and Croatia (55%) consider the implementation of a general business strategy that incorporates digital strategy as the main challenge of the banks in digitization. In Bulgaria, management (78%) and security (78%) are aspects that require special approach and engagement, while the budget is cited as the biggest challenge in digital transformation for bankers in Serbia (63%) and Slovenia (80%) [4, p. 11].

Table 3: Indicators of the use of information and communication technologies in Serbia

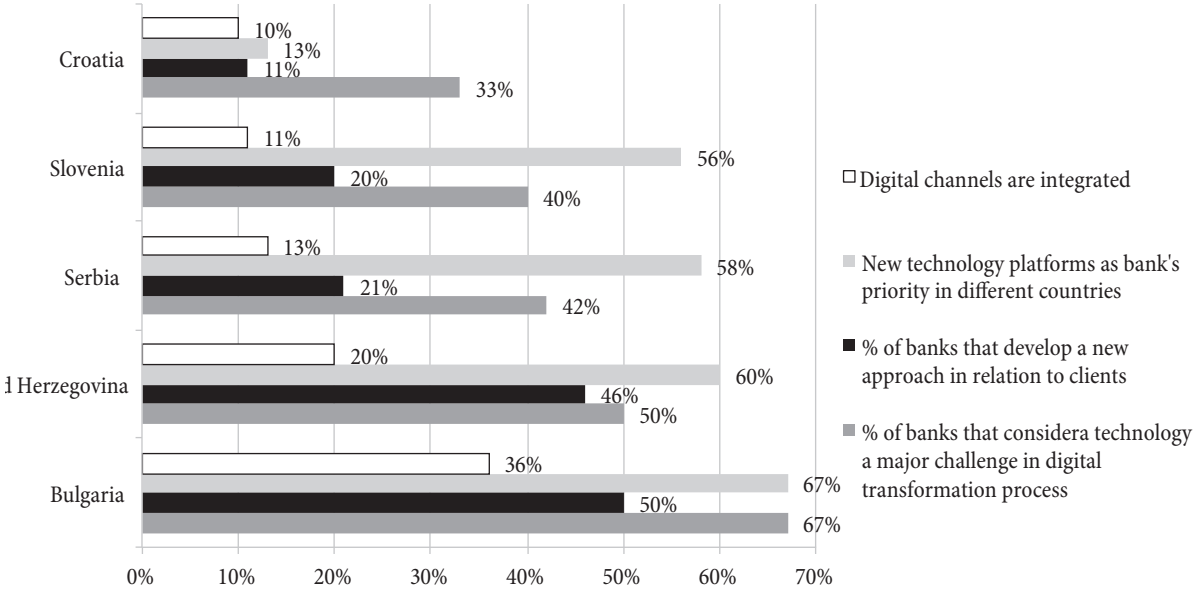
Year	Desktop computers in households	Internet access	Mobile phone use
2006	26.5%	18.5%	70.0%
2010	50.4%	39.0%	82.7%
2016	65.8%	64.7%	91.8%

Source: [34].

Conclusion

The speed of changes in digital banking indicates the necessity of banks to adapt their strategic orientation to emerging clients' needs, new technological solutions and

Figure 5: Certain aspects of digital transformation of banks in the surrounding countries



Source: [4, p. 10].

the emergence of new forms of competition. The high rate of acceptance of new technologies (smartphones), social networks and other digital trends have caused massive changes in consumer behavior in all industries. These trends also correlate with the requirements for greater quality, speed and simplicity in the use of banking products and services. The banking market of Serbia is under the dominant influence of foreign capital, and such an environment is favorable for significant investments that require digitization.

Regulatory environment is a major challenge and uncertainty in the banking business, since it is not worthwhile to develop and invest in products and services whose complete digital application is conditioned by rudimentary identification and security regulations. Regulatory barriers restrict the acquisition function of digital products and services. A positive trend is the growing migration of cash into non-cash transactions and the massive use of mobile banking and mobile phones, bringing the market of bank clients in Serbia to the most developed markets in terms of habits and behavior. The surrounding countries, including EU member states, face the same challenges of digital transformation as banks in Serbia - with particular emphasis on the problem of incorporating the digital strategy into a general business strategy. In the process of digital transformation of banks in Serbia, the priority strategic activities are client education, increase of client satisfaction, adjustment of price policy to new market trends and competition and implementation of new business processes complementary to the concept of digital banking.

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PRELIMINARY PAPER
UDK: 339.542(4-12)"2010/2015"
DOI:10.5937/EKOPRE1806356R
Date of Receipt: January 17, 2018

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CEFTA AGREEMENT AS A VEHICLE FOR ECONOMIC COOPERATION IN SEE

CEFTA sporazum – sredstvo ekonomske saradnje zemalja Jugoistočne Evrope

Abstract

The aim of this paper is to indicate the importance of economic cooperation for the development of regional economy of CEFTA countries and achieving better results using advantages of joint projects and access to third markets. As a free trade agreement, CEFTA has facilitated increased cooperation in the region, particularly among traditional partners that welcome the use of zero-rate customs. Ten years after signing the agreement, marked by constant improvement of trading terms between partners, CEFTA members have to find new ways to increase their trade in the conditions of economic stagnation and expand it with the EU countries. New synergies have to be achieved in order to raise trade above the current level. Also, every CEFTA member has to make an effort to resolve political conflicts and remove any nontariff barriers that could limit current cooperation. Finally, the importance of CEFTA is paramount for accession of each Western Balkan country to the EU.

Keywords: *CEFTA, EU, regional cooperation, economic development, nontariff barriers.*

Sažetak

Cilj ovog rada je da ukaže na značaj ekonomske saradnje zemalja CEFTA, u cilju razvijanja regionalne ekonomije i postizanja boljih rezultata uz prednosti zajedničkih projekata i pristupa trećim tržištima. CEFTA kao sporazum o slobodnoj trgovini je omogućio povećanje saradnje u regionu posebno među tradicionalnim partnerima u vidu oslobađanja carinskih stopa. Posle 10 godina od potpisivanja sporazuma i stalnog poboljšavanja trgovinskih uslova među partnerima, članice CEFTA moraju da pronađu nove načine da povećaju trgovinu u uslovima ekonomske stagnacije i povećaju trgovinu sa zemljama EU. Nove sinergije u trgovini će se postići kako bi trgovina dostigla viši nivo od trentnog. Takođe, mora da postoji napor svake zemlje članice CEFTA za rešavanje političkih sukoba i uklanjanje necarinskih barijera koje bi mogle ograničiti dosadašnju saradnju. Značaj CEFTA sporazuma je jedan od važnijih koraka za pristupanje svake zemlje Zapadnog Balkana Evropskoj uniji.

Ključne reči: *CEFTA, EU, regionalna saradnja, ekonomski razvoj, necarinske barijere.*

Introduction

As a free trade agreement, currently the purpose of CEFTA is to prepare the Western Balkan countries to join the EU, as well as to enhance regional cooperation. CEFTA strengthens and rebuilds economic cooperation among the partners in the Western Balkans and makes an efficient basis for entering the EU [2]. All these countries are in different stages of accession talks, but have some common economic characteristics that make them good partners that can jointly continue the increase in mutual trade and, through resolving their pending political issues, they could become more eligible to join the EU. Moreover, the advantages of CEFTA are reflected in overcoming political tensions in the region, reducing the costs of production, introduction of modern technologies and compliance with international standards, strengthening competition, and increasing the competitiveness of domestic products [7]. Therefore, the process within CEFTA is extremely important in the context of harmonization of these countries' economies with regard to future EU membership [4]. CEFTA has replaced 32 different bilateral agreements and provided free trade in the market of over 30 million people.

CEFTA does not act as a customs union or a common economic zone. There are still many issues to be resolved, in respect of removing technical barriers and facilitating free movement of capital and people, to make CEFTA an economic union closer to the principles of the EU [8]. Creating an economic union will most probably finally take place when the countries, each at a different pace, enter the EU (as it was the case with Croatia). The accession of Croatia to the EU in July 2013 has significantly changed the trade flows among the Balkan nations due to its abandoning of the CEFTA membership [13]. Meanwhile, CEFTA members can and should use the opportunities of the free trade agreement, but also an opportunity of closer cooperation with Russia, Kazakhstan, Belarus, Turkey and other countries that will not be possible once they enter the EU.

The trade among the CEFTA countries, as well as public procurement in the region, have been fully liberalized [1]. It was expected that the market for services would be fully liberalized until mid-2017.

CEFTA framework of procedures

CEFTA offers a framework of procedures that helps create a positive business environment in the following manner:

- Offers the possibility to apply diagonal cumulation of the origin of goods,
- Introduces steady liberalization of trade in services – fulfilled,
- Requires balancing of investment conditions through application of the WTO rules and offers identical status to domestic and foreign investors from the region,
- Enables steady opening of the public procurement market and offers identical status to domestic and foreign suppliers from the countries of the region,
- Guarantees protection of intellectual property rights in line with international standards,
- Advances mechanisms for resolving disputes arising from the implementation of CEFTA,
- Commits to obliging its member countries to implement the WTO rules regardless of their membership in this organization.

Diagonal cumulation of origin of goods was one of the most important achievements of the free trade agreement that could lead to an increase in production and exporting.[1]

Nontariff barriers as a crucial problem

Special problems in the implementation of the CEFTA agreement, i.e. in free trade, are various nontariff barriers which, according to some researches, exceed one hundred different types in this region. The main CEFTA guidelines have been followed, but the overall capacity and opportunities offered by the Agreement have not been fully realized and there are some points that can be developed further. The main problem is political volatility that affects the fulfillment of terms of the Agreement. There are political tensions between some of the members that affect achieving higher trading volumes. Essentially,

1 Goods produced in the territory of one member country will be considered produced in that country, regardless of whether they were partially or entirely produced there (the rule of diagonal cumulation). Goods produced in the context of integration will receive the label 'Made in SEE', which will stimulate intraregional cooperation in the field of production.

one of the basic reasons behind establishing CEFTA is to create political stability in the region as a whole. Abolition of nontariff barriers will lead to faster harmonization with EU regulations. Different dynamics of the accession process of different Western Balkan countries to the EU leads to different levels of adjusting to EU regulations. Therefore, different nontariff barriers created are considered "legitimate". Effectively, the countries that are in earlier phases of accession to the EU lose their market share in comparison to the countries that have already adopted EU regulations, which can, thus, surpass the aforesaid "legitimate" barriers and uncover real nontariff barriers imposed by the CEFTA state to protect its particular economic interests [16].

The most common nontariff barriers in trade among CEFTA members are technical, sanitary and phytosanitary, but also administrative. Technical barriers usually appear in the form of dismissing documents on harmonization, i.e. the most common case is that the CEFTA countries are, as discussed above, at different levels of harmonization with the EU regulations which creates a problem in everyday trading activities. Presenting sanitary and phytosanitary documents poses a problem of dismissing certificates issued by different accredited institutions. The typical example is the situation created between Serbia and Bosnia and Herzegovina in the first quarter of 2016: administrative barriers with regard to nontransparent customs procedures, controlling and verification of the documents related to the origin of goods, lack of information on newly adopted regulations and lengthy license issuing procedure.

Only in 2015, there were numerous reports on imposing barriers, especially concerning the trade between Serbia and Bosnia and Herzegovina. The most common reported barriers referred to the trade in foodstuff, beverages, alcohol, tobacco and cigarettes, live animals, etc.

The problem of the lack of mutual recognition of certificates is emerging, regardless of the signed protocols for mutual acknowledgment of certificates issued by accredited laboratories. This could be considered a true nontariff barrier.

Problems that arise from the existence of nontariff barriers could be further exacerbated due to difficult and unresolved political relations between countries, such as Serbia and Kosovo[2*]. On 21 March 2016, Kosovo* decided to introduce reciprocal measures against Serbia by not recognizing the ADR certificates for vehicles and drivers issued by Serbian authorities to carriers, Serbian exporters that perform the export of petroleum and gas to Kosovo*.

The Minister of Trade and Industry of Kosovo* raised this issue to the highest political level. He requested the intervention of the EU and, on 18 February 2016, a meeting of a tripartite working group between Kosovo* and Serbia was held in Brussels, mediated by the EU, on the issue of ADR certificates.

WTO has notified of over 2,000 different types of nontariff barriers and, in the last couple of years, a trend has emerged showing rapid increase of the number of technical barriers (in the last 10 years the use of technical barriers has increased 7 times, taking the form of obligatory testing and requests for certification). Technical barriers are typically used in chemical, pharmaceutical, food processing, machine, textile and other industries. There has been an increase in the implementation of measures (such as standards, technical regulations, phytosanitary, veterinary and sanitary measures – noncore measures, increase from 55% to 85%) that are justified by the customer protection regulations [20], while the implementation of measures aimed at protection of producers has reduced. This is one of the ways to hide the protection of core industries in a country behind the shield of customer protection while at the same time abiding by the CEFTA agreement.

The most frequent nontariff barriers in the region are the following [5]:

- Complicated procedures on border crossing points, complicated administrative procedures and non-harmonized working hours of the customs and inspection services (sanitary, veterinary, radiology);
- Lack of internationally recognized accreditation and certification bodies and insufficient number of certified laboratories and institutions;
- Nonrecognition of certificates of quality – agreements on mutual recognition of these documents have not yet been signed between the countries in the region.

2 * This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

- Therefore, in this respect each country has its own control. Each consignment of goods is tested (sampled) twice, once on either side of the border;
- Problem of nonconformity of domestic standards and technical regulations with the international standards;
- Lack of adequate transport and other infrastructure;
- Quite complicated visa regime, corruption and smuggling.

According to CEFTA 2006, each country is responsible for elimination of nontariff barriers to trade with the countries in the region, and for delivering reports about such activities regularly to the Joint Committee responsible for implementation of the Agreement [17].

In the Agreement adoption procedure, measures, procedures and initiatives for elimination of these barriers were identified. This particularly refers to the problem of mutual nonrecognition of certificates of quality (sanitary, phytosanitary and veterinary) for agricultural products, which harms trade in these products in the region.

Development indicators for the CEFTA region

Economic analysis

The biggest GDP growth among the Western Balkan countries in 2015 was observed in the Former Yugoslav Republic of Macedonia – 3.7%, Montenegro – 3.4% and Kosovo* – 3.6%, while the biggest GDP growth in 2014 was recorded in Macedonia, it being 4%. Inflation rates in this region were quite moderate in 2013 and 2014. The highest inflation rate in 2013 was recorded in Serbia (5.4%), while in 2014 it was in Moldova (6.4%). Also, in 2015 the highest reported inflation rate was in Moldova – 9.3%.

Table 1: The most important nontariff barriers in CEFTA

Technical barriers	Sanitary and phytosanitary measures	Administrative procedure	Inadequate infrastructure
Different pace of harmonization with the EU technical regulations.	Lack of acknowledgment of internationally accredited institutions that causes expensive, extensive, lengthy and double testing of products.	Customs control: lengthy and complicated nontransparent customs clearance procedure, verification of the documentation on the origin of goods, different working hours of the relevant services, biased and provisional estimates of customs in the procedure of establishing basis for customs clearance of goods.	Logistics, banking and insurance, transport, telecommunications, business services
Dismissal of the documents on harmonization	Dismissal of the certificates issued by authorized institutions	Lack of information on new regulations and procedures	
Labeling and packing	Labeling of agricultural products and foodstuff	Complicated and long procedure of issuing new licenses.	

Source: ISAC Fund (International and Security Affairs Centre).

Table 2: Economic analysis of the CEFTA region

	GDP GROWTH				INFLATION			GDP PER CAPITA		
	2013	2014	2015	2016	2013	2014	2015	2013	2014	2015
Albania	1%	2%	2.6%	3.2%	0.2%	1.7%	0.5%	4,510	4,460	3,950
Macedonia	3%	4%	3.7%	3.7%	4.5%	1.1%	2.8%	4,980	5,150	4,852.7
Serbia	3%	-2%	0.7%	1.8%	5.4%	2.7%	0.9%	6,050	5,820	5,143.9
Montenegro	3%	2%	3.4%	3.7%	2.1%	1%	0.7%	7,250	7,240	6,415.0
Kosovo*	3%	3%	3.6%	3.6%	1.8%	3.2%	-0.2%	3,960	4,000	3,553.4
Bosnia and Herzegovina	2%	1%	3.2%	2.6%	-0.3%	1%	0.1%	4,790	4,780	4,197.8
Moldova	9.4%	4.6%	-0.5%	0.5%	4.1%	6.4%	9.3%	2,244.0	2,244.8	1,843.2

Source: World Bank, development indicators.

Export and import in the CEFTA region

Foreign trade is very important for the CEFTA countries because it is a driver of growth. Foreign trade in the region could be improved. The percentage share of foreign trade in GDP should increase in the region. (Table 3). Only Serbia and Montenegro experienced an increase in foreign trade as a percentage of GDP in 2015 in comparison to all other countries in the region. Kosovo* recorded the lowest percentage of export of goods and services in 2015, while Macedonia had the highest. In 2015, the lowest percentage of import of goods and services was reported in Albania, and the highest was again in Macedonia (Table 3).

Trade in goods between the EU and Western Balkans in the 2013-2015 period

The EU is CEFTA's largest trading partner, accounting for over 75% of the region's total trade (Figure 1). In 2014, the share of the region, as a whole, in overall EU trade was 1.1%. However, individual countries' shares were very low – Serbia (0.50%), Bosnia and Herzegovina (0.20%), Macedonia (0.20%), Albania (0.10%), Montenegro (0.0%) and Kosovo* (0.0%).

In 2014, the main items imported from the Western Balkans by the EU were the following [10]:

- machinery and transport equipment (26.5%),
- miscellaneous manufactured articles (21.3%), and
- manufactured goods classified chiefly by materials (19.8%).

The EU's export to the Western Balkans mainly included:

- machinery and transport equipment (27.0%),
- manufactured goods classified chiefly by material (23.4%),
- chemicals (14.2%), and
- mineral fuels (12.3%).

Methods and data

This research required secondary data sources, provided by the World Bank (development indicators) and Statistical Offices of the CEFTA member countries. Based on the

Figure 1: Trade in goods between the EU and Western Balkans

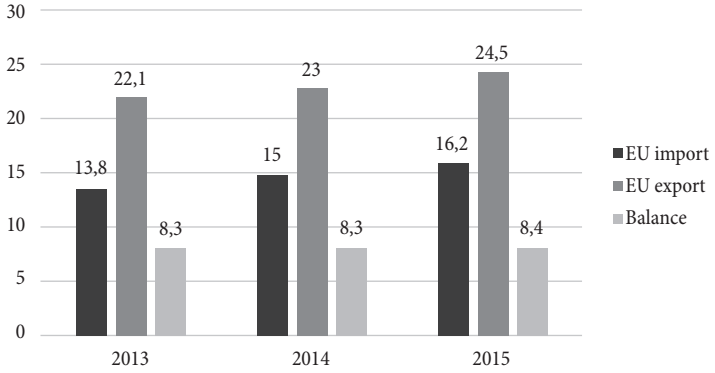


Table 3: Export-import indicators

	Export of goods and services (% of GDP)		Import of goods and services (% of GDP)	
	2014	**2015**	**2014**	**2015**
Albania	35.4	27.1	47.3	44.3
Bosnia and Herzegovina	33.9	No data	56.9	No data
Kosovo*	19.6	19.1	50.5	49.8
Macedonia	47.9	48.5	65.1	64.8
Montenegro	40.1	43.3	60.0	61.0
Serbia	41.2	47.7	54.3	57.4
Moldova	41.5	43.4	78.5	73.7

Source: World Bank, development indicators

data collected, the main tendencies in trade between CEFTA countries were analyzed. The 2010-2015 period was examined for each member state. Each country's volume of trade was analyzed in relation to the CEFTA member states, as well as in relation to the volume of general trade.

Research results and discussion

Serbia

Serbia has a central geographic position in comparison to other Balkan countries, it has managed to preserve the industrial sector that can be invested in and has relatively short transportation routes to other CEFTA members. It has a strong agricultural sector, food processing industry that is typically owned by local businessmen, as well as strong chemical, rubber and other industries that are largely dominated by foreign investors [3]. Like all other CEFTA countries, Serbia has competitive wages in comparison to the neighboring EU countries willing to attract investors, as well as a relatively good taxation policy. However, there are certain obstacles to investment reflected in very complicated administrative procedures and uncertainties with respect to the time necessary to complete investment activities. Some EU countries, like Bulgaria, boast similar advantages regarding investments to those of Serbia, but their EU membership makes them even more attractive to investors. Serbia has used its central position in the Balkans to attract large investments that contributed to its better positioning in the Western Balkans (e.g. purchase of NIS by Gazprom). A large part of investments in the region made by Serbia is still made by local Serbian companies, which has increased its central role as a trading partner in the CEFTA region.

Serbia has by far reaped most benefits from the CEFTA agreement, as it has become the biggest import partner of all CEFTA countries. Its export is highly dominated by items from agricultural and food processing industries, yet there are still numerous companies from different industries that operate in the region. Given the absence of language obstacles and familiarity with the chains of distribution, it was relatively easy for Serbia to preserve the dominant position inherited from the period of former Yugoslavia. Moreover, since Croatia became a member of the EU, Serbia's dominant position in the CEFTA region has additionally been strengthened.

Bosnia and Herzegovina and Montenegro have always been the biggest trading partners of Serbia, partly due to

Table 4: Export-import participation of CEFTA countries (Bosnia and Herzegovina, Montenegro, Macedonia)

	export – participation of CEFTA countries						import – participation of CEFTA countries					
member countries	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Bosnia and Herzegovina	34%	32%	33%	43%	47%	47%	40%	40%	30%	48%	58%	57%
Montenegro	25%	25%	24%	30%	27%	27%	12%	8%	8%	15%	7%	8%
Macedonia	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Source: World Bank, development indicators.

Figure 2: Export of Serbia

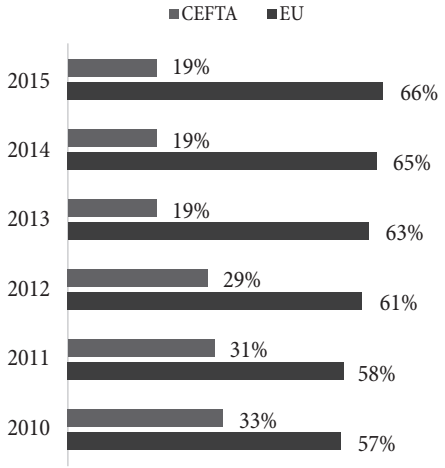
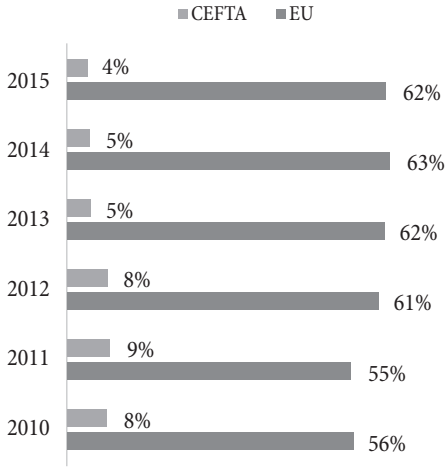


Figure 3: Import of Serbia



a large Serbian community in both countries, as well as the traditionally good political relations. Nonetheless, these are the countries where the trade is saturated the most in comparison to other CEFTA countries, because it is limited by consumer power in both markets, as well as the increasing level of trade with the EU countries, which is the case with all CEFTA members, as we have already discussed.

One of the ways to boost the trade between partners that have already attained a very high level of trade is for them to join energies in enhancing trade in other markets using free trade agreements.

Export of Serbia to the CEFTA region (Figure 2) is stable and amounts to almost 1/5 of overall export. The trade with the EU is increasing as expected. However, import is showing stagnation, with import from the EU countries rising.

Kosovo*

Characterized by corruption and political uncertainty, with unemployment rate of about 45%, poor infrastructure and lack of solid FDIs, Kosovo* is probably the least developed economy within CEFTA. It greatly depends on international aid, and its political and economic relation with Albania.

Kosovo's* export mostly relies on mineral products and other raw materials. Its industry and services are very poorly developed and its export is strongly oriented toward Albania and Macedonia, as well as Italy as a major EU partner. Kosovo's* cooperation with the CEFTA countries is important for the local economy and, as the data show, is expected to increase in the future. Basically, there are two major ways to significantly increase its volume of trade: increase in the volume of economic activities and the stabilization and normalization of political tensions with Serbia that can contribute to their trade relations in the long run. There lies a huge potential of one CEFTA country to increase and diversify its trade with other members. Nonetheless, the limitation to anticipated increase is the country's lack of industrialization and low consumer power.

Table 5 represents Kosovo's* major trading partners within the CEFTA region. Albania is its biggest export destination, while Serbia is its largest importer out of all CEFTA countries. Kosovo's* trade with Albania and Macedonia is stable in absolute amounts, but normalization of the trading relationship with Serbia has changed,

Table 5: Export-import participation of CEFTA countries (Albania, Macedonia, Serbia)

	export – participation of CEFTA countries						import – participation of CEFTA countries					
member countries	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Albania	46%	43%	40%	42%	35%	33%	9%	12%	14%	16%	19%	20%
Macedonia	39%	39%	26%	25%	28%	27%	43%	45%	37%	27%	19%	19%
Serbia	6%	9%	15%	14%	21%	26%	35%	31%	36%	42%	51%	50%

Source: World Bank, development indicators.

Figure 4: Export of Kosovo*

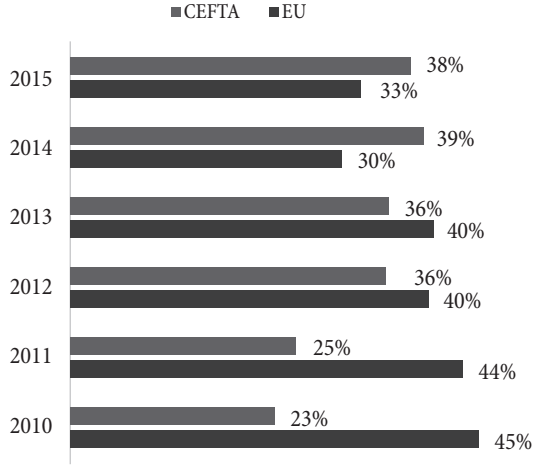
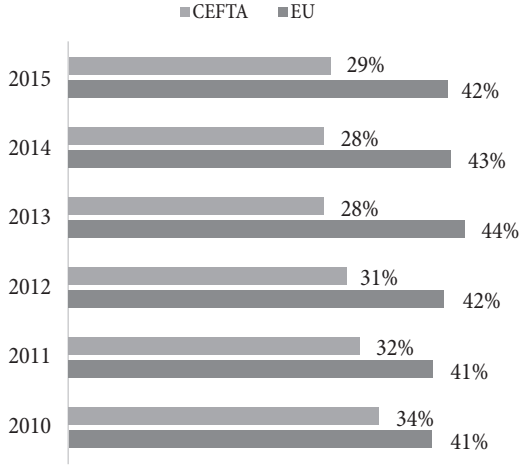


Figure 5: Import of Kosovo*



regarding both export and import. Kosovo* imports more from CEFTA than it exports to this region, importing different items, such as foodstuff, chemicals, plastics, energy, etc. (Figures 4 and 5).

Kosovo* has managed to nearly double its export to CEFTA countries in the 2010-2015 period. Nonetheless, the level of its export to this region has been very low and its substantial increase is not expected in the future. Import from the CEFTA countries records a slight drop, but not in the absolute amounts. The trade with the EU is at a stable level, yet turning toward new trading partners, such as Turkey and China, can influence import from CEFTA.

Reduction of political tensions, FDI and fight with corruption are the main drivers of change in the Kosovo's* economy, which can contribute to increasing its volume of activities with CEFTA.

Bosnia and Herzegovina

Bosnia and Herzegovina consists of two separate entities existing under a central government located in Sarajevo: the Republic of Srpska (Serbian entity) and Federation of Bosnia and Herzegovina (Muslim/Croat entity). Bosnia and Herzegovina's EU accession talks will present a lengthy process that is currently at the very beginning. Bosnia and Herzegovina is characterized by a high level of political uncertainty and lack of harmonization of its legislation with the EU. Once a heavily industrialized country, it now requires modernization of its complete industry. Political relations between the two entities are volatile which makes Bosnia and Herzegovina less appealing as an FDI destination. This country has modest growth affected by the lack of FDI, global economic crisis and transition process that has never actually taken place. The state still controls the companies, and privatization practically came to a standstill.

When Bosnia and Herzegovina joined CEFTA, Croatia became its very important trade partner. Since Croatia entered the EU, it seems that both export and import have stabilized, with Serbia being Bosnia and Herzegovina's biggest import and export partner of all CEFTA countries. Import from Serbia has substantially increased because in time Serbia substituted a part of import from Croatia with import from Bosnia and Herzegovina. Such import included products under a special customs regime. After Germany and Italy, Serbia has become the third biggest import partner of Bosnia and Herzegovina.

Table 6: Export-import participation of CEFTA countries (Serbia, Montenegro, Macedonia)

	export – participation of CEFTA countries						import – participation of CEFTA countries					
member countries	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Serbia	31%	35%	54%	57%	59%	58%	23%	38%	87%	88%	87%	88%
Montenegro	11%	10%	19%	20%	22%	20%	1%	1%	3%	2%	4%	3%
Macedonia	2%	4%	9%	7%	3%	9%	2%	4%	9%	9%	8%	8%

Source: World Bank, development indicators.

Figure 6: Export of Bosnia and Herzegovina

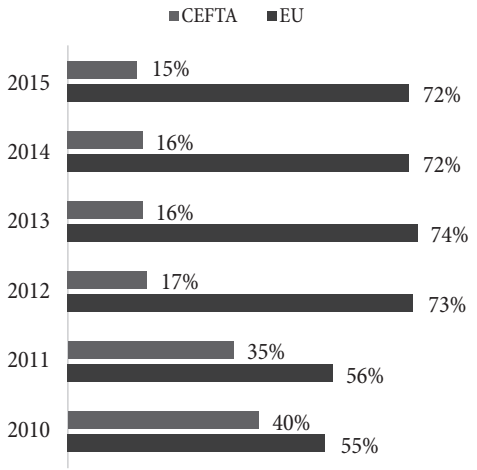
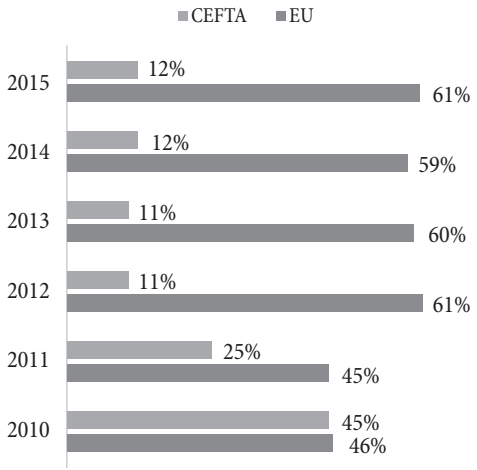


Figure 7: Import of Bosnia and Herzegovina



Montenegro is a very important trading partner of Bosnia and Herzegovina, but there is also export to Kosovo* and Macedonia to a significant degree. The main products traded in the region are food and live animals, minerals, fuels, other processed products, etc.

The participation of the CEFTA of countries in the overall export and import in Bosnia and Herzegovina is relatively low, as Figure 6 below shows.

Croatia is Bosnia and Herzegovina's third biggest export destination and the fourth biggest importer, which explains a decrease in its overall participation in trade with the CEFTA countries starting from 2012. Besides Croatia, Italy and Germany are this country's biggest trading partners from the EU, and there is a significant increase in trade with Turkey outside the EU and CEFTA area.

The case of Croatia's accession to the EU (leaving CEFTA) will not be analyzed here, yet the trade between Bosnia and Herzegovina and Croatia is a good example showing a decrease in trading activities between the two countries due to impossibility of trading within the free-trade zone. Though not large, the decrease has affected the trade in products under a special customs regime, such as dairy products.

Former Yugoslav Republic of Macedonia

Macedonia has a strong focus on foreign investments and has managed to be one of the most favorable investment destinations in the Western Balkans in recent years. Regardless of their political issues, Greece is one of Macedonia's biggest investors and trading partners.

Macedonia's biggest trading partner is again Serbia (Table 7), which is by far its biggest export import partner of all CEFTA countries, regardless of frequent technical barriers Macedonia is trying to introduce to import of wheat. Serbia extensively imports Macedonian food industry products, oil and gas, metals, different types of foodstuff, etc. [6]. Macedonia exports mostly pharmaceuticals to Serbia.

Nonetheless, the reason for the decrease in its percentage of trade with the CEFTA countries lies mostly in the increase in trade with EU partners. Germany is Macedonia's biggest export partner among EU countries, whereas import also records an increase in trade with China and Turkey, outside the EU.

In Macedonia, the main products exported are precious metal catalysts, wiring sets, etc., while the most important imported products are petroleum oils, electricity, etc.

Table 7: Export-import participation of CEFTA countries (Serbia, Bosnia and Herzegovina, Albania)

	export – participation of CEFTA countries						import – participation of CEFTA countries					
member countries	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Serbia	27%	27%	30%	36%	38%	36%	67%	62%	65%	79%	80%	78%
Bosnia and Herzegovina	8%	8%	9%	13%	18%	16%	8%	11%	10%	10%	11%	11%
Albania	7%	7%	8%	10%	11%	12%	4%	5%	5%	6%	6%	7%

Source: World Bank, development indicators.

Figure 8: Export of Macedonia

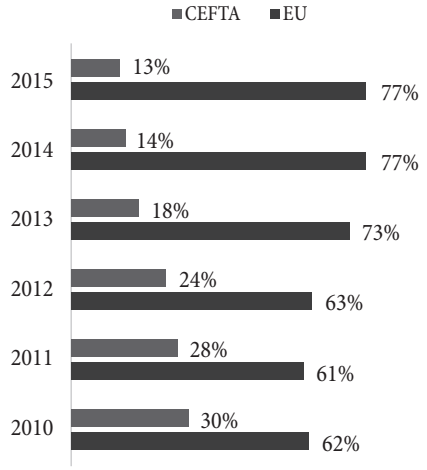
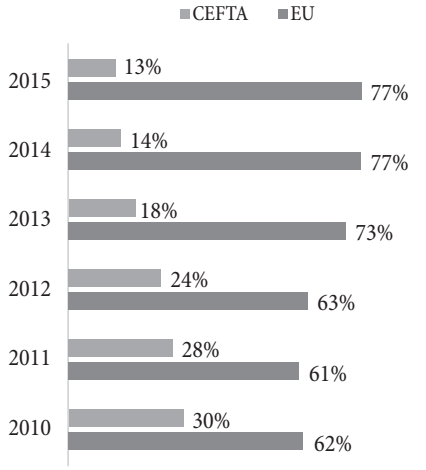


Figure 9: Import of Macedonia



Albania

Given the foreign investments from the neighboring EU countries, Albania was among the fastest-growing developing economies in Europe. It has poorly developed infrastructure and a low level of applied technologies.

Emigration and urbanization brought a structural shift away from agriculture [19] and toward industry and services, allowing the economy to begin providing a variety of services – ranging from banking to telecommunications and tourism. Despite this shift, agriculture remains one of the largest and most important sectors in Albania, generating over 20% of GDP and employing over 40% of its population.

Kosovo* is Albania's major export partner, and in import it is Serbia. Its volume of trade is relatively small and it will take a lot of diplomatic effort and increased economic interest on behalf of companies to boost trade in the CEFTA region (Table 8).

The largest part of Albanian export is based on extractive industries, manufacturing, electricity and water, which are also the products exported to the CEFTA countries. Albanian exports are mostly destined for EU countries, with over 20% of overall export and import done with Italy, which is Albania's most important trade partner by far. Although its export to CEFTA has increased over time, mostly due to the increase in the volume of trade with Kosovo*, all interest and possibilities might end there. Trade can be increased only if there is a strong political initiative to do so. Otherwise, the volume of trade with CEFTA will not change substantially, given the export orientation toward the EU countries that surpasses 75% (Figure 8).

Montenegro

Montenegro has a symbolic industrial output, but puts a lot of emphasis on its service sector, especially tourism which is the most important sector in the country. A large number of tourists, reaching up to 1.5 million, visit Montenegro on an annual basis. Montenegrin tourism has been experiencing new recognition in recent years, accompanied by a series of infrastructure projects. The tourism in the North Mediterranean has been given another chance, after the problems that ensued after Arab Spring.

Serbia is the biggest trading partner of Montenegro, but it also has a good level of trade with its other CEFTA neighbors – Kosovo* and Bosnia and Herzegovina (Table 9).

Table 8: Export-import participation of CEFTA countries (Kosovo*, Serbia, Macedonia)

	export – participation of CEFTA countries						import – participation of CEFTA countries					
member countries	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Kosovo*	62%	60%	69%	62%	63%	61%	11%	11%	12%	18%	14%	13%
Serbia	12%	15%	7%	9%	5%	9%	52%	49%	56%	44%	54%	51%
Macedonia	16%	17%	16%	17%	18%	18%	22%	22%	20%	25%	19%	21%

Source: World Bank, development indicators.

Figure 10: Export of Albania

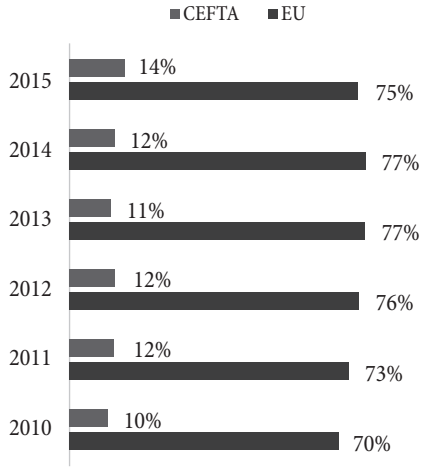
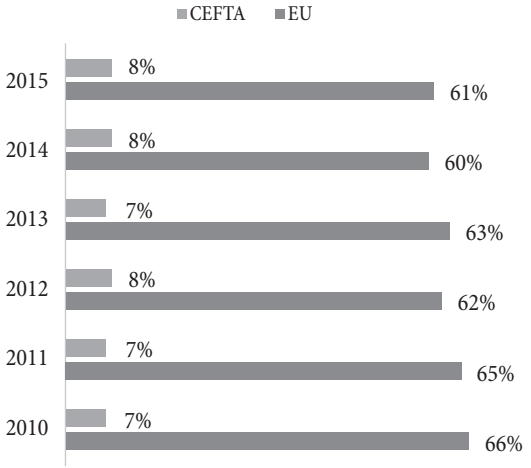


Figure 11: Import of Albania



There has been certain stagnation in trade with CEFTA in the last couple of years. It seems that import (Figure 13) from this region is on the rise, while in export (Figure 12) it has turned more toward the EU countries. Montenegro is a relatively small country where the extent of cooperation is limited by the size of the market and the main orientation of the country toward developing tourism. There is an opportunity to further promote tourism to CEFTA members and make it more interesting for them by offering competitive prices and organized tourist offer.

Moldova

There are two major differences between Moldova and other CEFTA countries: it is situated outside of the Western Balkans, which therefore raises the price of transportation when it comes to trade with the CEFTA countries, and it does not belong to the enlargement countries (candidate countries and potential candidates for the accession to the EU) but is part of the European Neighbourhood Policy. Moldova has been increasing trade with the EU countries, but its trade with the CEFTA countries amounts to less than 1% when it comes to both import and export. There is no policy of increasing trade with Moldova on the part of other CEFTA members, whose trade with this country includes a limited number of goods [9] and does not follow any trend. Without strong diplomatic efforts, the trade between Moldova and the CEFTA countries will not change drastically.

Analysis of the impact of export and import of CEFTA countries on the GDP of the Republic of Serbia

A large number of different models that analyze the impact of foreign trade on the economic growth of one country can be found in literature [11], [12], [18]. Their diversity is mainly reflected in the number of variables

Table 9: Export-import participation of CEFTA countries (Serbia, Bosnia and Herzegovina, Kosovo*)

	export – participation of CEFTA countries						import – participation of CEFTA countries					
member countries	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Serbia	57%	58%	58%	72%	53%	51%	65%	75%	76%	74%	72%	74%
Bosnia and Herzegovina	18%	16%	19%	10%	21%	21%	18%	20%	18%	18%	19%	17%
Kosovo*	14%	17%	16%	10%	14%	15%	0.2%	0.3%	0.7%	0.6%	0.5%	0.4%

Source: World Bank, development indicators.

Table 10: Export-import participation of CEFTA countries (Serbia, Macedonia, Bosnia and Herzegovina)

	export – participation of CEFTA countries						import – participation of CEFTA countries					
member countries	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Serbia	26%	50%	58%	44%	46%	48%	63%	52%	70%	83%	66%	80%
Macedonia	12%	13%	13%	20%	25%	35%	7%	10%	6%	5%	6%	9%
Bosnia and Herzegovina	9%	9%	18%	23%	19%	15%	14%	26%	13%	11%	7%	10%

Source: World Bank, development indicators.

Figure 12: Export of Montenegro

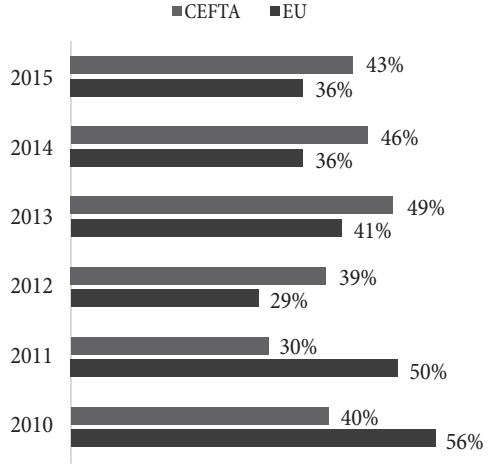
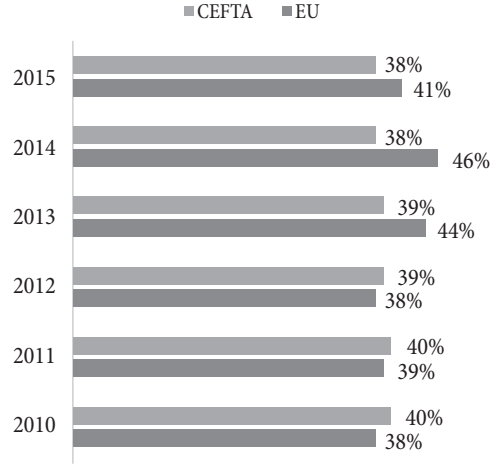


Figure 13: Import of Montenegro



included in the model in order to obtain as precise results as possible on data dependence [14]. Most studies show a positive and statistically significant impact of export on the economic growth of the observed country [15]. Determining the degree of dependence of two or more observed phenomena is the task of regression analysis. If we analyze the influence of the two variables, we apply a simple regression and correlation analysis. The linear regression model is given in the form:

$$Y = \beta_0 + \beta_1 X + \varepsilon.$$

where Y is a dependent variable, X is an independent variable, while ε represents a random error. The analysis to be carried out in this paper will include examining the two models, i.e. the degree of influence of export of CEFTA countries on the gross domestic product (GDP) of Serbia, as well as the impact of import of CEFTA countries on GDP of Serbia. The regression parameters and the degree of correlation among the listed variables will be calculated. For the estimation of parameters, we will use the least squares method, which implies minimizing the sum of squares of the vertical distance of the realized values from the estimated linear regression line of the form $\hat{Y} = b_0 + b_1\hat{X}$. Equations for calculating coefficients b_0 and b_1 are as follows:

$$b_1 = \frac{n\sum_{i=1}^{n} x_i y_i - \sum_{i=1}^{n} x_i \sum_{i=1}^{n} y_i}{n\sum_{i=1}^{n} x_i^2 - (\sum_{i=1}^{n} x_i)^2}, \quad b_0 = \bar{y} - b_1 \bar{x},$$

Table 11: GDP of the Republic of Serbia, export and import of CEFTA countries

Year	GDP	CEFTA countries	
		Export	Import
2010	38,688,224.80	2,813,235.70	1,442,518.10
2011	42,138,287.69	3,211,383.00	1,698,830.20
2012	41,591,897.08	2,480,507.70	971,719.70
2013	46,631,629.62	2,761,021.20	999,459.30
2014	39,295,279.41	2,823,523.00	927,431.00
2015	36,346,823.82	2,487,516.50	750,481.20
2016	36,384,654.74	2,673,227.10	758,506.80

Source: Statistical Office of the Republic of Serbia.

where n is the size of the sample, and and are the mean values of the corresponding data group.

The sample we are analyzing includes the data about GDP of Serbia and import and export of CEFTA countries, in thousands of USD, in the period from 2010 to 2016. The source of all data, shown in Table 11, is the Statistical Office of the Republic of Serbia.

For the calculation of the degree of relationship between the two variables, we used the correlation coefficient. The correlation coefficient can take values from -1 to +1. Positive values indicate a direct linear relationship, i.e. positive growth of one variable affects the positive growth of the other variable, while negative values indicate an inverse linear relationship, i.e. positive changes in one variable result in negative changes in the other. If the value of the correlation coefficient is 0, nothing can be concluded about the relationship and some other type of dependency test must be applied. Thus, this type of analysis shows mutual influence of the two variables without eliminating the effect of other variables. The correlation table of the tested sample (Table 12) shows that there is slight positive correlation between the values of export and import of CEFTA countries and GDP of Serbia. That confirms the indication that the increase in import and export has a positive impact on Serbia's economic growth.

Since the correlation coefficients in relations GDP – export and GDP – import are equal to 0.3194 and 0.3348, respectively (Table 13), we can conclude that a positive linear relationship exists, but is not significant. Therefore, we created linear regression equations to confirm the magnitude of the dependency. By calculating the linear regression line for the given data, the following results were obtained.

Table 12: Correlation table

	GDP	Export	Import
GDP	1		
Export	0.3194	1	
Import	0.3348	0.8195	1

Source: *Authors' calculations.*

Table 13: Regression models

	b_0	b_1	Regression model	r^2
Impact of export on GDP	27,272,117.35	4.68	Y=27,272,117.35+4.68*X	0.102
Impact of import on GDP	36,478,675.63	3.41	Y=36,478,675.63+3.41*X	0.112

Source: Authors' calculations.

Based on these results, it can be concluded that there is a positive impact of the growth of export and import of CEFTA countries on the GDP of the Republic of Serbia, which is also a CEFTA member. However, as the coefficient of determination is slightly more than 10% in both models, this indicates that only 10% of the GDP variation is caused by variations in foreign trade.

We can accept the obtained results as a confirmation of the indication that there is a positive influence of export of CEFTA countries on GDP of Serbia, but for a more precise prediction of the degree of causality, it is necessary to include additional variables and make models that will be highly statistically significant. We can conclude that the share of commodity export in GDP is very low. This indicates the inadequate import of modern technology and equipment necessary to modernize production and encourage small and medium-sized companies to boost production in order to increase competitiveness and export to countries outside of CEFTA. It can also suggest that there is no quality-oriented production aimed at increasing export in a specific category; instead of that, resources are currently divided into different categories of production.

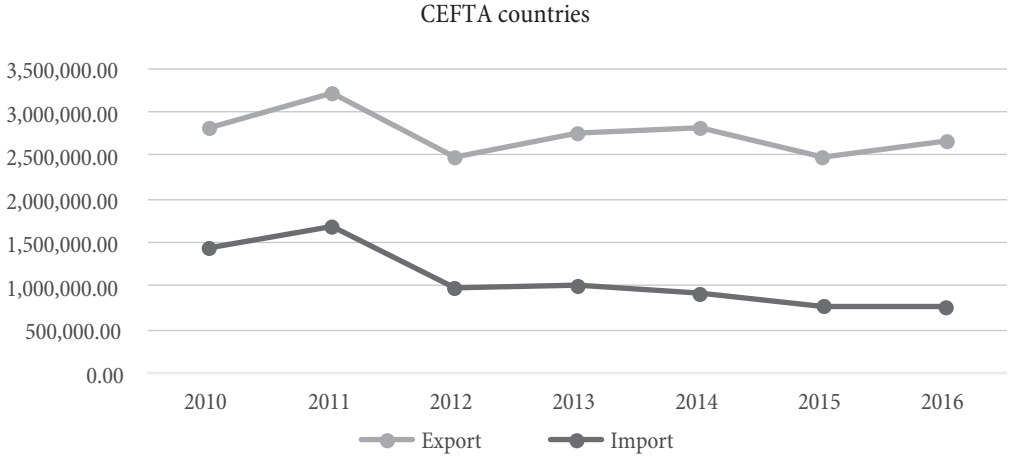
Conclusion

For the CEFTA agreement to be effective and its opportunities used, member countries need to focus more on trade among themselves, in addition to their major orientation toward trade with the EU countries. Special attention should be paid to decisions to invest in facilities that will provide better and high-quality supply to the region. This would significantly affect the countries' joint performance and competitiveness in third markets, such as Russia and the EU. Regional economic cooperation would be strengthened by resolving political disagreements in order to achieve mutual economic benefit, protection of the domestic market and even higher control of import. The aim is not to establish a new economic union, but to establish regional cooperation, where the citizens of member countries could act jointly in the market, thus achieving better position in the conditions of international economic competition. CEFTA has a significant impact on accelerating the process of integration into international economy.

The main recommended guidelines for the CEFTA countries are as follows:

- Reduce barriers to increase the level of trade integration. EU accession talks need to be improved in terms of the legal system, banking sector and free movement of goods.
- Reduce exposure to the Eurozone crisis, if possible, through joint work of the CEFTA member countries in order to strengthen their mutual ties and maximize benefits of the free trade agreement. Obstacles in trade should be minimized or eliminated, especially in the following areas: free movement of goods, agriculture and rural development. It is very important for the members of CEFTA to increase the exchange of goods between themselves and to act together in the markets of the EU and Russia.

Figure 14: Dynamics of export and import of CEFTA countries in the 2010-2016 period



- Use the potentials of other free trade agreements signed by the CEFTA countries – e.g. both Serbia and Bosnia and Herzegovina have signed free trade agreements with Turkey, but Serbia still has a protective customs rate for some key products, while export of these products from Bosnia and Herzegovina is performed at a zero-rate customs. The privileges Bosnia and Herzegovina has toward Turkey can be used by other CEFTA countries. Another example is a free trade agreement Serbia has signed with Russia that offers the benefit of free trade with Russia, through processing goods in Serbia.
- Work on the liberalization of trade in new sectors, such as services and public procurement, and faster harmonization with the EU regulations.
- Reduce unemployment rate.
- Reduce external debt, a common problem of CEFTA members, by working on fiscal consolidation.
- Reduce benchmark interest rate in order to attract investors.
- Joint work on increasing competitiveness in the EU market and the protection of CEFTA markets from products which are harmful, especially those that are banned in the market of the EU.
- Use the advantage of the potential of the common market defined by CEFTA – it is worth mentioning that, from the perspective of not only EU countries, but other potential investors/trading partners as well, the CEFTA region is considered as a whole and therefore all investment/trade decisions are made on the basis of assessment of the whole region and its potential benefits regarding zero-rate customs trading.
- Use the potential of exporting products of higher added value to other countries. With modest investments in some industries, like food processing, high-quality branded products could be created using raw material from different CEFTA countries with the zero-rate customs.
- Increase cooperation within CEFTA where there is room for development, i.e. where current cooperation is at a low level due to pending political or other issues that limit further cooperation.

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