ЕКОНОМИКА

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1. Часопис "Економика" покренут је јула 1954. године и под називом " Нишки привредни гласник" излазио је до јуна 1957. године, а као "Привредни гласник" до краја 1969. године. Назив "Наука и пракса" носио је закључно са бројем 1/1973. год. када добија назив "Економика" који и данас има.

2. Часопис су покренули Друштво економиста Ниша и Друштво инжињера и техничара Ниша (остало као издавач до краја 1964. године). Удружење књиговођа постаје издавач почев од броја 6-7/1958. године. Економски факултет у Нишу на основу своје одлуке броја 04-2021 од 26.12.1991. године постао је суиздавач "Економике". Такође и Економски факултет у ПриШтини постао је суиздавач од 1992. године. Почев од 1992. године суиздавач "Економике" је и Друштво за маркетинг региона Ниш. Као суиздавач "Економике" фигурирали су у току 1990-1996. године и Фонд за научни рад општине Ниш, Завод за просторно и урбанистичко планирање Ниш и Корпорација Винер Брокер Ниш.

3. Републички секретаријат за информације СР Србије својим Решењем бр. 651-126/73-02 од 27. новембра 1974. године усвојио је захтев "Економике" за упис у Регистар новина. Скупштина Друштва економиста Ниша на седници од 24. априла 1990. године статутарном одлуком потврдила је да "Економика" има статус правног лица. На седници Скупштине Друштва економиста Ниш од 11. новембра 1999. године донета је одлука да "Економика" отвори посебан жиро-рачун.

4. Према Мишљењу Републичког секретаријата за културу СР Србије бр. 413-516/73-02 од 10. јула 1973. године и Министарства за науку и технологију Републике Србије бр. 541-03-363/94-02 од 30. јуна 1994. године "Економика" има статус научног и ранг националног часописа "Економика" је поћев од 1995. добила статус међународног економског часописа.

5. УРЕДНИЦИ: др Јован Петровић (1954-1958), Миодраг Филиповић (1958-1962), Благоје Матић (1962-1964), др Драгољуб Стојиљковић (1964-1967), др Миодраг Николић (1967-1973), др Драгољуб Симоновић (1973-1984), др Миодраг Јовановић (1984-3-4/1988) и др Драгољуб Симоновић (1990-до данас).

1. The journal EKONOMIKA was initiated in July 1954. It was published as "Nis Economic Messenger" till June, 1957 and as "The Economic Messenger" till the end of 1969. The title "Science and Practice" it had till the issue 1/1973 when it changed its name into EKONOMIKA as it entitled today.

2. The Journal was initiated by the Society of Economists of Nis and the Society of Engineers and Technicians of Nis (the latter remaind as the publisher till the end of 1964). The Society of Accountants became its publisher starting from the issue no. 6-7/1958. The Faculty of Economics, Nis, on the basis of its Resolution No. 04-2021 from December 26, 1991, became the co-publisher of EKONOMIKA. Likewise, the Faculty of Economics of Pristina became the co-publisher since in 1992. Starting from 1992, the co-publisher of EKONOMIKA has been the Society for Marketing of the Region of Nis. Other co-publishers of EKONOMIKA included, in the period 1990-1996, the Foundation for Scientific Work of the Municipality of Nis, the Institute for Spatial and Urban Planning of Nis and the Corporation Winner Broker, Nis.

3. The Republic Secretariat for Information of the Socialist Republic of Serbia, by its Resolution No. 651-126/73-02 from November, 27, 1974, approved of EKONOMIKA's requirement to be introduced into the Press Register. The Assembly of the Society of Economists of Nis, at its session on April 24, 1990, by its statutory resolution, confrmed the legal status of EKONOMIKA. At the session of the Assembly of the Society of Economists, Nis, on November 11, 1999, the resolution was adopted the EKONOMIKA was to open its own bank account.

4. According to the Opinion of the Republic Secretariat for Culture of the Socialist Republic of Serbia No. 413-516/73-02 from July 10, 1973 and the Ministry for Science and Technology of the Republic of Serbia No. 541-03-363/94-02 from June 30, 1994, EKONOMIKA has the status of a scientific and national journal. Starting from 1995, EKONOMIKA has been having the status of international economic journal.

5. EDITORS: dr Jovan Petrovic (1954-1958). Miodrag Filipovic (1958-1962), Blagoje Matic (1962-1964), dr Dragoljub Stojiljkovic (1964-1967), dr Miodrag Nikolic (1967-1973), dr Dragoljub Simonovic (1973-1984), dr Miodrag Jovanovic (1984-3-4/1988) i dr Dragoljub Simonovic (1990-till the present day).

1. Журнал „Экономика” начал издаваться с июля 1954 года и под названием „Нишский хозяйственный вестник” выходил до июня 1957 года, а как „Хозяйственный вестник” - до конца 1969 года. Название „Наука и практика” носил заключительно с № 1/1973 г., когда и получил название „Экономика”, которое имеет и сейчас.

2. Журнал основали Общество экономистов Ниша и Общество инженеров и техников Ниша (оставались издавателями до конца 1964 года). Объединение бухгалтеров становится издателем начиная с № 6 - 7 / 1958 года. Экономический факультет в Нише на основании своего Решения № 04 - 2021 от 26.12.1991 года стал соиздателем „Экономики”. Также и Экономический факультет в Приштине стал соиздателем с 1992 года. Начиная с 1992 года соиздателем „Экономики” становится Общество маркетинга региона г. Ниша. Как соиздатели „Экономики” в течении 1990 - 1996 года фигурировали Фонд по научным работам, общины Ниш, Институт урбанистического планирования Ниша и Корпорация Winner Broker Ниш.

3. Республиканский секретариат по информации СР Сербии своим Решением №651¬126/73-02 от 27 ноября 1974 года принял заявление „Экономики” о входе в состав Регистра газет. Собрание Общества экономистов г. Ниша на заседании от 24 апреля 1990 г. Уставным решением подтвердил, что „Экономика” имеет статус правового лица. На заседании Собра-ниея Общества экономистов г.Ниша от 11 ноября 1999 г. принято решение об открытии „Экономикой„ отдельного расчетного счета.

4. Согласно мнению Республиканского секретариата по культуре СР Сербии №413¬516/73-02 от июля 1973 г. и Министерства науки и технологии Республики Сербии №541¬03-363/94-02 от 30 июня 1994 г. „Экономика” имеет статус научного и ранг национального журнала. С начала 1995 года „Экономика” получила статус международного экономического журнала.

5. СОСТАВИТЕЛИ: д.н. Йован Петрович (1954-1956), Миодраг Филиппович (1958¬1962), Благое Митич (1962-1964), д.н. Драголюб Стойилькович (1964-67), д.н. Миодраг Николич (1967-1973), д.н. Драголюб Симонович (1973-1984), д.н. Миодраг Йованович (1984 - 3-4/1988) и д.н. Драголюб Симонович (1990 и в настоящее время).

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ПРЕГЛЕДНИ ЧЛАНЦИ / SCIENTIFIC REVIEW ARTICLE

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ASPECTS REGARDING THE EVOLUTION OF THE CONSUMER PRICE INDICES IN ROMANIA, DURING 1991-2015. IS ROMANIA PRICE SAFETY?

Abstract

Prices are an essential barometer in assessing, both consumer behavior, orienting production towards those categories of products sold in the market but mainly provides information on economic developments in general. Pricing behavior also provides reliable information in the assessment classical report demand vs. offer. Rapid price increases are the results of a complex combination of structural and temporary factors. From this perspective, understanding and explanation as possible of the evolution of prices is a necessary step in adopting the general economic measures and policies to remove some of their volatility. The main aim of this paper is mainly focused on an analysis regarding the evolution of the consumer price indices in Romania, during 1991-2015, trying equally to explain if Romania is price safety.

Key words: *prices, demand, consumer behavior, ANOVA, econometric modeling.*

JEL classification: E20, E30, E31

АСПЕКТИ ВЕЗАНИ ЗА ЕВОЛУЦИЈУ ИНДЕКСА ПОТРОШАЧКИХ ЦЕНА У РУМУНИЈИ, ТОКОМ 1991-2015. ДА ЛИ РУМУНИЈА ИМА БЕЗБЕДНЕ ЦЕНЕ?

Апстракт

Цене су од суштинског значаја оне су барометар у процени понашања потрошача, оријентишу производњу према тим категоријама производа који се продају на тржишту, али углавном дају информације о економским кретањима у целини. Цена понашање такође пружа поуздане информације у процени класичног извештаја захтева против понуде. Брзи раст цена су

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резултати сложене комбинације структурних и привремених фактора. Из ове перспективе, разумевање и објашњење је могућа еволуција цена која је неопходан корак у усвајању општих економских мера и политике да се уклоне неке од њихових нестабилности. Главни циљ овог рада је углавном фокусиран на анализу која је у вези са еволуцијом индекса потрошачких цена у Румунији, током 1991-2015, покушавајући једнако да објасни да ли у Румунији постоји безбедност цена.

Кључне речи: *цене, потражња, понашања потрошача, АНОВА, економетријска моделирања.*

Introduction

Manifestation of some improper economic states among others the economic crisis, within the evolution of the European economy or the international economic instability are key factors in amplifying the consumer prices volatility in Romania. The price evolution is closely connected to the effects of economic policy measures adapted to the national economy and react to them in a high volatility regime. The lately fluctuations in prices analyzed it suggest that the domestic prices must accept the increasingly volatile consumer prices. Adapting to some speculative price manipulation methods that do not reflect reality but existing demand in the market for certain products requires the existence of a fence of flexibility which is often incompatible with the requirements and defining characteristics of the EU domestic production imported. Numerous studies as (Verhallen and Robben, 1994; Breitung and Candelon, 2006; Assenmacher-Wesche and Gerlach, 2008; Caporale et al., 2002) reflect the connections between the classical factors and influences on the consumer prices.

The economic instability and the price`s fluctuation imposed steep prices, despite a recent recovery in the national economy to rethink their position in European economic space. Price developments suggest a degree of uncertainty for the savings. The consumer price volatility indices are determined by a wide range of factors, these include price volatility and food products market impulses and scenarios.

In literature connexion between evolution of the price indexes and different types of determinants is widely analyzed. In this context, (Liping et al., 2014) evaluates how the oil price shocks affect consumer prices through a series of factors on disaggregate the U.S. consumer prices or how the institutions responds to such factors (Kilian and Lewis, 2011). Others authors as(Parguel et al., 2016) analyzes the impact of price display in the luxury sector, or develops investigations regarding the place and promotion policies and displays of more accessible prices as (Truong et al., 2009). As it is argued in literature (Skoufias, (2003); Gros and Steinherr, (2004); Svejnar, (2002); Mieila, (2012); Chivu and Ciutacu, (2014), after the fall of the communism Romania economy transition process towards the market economy and its step by step becoming part of the European and world economy generated evolutions of the inflation rates with significant values and amplitude, especially during the period subsequent to the revolution in 1989. After 2000 these values have been considerably diminished, the trajectories of the monthly average

inflation rate and monthly average change of prices for food goods, non-food goods and for services tending to become stable. In Romania numerous papers provide examples of using IT in elaborating and testing the econometrics models both in economy (Andrei & a.l. 2008, Pecican 2007, Oprea & Zaharia 2011), and in financial market (Săvoiu & Necşulescu 2009, Trencea & Mutu 2012, Zaharia and Bălăcescu 2011) domains.

Specific Features of the Period 1991-2001

Within that decade the monthly average inflation rate has registered considerable high values (over 8.0 %) in 1991 (10.3 %), 1992 (9.6 %), 1993 (12.1 %, the highest value for the analyzed period) and 1997 (8.0%). The restructuring processes, the governmental and local policies, inappropriately chosen most of the times, and also the inertia characterizing the mentality of an important part of the population represent only a few elements which made possible the monthly average inflation rate maintain its values higher than 2.0 % (Figure 1) for a12 years period (1991-2001).
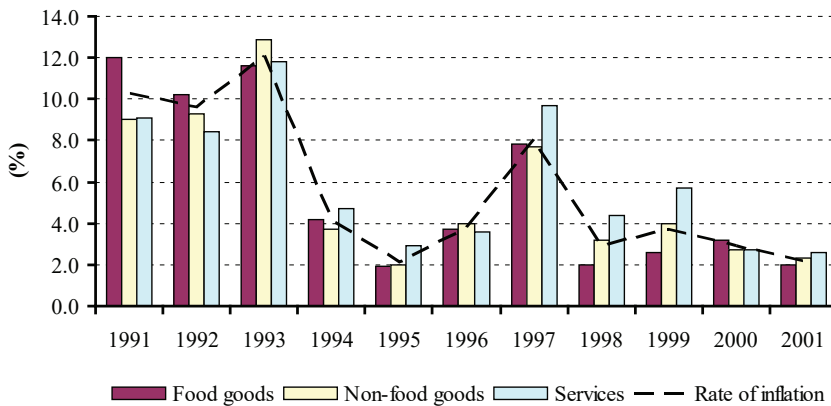
Figure 1. Evolution of monthly average inflation rate and monthly average change of prices for the period 1991-2001. Source: own construction based on Prices Statistical Bulletin, National Institute of Statistics (NIS 2015), Data series *Change of prices - monthly average.*

If between 1991- 1993 monthly average inflation rate registered high values, during 1994-1996 the values decreased with over 50% compared to 1993, being placed between 2 % and 4 %. The governmental policies which were applied after the elections in 1996 and the significant fall in value of the national currency compared to EUR consequently determined, in 1997, the increasing of the monthly average inflation rate from 3.8% (value registered in 1996), to 8.0 % (a rise of 2.1times). Even if the 1998 monthly average inflation rate decreased to 2.9 %, in 1999 a new rise, with a value of 3.7 % took place. Taking into account the monthly average inflation rate it can be concluded that the period 1996-2000 emphasized a significant decrease of the population purchase power with consequences on the economic stability and level of living; as a

result, there have been necessary almost five years in order to recover the level of about 2.0% monthly average inflation rate de approximately 2.0 necessary

Monthly average change of prices for food goods, non-food goods and services, in 1991, 1992 and 1993 has also registered significant values. Thus, in 1991, the value for food goods was 12.0 % (the highest value within the analyzed period for this category of goods), with 1.7 percentage points over the monthly average inflation rate. However, it should be outlined that, excepting 2000, during the period 1995-2001 the values of monthly average change of prices for food goods were lower than monthly average inflation rate.

On one side, in the case of non-foods, the monthly average change of prices, in six years out of the total of 11 years during the period 1991-2001, the values registered have been under the monthly average inflation rate, the most important difference (-1.3 percentage points) being registered in 1991.On the other side, the monthly average change of prices for non-food products in 1993, outrun the monthly average inflation rate by 0.8 percentage points. Monthly average change of prices for services fluctuated around the monthly average inflation rate with values between -1.2 percentage points in 1991 and 1992, and 2.0 percentage points, in 1999, outrunning the monthly average inflation rate in six out of 11 years during the period 1991-2001. The highest value of monthly average change of prices for services was 11.8 % (1993), and the lowest 2.6 % (2001).

Table 1 Evolution trends of monthly average inflation rate and monthly average change of prices during the period 1991-2001

	Multiple R	Standard error	Significance F	Regression Coefficient		
				b	Lower	Upper
Rate of inflation	0.73418	2.61576	0.01009	-0.80909	-1.37328	-0.24490
Food goods	0.77321	2.69776	0.00525	-0.94091	-1.52278	-0.35903
Non-food goods	0.68583	2.76212	0.01982	-0.74454	-1.34030	-0.14878
Services	0.62761	2.65723	0.03871	-0.61273	-1.18586	-0.03959

Source: authors own selection and interpretation of the data

During the period 1991-2001, the monthly average inflation rate and monthly average change of prices have had decreasing trends (Table 1). For the chosen significance level (α=0.05) the regression indices are statistically significant. As a result, the monthly average inflation rate registered a yearly average decrease of 0.80909 percentage points, the trust interval being [-1.37328, -0.2449]. As far as the monthly average change of prices is concerned, the most important decrease was by food goods (-0.94091 percentage points and trust interval [-1.52278, -0.35903]), followed by non-food goods (-0.74454 percentage points and trust interval [-1.3403, -0.14878]) and services (-0.61273 percentage points and trust interval [-1.18586, -0.03959]).

Methodology

In order to analyze the monthly average inflation rate and monthly average change of prices, for food goods, non-food goods and for services, during the period 1991-2001, there were used least square methods, the validation of the obtained regression models being performed by means of the ANOVA methodology. In the same time, testing

the normality of the distribution of residuals was accomplished by using the JB test (Jarque and Bera, 1987). Based on the obtained results there were tested and analyzed the specific features of the indices evolution during Romania transition period to the market economy and, in the same time, the influence of the economic crisis on these price indices. The second part of the paper aims to present an analysis of the monthly evolution of consumer price indices for food products realized by means of the autoregressive AR(p) and mobile mean MA(q). Such as (Eckard,, 2003; Vogt and Johnson, (2011), Ostertagová and Ostertag, (2013):

$$y_t = \phi_0 + \sum_{i=1}^{p} \phi_i y_{t-i} + \varepsilon_t + \sum_{i=1}^{q} \theta_i \varepsilon_{t-i}$$
(1)

Where ϕ_i şi θ_i are the parameters of the model and $M(\varepsilon_t) = 0$ the stationary series,

$$M(\varepsilon_t) = 0, \; M(\varepsilon_t^2) = \sigma^2 \text{ and } \text{cov}(\varepsilon_t, \varepsilon_i) = 0 \; \forall t \neq i \, .$$

In order to test the stationary of the monthly series evolution of consumer price indices for food products there was used Augmented Dickey-Fuller Test, and for the seasonal adjustment there was made use of the Multiplicative Method. After checking the stationarity and eliminating the seasonal component, there were identified the values of the parameters of the model (1) with least square method. In order to test the validity of the obtained model we used the F statistics:

$$F = \frac{R^2}{1-R^2} \cdot \frac{n-k-1}{k}$$

where $k = p + q$. If $F > F_{\alpha;k;n-k-1}$ (respectively Prob (F-statistics)<α);

The model is considered valid and can be used in the forecast of monthly evolution of consumer price indices for food products. The level of significance which has been used is α=0.05.

Evolutions of the monthly average of prices change

Specific Features of the period 2001-2015

After the 2001, both monthly average inflation rate, and monthly average change of prices have registered increasingly low values which, starting with 2004, have been lower than 1.0 %. (Figure 2).
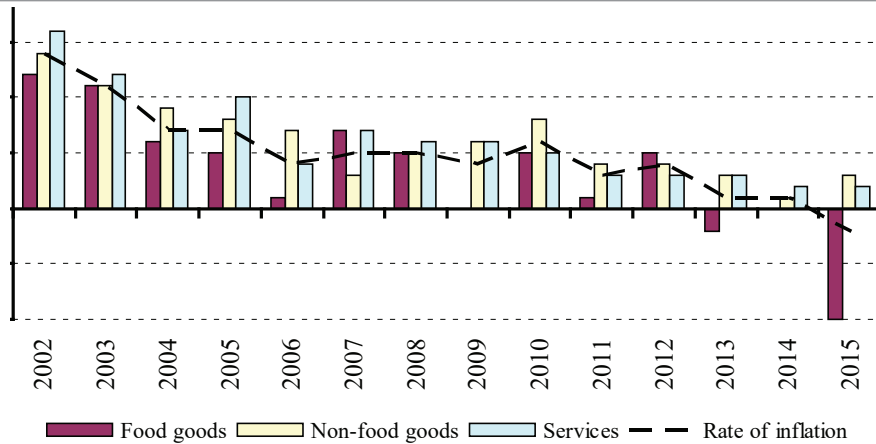
Note: For 2015, the values were calculated as June / July - 2015

Figure 2. Evolution of monthly average inflation rate and monthly average change of prices during the period 2002-2015. Source: own construction based on Prices Statistical Bulletin, National Institute of Statistics (NIS 2015), Data series *Change of prices - monthly average*

These evolutions emphasize the equilibrium tendency of the Romanian economy. It is worth mentioning that the economic crisis, debuting in the end of 2008, has not significantly influenced monthly average inflation rate or monthly average change of prices for food products, non-food products and services. Analyzing the evolutions of monthly average change of prices by comparison to monthly average inflation rate, it is worth emphasizing that, with the exception of 2007 and 2012, monthly average change of prices for food products, have been lower or, at its best, equal to monthly average inflation rate with values comprising 0 (in 2003 and 2008) and -0.8 percentage points (in July 2015 compared to June 2015). Concerning the monthly average change of prices for non-food product and for services, excepting 2007, for non-food products and 2010 and 2012, for services, these have had values higher or equal to monthly average inflation rate between 0 and 0.5 percentage points for non-food products, respectively between 0 and 0.4 percentage points for services.

Table 2 Evolution Trends of monthly average inflation rate and monthly average change of prices during the period 2002-2015

	Multiple R	Standard error	Significance F	Regression Coefficient		
				b	Lower	Upper
Rate of inflation	0.89736	0.18635	0.00001	-0.08703	-0.11395	-0.06011
Food goods	0.80728	0.34279	0.00048	-0.10769	-0.15721	-0.05817
Non-food goods	0.85495	0.19392	0.00009	-0.07341	-0.04539	-0.10142
Services	0.67171	0.20873	0.00004	-0.08527	-0.11543	-0.05512

Source: authors own selection and data interpretation

The decreasing trends registered during the period 1991-2001 remained the same during the period 2002-2015 for all analyzed indices (Table 2). Taking into account that

Significance F is much lower than the chosen significance level (α=0.05), results that all the regression indices were statistically significant.   During the period 2002-2015 monthly average inflation rate had a yearly average decrease of 0.080703 percentage points, the trust interval being [-0.11395, -0.06011]. Monthly average change of prices for food goods was -0.10769 percentage points (trust interval [-15721, -0.05817]), followed by services (-0.08527 percentage points and trust interval [-0.11543, -0.05512]) and non-food goods (-0.07341 percentage points and trust interval [-0.04539, -0.10142]).

Are there significant differences between the data series?

In order to test the hypothesis regarding the existence of significant differences between the data series of the monthly average change of prices for food products, non-food products and services there was used the ANOVA methodology, the results being presented in the table 3.

Table 3 The results of testing the hypothesis regarding the existence of significant differences between the data series of monthly average change of prices for food products, non-food products and services

Period	Source of Variation	SS	df	MS	F	P-value	F crit	Acc.
1991-2001	Between Groups	1.2897	2	0.6448	0.0486	0.9525	3.3158	H_0
	Within Groups	397.37	30	13.246				
2002-2015	Between Groups	0.7619	2	0.3809	1.8799	0.1661	3.2380	H_0
	Within Groups	7.9028	39	0.2027				

Source: authors own selection and data interpretation

Taking into account that for the three categories of products, both during the period 1991-2001 and during the period 2002-2015, the statistics F (0.0486 for the first period and 1.1661 for the second period) is lower than critical F (3.3158 and respectively 3.2380) and it is accepted the null hypothesis and, as a consequence, the corresponding data series monthly average change of prices for food products, non-food products and services is not significantly different.

Time series analysis of monthly consumer price indices for food products

The monthly evolution of consumer price indices for food products in the years 1991 - 2015 had an evolution similar to monthly average inflation rate analyzed above. The first decade of the analyzed period has been characterized by fluctuations of the consumer price indices for food products around a decreasing trend (Figure 3) which has continued during the next decades, though with a much lower slope.
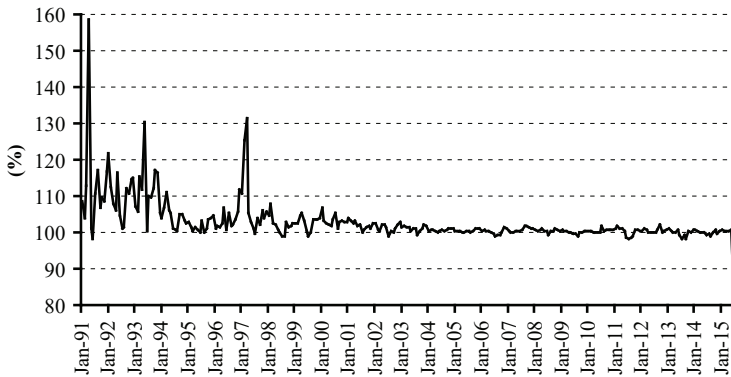
Figure 3. Evolution of monthly evolution of consumer price indices for food products in the years 1991 – 2015. Source: own construction based on Prices Statistical Bulletin, National Institute of Statistics (NIS 2015), Data series *Consumer Price Indices - Monthly evolution in the years 1990 - 2015*

Starting from these observations, this chapter emphasizes some specific features of the consumer price indices for food products as a time series with the emphasizing of the seasonal component, of the trend and of the autoregressive model which characterizes the evolution of consumer price indices for food products for the last 25 years.

In order to identify the seasonal factors there were used both Moving Average Method (Multiplicative adjustment method) and X12 method (multiplicative method). The seasonal factors which characterize the monthly evolutions of the consumer price indices for food products are presented in figure 4. The values of ratio to moving average take values between a maximum of 1.01064, corresponding to March, and a minimum of corresponding to June. Ratio Evolutions to moving average during the period 1991-2015 emphasize that, for food products, starting with September, until December, in Romania, there takes place a relatively constant growth of the prices for food products. The growth of the prices for food products has been maintained during the first semester of the next year and reaches the maximum of their values.
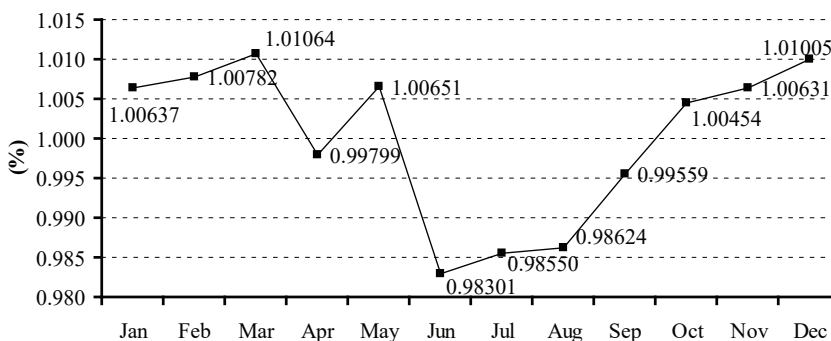
Figure 4 Ratio to moving average for monthly consumer price indices for food products. Sample: 1991:01 2015:07, Included observations: 295 (Multiplicative adjustment method). Source: authors own design

During April and May the seasonal factors are approximately equal to 1, the influence of the seasonality on the monthly consumer price indices for food products is insignificant. In June, July and august, from the consumer point of view the seasonal factors have a favorable influence, these factors leading to the lowest prices of the food products within the entire year. Taking into account the evolution of the monthly consumer price indices for food products and applying Census X12 method (multiplicative method) there were obtained four data series: final seasonal factors, final seasonally adjusted series, final irregular component and final trend-cycle. Data series of the final seasonal factors for monthly consumer price indices for food products (CPIFP_SF) contains the evolution of the seasonality factors for each year of the analyzed period. The CPIFP_SF evolution is presented in figure 5.
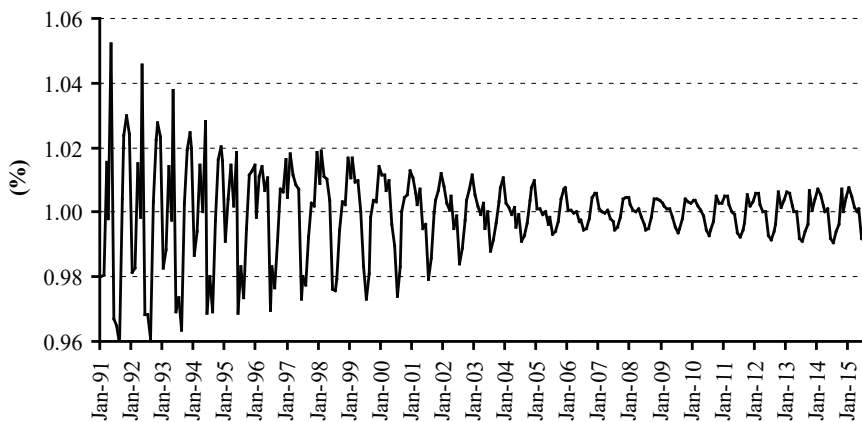
Figure 5. Final seasonal factors for monthly consumer price indices for food products (CPIFP_SF) in the period 1991-2015. Source: authors own design

During 1991 – 2003 took place a significant decrease of the seasonality influence on the price for the food products. This decrease, though much slowly, has continued until 2009.

After 2009 the seasonality influence on the prices for food products has become slightly divergent.. This aspect emphasizes the existence of a slight seasonal instability of the price for food products which, if it continues, it will have negative influences on the markets for food products.

The trend of monthly consumer price indices for food products (CPIFP_TC) it is computed through the adjusting process of the monthly consumer price indices for food products (CPIFP) cu series CPIFP_SF and final irregular component of monthly consumer price indices for food products (CPIFP_IR) for every moment of the time:

$$CPIFP\_TC(t) = \frac{CPIFP(t)}{CPIFP\_SF(t) \cdot CPIFP\_R(t)}$$

(2)

The evolution of CPIFP_TC series (Figure 6) also emphasizes significant differences for the trend of the monthly consumer price indices for food products during the period 2002-2015 compared to the period 1991-2001.
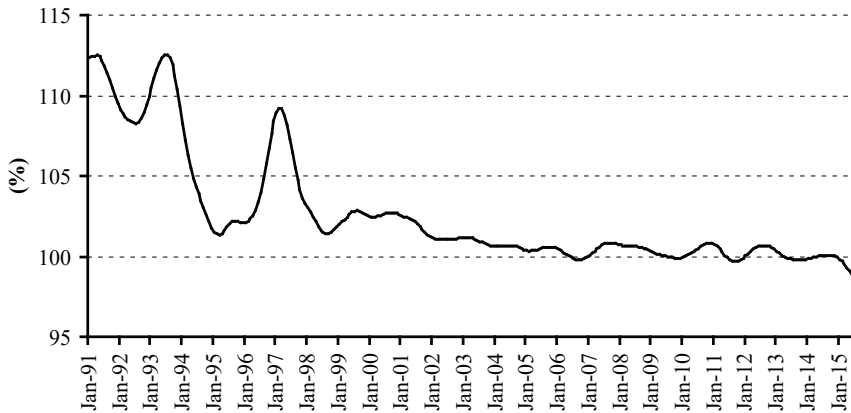
Figure 6 Final trend cycle for monthly consumer price indices for food products (CPIFP_TC) in the period 1991-2015. Source: authors own design

Taking into account that the evolution of the monthly consumer price indices for food products during the period 1991-2001 was influenced in the first place by the processes and phenomena of Romania transition period to the market economy, there was extracted from the CPIFP_TC series the CPIFPR subseries corresponding to the period January 2002 –June 2015.

The results of testing the stationarity of the CPIFRP series and of its first difference, DCIPFPR, are presented in Table 4. Both CPIFPR series and DCIPFPR serie are stationary, fact outlined by the results obtained by means of applying Augmented Dickey-Fuller Unit Root Test (for the chosen significance level α=0.05, t-Statistc<-2.880853 and, as a consequence, the null hypothesis is rejected).

Table 4 The results of Augmented Dickey-Fuller Unit Root Test for CPIFPR and DCPIFPR series

Null Hypothesis:		CPIFPR has a unit root		DCPIFPR has a unit root	
		t-Statistic	Prob.*	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.087851	0.0013	-3.267806	0.0086
Test critical values:	1% level	-3.474567			
	5% level	-2.880853			

Source: authors own calculus

Monthly consumer price indices for food products during January 2002 – June 2015 after testing the series CPIFPR and DCPIFPR, choose the series CPIFPR. Therefore the model of development will be ARMA (n, m). Among the performing models tested the best was obtained for ARMA model (4.3) as:

CPIFPR = 100.2488 + [AR(4)=0.850324, MA(3)=0.992554,INITMA=2002:05]   (2)

Of which characteristics are presented in table 5.

Table 5 testing of the parameters of ARMA(4,3) model for the CPIFPR series

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	100.2488	0.178928	560.2746	0.0000
AR(4)	0.850324	0.042436	20.03780	0.0000
MA(3)	0.992554	0.018224	54.46407	0.0000
R-squared	0.853861	F-statistic		452.8170
Adjusted R-squared	0.851975	Prob(F-statistic)		0.000000

Dependent Variable: CPIFPR, Method: Least Square, Included observations: 158 after adjusting endpoints, Convergence achieved after 5 iterations
Source: own determination

Both model (2) and all its three parameters are statistically significant (F-statistic=0.00, respective Prob=0.00<α=0.05). Regarding the residuals series for sample 2002:05 – 2015:06, this has a normal distribution with Mean=-0.0114, Skewness=-0.1445, Kurtosis=3.333 and for which JB=1.2797 (Probability=0.5274).
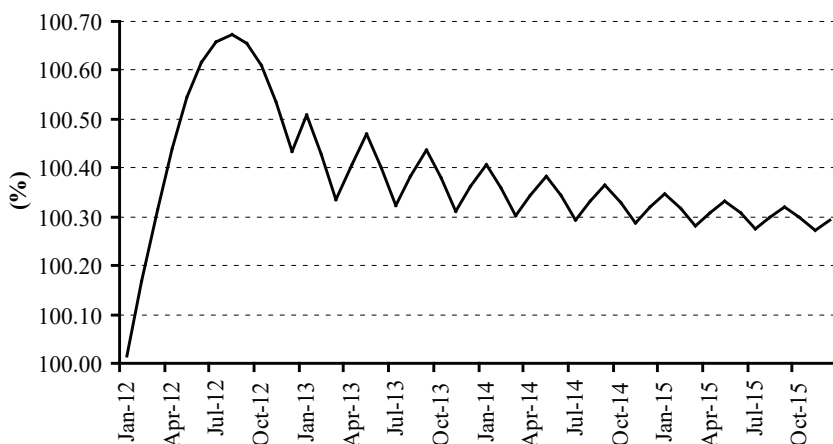
Figure 7 Estimation of the monthly consumer price indices for food products evolution (CPIFPR_D) in the period Jan-2012 - Dec-2015. Source: authors own design

Starting from the model (2) it was estimated the evolution of the monthly consumer price indices for food products during the period January 2012 –December 2015 (Figure 7). This represents tending to the equilibrium value of 100.3%. As a result, if there are not registered significant changes within the social media and the economic monthly consumer rate indices for food products will be of approximately 0.3%.

Conclusion

The paper had as main research theme the analysis of evolution of the consumer price indices in Romania, during 1991-2015 in terms of inflation stability in a country that

has experienced the transition to a functional and highly economy competitive market. Price index fluctuations represent a fundamental element in understanding the mechanism of functioning of the Romanian inland economy. Econometric analysis conducted in this paper highlighted the specific features of an economy at the confluence of the requirements of the market economy to those of an indirect intervention of the state in the global economy. Reducing inflation due to decreased VAT rate linked a significant reduction in the level of consumer prices and thus inflation. Volatility of the consumer price indices in Romania is by itself an important problem that requires a coherent management solution multivalent in terms of price policy. As results from the analysis performed, evolution of the consumer price indices in Romania is syncope with different amplitude that can be like a general framework in highlighting the national economy behavior.

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CORRELATION BETWEEN CORRUPTION AND ECONOMIC CRIMES IN HOUSING AND COMMUNAL SERVICES

Abstract

In this article it is argued that the correlation between crimes committed in one of the most important sectors of the Russian economy - the housing sector. Along with this, the author reasons that the government allocated large sums of money attract criminal gangs in housing and communal services that, in turn, contributes to the Commission along with economic and corruption crimes.

Key words: housing and communal services, corruption crimes, economic crimes, anti-corruption efforts, bribery, corruption bribery, legalization and money-laundering.

JEL classification: K10, K14

КОРЕЛАЦИЈА ИЗМЕЂУ КОРУПЦИЈЕ И ПРИВРЕДНОГ КРИМИНАЛА У СТАМБЕНИМ И КОМУНАЛНИМ СЛУЖБАМА

Апстракт

У овом научном раду аргументује се корелациона веза међу свршеним инкриминацијама у једној од важних грана руске економике – стамбено-комуналној сфери. Упоредо с тим, ауторка доказује, да крупне новчане суме издвојене из буџета државе привлаче криминалне групе у стамбено-комуналну привреду, што, посебно доприноси извршавању реда економксих и корупционих инкриминација.

Кључне речи: стамбено-комунална привреда, корупционе инкриминације, економске инкриминације, антикорупциона делатност, подмићивање, корупциони мито, легализација, прање новца.

Introduction

Counteraction of corruption in housing and communal services (hereinafter – HCS) is one of the priority activities of the relevant divisions of the Ministry of internal Affairs of the Russian Federation (hereinafter – the MIA of Russia). In particular, as noted by the head of Department on fight against corruption GUEB and PC of the MIA

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of Russia, A. Y. Ryabtsev, special attention is paid to the suppression of illegal activity of officials, to identify corrupt links between officials of the authorities and representatives of commercial organizations operating in the housing sector[2] .

The development of new industries and economic institutions and economic activities of the state, formation of new economic relations and technologies of document management and registration of financial-economic activity, substantial effect on the activity of the investigative units for the disclosure and investigation of economic and corruption crimes.

Corruption and economic crimes in housing and communal services

Clear evidence of the scale of corruption offenses in housing and, therefore, a public response to this issue is the consolidation of the Decree of the President of the Russian Federation from 11.04.2014 № 226 "About the national anti-corruption plan for 2014 - 2015 years" of top-priority goals:

- handling of the issue of the fight against corruption in the housing sector at the meetings of the Presidium of the presidential Council of the Russian Federation on corruption counteraction;
- conducting audits of state Corporation "Fund of assistance to reforming of housing and communal services";
- conducting inspections of implementation of legislation on combating corruption in the housing sector;
- prevention of corruption crimes and their control in the housing sector through the housing sector of the complex of educational and educational measures to clarify responsibility for crimes of corruption;
- prevention of corruption crimes and their control in the housing sector by conducting complex investigative actions and operational-search activities (hereinafter referred to as ORM) for the detection and suppression of bribery and mediation in bribery in the housing sector;
- analysis of corruption risks in the housing sector[3].

Of the normative legal act it can be concluded that housing is an important component in the livelihoods of citizens, affecting almost the entire population of the country and, therefore, occupies an exceptional position in a number of other sectors of the economy.

It is necessary to consider that according to experts in the budgets of commercial structures are laid for about 50 % of the costs for bribing officials at various levels . However, as one of the most important directions of development of our country in modern socio-legal and economic conditions, efforts to suppress offences of corruption and economic in the sphere of housing and communal services, as well as their disclosure and an objective investigation does not give positive results that is a result of the absence of methodical provision of the activity of investigation departments.

While the crimes in housing and communal services there is no official statistics and, as a rule, the development of methodical recommendations on disclosing and

investigation of crimes should be investigated to use mainly internal information. In the statistics of the Main information-analytical center of the Ministry of internal Affairs of Russia (further - the MIAC Ministry of internal Affairs of Russia) from 2010 to 2011 there is no count on information concerning corruption crimes in housing and communal services. However, economic crimes for the period identified 276, 435 thousand and 202, 454 thousand, respectively. With 2012 enter the details of corruption cases, amounting to 49, 513 thousand of all registered crimes. On the website of the General Prosecutor's office noted that during the same period last year registered a 40, 407 thousand corruption crimes. In 2013 this index equals 42, 506 thousand, while in 2014 - 32, 204 thousand .

Analyzing the data of the RF IC, the number of previously investigated corruption offences in housing and communal services for 2009 is 210 criminal cases, 2010 - 152, 2011 - 377, 2012 - 565, 2013 - 567, 2014 - 658, there is an increase in the detection of acts of corruption in the study area.

Thus, referring to figures registered money laundering, we note them not matching the real crime of this type, given the latency, which reaches 95 %[4] . In the Russian Federation annually, several hundred thousand economic crimes, which include crimes in housing and communal services. Of them tens of thousands of crimes associated with obtaining criminal income in large or especially large size (in 2010 – 51, 969, 2011 – 40, 315, 2012, 36, 083, 2013 – 29, 878, in 2014 25, 422), which causes their connection with "money laundering". From the point of view of criminology is quite remarkable is that according to experts, corruption have more than half exposed to the RF criminal groups[5]. In 2010 on criminal cases about corruption set the damage for the sum more than 12 billion rubles. In 2012 takes into account the damage from corruption crimes in Russia amounted to almost 21 billion rubles. Financial losses from unfair officials in 2013, compared to 2012, increased by 5 billion rubles, and if you calculate the damage directed to the court claim requirement, he was 32, 7 billion. rubles, exceeding the indicator of 2012 by RUB 11 billion[6].

Analysis of information about the damage from crimes in the sphere of housing and communal services officially underway since 2012 For the specified period of time the damage from these crimes amounted to 1 billion 193, 509 million rubles, in 2013 - 3 billion 571, 748 million rubles, in 2014 - 4 billion 648, 326 million rubles . Analysis of these statistical data allow to conclude that criminal violations in the housing sector began to occur in relation to large sums of money, which allows to establish correlations between economic and corruption crimes in this sphere. The problems associated with investigating and establishing the loss on them, we believe, contribute to the distortion of statistics that does not fully reflect the actual damage caused by these offences.

In addition, given that the crime of corruption in utilities is often identified as a result of investigation of criminal cases about plunders in this sphere of economic activity, as well as the peculiarities of the subject of a criminal assault, which is cash in the form of "kickbacks" received from grants, subsidies and other benefits, which explains their close connection with fraud and theft.

Also it should be clarified that the relationship of bribery and commercial bribery in utilities theft, fraudulent legalization (laundering) of funds, etc., determines the content of a significant amount of financial, accounting and other documents in criminal cases of the given group of crimes, without which, sometimes, committing them is impossible. This is due primarily to the fact that annually by the state for the development of utilities

allocated (in billion rubles): 2009 - 142, 2; 2010, 223, 2; 2011 - 216, 5; 2012, 136, 0; 2013 - 104, 2; 2014, 144, 5; 2015 - 118, 0[7]. Expenditures from the Federal budget on the maintenance of housing and communal services for 2010 amount to 234, 9 billion rubles., 2011 – 279, 6 bln. RUB., 2012 – 475, 7 billion RUR , 2013 - 177, 6 billion rubles, 2014, 119, 6 billion rubles. in addition, subject and additional funding from governments, consumers and housing organizations: financial, stock, investment and other resources.

The significant turnover of funds in the housing sector attracts criminals and their organized groups. This leads to the Commission of offences in respect of subsidies from Federal and municipal budgets, which are determined on the basis of the approved Federal standards to cover the losses of the housing and utilities sector. In the framework of the Housing programme the total funding for 2011 - 2015 was 462, 26 billion rubles , in 2012 - 2015. the Fund of assistance to reforming of housing and communal services is provided from the Federal budget of 217 billion rubles.

According to the research Foundation "INDEM" the risk of corruption in economic relations in the housing sector is 32%, i.e. almost one third of citizens in housing and communal services is subject to corrupt influence. The volume of the corruption market in this area, i.e. the amount of money spent by citizens a year on bribes of housing and communal service, is 22, 7 million dollars – twelfth the rate of sixteen possible. These data allow to draw a conclusion that is small in comparison with other spheres of interaction between citizens and the authorities of bribes to utilities when their widespread distribution leads to a significant spread of bribery and bribery.

However, despite a complex system of legislative regulation of legal relations in the housing sector, in most municipalities it operates according to the scheme, the main element of which is a diversified municipal housing and utility enterprise, integrating the functions of the owner of housing and utilities infrastructure of the customer on execution of works on repair and maintenance of housing communal property and contractor. This contributes to the development of corruption, and comprehensive schemes of withdrawal of money from the housing sector and, respectively, the number of crimes of economic orientation.

Shows studied investigative practice, between the municipal company and contractors formed economic and criminal scheme due to lack of control over their activities on the level of outsourcing.

Contractors and subcontractors, pass a bribe and illegal remuneration of persons performing managerial functions in a commercial organization or municipal companies for the conclusion with them contracts on performance of works or rendering of services, signing of acts of acceptance and other documents necessary for the transfer to the accounts of their organizations cash to ensure a win in the competition for government contracts in the housing sector, etc. Further, obtained from Federal or regional budget for the trust funds transferred by usetcpnodelay and receiving illegal remuneration in affiliates for alleged work performed or services rendered.

For example, the materials of the criminal case, which implies that the Deputy chief of Department housing and communal services of the Perm city administration B. received a bribe from the contractor in the form of money in the amount of 1 million 300 thousand rubles for the signing of contracts for the equity financing of capital repair of common property in several apartment houses in Perm and the allocation of budgetary funds of the HOA, with whom the contractor had been awarded the contract agreements for the conduct of such work[8].

The head of noncommercial partnership "housing Control" B. was detained when receiving unlawful remuneration in the amount of 10 thousand rubles from the representative of one of the utility companies in Miass for defending the interests of the latter in the administration of the city[9].

From the materials of the criminal case investigated by the investigative Committee of the Russian Federation across the Kaliningrad region, it is clear that the head of Department on reforming of housing and communal services of city administration of Sovetsk P. was detained when receiving through the intermediary of a bribe in the amount of 250 thousand rubles from the Director of a commercial organization for the coordination and transfer certificates and certificates of the executed works on major repairs of the roof and facade of two apartment houses in Sovetsk[10].

Examined the investigative practices allows to identify one typical scheme of criminal activity in the housing sector , where local governments passed bribes to representatives of housing and communal services of regions and their subordinate units at regional and local levels for the allocation of Federal or regional budget funds for the development of housing in a particular region.

In this case, the correlation of corruption and economic crimes in housing and communal services observed the following: due to organizational and technical capacities of municipal enterprises are not able to function and exercise at the same time its activity in all three sectors of housing without the involvement of third parties, which lays the basis for committing the specified crimes from the past. These are the organization for the maintenance and repair of housing Fund, housing and utility companies (utility), the organization of diversified utilities. Management companies, housing cooperatives (hereinafter - LCD), housing cooperatives (further - ZHSK) and homeowners Association (hereafter HOA) are also included in the composition of housing organizations[11].

Along with the above, we believe it is important to note the following. The author of this article study found that housing provides the reproduction and maintenance of housing by providing the following housing services, where for the provision of officials and persons performing managerial functions in commercial and other organizations operating in the housing sector, receiving bribes and illegal remuneration:

1. By granting use of premises under the contract of social hiring or the contract of hiring of premises the state or municipal housing stock;
2. For maintenance and repair of the dwelling, including rooms and the apartment building management, maintenance and current repairs of common property in an apartment house;
3. On capital repair of common property in an apartment house proprietors of premises in an apartment house;
4. For the collection and removal of solid waste;
5. For the collection and removal of liquid waste from residential buildings ;
6. Maintenance of elevators;
7. Cleaning of common areas and surrounding area;
8. Improvement of housing and adjacent territories;
9. Providing information and communication services, including television antennas and Internet providers, etc.

For residential services refers to "actions or activities of the contractor to maintain and restore the proper technical and sanitary condition of buildings, structures, equipment, communications and facilities of housing and public utilities, waste removal and supply to the consumers of electric energy, drinking water, gas, heat and hot water."[12]

Are these services between enterprises of the housing stock (state unitary enterprise (hereinafter - GUP), public institution (hereinafter - the civil code), legal entities (a limited liability company (hereinafter LLC); joint stock company (hereinafter – JSC), etc.), etc.) and the consumers of these services, i.e. the owners of premises in apartment houses. On behalf of the latter, in most cases, are managing companies (hereinafter – CC), HOA or LCD that shows studied investigative practice, working with companies housing often form an organized criminal group.

Through bribery and giving bribes to representatives of law enforcement bodies and bodies of local self - government of UK, TSZH, ZHK and performers of housing services to draw up bogus contracts on performance of works and (or) rendering of services implement their activities without obtaining licenses and other permits, using firms-lived or non-existent commercial organization to transfer funds to their personal account.

So, the Director of the MUP "Inzensky heating" L, his Deputy V., M. V. and subordinates, using the documents of fictitious companies, organized crimes on the implementation of fuel, which they had extracted an income of over 7 million rubles To cover the activity of L. contributed to the transfer of the law enforcement officer monetary reward for not taking measures to stop their criminal activities, for which he was arrested[13].

The example also serves as a criminal case, investigated in relation to the General Director of state unitary enterprise RM "Association of road service stations and autostations" A., who had illegally received from the Director of "SMP "Turetskoe" money in the amount of 63 thousand rubles. for the transfer of the last temporary possession and use of nonresidential premises[14].

Considering the criminal activities in the housing sector, one of the links of which is the criminal code, we note that the Housing code of the Russian Federation[15] establishes three main ways to manage the multifamily house:
1. The direct management of proprietors of premises in an apartment house;
2. The management of the HOA or LCD or other specialized consumer cooperative;
3. The managing organization (managing company).

These methods of apartment building management are included in the housing organizations and the most common of these is asset management. The attractiveness of this method to commit bribery and commercial bribery in utilities is a result of the complexity of implementation of control over the activities of penal code of the state and the public, legislative gaps, the interest for illicit enrichment and impunity for crimes in this sphere.

The result of these actions management companies are the lack of hot water, heating and electricity in the winter, leaking roofs, breakthroughs pipelines, pollution of territory of apartment houses and etc. the head of the presidential administration noted that causes such effects is "the lack of professionalism and indiscipline management companies, and not without a banal theft"[16].

Thus, the existence of complex and multilevel patterns of legal regulation of housing sector, a large volume of legal institutions that regulate relationships in this field, contributes to the difficulties of the investigator in determining the rules of economic behavior on the market of housing and communal services. However, not clarified in the wording of fundamental concepts; legal regulation of the studied areas is also carried out normative-legal acts that are not directly industry sector: tax, land, employment legislation, etc. These circumstances predetermine the challenges in investigative units in the investigation of criminal cases on crimes in the sphere of housing and communal services.

It should be noted that, despite a complex system of legislative regulation of legal relations in the housing sector, in most municipalities it operates according to the scheme, the main element of which is a diversified municipal housing and utility enterprise, integrating the functions of the owner of housing and utilities infrastructure of the customer on execution of works on repair and maintenance of housing communal property and contractor-contractor.

When the detection and investigation of criminal cases on crimes in the study area, the investigator should know what the activity of the municipal enterprise can implement on the three leading industries of housing, which are:
- housing construction;
- housing;
- utilities.

It is necessary to clarify that these enterprises are not able to function and exercise at the same time its activity in all three sectors of housing without the involvement of third parties. The housing organizations are the organization for the maintenance and repair of housing Fund, housing and utility companies (utility), the organization of diversified utilities. Management companies, housing cooperatives (hereinafter - LCD), housing cooperatives (further - ZHSK) and homeowners Association (hereafter HOA) are also included in the composition of housing organizations . Given this information, the investigator at the stage of preliminary check of messages on crimes in the sphere of housing and communal services is authorized to request necessary information from these organizations, as well as to receive from the officers explanation.

Housing construction, which targets residential building intended for human habitation, provides a redistribution of housing facilities and that they create housing and services. The main component of the investigated areas is the housing market, which implements the functions of reproduction of the housing Fund, i.e. the construction, modernization and reconstruction of housing, which is the basis of housing. In turn, this market cannot function without serving its housing and public services, where the bulk of criminal assault. In this regard, in the thesis to be examined only the data of HCS (housing and communal services).

Investigative practice shows, because of the lack of information about the structure of housing and communal services, bodies and organizations operating in this sector of the economy, in the modeling process mental picture of an event criminal event, the investigator faces a number of difficulties. In this regard, we believe it is necessary to outline the structure of housing and communal services (on the branches), the housing and communal services, to indicate their types, to describe the structure of the organs, organizations providing these services in the study area.

Thus, housing provides the reproduction and maintenance of housing by providing the following housing services:

- granting use of premises under the contract of social hiring or the contract of hiring of premises the state or municipal housing stock;
- maintenance and repair of the dwelling, including rooms and the apartment building management, maintenance and current repairs of common property in an apartment house;
- capital repair of common property in an apartment house of proprietors of premises in an apartment house;
- collection and removal of solid waste;
- collection and removal of liquid waste from residential buildings ;
- maintenance of lifts;
- cleaning of common areas and surrounding area;
- improvement of housing and adjacent territories;
- providing information and communication services, including television antennas and Internet providers, etc.

For residential services refers to "actions or activities of the contractor to maintain and restore the proper technical and sanitary condition of buildings, structures, equipment, communications and facilities of housing and public utilities, waste removal and supply to the consumers of electric energy, drinking water, gas, heat and hot water."[17] Are these services among enterprises of housing and the consumers of these services, i.e. the owners of premises in apartment houses. On behalf of the latter, in most cases, are management companies, TSZH or housing. However, it should be noted that the Housing code of the Russian Federation establishes three main ways to manage the multifamily house:

1. the direct management of proprietors of premises in an apartment house;
2. the management of the HOA or LCD or other specialized consumer cooperative;
3. the managing organization.

These methods of apartment building management are included in the housing organizations and the most common of these is the managing organization. The attractiveness of this method for the implementation of bribery and commercial bribery in utilities is due to the extremely low control of the state and the public over the activities of organizations of housing and communal services, high interest in the enrichment and impunity of officials for crimes in the sphere of legislative omission.

So, in the absence of the decision of owners of premises in an apartment house on the choice of the method of apartment building management, the local authority should conduct an open tender to select a managing organization. The owners of the premises in this case are obliged to conclude the contract of management of apartment home chosen by the contest management organization for a period of not less than one year. This provision of the Housing code of the Russian Federation allows officials and persons performing managerial functions in commercial or other organization, to engage in criminal collusion for selfish purposes. As the investigative practice shows, for a certain remuneration the offender in connection with his official position in the interests of the managing organization contributes to the winning of tenders for the right of conclusion of the contract on management of apartment building, public

contracts on accomplishment of adjoining territories, the implementation of capital repairs of apartment houses and signs acts of acceptance of work performed, other Executive documents.

Here is a typical example of the materials of the criminal case opened in Khanty-Mansi Autonomous district in respect of the Deputy head of the urban settlement, Parking lot construction, capital repair, housing, land and property relations B., on signs of the crime provided by part 3 of article 30, paragraph "b," including 5 senior 290 of the criminal code. It is established that in August of 2012. the administration of the urban settlement Talinka conducted an open tender for the right to conclude municipal contracts for capital repair of apartment houses, the winner of which is recognized as one of the organization of the settlement. B., head of the Commission on carrying out of the competition, offered his protection and lobbying of interests of the company to conclude contracts in the territory of the urban settlement and also illegally demanded from the company of the transfer of funds in the amount of 800 thousand rubles as compensation for already concluded contracts. In addition, B. explained that in case of refusal to fulfil its requirements, the completion certificate will not be signed and as a result, the company will not be listed cash for work performed, in connection with which management has addressed in law enforcement bodies. After receiving part of a bribe in the amount of 400 thousand rubles., B. was detained by police[18].

In turn, utilities provides production and finishing to the direct consumers of public services, which include:
- service cold and hot water supply;
- water removal (Sewerage) and wastewater treatment;
- electricity;
- gas supply (including deliveries of household gas in cylinders);
- heating (a heat supply, including deliveries of firm fuel in the presence of furnace heating);
- the collection, transportation and disposal of household waste.

Under utilities is "the activity by serving customers of any utility resource individually, or 2 or more of them in any combination to ensure favorable and safe conditions of use of residential, non-residential premises, the common property in an apartment building and land and located on them dwelling-houses (households)"[19].

Investigative practice shows that management companies, as intermediaries between owners of premises in apartment buildings and utilities providers do not pay the last money received from the owners on payment of municipal services, kidnap and resell fuel, and so eventually leads to the formation of debts to utilities providers and poor delivery of public services.

An example is the criminal case brought by investigative management of UMVD of Russia across the Tver region against the head and the employee of one of management companies of Tver on the fact of causing of property damage done by the supplier organization. According to investigators, the men in the period from 2011 to 2014 abusing the trust caused the property damage done by the supplier and the enterprise for the sum more than 26 million rubles. Using a controlled company with similar names, located at one and the same legal address, the defendants received from tenants cash houses for heat supply services. However, money in a resource-supplying organization would not be transferred, and disposed of them at his discretion.

An example of theft of fuel resources can serve as prosecution, the investigative part of the SU of UMVD of Russia across Khabarovsk territory, from which it follows that in the period from August to October 2011, two founders of company "D." of Komsomolsk-on-Amur has created an organized community and developed the scheme of illegal activity in the housing sector. The organization consisted of four groups. Some engaged exclusively in the theft of oil. Other - transport and sales of stolen oil. To this end, we used one-day firms, the activity of which was to hide the theft. The stolen fuel was sold to various commercial enterprises in the region. The revenue was shared between all members of the community.

These crimes in the housing sector are due to the concealment by officials of bodies of state power and local self-government, law-enforcement and supervising bodies, representatives of management companies transmit a prearranged remuneration in return for their inaction.

A vivid example is the detention by employees of the Department to identify crimes in the sphere of housing and communal services №8 Uebipk GU MVD of Russia in Volgograd region Director of the HOA Dzerzhinsky district of Volgograd on suspicion of committing a crime under article 291 of the criminal code. G. proposed illegal monetary reward in the amount of 200 thousand rubles. security officer Uebipk GU MVD of Russia in the Volgograd region for the failure further checks of financial and economic activities TSZH. At the time of transfer of a bribe the suspect was detained by operative employees.

A typical scheme of criminal activity in the housing sector is the establishment of municipal institutions (on the basis of the decree of the head of municipal entity) engaged in the transfer of budgetary funds on capital repairs, and performs control functions for the development of these tools. The competence of this organization includes the functions of technical supervision and coordination of acts of acceptance of work performed. The founders of this organization are the authorities of the municipality, in charge of utilities. For each object overhaul is an agreement on the provision of subsidies for payment of major repairs.

However, by virtue of its structure, material and technical base, housing authorities forced to enter into agreements with contractors, which are extremely difficult to control and accounting. You should note that currently the total volume of fixed assets of the Russian Federation on the housing and utilities sector accounts for over 26% (approximately 8 trillion. RUB.); it includes objects in the amount of 19 million and a total area of 3 billion m2, they consumed over 20% of state energy resources. Payables to resource-supplying organizations is more than 350 billion rubles[20]. Referring to the emergency Fund, it should be said that the state today in value terms has 93 billion rubles Annually for the modernization of housing and communal services the state allocates significant amounts of funds (in billion rubles): 2009 figure should be 142.2; 2010. - 223,2; 2011. - 216,5; 2012. - 136,0; 2013. - 104,2; 2014. - 144,5; 2015. - To 118.0[21] . Here is laid the Foundation for the implementation of criminal activities in this area.

Today activity in the housing sector can be characterized by the following negative trends in organizational and managerial problems and economic plan:
- a complex system of contractual relationships between the public, municipal authorities and management companies providing housing and communal services;
- low control over the activities of management companies from the municipal authorities and other regulatory bodies;

- the creation of management companies with additional services and new legal entities for realization of complex of works in housing and communal services, which leads to the decentralization of functions and management;
- high level of criminal assault on the part of performers of contract works in housing and communal services.

The attractiveness of utilities to implement various kinds of criminal assault, namely: fraud, misappropriation or embezzlement, the creation and use of shell companies, criminal, bankruptcy, commercial bribery, bribery, misuse of state funds and other crimes, is a consequence of the existence of the negative trends described above.

Conclusion

The head of the municipal institution creates an independent commercial entities (companies), founded by his relatives or affiliates (trusted) person. Often the actual management of such organizations carries out the aforementioned head. In investigatory practice there were cases when for such purposes were purchased from existing organizations (companies) with economic and banking history. In some cases, took place the creation and registration of the HOA for dummies. The Russian legislation does not provide for HOA mandatory bidding when choosing the contractor, it shall be entitled to choose the Contracting organization. Or officials of the municipal administration and institutions, using its administrative resources, executives of the HOA homes located within their jurisdiction, to make a choice in favor of their subordinate organizations, citing a possible refusal of participation in the program. Example of committing such a crime we cited above.

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DESIGNING A BALANCED SCORECARD AS STRATEGIC MANAGEMENT SYSTEM FOR HIGHER EDUCATION INSTITUTIONS: A CASE STUDY IN MACEDONIA

Abstract

European higher education institutions (HEIs) in the last two decades have faced a number of challenges: reduced public funding, increased competition from foreign and private universities, constant pressures and demands for their greater quality, and constant changes of education laws and legal regulations.

The only way for fast adjustment of HEIs to the new competitive conditions is to explore all possibilities for effective implementation of some of the most popular management concepts such as Balanced Scorecard (BSC) system.

Although the application of the BSC in the business sector is well documented, limited research has been reported regarding the application of the BSC in the education sector.

For this purpose, relied on the existing literature, reported results and experiences from its implementation in business, firstly, we propose a suitable process for building a BSC system for HEI, and then we design a specific Strategy map and BSC system applicable for the Faculty of Economics-Skopje, Ss. Cyril and Methodius University, easily adaptable for implementation in other HEIs.

Key words: *higher education institutions, reforms, performance management, strategy maps, Balanced Scorecard.*

JEL classification: I23, M10, M120, M190

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ПРОЈЕКТОВАЊЕ БАЛАНСНЕ КАРТЕ КАО СИСТЕМА СТРАТЕГИЈСКОГ МЕНАЏМЕНТА: СТУДИЈА СЛУЧАЈА У МАКЕДОНИЈИ

Апстракт

Европске институције високог образовања се у последње две деценије суочавају са бројним изазовима: смањено јавнао финансирање, све већа конкуренција из иностранства и приватних универзитета, стални притисци и захтеви за већим квалитетом, и константне промене закона о образовању и законских прописа.

Једини начин за брзо прилагођавање високошколских институција на нове конкурентске услове је да се истраже све могућности за ефикасно спровођење неких од најпопуларнијих концепта управљања, као што је систем балансне карте.

Иако је примена система балансне карте у пословном сектору добро документована, мали број истраживање је посвећен примени овог система у сектору образовања.

У ту сврху, базирано на постојећој литератури, забележеним резултатима и искуствима из његове примене у пословању, пре свега, предлажемо одговарајући процес за изградњу система балансне карте у високом образовању, а затим, дизајнирамо посебну стратегијску мапу и систем применљив на Економском факултету -Скопје, Универзитета Св. Кирил и Методије, лако прилагодљив за имплементацију у другим високошколским установама.

Кључне речи: високошколске установе, реформе, управљање перформансама, стратегијска мапа, балансна карта

Introduction: The Importance of Higher Education in Europe through Facts

The importance of the nine-centuries long higher education history in the development of today's modern Europe is definitely great and undeniable, as well as its image and influence around the world. Moreover, the first and the oldest university in the world is European - University of Bologna in Italy, which was founded in 1088.

Therefore, it should not come as a surprise, that Europe has always devoted its great attention to higher education on its territory. There are numerous reasons for that. Its potential to stimulate economic development, social cohesion and to improve the quality of life in society is huge. It has been estimated that each additional year of education above the population average, increases the productivity of an average EU country for 6.2% and a further 3.1% on a long run, mainly achieved through the contribution, which education has, over faster technical progress (de la Fuente and Jimeno 2005). Higher education enables achievement of higher income and higher employment rate. According to the results of scientific research conducted in 10 EU countries, it can be

firmly concluded that higher levels of education of the population (measured by the share of people with higher education than elementary education) reduces the rate of unemployment, among the less educated and those with higher education (Biagi and Lucifora, 2008).The impact that higher education has on a society is remarkable even in reducing the crime rate in a society and greater active involvement of educated people in social living (Woessmann, 2006). The Share project exposes a strong correlation between the level of education of population, i.e. their socio-economic status and their health. It is considered that 70% of the population with lower levels of education are physically inactive and even 50% of them are prone to being overweight compared to more educated population. This same applies to the mental health of the population. Individuals with lower income or less material resources, are mostly poorly educated people and often suffer from depression, especially in the north part of Europe. And according to a research done by Eurostat in 2010, systemic relationship between the level of education and mortality has been determined. It has been said that the expected lifespan is lower in the group of less educated population and it increases with the level of education (EC-DG ECFIN 2010, p.17).

Undoubtedly the higher level of education provides clearer image of the world and the way it functions, as well as a better understanding of our own role in a society. The new knowledge changes people, their habits, their values and their way of life. Ultimately, it changes individuals, society and the world for better. Therefore, any responsible society that tends to increase economic and social development and improve quality of life for its population, should always have the (higher) education in the primary focus of interest.

The competitiveness of European higher education internationally

Although Europe has always been known as the world university center and incubator of the global intelligence, still, it seems that the last few decades, European HEIs are failing to keep pace with the best HEIs in the Anglo-Saxon countries which seems to dominate in the educational market. For several years now, many different worldwide accepted university rankings, such as those of the Shanghai University or of the Times Higher Education, show that the top 20 HEIs in the world come from the Anglo-Saxon countries.

For example, in 2014, the top 20 ranked universities consisted barely four European universities, and three of them are British (University of Cambridge, University of Oxford and University College London) and one of them is Swiss (Swiss Federal Institute of Technology Zurich) (ARWU, 2014). Thus, global ranking in the top 50 best-ranked universities includes only 7 universities of continental Europe (two from France, two from Germany, one from Switzerland, one from Denmark, and one from Sweden). There is not even one university from Italy, Austria, Belgium or Spain among them.

Similar results indicate also the annual ranking of the top 400 universities from the world ranking of Times Higher Education. In the academic year 2013/2014, again among the top 50 universities in the world, barely four, are from continental Europe (two from Switzerland, one from Netherlands, one from Germany). The rest are from United

Kingdom, several from Canada, Australia, Japan and China, and the overwhelming majority belongs to US universities.

Despite the complete domination of the United States universities among the best HEIs in the world, the European education has also some advantages that should not be ignored. European HEIs have better average quality, are more accessible for students from lower social status families and focus more on long-term research. Also, some studies confirmed better results in Switzerland, Britain, Denmark, Spain, Sweden, Belgium, Canada and Australia, compared with the United States in terms of the number of published scientific papers per 10 researchers and one dollar invested (NOWT, 2003 in Jacobs and van deer Ploeg, 2006, p.538).

However, we should not neglect the fact that many of the best European students, researchers and teachers in search of a more thrilling life, higher salaries and more creative and dynamic work environment, migrate to the United States or Canada, that currently offers the best and the most competitive working conditions.

In order to reduce the brain drain, enhance the quality of higher education and recover the lost status of worldwide intelligence creator, over the last two decades, Europe undertakes various reforms. It was believed that through the consistent implementation of Bologna Declaration, Lisbon agenda, as well as its successor »Europe 2020«, that European HEIs will quickly manage to strengthen their role and build the most competitive society in the world, based on knowledge. But it is more than clear that those reforms were not enough.

The Reforms in Higher Education in Europe

During the late 1980s dissatisfaction of the continuous poor performances of the public institutions culminated worldwide. Inefficiency, bureaucracy, inflexibility towards changes and poor financial results represented their work. That was the trigger why governments in most countries started to implement the principles of market economy in the public sector. This transition from a market economy to a market society, also known as a trend of public sector commercialization did not avoid universities. Consequently, in many countries, governments started: (1) reducing the financial support for higher education (Hodson and Thomas, 2001); (2) requiring greater financial autonomy of educational institutions (Coy and Pratt, 1998); (3) encouraging competition by allowing free entrance to foreign and private universities (Tooley, 1998); and (4) imposing major reforms in higher education.

These changes and pressures undoubtedly created a need for greater responsibility and real managerial behavior at HEIs, far different from the past collegiate or confirmative management. The only way for rapid adjustments to the new conditions, was exploring the possibilities for effective implementation of popular management concepts and techniques in HEIs which were already proven in business. Hence, began the trend of testing and implementing of different management tools, such as Balanced Scorecard (Cardoso, Trigueiros and Narciso, 2005; Ruben, 1999; Stewart & Carpenter-Hubin, 2000; Papenhausen & Einstein, 2006, Umashankar & Dutta, 2007; Karathanos & Karathanos, 2005; Pineno, 2007; Cullen, Joyce, Hassall, & Broadbent, 2003; Mashhadi, Mohajeri & Nayeri, 2008), Benchmarking (Doerfel & Ruben,2002), Data Envelope

Analysis technique (Zheng & Steward, 2002), EFQM excellence model (Osseo-Asare & Longbottom, 2002; Calvo-Mora, Leal & Roldan, 2006; Hides, Davies, Jackson, 2004; Tari 2006), Total Quality Management (Chadwick, 1995; Owlia & Aspinwall, 1997) and others business tools. This trend corresponds with the generally accepted public sector policy towards the improvement of efficiency, effectiveness and financial performances in universities (Coy and Pratt, 1998; Tooley, 1998), as well as the Declaration of Graz which for successful reforms requires each educational institution to actively apply leadership, quality and strategic management (EUA Graz Declaration, 2003).

Nowadays, most universities operate in a competitive environment where all students are often treated as consumers or customers, education as a product and the operating area as an educational market (Craig, Clarke and Amernic 1999; Hodson and Thomas, 2001). We are witnessing a strong competitive struggle between HEIs for each student and the focus is moving from local to global educational market. Many of them, in order to promote students as customers of their services, started testing and measuring many indicators such as: student satisfaction rate, the number of enrolled/graduated students per year, the rate of rejected candidates, or proportion of full-time/part-time students, the number of signed agreements for cooperation with foreign universities or organizations, the number of published papers in the country and abroad, the proportion of computers/students, and many others. But, many of these traditional measures do not reflect the real picture for the current status of the institution. They do not show the key factors for success of the faculty or university, nor take into account the most important dimensions of the organizational mission, vision and strategic goals (Doerfel and Ruben, 2002).

From performance measurement to strategic management in HEIs by employment of BSC system

In our opinion, the real answer to the management issues that HEIs are beginning to face: competitive market and »measurement of everything, but nothing that actually matters«, problems well known in the private sector, is the BSC system. Its creators Kaplan and Norton describe it as »a system that serves to translate the organizational mission and strategy into a modern set of measures that provides a basis for a strategic measurement and strategic management« (Kaplan and Norton, 1996). This is a simple, logical, practical and already proven management system and an appropriate response to the challenges faced by modern HEIs.

Our opinion is shared by many other authors. They point out that the BSC concept also allows: planning of the strategy and its cascading to all units of the educational institution, identifying the necessary steps for its implementation, as well as a successful selection of indicators that will ensure higher quality of education (Cardoso, Trigueiros and Narciso, 2005). And authors Ruben (1999), then Stewart and Carpenter-Hubin (2000), alike Papenhausen Einstein (2006), and Umashankar and Dutta (2007) explain in detail how BSC system can be successfully implemented in university education as a framework for quality management and organizational performance. Authors Karathanos and Karathanos (2005), however, indicate the importance of a clear relationship between measures with mission, core values and strategic goals of every organization. Pineno

(2007) points BSC concept as a powerful tool for development and implementation of a strategic management system used for monitoring organizational performances in business schools. And Cullen, Joyce, Hassall, and Broadbent (2003) propose implementation of BSC concept in HEIs in order to strengthen their management capacity.

However, although in the past decade many universities worldwide successfully implemented the BSC concept in their work, only a few published papers and empirical studies explaining their specific experiences in the process of its implementation. But what should be pointed, is the fact that almost all registered results or to date experiences of HEIs that have experimented with BSC are positive and successful.

Thus, Hafner (1998) reported successful results from the application of the BSC concept in the University of California. Chang and Chow (1999) reported that in their study of 69 accounting department managers, the most of the examinees declared positively for the applicability and benefits of the BSC concept in the accounting educational programs. Armitage and Scholey (2004) successfully implemented the BSC concept of post-graduate studies in business, entrepreneurship and technology. Karathanos and Karathanos (2005) in details present the BSC systems that they applied in three USA universities. That makes them the first winners of the Malcolm Baldrige National Quality Award in the field of education. Yek, Penney and Seow (2007) argue the positive experiences from the application of the BSC concept in professional vocational education, or more specifically at the Institute of Technical Education of Singapore and also won the National Quality Award. Suraya, Yu, Soo and Mohamad (2008) achieved positive effects from the application of automatic or e-BSC system for performance measuring and success at the University of Malaysia.

A brief view of the current situation in higher education in Macedonia

Today, the higher education in Republic of Macedonia is treated as a public good. The Macedonian higher education from a privilege of a few, became everyone's right. Macedonian higher education suffered serious expansion in the last decade. The number of students has increased dramatically from 40.246 students in 2000/2001 to 56.687 students in 2013/2014. Greater number of students was accompanied by even greater increase in the number of universities - from a few public universities in 2000/2001 to 23 universities in 2015 (5 state universities and 18 private universities), or from 31 HEIs in 2000/2001 to 125 HEIs in 2013/2014 (State Statistical Office, 2015). As result of this expansion the educational attainment indicator in Macedonia (defined as the percentage of the population aged 30-34 who have successfully completed tertiary studies) has increased from 11.6% in 2006 to 28.5% in 2015 (Eurostat, 2016). Unfortunately, funds allocated from the budget for education and research did not follow the growing needs of education. The public expenditure for education has been reduced from 3.7% of GDP in 2004 to 3.5% of GDP in 2010, and the public expenditure for research and development has been reduced from 0.2% of GDP in 2003, to 0.1% of GDP in 2010. This was followed also by a serious reduction in the amount of student tuition fees, from average 1.000eur per academic year in 1998/99, to average 200eur per academic year in

2014/2015. Meanwhile the Law on higher education, which was adopted in 2008, was subject to more than 20 amendments to date. We can conclude, that the Macedonian HEIs face the same challenges as their colleagues from the rest of Europe: increased number of students, reduced financial support from the government; reduced financial and other autonomy of educational institutions; severe competition from foreign and private universities; major legal reforms in higher education, changed focus of the academics from teaching to researching, need for more managerial skills and strategic focus.

The evident lack of strategic focus of the HEIs management is even confirmed in the *National program for education development in Macedonia 2005-2015* by the Ministry of Education in Republic of Macedonia: »Strategic management and planning of institutional development should be critical in future reforms of higher education. Owing to the fact that at the moment they are not in the center of reforms, intensive training of the management structures at universities / faculties / institutes would be essential. The lack of appropriate knowledge and skills has already been identified from various international partners (World Bank, European Commission, UNESKO-CEPES)" (MON, 2006, p.308).

Having in mind these conditions and challenges, an employment of a BSC system for strategic management of universities in R. Macedonia is definitely highly recommended. The benefits from its application are not limited only on the improvement of the efficiency, effectiveness and financial responsibility of the HEIs, but also improvement of the quality of their services.

Education quality is a complex and elusive concept especially when we should prove it or measure it. But it is easily noticed by its absence. In the next several years each modern university will have to have a system that ensures its quality. University stakeholders, especially government and students will be more sensitive to quality issues. Those HEIs, which will succeed and offer high quality education, genuine and contemporary curriculum for its students, can attract better students. Nowadays, the best students can choose globally, between large number of studies. Therefore, HEIs should constantly identify and strengthen their competitive factors. Definitely, one of those factors that can significantly assist in providing continuous improvement and quality in the work of HEIs, is the implementations of management system for organizational performances in higher education (Cardoso and Trigueiros, 2007, p.4). Each Macedonian higher education institution should strive, with all its potentials, to constantly adjust and improve, correct its weaknesses, avoid external treats, and maximally exploit its strengths and opportunities offered in the environment.

Therefore our primary goal is, relying on the existing literature, reported results and experiences from its implementation in business, to propose a suitable process for building a BSC system for HEI and then to design a specific Strategy map and BSC system applicable for the Faculty of Economics-Skopje, Ss. Cyril and Methodius University, easily adaptable for implementation in other HEIs.

This also would be our modest contribution in filling the research gaps on the application of these management tools in developing countries pointed from different authors such as Samuels and Oliga (1982) and Wallace (1990), especially in the education institutions in developing countries (Lawrence and Sharma, 2002).

Proposing a specific process for designing a BSC system applicable in Macedonian HEIs

Various authors in this area suggest many processes with different number of phases for designing and implementing the BSC system. However, most of them use similar sequence of phases or activities that consist this process. As a result of analyzing numerous practical and theoretical processes, we suggest specific process of creating the Balanced Scorecard system applicable in Macedonian HEIs (see Fig. 1). Phases are divided into two groups: phases of designing the BSC system and phases of implementing the BSC system.

Figure 1: Process of designing the BSC system for Macedonian HEIs

Designing the Balanced Scorecard system

The first phase of designing the BSC system process begins with defining the vision of the HEI. The vision represents an attractive and possible image that inspires and motivates the employees. The vision shows clear image for the institutional future. Creating a new vision, or redefining the existing, follows SWOT analysis, which helps identifying all the relevant opportunities and threats that can be found in external environment, as well as determining the internal strengths and weaknesses that the institution has.

The second phase of designing the BSC system process is specifying the institution's vision by **defining its mission.** Mission explains the purpose of existence that the educational institution has. The mission should provide "framework or context in which the strategies of the institution should be created" (Hill and Jones, 2008, p.11). Well defined mission defines the basic and unique intention of the institution, which is different from other HEIs and it determines range of activities from aspect of the educational programs and services that will be offered, as well as the students that will be targeted. It promotes a sense of expectation among the main stakeholders.

Quite interesting way of defining and understanding these two terms is the statement of the two management gurus – Warren Bennis and Bert Manus: "To choose a direction, a leader must first have developed a mental image of a possible and desirable

future state for the organization. This image, which we call a vision, may be as vague as a dream or as precise as a goal or a mission statement. The critical point is that a vision articulates a view of a realistic, credible, attractive future for the organization, a condition that is better in some important ways than what now exists" (Bennis and Nanus, 1985, p.5).

The third phase of designing the BSC system process is translating the mission into strategic goals. Operationalization of the HEI mission can be seen as determining strategic goals for each department. The goals are future state, situation or desired result that is planned upfront. The goals should be SMART (specific, measurable, attainable, realistic and time-bound).

The forth phase of designing the BSC system process is forming the strategy for achieving these goals. After the strategic goals are being defined, the management of the institution should make a decision regarding the strategy or their implementation. The strategy is a bridge between the current state of the institution and the desired state. It should show us how to win a competition, how to best use the resources and the competitive advantages (Armstrong, 2003, p.104).

The fifth phase of designing the BSC system process is creating a strategy map. The strategy map is graphical presentation of the most important institutional goals. It is a logical structure of the organizational strategy which is created by presenting the relations between stakeholders, internal processes and abilities. In order a strategic map to be developed, the management should choose few strategic goals for each of the 4 perspectives that consist the BSC system, define their interaction and determine the causality in between. The strategy map provides a one page precise view of the organizational strategy, each perspective goals for their integration and connection in execution of the strategy. Strategic mapping should provide better communication in the institution, improved understanding and awareness of the employees for the strategy, as well as better execution of the strategy.

The sixth and last phase of this process, is the designing of the BSC system itself. It includes defining the most important strategic actions towards achieving the strategic goals, defining the key performance indicators (KPIs) that derive from the strategic goals and provide measurement of their achievement, as well as determining targets or standards for comparing each measurement shown in the Balanced Scorecard system.

With this phase, the designing process is finished and the process of implementing the Balanced Scorecard system begins.

Implementing the Balanced Scorecard system

The seventh phase that represents the beginning of the implementation process is the institutional alignment phase. In this phase, the designed BSC system is reviewed and approved by the management and then it is proceeded to operationalization. First, it should be automatized by connecting it to a software that will keep a track on the achievements of the goals and will alarm on time if there are significant deviations from the targets. Afterwards, the institutional BSC system is cascaded into additional complementary BSC systems for each department or center translating the HEI mission

and goals into departmental actions, targets and KPIs. Moreover, these BSC systems can be further cascaded i.e. to translate to an individual level and this way to align day-to-day activities of the employees with the strategy and mission of institution.

The eight phase from the BSC system implementation process is the phase of finalizing the strategic management system. This phase starts with linking the strategic goals and BSC system with the resource allocation, reporting and rewarding processes. Without financial support for the core activities of the institution, results cannot be expected. Beside resource allocation, if you want to be sure that the job will be done you should measure it and reward it. Of course, one of the greatest benefits that the automatized BSC system has is the reporting – turning the results into valuable information for decision making and correcting the efforts towards achieving the goals or reviewing the goals. Connecting these three activities with BSC system, makes it not only a useful managerial tool for keeping track and controlling the operations in the institution, but a whole system for strategic management in the higher education institutions.

Strategy map and BSC for Faculty of Economics-Skopje

In addition we will approach the next phase of the process of designing a BSC system for Faculty of Economics-Skopje. With all due respect and discretion of the defined elements of the strategic plan of the faculty, we will take the right to perform their different and more appropriate grouping in the four perspectives of the BSC system, and provide them better and more efficiently alignment with the institutional mission in the Faculty Strategy Map (see Fig. 2). The strategic map is a graphical presentation of the most important goals of the faculty and their relation to cause-effect relationships.

Figure 2: Strategic map of Economics Faculty in Skopje
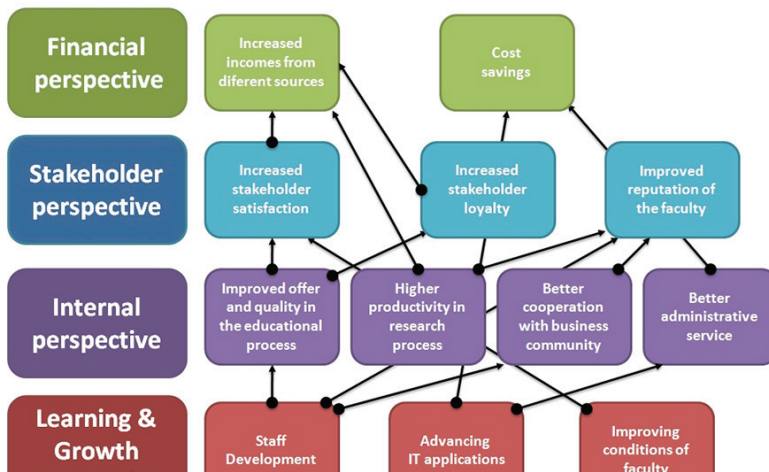
Development and improvement of knowledge, skills and abilities of employees will contribute to a better offer and quality in the educational process, higher productivity in the research process, and to better cooperation with the business community. Advancement and regular update of IT applications should contribute to improved

student services and that, combined with the improvement of physical and technical conditions of the faculty, should result in an increased satisfaction rate of students and other stakeholders, their greater loyalty, and ultimately improved image of the faculty. These changes will certainly lead to increased and diversified income, as well as better utilization of resources and cost-effectiveness of the work of the faculty.

Below we continue with the four perspectives of the Faculty of Economics-Skopje BSC system.

Learning & growth- perspective

In learning and growth- perspective, the strategic activities are classified into 4 groups: human capital, information capital, physical capital and organizational capital, whereas each of those groups of activities are defined objectives and key performance indicators for monitoring their achievement (see Fig. 3).

Figure 3: Learning and Development – perspective

Strategic activity	Goal	Key performance indicators- KPIs
Human capital	Development and promotion of knowledge, skills and abilities of employees	• **Number of employees promoted to higher academic-scientific title** • Number of study visits abroad • **Number or hours spent on training courses, seminars for enriching knowledge and didactic skills of employees** • Gained awards and honorary titles • Funds provided from the budget for development of knowledge and skills of employees
Information capital	Improvement of the information and technical possibilities of faculty	• **Average cycle time for up-date and modernization of the IT equipment in faculty** • Funds allocated for this purpose • Coverage with wi fi internet • **Number of on-line services for students and employees (electronic evidence, on-line registration, reporting, submission of notes, etc.)** • Student-to-computer ratio • Proportion of computers/students • Proportion of constantly available computers/students • Percentage of automated work processes
Physical capital	Improvement of the spatial and technological capabilities of faculty	• Average cycle time of renewing and modernization of the premises and teaching equipment • Funds allocated for improvement of conditions for study/work • Satisfaction rate of the students and employees • Available space in m² per student/employee • Degree of utilization of the faculty's capacity (lecture halls, classrooms, reading room, library, Internet center)
Organizational capital	Promotion of the organizational culture	• Service oriented and entrepreneurial culture • **Number of (realized) proposals for improving performance** • Attitude toward change • Team spirit or group cohesion • Employee morale
Strategic activity	Goal	Key performance indicators- KPIs

Internal perspective

In the internal perspective also the strategic activities are classified into 4 groups: teaching and educational process, research process, cooperation with business community and administrative process. For each of those groups of activities are defined two goals, and KPIs for monitoring their achievement (see Fig. 4).

Figure 4: Internal perspective

Strategic activity	Goal	Key performance indicators- KPIs
Teaching and educational process	Interactive and modern teaching	• Internal evaluation by the students • Internal evaluation by the colleagues and employer • External evaluation
	Innovation of the curriculum	• Number of new subjects • **Number of innovated existing subjects (over 25%)** • **Number of new study programs (1ˢᵗ or 2ⁿᵈ-cycle)** • **Number of new professional and specialized programs and courses** • Number of joint degree programs with foreign universities in english language • External evaluation for compliance of teaching plans and programs to the needs of the economy and world's scientific achievements by accreditation bodies or partner institutions from home and abroad
Research process	Improving productivity of the academic staff	• **Number of published books, professional or scientific monographs in the country and abroad** • **Number of published scientific papers in peer-reviewed international and domestic journals or conferences proceedings** • Number of organized international conferences • Number of domestic and international professional and scientific journals, whic hare regularly issued by the institution • Number of applied research projects in the domestic or international institutions
	Increasing the impact (meaning) of their work	• Proportion of submitted and accepted papers for presentation or publication • **Number of citations of the authors** • Ranking of journals by their Impact factor (industrial, academic impact) • Memberships in national and international editing boards • Domestic and international reviews • **Approved i.e. funded research projects**
Cooperation with business community	Improvement of the educational activity	• Number of involved experts and professionals from certain areas of business as guest lecturers • Number of contracts with companies and institutions accepting students for realization of practical teaching • Number of representatives from the business community actively involved in the creation and innovation of curriculum
	Improvement of the professional-application activity	• Number of conducted scientific and professional studies for the needs of companies and institutions • Number of realized innovations, inventions, patents and copyrights • **Number of realized proposals for cooperation with representatives from business community as a result of Business Advisory Board of the faculty**

Administrative process	Improving of effectiveness of the services	• Student satisfaction rate • Administrative cost per student • Average time for registration of exams for certification of semesters for response to students' requests, complaints, requests • **Number of complaints and appeals** • Efficiency in organizing exams and colloquiums • Kindness and helpfulness of employees in the service
	Implementation of ISO standards in the operations of administration	• Respect of the procedures for movement, handling and storage of documents • Respect of the imposed standards in operations
Strategic activity	**Goal**	**Key performance indicators- KPIs**

Stakeholder perspective

In stakeholder perspective, even though there are many, we focused on five groups of stakeholders, which in our view, are the most important, i.e. should be paid particular attention to: students, teachers and associates, alumni, government, Ministry of Education and Science, accreditation bodies and business community. For each of them are defined objectives and key performance indicators for monitoring their achievement (See Figure 5).

Figure 5: Stakeholder perspective

Strategic activity	**Goal**	**Key performance indicators- KPIs**
Students	Attracting the best students	• Number of applications/acceptances or rejections • **Average grades of secondary education and results from the state graduation of the first year students** • Percentage of enrolled students from other countries
	Improving the efficiency of studying	• Retention metrics • **Percentage of students who have graduated and graduate on time** • Transition of the students in certain subjects
	Increasing student satisfaction of various aspects of studying	• **The students' satisfaction rate of the relevance and quality of the curriculum and content** • **The students' satisfaction rate of teaching staff (skills and professionalism)** • **The students' satisfaction rate of the administrative departments (library, reading room, internet center, student center etc.).**
	Improving learning outcomes, ie studying	• Increasing the employability of students for X% • **Average period to first employment of graduates** • Percentage of participation of the graduates in processes and programs for lifelong learning • Satisfaction rate and fulfilied expectations of graduates • **Employers' satisfaction rate with the performance and flexibility of students who practice or work in their organisation**. • Interest of employers to participate in career fairs organized by faculty • Programs for support or scholarships for students

Strategic activity	Goal	Key performance indicators- KPIs
Teachers and associates	Increased satisfaction and quality of academic staff	• **Employees' satisfaction rate of working conditions (workspace, computer and other equipment, free access to electronic database articles, rewarding)** • Proportion of teaching staff/number of students • Even distribution of work duties • Budget funds allocated for staff development • Budget funds intended to support employees in research, publication and participation in conferences • Fluctuation rate of employees • Percentage of employees involved in the decision making
Alumni	Increased cooperation with alumni	• Creation of electronic database of alumni • **Percentage of alumni actively involved in supporting the activities of the faculty**
Government, Ministry of Education and Science, and Accreditation bodies	Improving the impact and relations with legislators and relevant institutions	• Involvement in preparation and adoption of new laws, policies and strategies • Conducting analyzes and studies needed for their decisions • **Number of academic staff, employed as advisors or consultants in state institutions**
Business community	Improving of the faculty reputation in the business community	• **Number of academic staff engaged as consultants or directors in the supervisory boards of companies and institutions** • Number of contracts for training, consulting or research with business community • Provided donations and sponsorships for support of various programs and activities of the faculty • Demand for the products and services of faculty
Strategic activity	**Goal**	**Key performance indicators- KPIs**

Financial perspective

Finally, follows the financial perspective in which the main focus is improving the financial management of the faculty operations by achieving two main objectives that will be monitored with these key performance indicators (see Fig. 6).

Figure 6: Financial perspective

Strategic activity	Goal	Key performance indicators- KPIs
Financial Management	Increase the revenues from various sources	• **Percentage of revenues from various sources (state funds, student tution fees, research and consulting services, donations and sponsorships, publishing, etc.).**
	Better utilization and control of resources	• **Percentage of funds allocated for salaries** • **Percentage of funds allocated for improvement of the working conditions and studying** • **Percentage of funds for research supporting** • **Percentage of funds allocated for staff development** • Compliance of income and expenditure • Average time of payment of the liabilities

Discussion: Specific directions for implementing the BSC system in HEIs

The offered list of approximately 100 key performance indicators in the four perspectives of the Balanced Scorecard system, **should be considered as preliminary.** The list is not final nor necessarily appropriate for all the departments, centers or higher education institutions. A special attention, as pointed out before, should be devoted not to be caught in trap and follow all the indicators. **The management should select only a limited number of the key performance indicators** for each of the four perspectives which would best follow the strategic activities that aim towards achieving the strategic goals. It is advisable to choose 5-6 indicators for each perspective and maximum 8 indicators for the internal perspective. That would, practically, mean measuring and following **not more than 30 key performance indicators**. This way the management is unable "to measure everything that can be measured in an institution", which was one of the key critics of the traditional operating and measuring the organizational performance. The most appropriate KPIs for the Faculty of Economics-Skopje are those 30 KPIs which are marked with bold letters in the figures above. Connecting this limited number of indicators into a coherent system and their continuous measuring, can provide following to the organizational performances and determinate the level of organizational success on a pretty simple way. The management should and will be able to focus on the key factors that contribute to future success, instead of the indicators that show the results for some past activities and operations.

After defining the most important key indicators for the faculty operations, it is essential to **set up targets or standards for each of the key performance indicators.** That can be done by comparing the data and information that the faculty has from previous years (if those indicators were directly or indirectly followed) or by their forecasting. After the first year of implementation, the targets would be more precise for each KPI.

The core or generic BSC system developed for the faculty, does not have to be identical to the BSC system created for the department or centers. The concrete studies could have personal KPI that would be relevant to follow. The differences are more significant between the generic i.e. institutional BSC system and the individual BSC systems of the administrative offices. The last, measure the workflow and operating activities of the employees in the administrative offices compared to the educators. However, despite these differences, the individual and generic BSC systems should be aligned.

Measuring these performance indicators seems expensive and pretty complex process, however if a strong foundation has been set in the beginning, it could be relatively easy and cheap process. Most of the previously stated indicators can be followed using 3 or 4 types of questionnaires. **The first type of questionnaire measures the student's satisfaction rate from the quality of the education** (also known as process of self-evaluation of Macedonian higher education institutions). **The second type of a questionnarie,** again created on the same basis and merged with the first type of questionnarie, **should measure the student's satisfaction rate from the quality of the administrative office services** (student services, library, reading room, internet center, copy center, dormitories, student restaurant etc.). Both types of questionnaires would be electronic and mandatory for every

student at the end of the semester, during students' verification of their semester. The student would not be able to apply online in the system for taking the exam or colloquium if he/she has not answered these questionnaires. **The third type of a questionnaire should measure the faculty staff satisfaction rate** (academic and administrative staff) from different working conditions. **The forth type of a questionnaire is aimed at measuring the employers satisfaction rate** by measuring the competences, knowledge, skills of the students' that do practical work, or are employed at their companies.

In order to provide more precise and real image of the institution's operation, despite these types of measurements, it is desirable to implement the methods of **benchmarking and comparison to partner or other leading higher education institutions in that area, or to have direct grading from other peers for some aspects of the work operations** (teaching programs, researches done, teaching methods, etc.). This way, the following of the progress would be more detailed.

Conclusion: Expected advantages and benefits from implementing the Balanced Scorecard system to Faculty of Economics – Skopje

According to the definition of Philpott & Sheppard (1992): »**The main purpose of the process of performance management is building a culture where every individual or group will take personal responsibility for the continuous improvement of internal processes, as well as their skills performance.**« (In Armstrong, 2004). The process of performance management using the BSC system is primarily responsible for the realization of organizational, team and individual performances. Simply, organizations need to do the right things in the right way.

The secondary objective of this process is **constant development of employees.** The continuous improvement of the results would not be possible if simultaneously there is no effective process of permanent development of employees' skills and abilities. Therefore, the process of managing the organizational performance many authors equate with the process of managing the organizational development.

Third, the performance management **better meets the needs and expectations of all institutional stakeholders**: students, professors and colleagues, administration, university managers, economy, government, accreditation bodies, taxpayers, donors and other interest groups. And last but not least, the performance management results in **improved communication within the institution**. It creates a climate for continuous dialogue between management and other members of the organization, aiming to clarify the expectations and organizational mission, goals and plans.

Perhaps **one of the greatest benefits of the process of designing and implementing the BSC system in operation** at the Faculty of Economics, as well as any other higher education institution, of course, despite the improved results of operations, **is organizational cohesion and integrity among employees** which is created through the process of communication and building consensus on the objectives and measurement indicators. Properly managed, this process focuses, motivates and informs employees about their achievements, with strengthening their sense of leadership.

According to Pineno, **the additional benefit from the implementation of such strategic performance management tool in one economic faculty, from a same rank as our faculty, is easier getting the AACSB International accreditation** that requires continuous improvement of the quality and content of Management Education (2007). This is of particular importance for the Faculty of Economics in Skopje, which is in process of meeting the requirements for getting international accreditation. That would be a supplementary incentive for implementation of the BSC system in its operations.

Besides the expected improvement in the results of operations, the other additional benefits that can be expected from the successful implementation of BSC system in educational institution are: effective strategic management; organizational synergy; improved motivation and satisfaction of employees; effective communication in the organization; effective decision-making process; reduced costs; increased student satisfaction and satisfaction to other stakeholders; quick response to changes; increased competitive advantages.

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INTERDEPENDENCE OF INTERNATIONAL TRADE AND INVESTMENT FLOWS IN THE POST-CRISIS PERIOD[2]

Abstract

The world economy was characterized by the continuous increase of international trade and international investments flows in the second half of the twentieth century and by intertwining of these flows especially in the period after 1990s. The aim of the paper is to show that there are mutual relationship, interconnection and intertwining of international trade flows and investment flows in the post-crisis period as well as in the period before the 2008 crisis. The post-crisis period has brought the recovery of both international trade flows and international investment flows and their higher levels. These developments haven't changed the fact that, the same as in the period before the crisis, international trade flows continue to perform increasingly more through investments flows, that is through foreign affiliates' sales, then through classic, cross-border trade. The sales through foreign affiliates remain the main channel of international trading. In this situation, only the approach that means the new coverage implementation of international trade flows will lead us to the real international trade values and international trade picture. If we look for the impetus and drivers of the economic growth in trade and investments flows, then we must take into account the connection and intertwining of these two types of flows in order to have a real picture of them and make adequate decisions in the field of investment, trade and economic policy.

Key words: *international trade, international investments, foreign direct investments, foreign affiliates' sales.*

JEL classification: F10, F21, F23.

МЕЂУЗАВИСНОСТ МЕЂУНАРОДНИХ ТРГОВИНСКИХ И ИНВЕСТИЦИОНИХ ТОКОВА У ПОСТКРИЗНОМ ПЕРИОДУ

Апстракт

Светску привреду је карактерисао континуирани пораст међународних трго-винских и инвестиционих токова у другој половини XX века као и испреплетаност

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ових токова нарочито у периоду после 1990-тих година. Циљ рада је да покаже да постоји међусобни однос, повезаност и испреплетаност међународних трговинских и инвестиционих токова у посткризном периоду као и у периоду пре кризе из 2008. године. Посткризни период је донео опоравак како међународних трговинских тако и међународних инвестиционих токова, као и њихове веће обиме. Овакав развој није променио чињеницу да се, исто као и у периоду пре кризе, међународни трговински токови све више одвијају кроз инвестиционе токове, односно кроз продаје страних филијала, него кроз класичну трговину која се одвија преко националних граница. Продаје посредством страних филијала остају главни канал међународног трговања. У оваквој ситуацији, само приступ који подразумева примену новог обухвата међународних трговинских токова ће нас водити до стварних вредности и праве слике међународне трговине. Ако подстицаје и покретаче економског раста тражимо у трговини и инвестицијама, онда морамо узети у обзир повезаност и испреплетаност ових токова како би имали праву слику о њима и доносили адекватне одлуке на пољу инвестиционе, трговинске и економске политике.

*   **Кључне речи:** међународна трговина, међународне инвестиције, стране директне инвестиције, продаје страних филијала.*

Introduction

The world economy was characterized by the continuous increase of international trade flows and international investments flows, primarily foreign direct investment flows, in the second half of the twentieth century. International trade has grown dynamically since the second half of the twentieth century. Its values are measured in figures of over 10 trillion USD since 2005. The most important segment of international trade represents international merchandise trade (which accounts for about 80% of world trade) which tremendous growth, during the entire second half of the twentieth century and early twenty-first century, led to achieving significantly higher growth rate of world trade relative to the growth rate of world production (based on data from: WTO, 1995; WTO, 2004, p. 17; WTO, 2007, p. 7; WTO, 2013, p. 19). Since the 1950s to the early twenty-first century, the value of international merchandise trade has increased over 100 times: from 1948 to 2008 its value has increased from 58 billion USD to over 16 trillion USD i.e. for 208 times, and from 1948 to 2011 (when international trade reaches record value) its value has increased for 314 times (Figure 1).

Figure 1: Growth of international merchandise trade (billion USD)
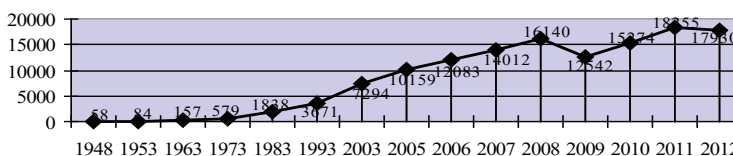
Source: Author's graphic presentation of the data from (WTO, 2004, p. 30; WTO, 2007, p. 175; WTO, 2012, p. 209 and WTO, 2013, p. 22).

In the first decade of the twenty-first century, international merchandise trade recorded a continuous increase until 2008, when the world merchandise exports reached its first record value of 16 trillion USD. Due to the 2008 global economic crisis, international merchandise trade recorded its biggest decline since the mid twentieth century, for 22% compared to 2008, to a level of 12.5 trillion USD in 2009. This decline was accompanied by a sharp rebound in 2010 to 15.3 trillion USD. The growing trend continued in 2011, when international merchandise trade reached its highest value ever of 18.2 trillion USD. The value of almost 18 trillion USD the international trade also maintained in 2012.

As well as international trade, foreign direct investment flows have also been dynamically rising since the second half of the twentieth century. The last decade of the twentieth century was the period of the greatest FDI growth. From 1990 to 2000, total FDI inflows have increased seven times (from 0.2 trillion USD to 1.4 trillion USD) reaching its highest value until then (Figure 2).

Figure 2: Growth of world FDI inflows (billion USD)
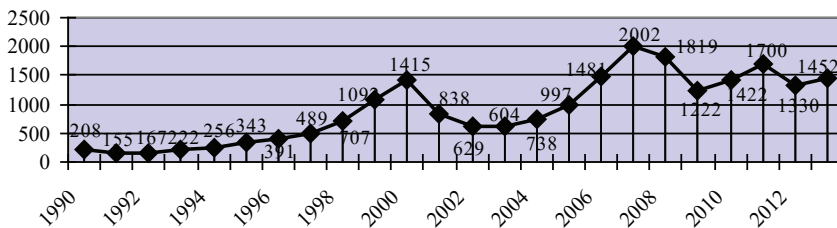
Source: Author's graphic presentation of the data from UNCTAD FDI database.

After its first record value in 2000, world FDI inflows have recorded a decline for three consecutive years (until 2003), and then four consecutive years of growth and in 2007 reached the highest value ever – over 2 trillion USD. Global economic and financial crisis in the second half of 2007 was followed by the shifts of falls and increases in world FDI inflows.

From the peak in 2007, FDI inflows declined rapidly to 1.2 trillion USD in 2009. The 2009 decline was followed by FDI inflows growth in 2010 and 2011 (to 1.4 and then to 1.7 trillion USD), surpassing the first record level of 2000. What followed was again the sharp drop of FDI in 2012 (on 1.3 trillion USD), and then rebound in 2013 to 1.45 trillion USD, reaching the level of 2010. FDI inflows in 2013 rose in all three groups of countries (developed, developing and transition countries) but to varying degrees. According to the UNCTAD's projection (UNCTAD, 2014, p. ix) it can be expected that the realized value of FDI flows in 2014 will amount to 1.6 trillion USD, and that FDI flows will grow to 1.75 trillion USD in 2015 and to 1.85 trillion USD in 2016.

Expansion of international trade and FDI flows dragged the world economic growth. From the second half of the 20th century onwards they represented a lever of world growth. The data about their movement and the former analysis are based on the official trade and FDI figures. However, the aim of the paper is to show that beside this analysis based on the official trade and FDI figures, there are mutual interconnection and intertwining of international trade flows and investment flows that also should be taken

into account in the analysis of the world trade. There are mutual interconnection and intertwining of international trade flows and investment flows in the post-crisis period as well as in the period before the crisis, but within the different values of international trade and international investments in these periods, which must be taken into account when we do the analysis.

The post-crisis period has brought the recovery of both international trade flows and international investment flows and their higher levels. These developments haven't changed the fact that the same as in the period before the crisis, international trade flows continue to perform increasingly more through investments flows, that is through foreign affiliates' sales which are results of foreign direct investment flows, then through classic, cross-border trade. The sales through foreign affiliates remain the main channel of international trading.

Therefore, the paper accentuates the need for the recognition of this intertwining of international trade flows and international investment flows and also the apprehension of prevailing realization of international trade through foreign affiliates' sales as well as the resulting need for the international trade analysis and calculation of international trade values different from the classical one. Only this approach, only the approach that means the new coverage implementation of international trade flows, will lead us to the different but realistic international trade values and international trade picture. The following part of the paper will give the literature review about FDI and international trade and their relation indicating that their relation (either substitute or complementary) must influence our analysis of international trade and FDI. The second part of the paper explains interconnection and intertwining of international trade and investment flows, showing the results of application of the new approach and coverage of international trade flows.

Literature Review

The literature about FDI is broad. A systematic review of the literature on FDI, its determinants and motives is given by Blonigen (2005). Empirical studies and theoretical models dealing with FDI may be also classified into: early studies of FDI as well as FDI in the context of neoclassical trade theory, ownership advantages, aggregate variables, OLI framework, proximity-concentration and factor-proportions hypothesis, knowledge-capital model, risk diversification models and policy variables (Faeth, 2009). These approaches are not mutually exclusive, but rather complement each other explaining various aspects of FDI. One of the main theoretical approaches, Dunning OLI paradigm (Dunning, 2000), explains that the reasons for FDI undertaking may be found in (Ownership, Location or Internalization) advantages which company/investor may achieve through direct investing abroad.

Also the literature about the relation between international trade and foreign direct investments is broad. The views and approaches about this relationship are different. According to Vernon (1966), the trade and FDI may be seen as successive stages in firm's production for foreign markets, whereby the firm would decide to invest abroad when trade no longer allows it to capture the rents from its assets. According to Hymer (1976), the production process will be organized through subsidiaries in order to capture the

rents from firm-specific assets including advanced technology, managerial, marketing and distributional skills. The analysis of FDI and trade at the aggregate level is provided through the inclusion of FDI dimension in the flying geese paradigm by Kojima (1973a), who distinguished pro-trade FDI and anti-trade FDI. In the model, FDI is trade-oriented and complementary to the host country's economy. There are other studies (Kojima, 1973b; Kojima, 1982; Kojima and Ozawa, 1984; Ozawa, 1990, Ozawa, 1992 and Ozawa, 1995) which also explain the pattern of FDI in the similar way. Mismatch can be observed in literature views between findings of complementary relationship and theoretical premise of substitute relationship between FDI and trade. The traditional theory of multinational corporation finds substitution of FDI and trade. Some empirical studies on the relationship between trade and FDI do not provide conclusive results (Agarwal, 1980; Hufbauer, Lakdawalla and Malani, 1994). Other empirical studies find complementary relation (Lipsey and Weiss, 1984; Clausing, 2000; Head and Ries, 2001; Broadman, 2005). Blonigen (2001) finds evidence for both substitution and complementarity between foreign production and exports.

However, the different studies about relation between FDI and trade do not indicated how that relation (either substitute or complementary) should influence our analysis of international trade and FDI. Our analysis of international trade and FDI is based on the official trade figures and official FDI figures which are result of existing methodology of international trade statistics and FDI statistics. The official trade statistics gives us the figures on the value of international trade and foreign trade of individual countries, basing its measuring of trade flows primarily[3] on the coverage of classis trade transactions taking place across national borders. Application of existing methodology results in existing official trade figures and existing official investment (FDI) figures.

As the dominant channel of international trading in contemporary world trade - foreign affiliate sales – is not included in official trade figures, a great deal of global trade is missing from the reported trade figures. The comprehension and analysis of contemporary international trade must be changed, because modern trade flows take place both as classic cross-border trade flows and via FDI flows. Because of that the international trade can no longer be analyzed classically, as cross-border trade only; instead, we must expand it, register it statistically, calculate its value and analyze it in the new way.

If we apply a new approach in the international trade analysis (Stojadinović Jovanović, 2010) and the new coverage of international trade flows, we will get the different values of the whole, world trade as well as of the foreign trade of individual countries. The applied methodology is based on FATS methodology (presented in UN et al., 2002 and UN et al., 2010) covering sales of TNCs' foreign affiliates and on a proposal for the new coverage of international trade flows (Stojadinović Jovanović, 2013) which suggests the inclusion of foreign affiliates' sales as a main trading channel in contemporary world economy in international trade coverage, calculation and analysis. Based on this methodology, the paper will approach in the same way to the analysis of the international trade flows and investment flows in the post crisis period. It will show that there is intertwining of international trade flows and investment flows in the post-crisis period, the same as in the period before the crisis. It will also show that the implementation of the new way of calculation of the world trade will result in the new world trade values, higher than the existing one, in case of post-crisis period as well as in the pre-crisis period.

Intertwining of International Trade and Investment Flows

The rise of international trade since the second half of the twentieth century was associated with the growth of transnational companies (TNCs), increasing undertaking of foreign direct investments (FDIs) by TNCs and expansion of their affiliates abroad. The rise of foreign direct investments (FDIs) in the world economy led to the expansion of foreign affiliates' production (international production) and foreign affiliates' sales. Undertaking direct investments abroad include establishing foreign affiliates for performing production in them (international production) with the aim to sell the manufactured goods and services on local market and markets of other countries. Up to the 1990s the sales of foreign affiliates and the world export were almost equal (Table 1). But after 1990 firms started to export more through foreign affiliates which are the result of foreign direct investments than through traditional, cross-border exportation. Thus, after the 1990s the sales of foreign affiliates accomplished faster growth and much higher value (almost double in some years) than the world export and exporting through foreign affiliates and foreign direct investments has become more important channel of trading than traditional exporting.

The period after the 1990s is the period when the significant changes happened regarding the way the international trade flows perform, caused by the expansion of investment (FDI) flows and resulting expansion of number and activities of foreign affiliates and their international production. The sales of foreign affiliates increased worldwide from 2.7 trillion USD in 1982 to 6.1 trillion USD in 1990 and to 31 trillion USD in 2007 and 33 trillion USD in 2008 (Table 1). At the same time, these sales of foreign affiliates were much higher than the world exports, showing that companies sold more through foreign affiliates than trough classic, direct, cross-border export registered by official international trade statistics as the world export. However, the outstanding sales of foreign affiliates are not covered and not included in official trade figures.

Table 1: The forms of international trading

	Value at current prices (billions of dollars)		The presence of the international trading forms (1):(2)
	Sales of foreign affiliates (1)	World exports of goods and services (2)	
1982	2 741	2 395	1.14 : 1
1990	6 126	4 417	1.39 : 1
2000	15 680	7 036	2.23 : 1
2001	18 517	7 430	2.49 : 1
2002	17 685	7 838	2.26 : 1
2003	17 580	9 228	1.91 : 1
2004	20 986	11 196	1.87 : 1
2005	22 171	12 641	1.75 : 1
2006	25 844	14 848	1.74 : 1
2007	31 197	17 138	1.82 : 1
2008	33 300	19 794	1.68 : 1
2009	30 213	15 783	1.91 : 1
2010	32 960	18 713	1.76 : 1
2011	28 516	22 386	1.27 : 1
2012	31 532	22 593	1.39 : 1
2013	34 508	23 160	1.49 : 1

Source: Author's calculation based on UNCTAD (different years) World Investment Report, New York and Geneva: UN.

Although there were the significant slowdown and decrease in both international trade flows and investment flows in the period of the 2008 world economic and financial crisis (Figure 1 and Figure 2), the same tendency in the relation of the forms of international trading (Table 1) can be observed in the period after the crisis as in the period before. After a fall in 2009 to 30 trillion, the sales of foreign affiliates increased worldwide to 33 trillion USD in 2010 and to 34 trillion USD in 2013, while world export increased from 15 trillion USD in 2009 to 23 trillion USD in 2013. The main channel of trading continues to be in the form of sales through foreign affiliates which significantly surpass classic, cross-border export (Figure 3).

Figure 3: Exports and foreign affiliates' sales (billion USD)
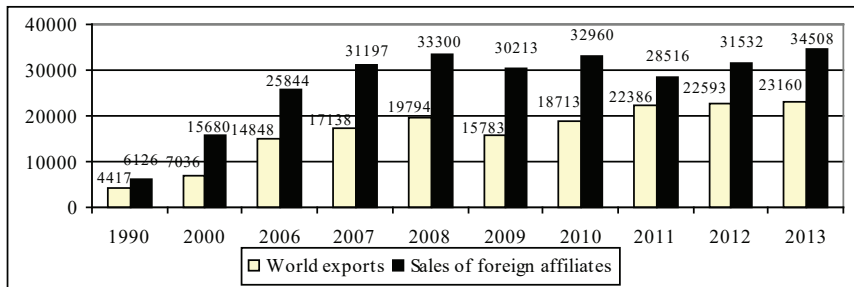
Source: Author's graphic presentation of the data from Table 1.

The post-crisis period has brought the recovery of both international trade flows and international investment flows and their higher levels. These developments haven't changed the fact that the same as in the period before the crisis, international trade flows continue to perform increasingly more through investments flows, that is through foreign affiliates which are results of foreign direct investment flows, then through classic, cross-border trade. Therefore, the sales through foreign affiliates remain the main channel of international trading.

Analysis of the international trade flows and investment flows of the groups of countries (developed and developing ones) shows also the importance of the sales through foreign affiliates (through FDI) for the each group of countries as the form of trade (export or import) realization of these countries.

For developed countries it can be shown that they export more through foreign affiliates' sales than through classic, cross-border export (Stojadinović Jovanović, 2012). Developed countries, that are the largest sources of world foreign direct investments, had much larger share in world foreign direct investment outflows (71% in 2010) than in world merchandise export (55% in 2010). There were similar relations in previous years: in 2003 these shares were 93% and 64.5% (Stojadinović Jovanović, 2008b), and in 2005 83% and 60.1% (Stojadinović Jovanović, 2008a), respectively. This trend of larger shares in world foreign direct investment outflows than in world merchandise export reveals the continuous importance of non-classic specific form of export (export through foreign direct investment outflows) for developed countries. It also reveals that export through outflows of foreign direct investments from these countries is the main form of export for these countries.

For less developed countries (developing and transition countries) with the prevailing FDI inflows over FDI outflows, it can be shown that import realization is been relied more on FDI inflows than on classic import. (Stojadinović Jovanović et al., 2015). The CEE countries achieved a higher share in world FDI inflows (9.2% in 2008) than their share in world merchandise import (7.6% in 2008). This means that this group of countries in import rely more on FDI inflows (buying products from affiliate which is the result of FDI inflow), than on classic import which takes place across the national borders and which is registered in trade balances of countries and official trade statistic figures. This trend is not a new feature of these countries' trade flows, and it can be observed in other years. In previous period (2007 data), these countries also relied more on FDI inflows than on classic import as well as in recent period (2011 data).

These findings highlight the importance of understanding the relationship between international trade flows and investment flows. They show that there is a need for recognition of the connection and intertwining of international trade flows and international investment flows and also the apprehension of prevailing realization of international trade through foreign affiliates' sales as well as the resulting need for the international trade analysis and calculation different from the classical one. Only this approach, that means the new coverage implementation of international trade flows and inclusion of the dominant trading channel – sales through foreign affiliates, will lead to the different but real international trade values and international trade picture.

If we implement the new approach and the new way of coverage of international trade flows (Stojadinović Jovanović, 2013), we will get the new values of world trade higher than the existing official values (Table 2). Real world trade value in 2008 was 46 trillion USD, after crisis was 40 trillion USD (in 2009) and 45 trillion USD (in 2010), while in 2013 it reached almost 50 trillion USD, what is from 25 to 27 trillion USD per year more than official trade figures shows. The newly values of world trade are higher than the existing official ones in case of both pre-crisis and post-crisis period showing that the real (actual) world trade is much higher than the official figures show due to the new, prevailing form of trading - very high foreign affiliates' sales.

Table 2: New coverage of trade flows and the real world trade values (billion USD)

		1982	1990	2008	2009	2010	2011	2012	2013
1	World export (registered in official trade statistics)	2 395	4 417	19 794	15 783	18 713	22 386	22 593	23 160
2	+ Total sales of foreign affiliates	2 741	6 126	33 300	30 213	32 960	28 516	31 532	34 508
3	- Export of foreign affiliates	- 688	- 1 523	- 6 599	- 5 262	- 6 239	- 7 463	- 7 532	- 7 721
4	Domestic sales of foreign affiliates (2-3)	2 053	4 603	26 701	24 951	26 721	21 053	24 000	26 787
5	Total world export – real value which covers foreign affiliates' trade (1+2-3) or (1+4)	4 448	9 020	46 495	40 734	45 434	43 439	46 593	49 947

Source: Author's calculation based on data from UNCTAD (different years) World Investment Report, New York and Geneva: UN.

Conclusion

Our current analysis of international trade and FDI is based on the official statistical trade and FDI figures. However, the paper has shown that beside the analysis based on the official trade and FDI figures, there are mutual interconnection and intertwining of international trade flows and investment flows that also should be taken into account in the analysis of the world trade. The mutual interconnection and intertwining of international trade and investment flows can be found also in the post-crisis period as well as in the period before the crisis, only within the different values of international trade and international investments in these periods.

It is observed the recovery of both international trade flows and international investment flows and their higher levels in the post-crisis period. These developments haven't changed the fact that the same as in the period before the crisis, international trade flows continue to perform increasingly more through investments flows, that is through foreign affiliates' sales which are results of foreign direct investment flows, then through classic, cross-border trade. The sales through foreign affiliates have remained the main channel of international trading.

Therefore, the paper has accentuated the need for the recognition of this intertwining of international trade flows and international investment flows and prevailing realization of international trade through foreign affiliates' sales resulting in the need for the international trade analysis and calculation different from the classical one. The applied approach, based on the new coverage of international trade flows, has given the new international trade values and international trade picture. The results of application of the new international trade coverage are more realistic, higher values of world trade including both classic cross-border trade and foreign affiliates' sales.

Realistic trade and FDI values represent the base for policy creation and policy decision. If we look for the impetus and drivers of the economic growth in trade and investments flows, then we must take into account the connection and intertwining of these two types of flows in order to have a real picture of them and make adequate decisions in the field of investment, trade and economic policy.

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Endnote

3. The changes are intended in the international guidelines: Manual on Statistics of International Trade in Services 2010 (UN et al., 2010) and International Merchandise Trade Statistics: Concepts and Definitions 2010 (UN, 2010), which recommend countries to separately record products which cross borders as a result of transactions between related parties (i.e. between affiliates and their parent companies).

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INTEREST RATEST AND GROWT
IN DEVELOPING COUNTRIES

Abstract

When developing countries begin to raise the trajectory of long-term development, interest rates and local currencies grow higher. An increase in the real cost of capital, a decline in investment demands, as the IS-LM model envisages, may jeopardize growth.

Can the interest rate policy be used to efficiently manage aggregate demand to sustain the initiated growth? It has proved quite successful at higher interest rate policy levels of development. In underdeveloped countries, this is not the case.

Developing countries largely fail to succeed in ensuring the full operation of market mechanisms. Their financial market is underdeveloped, capital demand is chronically high, and therefore the manipulation of the discount rate is of little use. In recession, manipulating government expenditures, implementing deficit financing and controlling private and public consumption prove to be more efficient anti-recession instruments.

Economic policy ought to provide a favorable environment for achieving developmental objectives: relative price stability and favorable interest rates. Underdeveloped countries need to control, channel and impose certain restrictions. The liberalization of capital transactions must not precede full convertibility of the local currency

Keywords: *growth, interest rates, developing countries*

JEL classification: O16, O20, O23

КАМАТЕ И РАСТ У ЗЕМЉАМА У РАЗВОЈУ

Апстракт

Кад недовољно развијене земље почну да подижу путању дугорочног раста, каматне стопе и вредност домаће валуте расту. Раст реалног трошка капитала и пад тражње за инвестицијама, како то IS-LM модел предвиђа, могу да угрозе раст.

Да ли се политиком каматних стопа може ефикасно управљати агрегатном тражњом како би се одржао започети раст? На вишим нивоима

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развијености политика каматних стопа се може користити са прилично успеха. У недовољно развијеним земљама то није случај.

Земље у развоју углавном не успевају да омогуће пуно функционисање тржишних механизама. Њихово финансијско тржиште је неразвијено, тражња капитала хронично увећана, па манипулисање есконтном стопом не може да буде од веће помоћи. У рецесији, манипулисање државним расходима, примена дефицитарног финансирања и контрола приватне и јавне потрошње ефикаснија су антирецесиона средства.

Економска политика треба да обезбеди повољан амбијент за остварење развојних циљева: релативну стабилност цена и подстицајне каматне стопе. Недовољно развијене земље капиталне трансакције морају да контролишу, каналишу и намећу одређена ограничења. Либерализација капиталних трансакција не сме да претходи пуној конвертибилности домаће валуте.

Кључне речи: раст, каматне стопе, земље у развоју.

Introduction

Different countries attain different levels of development and growth rates. Neoclassical economics (Bukvić, R., Pavlović, R., 2014. p. 2.) looks at economic growth, or development, as a process that happens automatically and arises fully from the games market.

Growth rates vary from period to period. Contrary to the identified empirical facts, the endogenous model of growth presupposes that all countries share the same long run growth rate, determined by the growth rate of the world technology frontier.

The difference in growth rates is explained by transitional dynamics. In an attempt to change the position in the long run global GDP distribution, some economies record growth at different rates. Underdeveloped countries take an inferior position in the global GDP distribution and as a rule are below the equilibrium trajectory of growth. It is interesting to observe what is happening in the markets at times when they try to increase their share in distribution.

A shift to the market organization of economic activities, an increase in investments or transfer of technologies from developed countries can take economy back to the long-run path of development or even raise the economy above it. Investment growth is particularly interesting because it plays a decisive role in the development of local products. The role is twofold. On the one hand, it affects an increase in demand because it is a prerequisite for economic production increase. At the same time, investment consumption, as a part of overall consumption, via demand, in the process described as the multiplier, also boosts aggregate demand. Progressive investment growth affects precipitate income trajectory leap**.** This particularly refers to underdeveloped countries. From the aspect of their developmental potentials, investments are the most important segment of aggregate demand.

Most authors (Batini, 2009, Clarida, 2001, Krugman, 2014, Mankiw, 2009) comparing flexible and fixed regimes conclude that the floating exchange rates are

preferable. Krugman, consider the autonomy of the monetary policy (better ability to control money supply) to be an important advantage of floating exchange rates. But, the basic question that arises here is whether aggregate demand may be efficiently used to manage an interest rate policy?

Independent of the level of development, it is known that short run rise in interest rates influences the growth of real cost of capital. Therefore, the changes in interest rates caused by the monetary policy measures have an effect on investment demand. However, increased investment demand also affects interest rate levels. What is the nature of this relationship?

The analysis that follows relies on the analysis of how the exchange market and loans market in developing countries functions. Ranges are clearly limited by the fact that these countries tend to have less developed markets. They are often informal or some of transactions take place in the gray zone. However, in this or that way, both markets are functioning.

IS-LM model

The model, in an open economy, is based on the simultaneous equilibrium in the goods market (IS curve) and money market (LM curve). It presupposes the givenness of GDP and the price level, which means that it doesn't deal any closer in these variables. But it is actually a rapid growth of GDP and general price level that are typical for fast-developing countries. In this sense, the model can be understood as a representation of the state of two markets in one point on the long-run growth trajectory.

The level of interest rates, investments and exchange rate are the main focus of attention of this model. We will show that on the rapid development trajectory the underdevelopment per se perpetuates a high level of interest rates and exchange rates.

IS curve represents the equilibrium of the goods market. The level of output is equal to the sum of consumption, investments, public spending and net exports (Blanchard, 2005, p. 422):

$$Y = C(Y-T) + I(Y,i) + G + NX(Y,Y^*,E) \dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

where *Y*- is at the same time domestic product and income, Y^*- foreign product *C*-consumption, *T*- taxes, i -interest rate, *E*– exchange rate. Given that the period of time is short, the level of local and foreign prices is treated as given and constant so that there is no inflation either real or expected, nominal interest rate equals real interest rates and nominal exchange rate is equivalent to real exchange rate.

Consumption is the disposable income function (the difference between income and taxes). Investments depend on income and interest rate and net exports on domestic and foreign products and foreign exchange rate. The equality between money supply and demand determine the interest rate. The relation between domestic interest rate and foreign exchange rate is negative:

$$E = \frac{E^e}{1+i-i^*} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

E^e - the spot exchange rate, E^e - expected, future exchange rate, i^* - foreign interest rate. If the equation (2) is included in the equation (1) we get a relation that describes the balance in the goods market:

$$...............................(3)$$

IS curve shows the relation between interest rate and output level. Interest rate is, therefore, considered an aggregate demand determinant. The correlative relation between the output and the level of interest rate is negative, which means that the IS curve slope is negative. High interest rates imply low investment and output levels. Changes in investments indicate a simultaneous change in aggregate demand and the output level. A low output level implies a relatively modest demand. A rise in the interest rate, besides the direct influence on a drop in demand and domestic product has the same effect, indirectly, through exchange rate.

The curve implies a given tax and public consumption levels. This implies that changes in one variable will cause a shift in IS curve. A tax increase shifts the curve towards left: at any given interest rate, tax increase lowers the domestic product equilibrium balance. The same applies to public consumption.

In the money market, interest rate is determined by money supply and demand equality:

$$\frac{M}{P} = YL(i) \ ....(4)$$

The equilibrium in the money market can be represented by the LM curve which is a geometric representation of different combinations of interest rates and output in which the money market is in equilibrium. The curve is derived from the equilibrium that characterizes the Keynesian money market model, and has a positive slope. Income growth increases the demand for money which in return increases equilibrium interest rate.

As the curve is based on the assumption that the real money supply is given, changes in the nominal quantity of money and the price level, shift the LM curve. An increase in the money supply lowers the interest rate shifting the curve downward, and vice versa.

The intersection of the two curves is characterized by the simultaneous equilibrium in the two markets. It defines the equilibrium domestic product and the equilibrium interest rate. With the given foreign interest rate and the expected future exchange rate, the equilibrium interest rate is determined by the equilibrium exchange rate.

IS-LM model in developing countries

When it comes to developing countries this model has several weaknesses. First and foremost, it disregards the permanent presence of inflation and its influence on investment goods demand and overemphasizes the influence of the interest rate level on the investment level.

The model presupposes that investments are conditioned by the demand level i.e. by income and the nominal interest rate which is assumed to be equivalent to the real interest rate i.e.:

$$I = I(Y, r)$$

If truth be told, a change in the price level is also taken in consideration and in the model it is reflected through accepting the nominal instead of the real interest rate. The real interest rate features as a difference between the nominal interest rate i and expected inflation π^e:

$$I = I(Y, i - \pi^e)$$

but it is expected that there is no inflation, neither real nor expected.

The equation shows that in inflationary economies the level of investments is not only determined by real interest rate level. The nominal interest rate and the level of expected inflation in the countries that raise long-term growth trajectory have quite an effect on the demand segment which is related to the level of investments. This relationship is particularly strong in developing countries where inflation is necessarily present.

The power of the connection can be shown as follows: If we disregard the amortization and assume that the price of an additional unit of capital (investment) depends on the interest on invested capital iP_I (where i is - the nominal interest rate and P_I the price of capital goods), and changes in investment goods prices, the price of additional unit of capital (Babić, 1991, p. 236) will equal:

$$P_c = iP_I - \frac{dP_I}{dt}$$

$$P_c = P_I \left(i - \frac{1}{P_I} \frac{dP_I}{dt} \right)$$

The real cost of capital depends on the price of capital goods, nominal interest rate and changes in investment goods $\frac{1}{P_I} \frac{dP_I}{dt}$. A rise in nominal interest rates generates an increase in real cost of capital: $\frac{dP_c}{d_I} = P_I \rangle 0$

The growth of real interest rate $r = i - \frac{dP_I}{dt}$ leads to an increase in capital costs and a reduction in investment demands. However, the real interest rate is also determined by inflation rate. For the given nominal interest rate, the real interest rate is smaller as the rate of inflation measured by investment goods growth rate is higher. Therefore, a demand for investments in inflationary economies rises. This can be illustrated by the following inequality:

If investors expect an increase in the prices of investment goods, they are likely to step up their investments because they know that the funds they earmarked for investments in the future period will be worth less. A growth in demand for investment goods accelerates inflation and the gap between savings and investment deepens. In an open economy, with developed markets, this gap is closed by reducing the net capital outflow. In underdeveloped countries, with shallow capital markets, interest rates are more likely to rise, causing an inflationary spiral.

In addition, in developing countries with underdeveloped financial markets where chronic shortage of capital is present, investments are generally inelastic to the interest rate level. Companies estimate future optimal level of capital funds and try to use investments to close the gap between the desired and the current level of capital in the shortest period of time. Investments rather pose a function of the gap between the desired and actual size of capital than an interest rate.

In the end we may conclude that investments are the function of the gap between the desired and actual size of capital (π^e), income growth and expected inflation π^e:

$$I = I(\mathbf{Z}, \pi^e, Y)$$

Money demand is chronically high and has little to do with interest rate. Such a situation in the market is favorable for the formation of high interest rates, which is good for raising the marginal propensity to save but is not good for investments.

To make this clearer, let us use Mankiew's graph (2008., p. 666) that besides the considered variables also includes net capital outflow, a variable that connects the two markets and points to an imbalance between the value of foreign assets bought by local residents and the value of domestic assets bought by foreigners. As a rule, in developing countries, net capital outflow is negative because their net export is also negative.
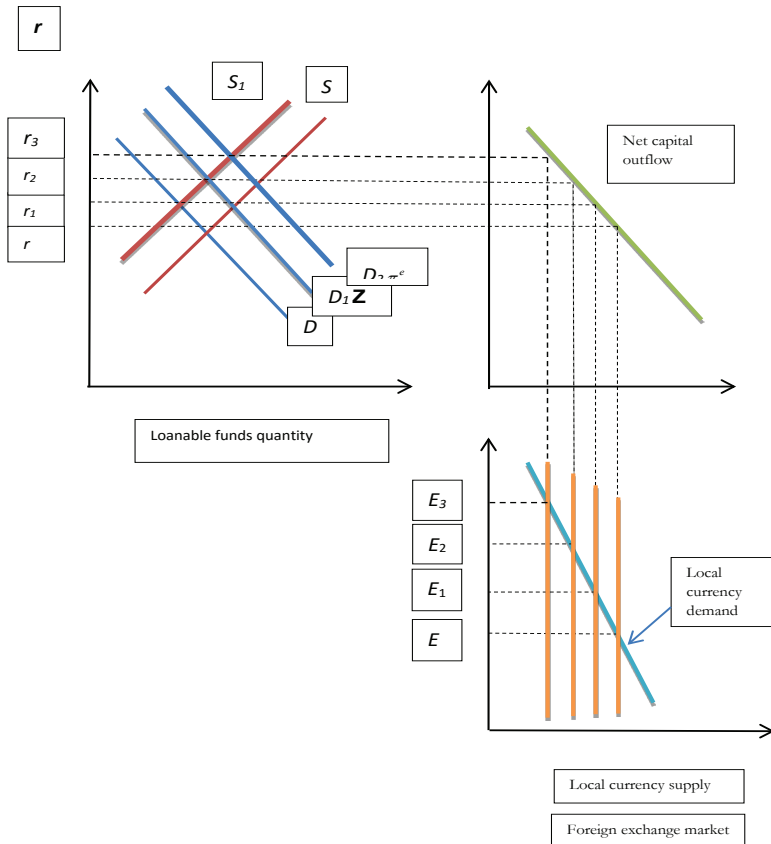
The position of the supply curve (S) and the demand curve (D) on the graph is typical for the countries whose economy is on the long-term growth trajectory. The relationship between supply and demand for loanable funds determines the equilibrium interest rate (r).

When it comes to developing countries, the supply curve must be presented differently. Namely, the supply of loanable funds (resulting from national saving) in these countries is insufficient because the domestic saving (as a result of the low income level) is low. In the countries whose position in the distribution of world GDP is inferior, whose economies are beneath the trajectory and which are trying to reach a higher trajectory growth level, savings is, as a rule, low, and the supply curve is shifted to the left (S_1), which means that from the beginning interest rates are higher (r_1). In an open economy, investment in these conditions, can grow only if the net capital outflow increases (trade balance deficit also rises), which is possible if the country has a lot to offer to foreign investors. Such a scenario can be of use only if investment projects are implemented along with an increase in return on capital.

On the other hand, a demand for loanable funds in the countries that aspire to raise long-term growth trajectory is at a higher level, for two reasons. Efforts to close the gap (z) between the current and desired levels of capital determine the higher level of demand for any interest rate, which shifts the demand curve to the right. Demand is at the same time higher due to the net capital outflow, which tends to be more negative. The position of the curve changes from (D) to (D_1) and the interest rate rises to the level of (r_2).

Investors are accustomed to the ever-present inflation and their expectations (π^e) are in this regard significant. They estimate that the funds earmarked for investments will, in the coming period, be worth less and hence, independent of the interest rate level, they seek to promptly realize the investments. The demand curve is shifted further to the right, from the level (D_1) to the level (D_2). Interest rate increases from the level (r_2) to the level (r_3). The described interest rate growth jeopardizes investments and capital accumulation and consequently the rate of economic growth.

If a country has a budget deficit, and developing countries generally do, it will further shift the supply curve to the left, which will squeeze out domestic investment and cause a further rise in interest rates.

A rise in interest rates causes all the more negative net capital outflow. Consequently, the value of the local currency rises and so does the trade balance deficit. Instead of encouraging the export-oriented segment of economy, the local currency becomes increasingly favorable for importers. As net export equals net capital outflow, what is happening can be vividly described as the sale of local assets for the sake of importing foreign goods.

The possibilities of monetary policy

High interest rates are typical for the countries aspiring to achieve long-term growth. Such a situation is conducive to the marginal propensity to save, but is not conducive to investment growth. It is therefore natural to wonder to what extent can interest rate management in these countries affect the level of investments and price

growth? Furthermore, are underdeveloped countries at all capable of efficiently controlling their interest rates?

At higher development levels of market-regulated economies with low inflation, this instrument can be used with reasonable success. In underdeveloped countries this is not the case. The higher the level of development and the lower the inflation, an increase in real interest rate level will have a greater influence on the decline in investments and vice versa. In underdeveloped countries in which expected inflation is a commonplace, a rise in real interest rates has very little influence on the aggregate demand level. This rise would have to be quite emphasized so that it could have an effect on a decline in both investment and aggregate demand. And vice versa, stimulating investments, employment and economic activities through a low inflation rate policy does not have such an effect on investment growth, as much as it takes the country into an inflationary spiral.

What happens when an expansionary monetary policy is being followed? At first glance, it appears that money supply increase can cause a multiplied domestic product growth. However, the described effect can only last a short period of time. Any subsequent attempt requires significantly bigger monetary expansion which increasingly raises prices and lowers production. Production revolves around "the potential rate," which is determined by real factors of production. Why? Because economic agents follow market trends and at the time when they are anticipating the growth of money supply, their behavior (based on experience) is adapted to those changes, and the impact of money supply growth on real income is absent. Only nominal indicators grow. This especially applies to the underdeveloped countries. They usually have a problem with inflation in the long run. Economic agents are accustomed to living with inflation and therefore much faster anticipate monetary expansion and hence more quickly adjust to it, which means that the effects of monetary growth melt much faster than in developed market economies. Because of this, an increase in the money supply cannot provide a more lasting economic boost.

If an underdeveloped country liberalizes capital transactions, a large number of economic agents realize their investment plans by incurring debts abroad at lower than the local rates. This puts additional pressure on the local foreign exchange market. A rise in convertible money supply makes local currency stronger. The central bank is not in a position to reject the rising convertible money supply. Constant pumping of the purchasing power makes the local currency appear stronger than it actually is. It's a good way to increase the county's external debt. In countries where, like in Serbia, exists dual currency economy, coupled with a high degree of liberalization of the capital transactions, that portion of total debt grows at a high rate. Central bank's maneuvering space, which enables us to conduct an adequate policy of local currency market supply, is declining. The monetary policy becomes ineffective.

If the main objective of the central bank is to maintain price stability, nothing else remains but to, by lowering repo operations, reduce money supply which further jeopardizes the work of the country's financial sector. It is more cost-effective for banks to purchase securities issued by the central bank than to fund largely unestablished companies, which also bears greater risk. And as long as the aforementioned money flows are directed towards an underdeveloped country, the exchange rate favors an increase in trade balance deficit. If and when money flow changes direction, the value of the domestic currency falls. However, this does not mean that such a trend will contribute

to export growth. Export growth is determined by a number of factors, primarily by foreign demand. Among the most important is investment efficiency level financed in the previously described manner.

In underdeveloped countries a large portion of money supply is kept in the form of cash, thereby making multiplicative expansion of money, that is, credit contractions limited. However, in a two-currency economy, one of which is not convertible, where high liberalization level of capital transactions exists, an effort to lead an optimal money policy is burdened with additional restrictions. They are to a great extent determined by external factors.

At the very bottom of the cycle, when the crisis sets in and when it is necessary to boost economic activities, bringing interest rates down is the usual option. Such a policy is carried out with more or less success, again depending on the overall extent to which the market is developed. Attempts to overcome the crisis by implementing the policy of low interest rates, particularly if the policy is not accompanied by other measures, usually end without any significant results. Brining interest rates down is only successful if one condition is met, namely, the level of interest rates should not only be low, it should also be lower than an income decline rate.

For the less developed countries moderate inflationary pressure is a better way to control real interest rates and boost investment demand. This helps maintain the general "temperature" of economy at a slightly elevated level. Nevertheless, this policy should be carefully implemented. Increasing money supply can raise private at the expense of investment consumption or export and in that way jeopardize economic growth. Therefore, private consumption should be kept under control. This can be achieved by the selective credit policy, restrictive consumer loan policy and fiscal policy.

We may conclude that the degree of monetary policy effectiveness in developing countries that seek to rapidly raise long term development trajectory is low. Therefore, fiscal policy should be given advantage. In the described situation it is more efficient and represents a more important lever of economic policy. First and foremost, this refers to manipulating public expenditures and implementing deficit financing.

Conclusion

Encumbered with a large number of development-related problems, developing countries usually fail to pave the way for the full functioning of market mechanisms, which makes developmental processes more difficult to regulate. Their financial market is underdeveloped and capital demand is chronically high. The monetary, in concert with the fiscal policy, in the short run, or over several short-run time segments, i.e. in the long run, ought to provide a favorable environment for achieving long-term developmental goals. Favorable environment implies relative price stability and favorable interest rates. Both segments depend on a larger number of circumstances.

The high interest rate level is a result of expected inflation and an aspiration to close the gap between the current and desired level of capital, hence manipulating the discount rate is not very helpful. Ever-present inflation can be reduced, but the cost of bringing down the growth rate is too high.

When raising the growth trajectory, particularly in recession, rather than on monetary, these countries should base their economic policies on the instruments of

fiscal policy and, above all, on controlling private and public consumption. Capital transactions must control, channel and impose certain restrictions. The liberalization of capital transactions must not precede full convertibility of the local currency.

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ANALYSIS OF KNOWLEDGE ABOUT CAPITAL MARKET ACTIVITIES IN REPUBLIC OF MACEDONIA

Abstract

Capital market represents the most important and influential segment in the economic policy and practice, with which successful and long-lasting functioning of the complete economical system is realized. Namely, this market offers many possibilities for mobilizing necessary financial resources for financing current and developing work of business entities, and on the other hand, it gives wide choice to the investors for investing free financial resources. Namely, the establishment of a successful stock market in a developing economy can be a major source of economic growth if it provides development finance by channeling domestic savings and attracting foreign investment. However, this objective is not always met, particularly in very small markets where there are barriers to efficient market operations. In that context, the main objective of this research is to analyze the current status of the Macedonian Capital Market (Macedonian Stock Exchange - MSE), the extent of knowledge about Macedonian Stock Exchange as a most important part of the capital market and the sources that promote knowledge about capital market (stock market) activities, also to identify the variables affect the investor's opinion to invest in MSE. In R. Macedonia, the capital market is not developed enough yet, that has a negative influence on business entities financing, and all that affects economic growth and development. Namely, the research carried out in this study has shown that public awareness for the existence and effective functioning of the capital market in the Republic of Macedonia is on a very low level. Altogether, it is observed that there is a long way to go for stock market operations in the Republic of Macedonia but need to get a powerful startup with a very dedicated, investment awareness campaign. The best model of development for Macedonian Stock Exchange is based on the active participation of stock exchange, government and companies inviting investors and creating confidence for secured investment.

Key words: *capital market, capital market knowledge, Macedonian Stock Exchange, capital market activities, securities*

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АНАЛИЗА ЗНАЊА О АКТИВНОСТИ ТРЖИШТА КАПИТАЛА У РЕПУБЛИЦИ МАКЕДОНИЈИ

Апстракт

Тржиште капитала представља најзначајнији и најутицајнији сегмент у економској политици и пракси, са којим се успешно и дуготрајно функциони-сање комплетног привредног система реализује. Наиме, ово тржиште нуди бројне могућности за мобилизацију потребних финансијских средстава за финансирање текућих и развој рада привредних субјеката, са друге стра-не, то даје широк избор инвеститорима за улагање слободних финансијских средстава. Наиме, успостављање успешне берзе за економски развитак може бити главни извор економског раста ако обезбеђује развој финансија за каналисање домаће штедње и привлачење страних инвестиција. Међу-тим, овај циљ није увек испуњени, нарочито у веома малим тржиштима на којима постоје препреке за ефикасно тржишно пословање. У том контек-сту, главни циљ овог истраживања је да се анализира тренутно стање ма-кедонског тржишта капитала (Македонска берза - МСЕ), степена знања о Македонској берзи, као најважнији део тржишта капитала и извора који промовише знања о тржишту капитала (берзи) активности, и да иденти-фикују варијабиле које утичу на мишљење инвеститора за улагање у берзу. У Р. Македонија, тржиште капитала није довољно развијено још, има још негативних утицаја на финансирање привредних субјеката, а све то ути-че на економски раст и развој. Наиме, истраживање које спроведено у овој студији је показало да је свест јавности за постојање и ефикасно функцио-нисање тржишта капитала у Републици Македонији на веома ниском нивоу. Све у свему, примећено је да постоји дуг пут развоја берзанског пословања у Републици Македонији и да је потребан снажан почетак са врло наменским, инвестицијама паметне кампање. Најбољи модел развоја Македонске берзе је засновано на активном учешћу у берзи, владе и компанија које позивају инвеститоре и стварају поверење за безбедне инвестиције.

Кључне речи: тржиште капитала, познавање тржишта капитала, Ма-кедонска берза, тржишта капитала активности, хартије од вредности

Introduction

Financial market is a driver for economic growth and development. In fact, it has different functions, which, if performed effectively, contribute to economic growth and development increasing and living standard improvement.

The financial market has integrated three markets itself, that are very closely connected and conditioned. The capital market, as a segment of the financial market, offers possibilities for mobilizing financial resources for financing current and developing work of the business

entities, and on the other hand, gives wide choice to the investors for marketing free financial resources.

Capital market authorities, managers, and operators undertake activities fundamental to the growth and development of capital markets in every country that operates a capital market. Their activities include policy formulation, policy implementation, product developments, investor education, and public awareness campaigns, market surveillances, market inspection, as well as offering investor protection. All these activities and many others should lead to improving market performance, development and integrity (Acquah-Sam, 2014, p. 58).

The stock market as a most important segment of the capital market, play a crucial role in mobilizing funds in capital markets. Stock markets provide a platform to investors and borrowers to exchange money by exchanging stocks.

Stock Exchanges represent an organized market form that facilitates - capital raising, trading of listed stocks, product development, increased avenues for investment of individual and institutional investors, free flow of market information and induce better corporate culture and conduct. These features of the capital markets and functioning of the stock exchange are considered vital for developing an efficient financial system that could benefit the real economy (Prasad Bandi, 2014, p.3).

Macedonian Stock Exchange – state and perspective

Republic of Macedonia successfully established a stock exchange in 1995. The stock exchange was founded as a holding company on a non-profit base, with a start-up capital of 1 million German marks. Although it was established in September 1995, the birth of the Macedonian stock exchange is associated with 28 March 1996, when the stock bell rang for the first time, which announced the official trading start.

The modest volume of transactions on the first date of trading of 25 transactions with 8 different securities, did not weak the feeling that this act was the beginning of new Macedonian economic history. In its initial developing stage, trading on the stock exchange was performed twice a week, on Tuesday and Thursday. The transaction signing was made on “the exchange parquet” in the trading hall via the method of continuous bidding and the model of “market driven by orders”.

Starting from 20.01 2001, the Macedonian stock exchange began working on a profit base with start-up capital of 500.000 EUR. Domestic and foreign legal and natural persons can be shareholders on the stock exchange. The property of an individual shareholder is limited to 10% of the stock exchange principal.

The basic aim of the Macedonian stock exchange was to provide effective, transparent and safe functioning of the organized secondary securities market in R. Macedonia, through a permanent effort of all investors to provide entrance, i.e. exit of financial instruments for trading in the different stock markets at fair market price, to help trade companies to attract new capital for financing their development and to contribute for building confidence into the Macedonian securities market.

The growth of the stock exchange in Republic of Macedonia has been relatively slow, and has especially received a poor response from private companies wishing to raise capital.

In the first several years of the Stock Exchange functioning, (in the period from 1996 to 1998), the Stock Exchange was in the so called “baby” development stage, which was

characterized by very low activity. Namely, the stock exchange was firstly formed within the early reform processes in 1990s, because it was thought that part of the privatization model would be realized and were realized through the stock exchange. Then follows the second stage, according to many features, very specific development stage (in the period from 1999 to 2004), in which the Stock exchange primary performed the function of indispensable market infrastructure for finishing privatization of public and state capital and consolidation of proprietary structures created by the privatization. That was manifested in a form of domination of block transactions and state auctions into the realized Stock Exchange turnover and absence of companies' voluntary quotation on the stock market. Starting from 2005, new Stock exchange life cycle has been recognized, in which, although the processes of property consolidation in companies have not been finished yet, a component that should be the top aim can be seen - the Macedonian stock exchange AD Skopje to be a place where with a moderate risk, free money of domestic and foreign investors, will be invested and fructified. Significantly increased turnover in 2005, only confirmed that statement.

The last ten years, it can be seen that capacity of the secondary capital market, of the Macedonian stock, has been moving annually as a turnover in all aspects between 100-200 million EUR. The exception are those good years, 2006 and 2007, when the turnover was 500-600 million EUR, and there was one unsuccessful of less than 100 million EUR in 2013. Concerning price movements on the stock within a longer statistical period, in the last decade we can see that there are several cycles-upward aggressive movements from 2005 to 2007, then from 2008 up to 2012, there was a negative price performance in continuity, while in 2013 and 2014 a small improvement and two annual pluses in succession were seen, but it was far away from the previous record levels. The current turnover (2015) and the price levels are not positive at all.

The market capitalization, after the two processes of obligatory quotation (the development of our total market on the offer side, is based on the two projects for obligatory quotation in 2001 and in 2013), i.e., the market value of 115 quoted companies is about 1,6 billion EUR and in relation to GDP is about 18%. The average indicator for this in EU is 65%, while in USA, UK and Switzerland; the figures go even above 100%. This is an indicator that shows what kind of enterprise structure and what kind of structure of the financial market, have been created in these 20 years of market economy in the country. It is obvious that there are not many big and quality shareholding companies on the stock exchange, or, there is not appropriate validation of the quoted shareholding companies on the levels as is the average in the EU.

The reasons for such situation can be located in the weak interest of the corporative sector in financing its activities through issue of securities. Namely, in R. Macedonia characteristically is that the business entities provide necessary capital by loans in the banks in the form of long-term credits, and alternative forms of financing, such as financing through issue of securities, are used in a very small volume.

The research carried out by the Centre for economic analyses (Center for Economic Analysis (CEA), 2007, p.6) shows that although 97% of Macedonian companies have needed additional capital, 76% have used bank loans for activities financing, and a very small percentage of them used financial resources from issuing corporative shares or bonds and 44% of them think that they are not ready to collect capital through securities issue.

All a.m. is a consequence of the following factors:
- Not-sufficiently informed management on the advantages offered by financing through securities issue,

- The business entities are not ready to be public opened – fear of publishing financial statements in public,
- Fear of diminishing the company control, should new shares are issued,
- Not-sufficient education of the public widely concerning the advantages of investing in securities and
- Not-fulfilling the obligations associated with the issued securities by the business entities.

Methodology

In order to analyze the knowledge about capital market operations, a research was conducted by the way of questionnaires. Questionnaires are the most commonly used instrument in gathering and measuring qualitative data because they present the same questions to all respondents thereby fostering a comparable basis for assessment (Acquah-Sami, Salami, 2013, p. 193).

The questions were carefully selected in order to get a clearer picture and more quality quantitative analysis of actual conditions concerning the fact how much the Macedonian population is familiar with stock exchange operations.

The questionnaire was realized on a representative sample of 109 respondents from various segments of the literate and working Macedonian population (teachers, administrators, student-workers, petty traders, and professionals in various sectors of the economy).

Purposive and convenience non-probability sampling methods were used to select respondents for the study. These methods were chosen because they are convenient and less costly as they target respondents who can provide relevant information that will help address the issues under consideration (Trochim, 2006). Also, this kind of method of sampling was used because the population is too large to include every individual in the study.

From the quantitative analysis, good conclusions were drawn, on which basis useful recommendations have been given.

Findings and Discussions

Knowledge and understanding of capital markets activities

The level of knowledge of the capital markets activities by investors is central to their level of participation. For instance, any investor needs to understand how the market operates, the products and markets and the mathematics that explain it. As new financial products emerge on the national and regional market, investors must understand all of this from an informed perspective (Capital Markets Investors Survey, 2012, p. 24).

However, some of these products are complex and difficult to grasp, especially for financially unsophisticated investors. Accordingly, individual investors need to possess adequate financial literacy and knowledge to make rational allocation decisions to increase their welfare in both the short and long term.

In that context, the main objective of this research is to analyze the knowledge of stock markets activities of the Macedonian population (Macedonian investors). For that reason

we have designed questions to measure the basic knowledge related to the stock market activities, as well as questions to measure financial knowledge related to financial market instruments, e.g. capital market terminology (stocks, bonds, etc.).

The results from the answers to the questions related with the respondents' knowledge of capital market activities are shown in figure 1. They indicate that 83 respondents, 76% of the total respondents, had knowledge of capital market activities. On the contrary, 26 respondents, representing 24% of the respondents, answered that they had no knowledge about capital market activities. This means that majority of respondents have knowledge about capital market activities.
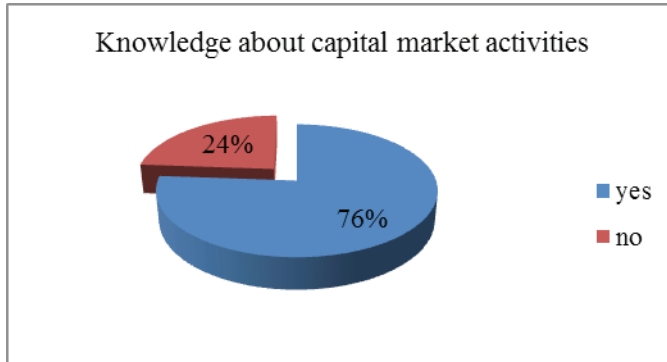
Figure 1: Knowledge about capital market activities

In figure 2 is presented the level of knowledge about capital market activities among respondents who have positive answer on the previous question. According to the processed answers to the question regarding the level of knowledge about capital market activities, as shown in figure no.2, we can conclude that 71 respondents, 86% of the eighty three (83) respondents who have knowledge about capital market activities, indicated that they have little knowledge about capital market activities. And only twelve 12 respondents, 14% of the 83 respondents who have knowledge about capital market activities, indicated that they have much knowledge about capital market activities. These results provide evidence for limited financial knowledge about capital market activities. Those who have low financial knowledge are significantly less likely to invest in securities.

One of the reasons about this situation in our country is the low level of financial literacy. Therefore, lack of understanding of economics and finance is a significant deterrent to stock ownership and lack of financial literacy prevents households from participating in the stock market.
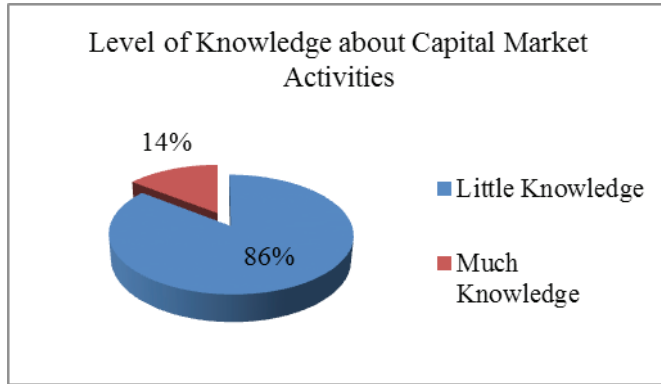
Figure 2: Level of Knowledge about Capital Market Activities and
Level of Knowledge about Capital

As noted by Calcagno & Monticone (2011), the low level of financial literacy in many countries puts households are at risk of sub-optimal financial decisions. Individual respondents who have little knowledge about capital market activities may consequently not know the right kind of financial assets in which to invest, and as a result, may not purchase capital market securities.

The next question in the questionnaire was in correlation with the capital markets' terminologies. Namely, the respondents were asked whether they have ever heard of some capital market terminologies and whether they know the meaning of the selected terminologies. The findings are presented in figure 3.
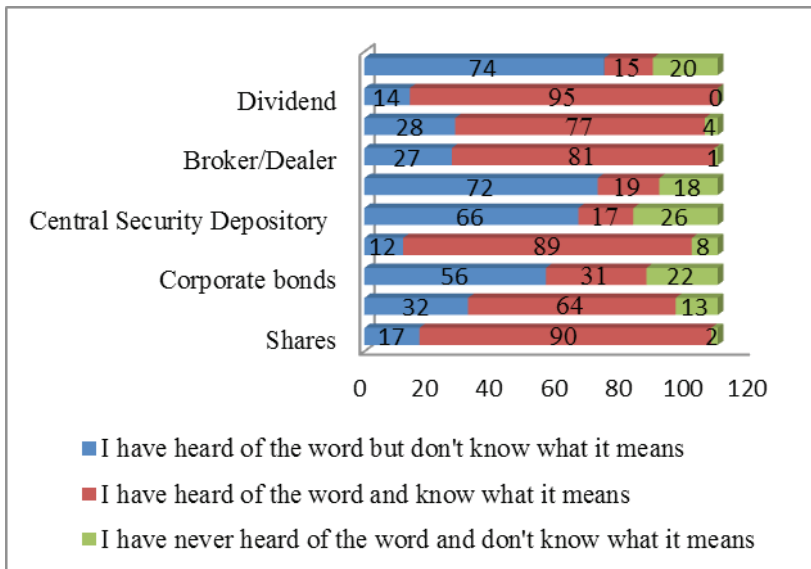
Figure 3: Knowledge about capital markets knowledge

Most of the respondents stated that they were familiar with the terminology used and that they knew what the terminologies meant. They were generally aware of dividends and shares as reported by 87% (or 95) and 83% (or 90) of the respondents. The two terminologies for which the respondents have minor knowledge are the Central Securities Depository and the Securities and Exchange Commission. Namely, only 16% (or 17) and 17% (or 19) of the respondents answer that they know the meaning of the Central Securities Depository and the Securities and Exchange Commission.

Source of knowledge of capital markets activities

There many factors that influences to assess knowledge about capital markets. For that reasons in this study we analyzed the factors that contribute to respondents' knowledge about capital market activities. Figure 4 presents the various sources where the respondents got information on capital markets from.
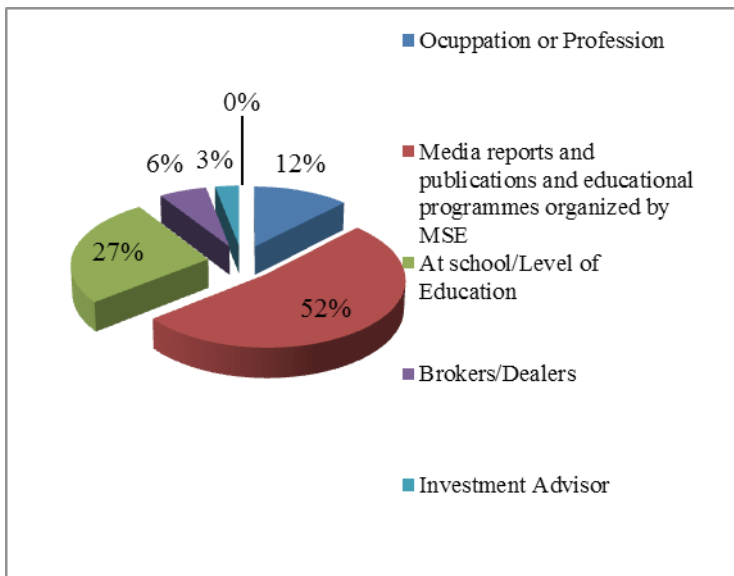
Figure 4: Source of Knowledge of Capital Markets Activities

Ninety eight (98) respondents answered the question on the factors that contributed to their knowledge about capital market activities. Eleven (11) of the 109 respondents who indicated that they had knowledge about capital market activities did not answer the question on the factors that contributed to their knowledge. It could be that they are not aware of the factors that contributed to their knowledge.

It was established that majority of the surveyed respondents (52%) acquired information about capital markets and related terminologies from media reports and publications and educational programs organized by Macedonian Stock Exchange and market regulators. So, it can be concluded that the most important factor that influences respondents' knowledge about capital market activities is media publications and reports by market regulators and stock exchange. This indicates that these educational and media programs have a very

positive impact on peoples' knowledge about capital market activities. Accordingly, in the future Macedonian Stock Exchange and market regulators should organize various educational debates and seminars for the managers and investors (especially individual) to increase the knowledge about mobilizing financial resources through issue of securities and about the investment opportunities in financial instruments.

The second major factor that contributed to respondents' knowledge about capital market activities was schooling/level of education. Twenty six (26) respondents, 27% of the ninety eight (98) respondents acquired knowledge about capital market activities through the courses at school and universities.

By teaching capital market courses in senior high schools, universities, polytechnics, and professional institutions, a significant part of the population becomes aware of the role of the capital market in the lives of individuals and in national development.

The importance of this second factor is supported by Rooij (Rooij et al., 2007), who are of the view that those who were exposed to financial education in high school or in the workplace save more. In other words, as people acquire more knowledge about capital market activities through schooling they are more likely to invest in capital market securities.

Some respondents indicated that their knowledge about capital market activities was influenced by their occupations or professions. This was true for twelve (12) respondents, 12% of the 98 respondents.

Only 12 respondents answered that they acquired the knowledge from brokers/dealers and investment advisors. Nobody of the respondents acquired knowledge about capital market activities through friends who have experience with investing in securities.

Motivation to invest in capital markets securities

An investor is any person who commits capital with the expectation of financial returns. Investors utilize investments in order to grow their money and/or provide an income during retirement, such as with an annuity. A wide variety of investment vehicles exist including (but not limited to) stocks, bonds, commodities, mutual funds, exchange-traded funds (ETFs), options, futures, foreign exchange, gold, silver, retirement plans and real estate (http://www.investopedia.com/terms/i/investor.asp). Creation of wealth is the primary objective of investors (http://www.namexijmr.com/demo1/wp-ontent/uploads). Namely, the primary concern of an investor is to minimize risk while maximizing return (http://www.investorwords.com/2630/investor.html). But there many factors that influence on their decisions to invest. Accordingly, this study also sought to find out from respondents with knowledge of capital market activities, the factors that influence their decisions to invest.

The reasons are shown in figure 5. Namely, the respondents were asked what motivated them to invest in capital markets.
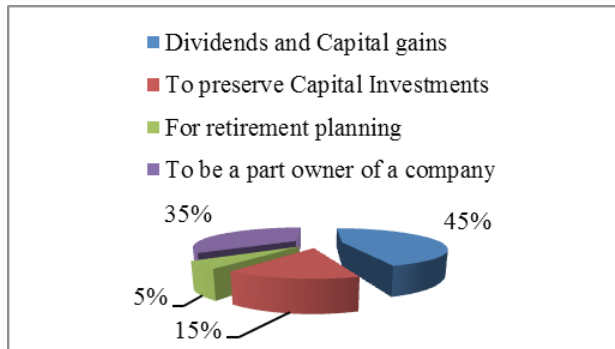
Figure 5: Factors for Investing in Capital Market Securities

The results of the study discover that the most of the investors (45%) were motivated by expected dividends or profits to invest in capital markets. Hence, it can be concluded that many potential investors are not aware of the possible benefits obtainable in investing in capital markets and as a result they are not attracted to such investments. Namely, the stock market in Republic of Macedonia is still young and with slow development. In future the markets regulators must accelerate grow through increased incentives that attract key investors. Also, they should informed potential investors how such risks can be minimized in order to increase participation of more investors.

The second major factor for investing in capital market securities was to be a part owner of a company. Thirty four point nine per cents (35%) of the one hundred and nine (109) respondents or thirty-eight (38) respondents are motivated to invest in capital market securities to be a part owner of a company.

The third most significant factor respondents invested in capital market securities was because they want to preserve their capital investment. This group constituted 15% of the respondents or twenty (16) responses. And the last reason respondents purchased capital market securities was to enable them to secure their retirement. Only six (6) respondents, 5% of the 109 respondents, invested in capital market securities to plan for their retirement.

Reasons respondents do not invest in capital market securities

Versus the reasons that motivate respondents to invest in capital markets securities, there many reasons that influence on respondents decisions to not invest in it.
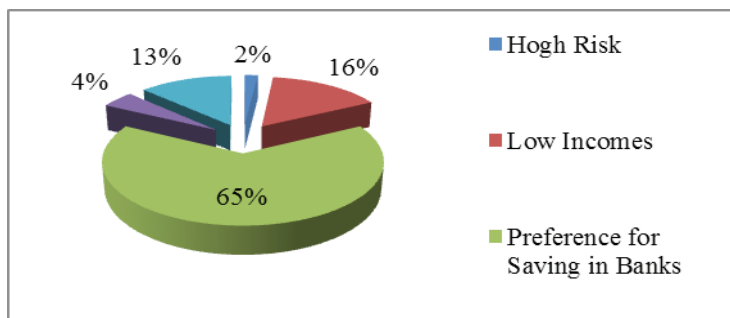
Figure 6: Factors for Not Investing in Capital Market Securities

The results from the answers to the questions related with the reasons that don't motivate the respondents to invest in securities are shown in figure 6.

As shown in Figure 6, eighty one (81) of the respondents representing 65% of the one hundred and nine (109) responses preferred to save with banks. The main reason o this situation in Republic of Macedonia is that both, the population and enterprises are not aware and are not informed about the way of functioning of our capital market and its benefits.

The second reason respondents gave for nonparticipation in capital market activities was low incomes. Namely, 16% of the one hundred nine (109) respondents chose this reason. This suggests that given increased incomes backed by effective awareness creation programs on capital market securities, appropriate investment advice and the right incentives, a lot of prospective investors could be lured into purchasing capital market securities (Acquah-Sami, Salami, 2013).

The third reason for nonparticipation in capital market is preference for real estate. 13% of the respondents have positive answer on this reason. This is because Macedonian population has very low level of education and knowledge about how capital market operates and as a consequence they don't trust in Macedonian Stock Exchange.

Very little part of the respondents indicates that lack of interest about workings of the securities (4%) and risky to hold (2%) is the reason of uninvesting in capital markets.

Conclusion

In R. Macedonia, the capital market is not developed enough yet, especially the market of long-term securities. This not sufficient development of the long-term securities market has negative influence on the economy, i.e. the business entities are faced with big difficulties when mobilizing financial resources indispensable for financing their work, and all this affects the country growth and development.

Very important factor for providing successful development of the capital market in Republic of Macedonia is existence and functioning of the Stock Exchange. The Macedonian stock exchange should provide effective, transparent and safe functioning of an organized securities market; diversification of the risk with potential investors, via offering large number of different financial instruments; correct allocation of resources and control in management, protection of the investors' interests and instruments, through which the state will meet its financial needs via market resources, not via fiscal and monetary ones.

The Macedonian stock exchange is relatively young institution and has negligible role in financing the business entities. Such situation is due to deep structural obstacles that make difficult its development, among which more important are:

Non-financing companies in R. Macedonia do not show enough interest in financing their activities through issue of shares. This is mainly due to the fact that management teams do not know well the advantages of this kind of financing. Also, it should be noted that managers have some fear that they will lose the managing right and they are also afraid of publishing the company financial statements in public;

- The business entities are not interested in issuing bonds. That is due, mainly, to the absence of expertise for structuring and promoting this kind of securities. On the Macedonian stock exchange, trading is performed only by state bonds from the old foreign currency saving, foreign currency deposits, bonds of R. Macedonia for denationalization, state records and convertible certificates;

- Not sufficient education of the public widely and business entities about the advantages of investing in securities and financing the businesses through issue of securities;
- Limited offer for financial instruments, in which the investors will direct the free financial resources;

In order to overcome such situations, it is of special importance to increase the Macedonian population and business entities' knowledge for the way of capital market functioning, because just in this place they can, in a very simple and cheap way, provide additional capital for financing their investing projects or for maintaining their current solvency. The survey carried out in this study, has shown that 83% of the respondents, i.e. 76%, are acquainted with the activities in the capital market, but 86% of them have answered that their knowledge on these activities, is very low. So, these results indicate that the level of knowledge about capital market is low.

Moreover, the results from the performed analysis show that the advantages of investing in securities are not very well known, not only for the business entities, but for the large part of the public, as well. Due to those reasons, there is need for combined effort from both public and private sectors to sensitize people on how the capital market works, including comparison of capital market investments to conventional investment vehicles and the risks and returns involved in capital market investments. In fact, there is a need for organizing various kinds of seminars and special courses for the people who intend to invest free resources into financial instruments, but also for the employees in the financial institutions dealing with investments in securities, in order to enable them to increase working effectiveness, i.e. to increase the number and the kind of services they offer to their customers.

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EVALUATION OF TEACHERS' WORK IN HIGH EDUCATION INSTITUTIONS OF SERBIA

Abstract

Evaluation of teachers' work is faced with critics by teachers and students. It is a common impression that evaluation of teachers' work at faculties is not a good process.

The aim of this research is to use responses from the questionnaire developed for this purpose in order to determine the quality of evaluation of teachers' work procedure at faculties. There was an effort to develop a model which would response regarding the quality of evaluation process at faculties. Data used for development of model were collected via Google Forms, where 427 teachers from all universities in Serbia were involved.

Research results indicated that presented model is able to differ approval and disapproval of evaluation work procedures at faculties.

Obtained model encouraged clear and scientific explanation of evaluation of teachers' work. Further researches should include variables which can be effective for further development of a model.

Keywords: evaluation of teachers, faculty, teacher, student, model

JEL classification: A20,C63,I21

ВРЕДНОВАЊЕ РАДА НАСТАВНИКА У ВИСОКОШКОЛСКИМ ИНСТИТУЦИЈАМА СРБИЈЕ

Апстракт

Евалуација наставниковог рада је на удару критике и наставника и студената. Општи је утисак да вредновање рада наставника на факултетима није добро.

Циљ истраживања је био да на основу одговора на питања из конструисаног упитника за потребе овог истраживања, откријемо квалитет процедуре вредновања рада наставника на факултетима. Покушали смо да направимо модел који би одговорио на питање када је процесс евалуације на факултетима добар а када не. Подаци који су коришћени за прављење модела су прикупљени анкетом преко Google Forms-a, где је учестовало 427 наставника са свих универзитета у Србији.

Из резултата истраживања је закључено да постављени модел може да разликује одобравање и неодобравање процедура вредновања рада на факултетима.

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Добијени модел помаже јасном и научном објашњењу евалуације рада на-ставника. У следећим истраживањима потребно је увести варијабле које могу да утичу на даље усавршавање модела.

Кључне речи*: евалуација рада наставника, факултет, наставник, сту-дент, модел*

Introduction

Bologna process in the high education of Serbia has officially started in 2003. It can be assumed that the period of 13 years was a long period during which everything came in its place and the system became capable of work without great problems and turbulences. However, practices have shown that situation is not that perfect. This reform process as good (and right) solution for high education is still faced with problems for which was supposed to be solved in the previous period.

One of such unsolved problems is an evaluation of teachers' work in high education institutions. Bologna process noted it as Evaluation of teachers' work (Bologna declaration, 2003). This research subject – Evaluation of work was defined as a process by which something is measured by comparing with defined standards and criteria (Pavlovic, 2015). The measurement was conducted in order to provide data on quality of teachers' work (Act on students' evaluation of pedagogical work of teachers, 2006). This information was supposed to be used for corrections of their work. It was supposed to use evaluation for "more objective" HR solutions at faculties through side effects.

Therefore, it can be concluded that there is nothing more to add to the evaluation process. There are criteria and standards according to which teachers can be evaluated. Students are determined as evaluators of teachers' work. Where does the problem appear?

Creators of evaluation plan wanted to shift evaluation from economy directly to education institutions. It was planned to have students as clients who could express their satisfaction or dissatisfaction by evaluating of teachers' work. However, the practice indicated on numerous questions. One of the first questions was related to the competency of students to make an appropriate evaluation of teachers. Also, there was a question on the purpose of the evaluation itself. Is it conducted in order to provide information which could be helpful for correction of teachers' work or they can be used for control of their work? The latter option implies the option for them to have a direct impact on carrier and development of teachers' work in high education institutions.

No precise or correct answer has been obtained so far. The relative closeness of faculties impacted on the lack of application of good practices in other education institutions. Therefore, numerous critics by students and teachers appeared. The greatest problem was the absence of evaluation process model, a model of good (or bad) teacher. It leads to the absence of criteria and standards for evaluation of teachers' work at faculties. The interesting fact was that there was no great interest in finding the best solution for teachers' evaluation during the previous period. Teachers and students were accustomed to such condition. Teachers adapted their work to students' "needs" in situations where problems could appear. It is simple action like at the market.

The research problem was related to the process of evaluation at our faculties. According to the assumption that evaluation process at high education institutions in Serbia is not good enough, the question appeared: What can effect on the teacher to claim that evaluation process of his work is good or not?

The aim of the research was use following variables: "corrective measures for teachers with bad results of the evaluation, evaluation of students' competencies for evaluation of teachers' work and scope of evaluation" in order to determine the influence on the estimation of evaluation procedure of teachers' at faculties. Regarding that, the model which should be used for obtaining responses to the problem of research work was developed.

Using the random sample, 427 teachers from universities in Serbia participated in this research. The great number of them indicated the actuality of problem-related to the evaluation of teachers' work. Obviously, it is an existing problem which is unwillingly mentioned. Also, a very small number of research works on this subject implied the conclusion that people from universities have a lack of will to speak about this.

Modeling method was used for this work. The main characteristic of this method are unity and connection between theory and practice. Modeling method is research process for generating of character system. Also, this model can replace the real form and it can be helpful in using of simulation for research and transfer of findings into real form.

Limitations of modeling method is also limitations of this research. The model can be only relatively adequate to the original. Otherwise, it would not be known as a model. Also, the model is inevitable simplifying of researched form. It represents abstraction, a certain realization of the original. The model method includes significant limitations since findings are based on analogy category or similarity.

The purpose of this research is to place a model with which the answer to this question can be provided: What has an effect on the attitude of teachers that evaluation is good or not.

This research provided results which showed that model is able to differentiate approval and disapproval of procedures for evaluation of teachers' work at faculties. Regarding future evaluation processes, it is important to provide researches in multiple directions. The reason for that lies in a fact that evaluation is not uniform and it includes research on many indicators. This would provide more information helpful for a correct evaluation of teachers' work at faculties.

Literature review (Theoretical frame)

Evaluation of teachers' work is not a new idea. It started to develop during the second half of 20th century. However, evaluation was followed by failures due to bad communication between those who evaluate teachers' work, those who implement this and teachers themselves who were in the focus of evaluation. At the beginning, there was the greatest gap between education authorities who started evaluation and teachers whose work was evaluated. The confusion in teachers developed for no real and known reason related to the evaluation process. Teachers were asked if that is a review of their work in order to create the best model of teachers' work or standardization of their work in order to improve a quality of work at faculties (Beck et al, 2002).

Some of many questions by teachers were: What to do after the evaluation? Is there a need for corrective measures for teachers with bad results? What should be developed for teachers with excellent results? Unfortunately, the situation with evaluation of teachers in high education institutions did not change to date. There are no sufficient mechanisms and agreed procedures for evaluation of teachers' work (Marsh, 2006). Such task is dedicated to a small number of people from faculties. There is an impression that they do this job only because they have the obligation for that.

The paradox is that evaluation is better and more seriously accepted in primary and secondary schools rather than in faculties (Maksić, 2006). These schools included evaluators trained through many pieces of training and programs in order to make evaluation processes in a better way. The confusional information was that only students observe teachers' work beside mandatory of evaluation. Such way of the evaluation was faced with resistance in teachers and two questions appeared: Is evaluation as such reasonable and should it exist in such form? If it is needed, what would be the way of improving and optimizing of the evaluation process?

Many recognized professors were against evaluation of teachers' work in a way demanded by Bologna reform. Professor Lisseman was one of loudest in this case. Also, he is known as a bitter opponent of Bologna reform. His disagreement with education reforms started with critics on quantitative measurement in education (Lisseman, 2009). He claimed that it is not possible to measure everything using numbers. Also, it is not possible to measure the quality of teachers' work in this way. He was highly against the model of a teacher who is in obligation to publish his/her works for prestige journals and in certain time periods, which is logical. Also, he did not like the idea that teacher should be mobile in order to develop himself/herself as more quality teacher ready for improvement. He mentioned Immanuel Kant, one of the famous philosophers of all times, who was not mobile since he never left his hometown Kinizburg during his life. Also, according to this model, Kant would not achieve progress in his carrier since he did not publish anything for 10 years before writing a book "Critique of Practical Reason", one of biggest works in the history of philosophy. The rule to use exclusively quantitative indicators was obviously unsuccessful at a time. Beside statistic data, it is important to include other indicators for quality of teachers' work. These indicators would be used for better, wider and more quality description of teachers' work.

The quantitative approach in evaluation presented achievement of imagined goal regarding defined criteria. It looked like this in practice: achievements were compared with defined goals using instruments for evaluation of teachers' work designed for this occasion (Green & McClintok, 1991). The main problem with the quantitative approach is the way how data are collected. Doubt in a good way of data collection led to doubt in the validity of results obtained in this way. It is easy to view consequences of such evaluation (Murray, 1987). What should be done with these results? What actions should be conducted in order to correct teachers' work if measurement does not present the real situation?

During the review of literature in the area of evaluation of teachers' work, it is not favorable to acknowledge that interest of researchers in these issues is very lowered during last decade. There are almost no progressive steps in solving problems related to the evaluation of teachers' work. It is an exceptional case where one topic is so interesting and controversial and yet, it is not enough researched (Marsh, 2006).

The special problem is how to use feedback information for improvement of teachers' work. Results of evaluation should be used for correction of teachers' work. Instead of highlighting of teaching efficiency, it is important to focus on HR solutions (Marsh, 2006). HR solutions can be used as a good replacement for a teacher with weaker results. Also, these solutions are often expensive. Using this approach teachers found themselves to be endangered. It is one of the important reasons why they started to criticize evaluation of their work.

Inadequate evaluation lacked the opportunity to take actions for improvement teachers' work in a low-cost way. University teachers are not sufficiently pedagogically trained for good teachers. Feedback information obtained by evaluation should be priceless for them. Beside that, outside help for them would be useful so this information could be applied in practice. Questions for emergent responses are related to a development of a program for promotion of teachers' work. Also, there is a question: Why there are no more researches useful for all parties in this area?

As it can be assumed, there is no simple system for evaluation of teachers' work. Therefore, there is no such system for evaluation of teaching at the faculty. However, it is possible to include more evaluation models which can be used for evaluation of teachers' work in a reliable way. More methods would include more data resources. The first step would be aimed at the development of an own model of evaluation. Each faculty, each subject and, therefore, each teacher should include certain specifics which need to be adopted during evaluation of teachers' work. It is not the same to evaluate work of a teacher of mathematics and teacher of musical education. Also, classes in Forensic sciences are not interesting in the same way as classes in Biology. Each teacher has a different organization of his/her classes so it should be also observed and imported into the model. It is especially important to include teachers in the construction of instruments for evaluation of their work. That is the way for avoiding of discrimination of certain individuals with bad results only because their subject is not interesting for students' evaluation in a proper manner.

Evaluation is focused only on the quality of teaching at faculty, in the classroom (Hunt, 2013). However, teaching is a wider term and it included many actions conducted within and out of the classroom. Evaluation should also include the development of teaching program, new courses with students, creative mentorship of teacher, help in the development of works and dissertations, consultancies one-on-one and students advising, sharing experience in area of research techniques, use of technologies and software in learning, works, researches, positive teachings and many more.

It is not easy to answer which data sources are suitable for evaluation. Information from students and colleagues are important including data are given by teachers themselves. Students are the most important data source. Also, they are able to evaluate how a teacher is prepared for teaching, does he/she motivates students and respect them. Numerous researches showed that students are capable and reliable for evaluation of teachers (Marsh, 2006).

Beside active students, many faculties asked their former students to evaluate teachers' work. It was acceptable for many reasons. One of the most important reasons is that former students are not concerned by consequences in case of lower grades for teachers. Other reasons can originate from greater experience of former students. Researches showed that evaluations of former students are always nearly matched with evaluations of current students (Marsh, 2006).

Colleagues teachers can also be data sources beside students (Braskamp at al., 1984). Such kind of evaluation is not often proposed at faculties although it should have more important position during evaluation of teachers' work. Colleagues teachers could provide very valuable data on teaching in a classroom. This way of evaluation is not difficult and it is considered as feasible. The teacher should visit teaching classes of his/her colleague and make correct report according to his/her perception, knowledge and experience. It could be helpful for making of feedback information to teachers in order to improve their work but also to faculty administration in order to make correct decisions in HR domain. Beside visiting classrooms, teachers-colleagues could review teaching material used on classes and follow teacher's contribution to the development of teaching programs, books preparations, writing articles, etc. Students are not capable of evaluating a teacher in these specific areas. On the other hand, teachers mostly complained that their work in these areas is not evaluated.

Each teacher should have his/her own portfolio including data with information needed for evaluation of their work (Edgerton at al., 1991). There is a small number of faculties which insist on this data sources for evaluation of their work. Also, few faculties insist on such kind of data in order to evaluate teachers. Portfolio usually includes teacher's references related to the publishing of works and books which are not enough. The portfolio should include teacher's plans for progress, his/her efforts in teaching improvement and future teaching objectives. Also, a teacher can express his/her expectations regarding teaching and researches, his/her plans for improvement of his/her pedagogical competencies.

Marsh (2007) claimed that evaluations of teachers' work made by students are multidimensional, reliable, stable and they relatively present the real way of efficiency and effectiveness of teaching. Students' grades are considered as useful for promotion of teaching efficiency if they are correlated with suitable consultancies after evaluation. Corrections on teachers' work are an important part of evaluation process.

There are not many research works on this subject in Serbia. During the second half of 20th century, evaluation of teachers' work was unilateral. There were usual responses on the question what should be used as a subject of evaluation (Potkonjak, 1972). Mandic and Vilotijevic (1980) and Vilotijevic(1992) made researches on pedagogical in the school. All of these works are usually connected with teachers from primary and secondary schools. Work by Jankovic and Jaric (2009) within qualitative research clearly explained some processes of evaluation. Statements of teachers on the evaluation of their work were especially interesting. All teachers claimed that evaluation is extremely important and that is good to provide an evaluation of teachers' work. However, all teachers also insist on being careful regarding results from an evaluation of their work by students. Teachers think that students cannot evaluate teachers' work in the best way. It is interesting to know that teachers want to be actively involved in the evaluation process, especially during questionnaire development.

Methodology

Research is quantitative and it is aimed to the investigation of the impact of a subject who conducts the evaluation, application of corrective measures for teachers with

lower results, evaluations of students' competencies for evaluation of teachers' work and scope of the evaluation, estimation of evaluation procedure for faculty professors. The questionnaire was developed for the purpose of this research.

Methods of modeling

Graphics 1: Basic cognitive models and modeling
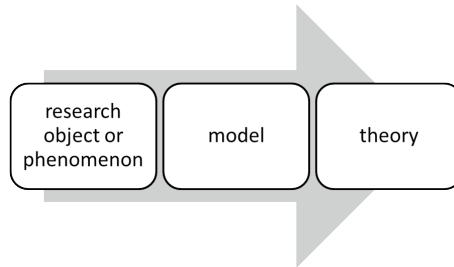
Source: Graphics created made by the author

Respondents

The research included 427 faculty professors. The sample contained 242 (57%) male respondents and 185 (43%) female respondents. Also, it included 106 (25%) regular professors, 76 (18%) associate professors, 136 (32%) docents and 109 (25%) cooperatives in teaching and assistants. The domain of natural sciences included 63 (15%) respondents, 168 (39%) respondents from the domain of social sciences and 196 (46%) respondents from the domain of technical sciences.

Graphics 2: Structure of scientific fields (number of teachers)
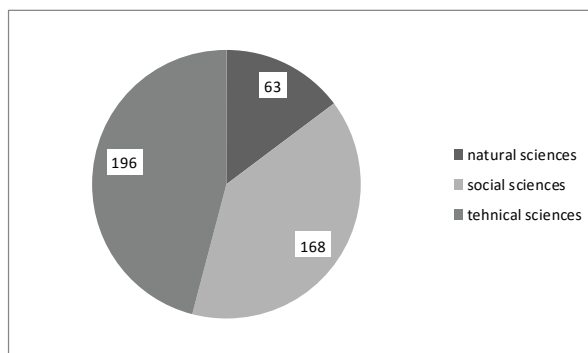
Source: Data from the research of the author

Graphics 3: Structure of teachers who participated in the survey (number of teachers)
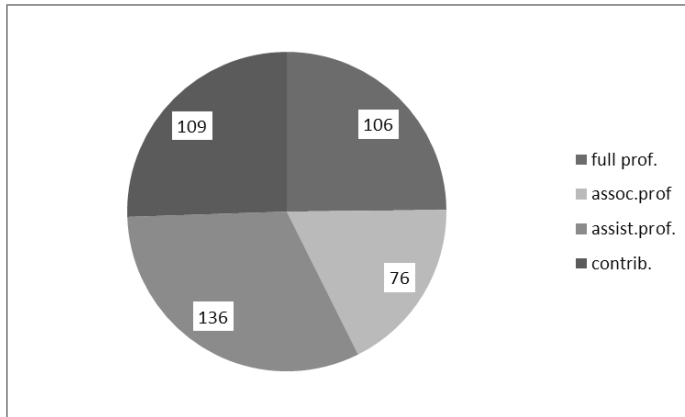
Source: Data from the research of the author

Research instrument

For purposes of this research, a questionnaire of 8 questions was developed. All questions are closed including the possibility of choosing one answer. Subject variable related to evaluation is operationalized through the question: "Which evaluation of teacher's work is present in your faculty?" Offered responses were: evaluation by students and evaluation by colleagues-teachers or self-evaluation and non-evaluation of teachers' work at our faculty. Application of corrective measures for teachers with low results of evaluation is operationalized through questions: "Are there any corrective measures for teachers with low evaluation results?". The estimation of students' competency for evaluation of teachers' work is operationalized by the question: "According to your opinion, are students competent to evaluate teachers' work?" The scope of the evaluation is operationalized through the question: "Are all teachers included in the evaluation of teachers' work?" Offered responses for these three questions were following: Yes; No and I don't know. Assesment of evaluation procedure is operationalized through the question: "Do you think that the work evaluation of teacher from your faculty is good enough?" while offered answers were: Yes and No.

Questions related to gender and occupation of respondents and subject domain were not used in the analysis.

Procedure

The questionnaire was developed in electronic form and placed on website Google Forms where it was available during next 30 days. Survey respondents were emailed on the availability of questionnaire and asked to offer their answers. Answers were taken from Google in electronic form (in the form of an electronic table). All respondents participated anonymously and on a voluntary basis.

Data analysis

Direct, binomial logistic regression, was used for testing of the effect of evaluation subject, application of corrective measures for teachers with low results, competency assessment of students for evaluation of teachers' work and scope of assessment and assessment of evaluation procedure for faculty professors' work. Criteria variable as four question is dichotomous where answers No and I don't know are marked with 0, answer Yes was marked with 1. Assumptions on multicollinearity and presence of extreme values in data were reviewed. During analysis of extreme values, 7 cases with values z>2,5 were excluded from the analysis. The assumption on the absence of multi-collinearity between predictor variables and size of the sample were satisfied.

Results

A complete model which included all predictor variables is statistically important $(\chi 2(7)=108.06$ p=0,00). It implied that model can differ approval and disapproval of evaluation of faculty professors' work. The entire model explained between 22.7% (Cox and Snell R2) and 33.3% (Nagelkerke R2) variances at dependent variable.

Model exactly differs 78.3% of cases. The correctly classified percentage of 90,4% cases were classified for answers No and I don't know on the 4th question while 44% cases were classified for answer Yes.

According to the table below, application of corrective measures for teachers with low results of the evaluation (5th question in the survey) and assessment of students' competencies for evaluation of teachers' work (8th question in the survey) are statistically important for the model.

Table 1: The results of modeling

	B	S.E.	Wald	df	Sig.	OR	95% interval of trust	
							Lower level	Upper level
5th question, answer YES	-2,194	,330	44,313	1	,000	,111	,058	,213
5th question, answer NO	-1,419	,320	19,613	1	,000	,242	,129	,453
8th question, answer YES	-2,390	,410	34,026	1	,000	,092	,041	,205
8th question, answer NO	-,666	,366	3,309	1	,069	,514	,251	1,053
10th question, answer YES	1,015	,574	3,125	1	,077	2,760	,896	8,505
10th, answer NO	-,592	,440	1,816	1	,178	,553	,234	1,309
1st question	,564	,447	1,587	1	,208	1,757	,731	4,222
Constant	,226	,545	,173	1	,678	1,254		

Source: This table is taken from survey data(SPSS)

Discussion

If during answering on 5th question (Are there any corrective measures for teachers with low results?) respondent shifts from answer "Yes" to answer "No", the chance to answer the 4th question (Do you consider evaluation at your faculty as good?)

from "No" and "I don't know" to "Yes" is decreased for 0,11 times. Using trust interval in the value of 95%, it can be claimed that chance for answering the 4th question is between 0,06 and 0,23.

If during answering the 5th question (Are there any corrective measures for teachers with low results?) the respondent shifts from answer "No" to answer "I don't know", the chance to answer 4th question (Do you consider evaluation at your faculty as good?) instead "No" and "I don't know" to "Yes" is decreased for 0,24 times. With an interval of trust in the value of 95%, it can be claimed that chance for answering the 4th question is between 0,13 and 0,45.

Overal and Marsh (1987) claimed in their researches that corrective measures conducted after evaluation are very useful for teachers and students. They conducted research on the same group of students in order to review differences. Students had much better results with teachers who were faced with corrections of their work after evaluation.

However, it doesn't have to mean that feedback information is going to have a corrective effect on teachers. McKeachie (1997) claimed that teachers can ask students to change. Also, teachers can undertake measures to students who make lower grades which will endanger good teaching (Murray, 1987). It is a big mistake to use evaluation for solving of HR issues and not for improvement and correction of teachers' work (Cashin, 1988; Wilson, 1986). Also, teachers often have a lack of knowledge in the area of pedagogy and didactic so feedback information is not helpful for them (Meyer, 2001). They need additional help (Marsh, 2007).

If during answering on 8th question (Do you consider students competent for evaluation of teachers' work?) respondent shifts from "Yes" to "No", the chance to answer the 4th question (Do you consider evaluation at your faculty as good?) from answers "No" and "I don't know" to answer "Yes" is decreasing for 0,09 times. With an interval of trust in the value of 95%, the chance to answer the 4th question is moving between 0,04 and 0,20.

Similar to these findings on students' competencies are claims by Marsh (2007) and Feldman (1987). They noted that students are able to differ different components of the efficiency of teachers' work. Also, researches claimed that students are not able to evaluate teachers' work through multidimensional evaluation. In that case, evaluation provides low results (Marsh and Groves, 1987).

Conclusion

Although model presents knowledge according to analogy category, the comparison with previous researches provided opinions that model had successfully replaced the research subject of this paper.

Modeling method provided knowledge that two variables have an effect on forming a model of teachers' opinions on an evaluation of their work. These variables are following: application of corrective measures for teachers with low results and estimation of students' competencies to evaluate teachers' work.

It can be concluded that evaluation of faculty teachers' work is going to be good if there are corrective measures for teachers with low evaluation results. Also, it can be

claimed that evaluation of teachers' work will be good if students are competent enough to evaluate and estimate teachers' work.

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QUANTITATIVE ANALYSIS OF MULTI-FUNCTIONALITY OF AGRARIAN AND RURAL DEVELOPMENT IN THE REPUBLIC OF SERBIA

Abstract

The objective of this paper is, primarily, to point to the possibility of quantification of indicators related to multifunctional agricultural and rural development and decision making on the basis of the ones. Quantitative indicators should indicate the achieved level of multifunctional agricultural development in the Republic of Serbia, starting from widely accepted principles of this development: economic, ecological and social ones. The core of multifunctional agricultural and rural development is actually sustainable development which takes into consideration interests of present and future generations. The state development policy in solving sustainable development problems is of great importance, and decisions would be more real if they rely on measureable indicators and adequate quantitative analysis. Composite indicators, very useful for trends identification and drawing attention to certain questions of interest, have a special place in this analysis.

Key words: multifunctional agriculture, multifunctional development dimensions, sustainable development, composite indicators.

JEL classification: C10, O13

КВАНТИТАТИВНА АНАЛИЗА ДИМЕНЗИЈА МУЛТИФУНКЦИОНАЛНОСТИ АГРАРНОГ И РУРАЛНОГ РАЗВОЈА У РЕПУБЛИЦИ СРБИЈИ

Резиме

Циљ овог рада је, првенствено, да укаже на могућност квантифицирања показатеља везаних за мултифункционални пољопривредни и рурални развој и доношење одлука на основу њих. Квантитативни показатељи треба да укажу на достигнути ниво мултифункционалног пољопривредног развоја у Републици Србији полазећи, пре свега, од општеприхваћених принципа овог

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развоја: економски, еколошки и социјални. У основи мултифункционалног пољопривредног и руралног развоја је одрживи развој који уважава интересе садашњих и будућих генерација. Велики је значај развојне политике државе у решавању проблема везаних за одрживи развој, а одлуке би биле реалније уколико се ослањају на мерљиве показатеље и адекватну квантитативну анализу. Посебно место у овој анализи имају композитни индикатори, који су веома корисни за индетификовање трендова и усмеравање пажње на од- ређена питања од интереса.

Кључне речи: мултифункционална пољопривреда, димензије мултифунк- ционалног развоја, одрживи развој, композитни показатељи

Introduction

The subject of this paper is multifunctional agriculture and rural development as the concept of multi-functionality as well as the method of achieving growing sustainability of non-market public property, in agriculture as well as in a rural community. The subject is also closely related with the research problem, primarily directed onto application of quantitative analyses of basic dimensions of multi-functionality of agrarian and rural development of the Republic of Serbia. This is the reason for carrying out the analysis of indicators of multifunctional agrarian and rural development in this paper, first from theoretical point of view and afterwards in practice.

The objective of the research is recognition of places the Republic of Serbia has in its environment regarding modern agrarian and rural development related to the concept of multi-functionality. To get the right picture of this problem, it is necessary to perceive the basic characteristics (advantages and disadvantages) of multifunctional agrarian and rural development.

Starting from the problem of researching, as well as its objective, the basic hypothesis of this paper is as follows: the Republic of Serbia is at the beginning of multifunctional agrarian and rural development.

The analysis of the agriculture multi-functionality problem requires applying of quantitative indicators such as composite indicators. The composite indicators are obtained by means of compilation or aggregation of a number of individual indicators organized within a clear theoretical model, clearly defining multi-dimensional phenomena as competition, sustainable development, economic structure etc. Advantages of the composite indicators become apparent especially in situations which require solutions concerning complex economic and social questions. Indicators facilitate imposing of public and political discussions at right time, making decisions and informing the public. The basic quality confirmation of a composite indicator lies in its capability to meet requirements and be accepted by users and scientific-expert practice .As the result of the quantitative analysis, there are conclusions concerning the observed problem. The correlative analysis was applied on the observed sample data (composite indexes) and adequate conclusions are drawn on the basis of the result of the applied analysis.

Multi-functionality and agricultural production systems

The term multi-functionality appeared in political documents concerning developing concepts of agriculture and rural regions during the last decade. Conceptual interpretation of multi-functionality is rather heterogeneous, so, from theoretical point of view, it has not been properly systematized yet. The concept of multi-functionality promote the idea that the agricultural production system, besides its basic functions has numerous non-productive externalities related to both sustainable and rural development, as well as a substantial social-demographic component. (Bogdanov, 2005).

According to it, agriculture can be called multifunctional if besides food production it also provides other benefits, such as: safe food for population, appropriate rural life conditions and environment protection.

Agricultural production development is carried out with different intensity and has economic, ecological and social characteristic. Noticeable detachment from conventional agriculture took place in 1960s , which resulted in ignoring and neglecting of basic functions and activities in rural districts On the other hand, social recognition that these functions must be treated with care, increases. As a result, a few alternative systems of agricultural production were developed in the following decades, among which there is multifunctional agriculture as well (Figure 1).

Figure 1: Agriculture production systems
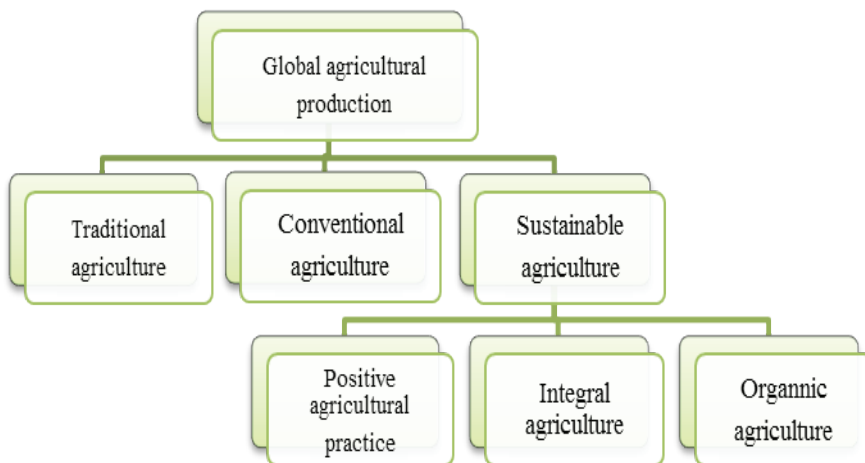
Source: Miltojevic,V.(2011) Culture as sustainable development dimension, Themes

Global agriculture production comprises traditional and conventional agriculture, as well as sustainable agriculture systems with the most frequently present: good agricultural practice, integral and organic (biological, ecological) agriculture.

Traditional agricultural production is the one carried out on small farms .It prevails in rural districts of Serbia and mountainous regions.

Conventional agriculture has to provide maximum production, in respect to quantity and quality, with minimal expenses. The measures applied in conventional agricultural production led to degradation of resources with limited ability of self-regeneration, without which people cannot exist.

Integral agriculture is actually improved conventional agriculture and the primary intention of this concept is reduced application of dangerous pesticides.

A group of economists united in The World Commission for Environment and Development (Brutland Commission) has introduced the term sustainable development into world's economy. This new concept has been introduced for the purpose of reconsidering the former development concept, based on constant increasing of growth and profit rate. Sustainable development is the development which meets requirements of the present time, without endangering capabilities of future generations to satisfy their own needs. The organic agriculture, which protects all existing resources, is an integral part of sustainable agriculture.

Limitations on above mentioned systems of agricultural production, as well as the experience gained through their application, with the addition of remarkable social ,economic and ecological pressures, created a new concept of multifunctional exploitation of land and multifunctional agriculture which would include all basic functions of rural districts (environment protection, sustainability of natural and agrarian-historic ambient , climate control and global heating effects and health and welfare care). (Bogdanov, 2005).

Multifunctional agriculture is characteristic for European countries and it is famous for its lowest participation of agricultural population and relatively favorable ratio of land and population. Not only EU but also all other "friends of multifunctional agriculture" (Japan, Switzerland, Norway) recognized the fact that, besides food production, agriculture has the other non-market functions which should be respected.

Basic dimensions of multifunctional agrarian and rural development

The multifunctional model of agrarian and rural development is synchronized with natural environment and tends to preserve the environment in sustainable development. Serbia has to define the national (social, economic, ecological) priorities in its rural development and they must be directed by accepted models of extended environment, first of all EU. The basic objective is negative trends holding up (demographic and economic) as well as preserving of natural and cultural heritage of rural surrounding.

The concept of sustainable development appeared in 1980s and it is defined as " development meeting present problems without questioning the possibility of future generations to satisfy their needs" (the report of Brutland commission on environment and development). It is actually a new approach, known as "3 pillars model" comprising ecological, social and economic objectives (Figure 2).

Figure 2: *Sustainable development dimensions*
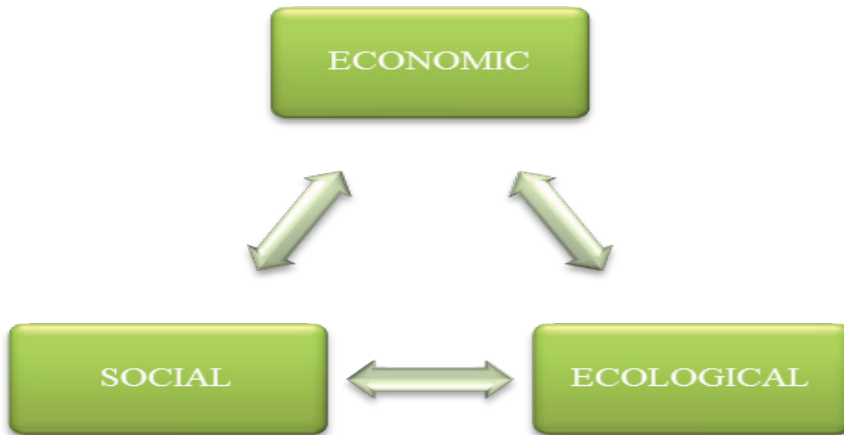
*Source: Miltojevic, V (2011) culture as sustainable development dimension,
Themes,35(2)*

A fundamental pillar which is the framework of sustainable development is an economic pillar; i.e.it is a principle of coordination of economic development with resources and production capacities. Disrespect of sustainability concept leads to inefficient economic development in terms of bigger and bigger dissipation of resources and energy. The economic dimension is observed through two fields: production and economic structure and consumption.(Miltojevic, V; 2011).

A social pillar refers to social relations, increasing of welfare of population, improving of the approach to basic health and educational services, satisfying of minimum standard of protection and human rights respect. It is followed through five fields: health, social justice, education, population, safety and dwelling.(Miltojevic, V; 2011).

An ecological pillar expresses concern for conservation and increasing of physical and biological resource basis of ecosystem. Ecological system includes elements of the environment that mankind use in activities processes and adjusts it to meet owen needs. On the other side, the men often produce a lot of unwanted products, which burden the ecosystem. (Mihajlovic D., Ilic B., Simonovic Z., 2013) It is observed through five fields: atmosphere, land, oceans (sees), waters and bio-diversity. (Miltojevic, V; 2011).

According to numerous authors, if there is a wish to reach sustainable development it is necessary to adjust four supports of sustainable development: economic, ecological, social and cultural. There are also authors who share opinion that sustainable development must not be reduced to three dimensions, but they also think that the fourth dimension does not comprise culture. They mentioned political or even institutional dimension as the fourth pillar of sustainable development.

The analysis of basic dimensions of sustainable development, which is the framework of multifunctional agricultural development, will be carried out by means of composite indicators. Generally speaking, an indicator is a quantitative or qualitative measure originating from numerous facts and it can reveal and indicate the direction of

change in one field. The indicators are very useful for trends identification and drawing attention to certain questions of interest.

Multi-functionality dimensions analysis

For analysis of basic dimensions of multi-functionality, the countries of Southeast Europe, among which is Serbia, are observed. They make an entity in the Southeast of European continent. The percentage of rural population is considerable in the total and it is similar in all countries of the Southeast Europe. According to the data for 2008, 2010, 2012 and 2014 it can be concluded that most countries characterize decreasing of rural inhabitants' number every year. It is interesting that Greece has the smallest percentage of rurality (about 24%), and Moldavia and Bosnia the biggest one (Table 1, Figure 3).

Table 1: *Rural population (% of the total)*

Country	2008	2010	2012	2014
Albania	50	48	46	44
Bosnia	53	52	51	60
Bulgaria	28	27	26	26
Croatia	43	42	42	41
Macedonia	41	41	41	43
Romania	47	47	47	46
Serbia	45	44	43	45
Moldavia	55	53	52	55
Montenegro	37	37	37	36
Turkey	31	30	28	27
Greece	24	24	23	22

Source: http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS

Figure 3: *Rural population participation in the total by countries (in %)*
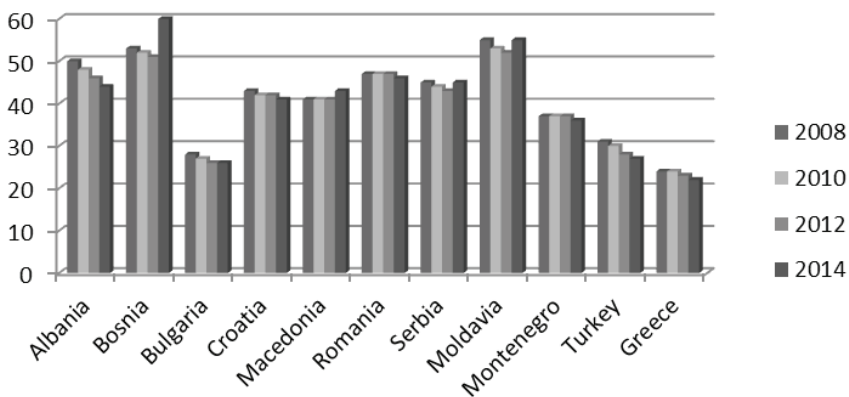
The countries of Southeast Europe (SEE) have been in the process of transition for last fifteen years Although institutional and structural reforms are the main challenge in the whole region, macroeconomic characteristics are noticeable in the region During 2004 and 2005 the countries of SEE experienced the biggest economic growth since the beginning of transitional changes, with similar tendencies in next years, although at slower rate. The participation of mining, industry, agriculture and forestry dominate economic structure, while the services sector is not so developed.

It is necessary to define the set of indicators of the development, for both monitoring of the achieved level of development, and creating of an appropriate strategy and the policy of multifunctional agrarian and rural development. Some of the most important indicators for monitoring of the achieved level of multi-functionality are: employment rate, expected lifetime, emission of poisonous gases etc. Besides these, there is also a **composite indicator** and it stands for an aggregate index which comprises individual indicators and corresponding weight coefficients that usually represent relative importance of each indicator. It measures multi -dimensional concepts which cannot be comprised by a single indicator. The composite indexes include indicators of economic, ecological, social and innovative dimension of multi-functionality. Each dimension of multi-functionality is equally important, but in some specific circumstances some of them are given priority.

Economic growth is in the focus of the *economic dimension of multi-functionality*, but with limitations imposed by natural conditions. In fact, this dimension implies effective usage of natural resources for economic growth ensuring. Besides the indicators such as consumption level, production, and trade, one of the significant indicators of economic dimension of multi-functionality is GNP per capita. Gross national product is the total value of end products and services manufactured in a country in a given period. Gross value added (GVA) is a part of GNP increased by taxes and reduced by subventions. In this case, GVA is observed as an economic dimension and Table 2 presents the data referring to GVA in agriculture (% of GNP) for 2008, 2010, 2012 and 2014.

Table 2: *Gross value added in agriculture (% of GNP)*

Country	2008	2010	2012	2014
Albania	19.4	20.7	21.7	22.6
Bosnia	9.1	8.4	7.7	7.6
Bulgaria	7	49	53	53
Croatia	5	49	45	43
Macedonia	13.3	11.7	10.5	10.2
Romania	6.6	6.3	5.3	5.4
Serbia	10.3	10.2	9	9.7
Moldavia	10.7	14.4	13.4	15
Montenegro	9.3	9.2	8.9	10
Turkey	8.5	9.5	8.8	8.0
Greece	3.2	3.3	3.7	3.8

Source: Beyond GDP, http://www.beyond-gdp.eu/index.html

For environment policy creators, identification of the most significant problems of the natural resources and environment field, is of crucial importance as it can help

them direct the actions to their elimination and lessening. Besides that, the importance of establishing ***environment indicators*** is at the same time the possibility of making comparison with indicators of other countries and establishing the achieved level of ecological performances. EPI index is one of the indexes showing the countries to what extent they have progressed in fulfilling targets concerning environment policy (this methodology has been developed by the World Economic Forum, Yale University and Columbia University). The Table 3 shows tabular presentation of EPI index for the countries of South-East Europe for 2008, 2010, 2012 and 2014.

Table 3: EPI by the countries

Country	2008	2010	2012	2014
Albania	84	71.4	65.86	54.73
Bosnia	79.7	62.5	36.76	45.79
Bulgaria	78.5	55.9	56.28	64.01
Croatia	84.6	68.7	64.16	62.23
Macedonia	75.1	60.6	46.96	50.41
Romania	71.9	67	48.34	50.52
Serbia	-	69.4	46.14	69.13
Moldavia	70.7	58.8	45.21	53.36
Montenegro	-	69.4	46.14	55.52
Turkey	75.9	60.4	44.8	54.91
Greece	80.2	60.9	60.04	73.28

Source: 2014 Environmental Performance Index and Pilot Trend Environmental Performance Index, Yale University (Yale Center for Environmental Law and Policy – YCELP), Columbia University (Center for International Earth Science Information Network - CIESIN) in collaboration with World Economic Forum, 2014. Available at http: www.epi/yale.edu/downloads

SSI Index (Sustainable Society Index) has been chosen for the analysis of the ***social dimension*** of sustainable development in this paper. The main goal of this index is stimulating and helping nations (countries) in their development through sustainability on their way towards multi-functionality.SSI is estimated on the basis of 21 indicators classified into three welfare categories (ecological ,human and economic welfare). The Table 4 presents SSI values for the countries of Southeast Europe for the observed period.

Table 4: *SSI by countries*

Country	2008	2010	2012	2014
Albania	6.26	6.5	5.76	5.64
Bosnia	5.96	5.83	3.92	4.75
Bulgaria	5.84	6.3	5.13	5.93
Croatia	5.97	6.53	5.55	6.05
Macedonia	5.76	6.07	4.94	5.22
Romania	6.09	6.7	5.48	6.47
Serbia	5.53	6.39	4.5	5.24
Moldavia	6.21	6.5	4.87	5.69
Montenegro	5.58	6.47	5.6	5.86
Turkey	6	6.07	4.77	5.53
Greece	5.75	6.13	4.32	4.94

Source: Sustainable Society Foundation

The innovation index has been chosen for ***innovation*** analysis in this paper. Technological innovations, especially important for continuous growth of highly

developed world economies, represent one of the competition pillars. Less developed countries can still achieve big productivity growth owing to improvement of institutions, infrastructure and similar fields, but it is no longer enough for economies led by innovations Long-term growth in the living standard and competition strengthening could be improved only by means of technological innovations adopting and applying. This implies creating of environment which is completely oriented towards innovative activities and has support of both private and public sector. The Table 5 shows innovativeness indexes for the countries of East Europe.

Table 5: *Innovativeness index*

Country	2008	2010	2012	2014
Albania	2.22	2.57	2.58	2.7
Bosnia	2.37	2.59	2.84	2.8
Bulgaria	2.91	2.91	2.94	2.9
Croatia	3.41	3.08	3.09	3.1
Macedonia	2.86	2.88	2.81	3.3
Romania	3.14	2.94	2.91	3.3
Serbia	3.09	2.93	2.9	2.9
Moldavia	2.49	2.44	2.40	2.5
Montenegro	2.96	3.48	3.39	3.4
Turkey	3.16	3.10	3.15	3.4
Greece	3.18	3.00	2.98	3.2

Source: http://www.weforum.org/issues/competitiFveness-O/gci2014-data-platform/

In order to examine matching i.e. intensity (strength) of the connection of all four indicators simultaneously, the coefficient of multiple linear correlation for each observed year has been calculated. Prior to the coefficient calculating, the analysis of available data was carried out and an appropriate indicator of interdependence of observed indicators was chosen. Interpretation of obtained indicators is carried out to Cohen (Cohen,1988).

The *multiple linear correlation coefficient* for **2008** is 0,790 (between 0,5 and 1,0) which suggests that there is a substantial correlative connection of practical importance between observed indicators. As this coefficient shows only the matching degree but not the direction, it is necessary to calculate so called partial correlations.

The *partial correlation coefficient* shows the degree (intensity) of the connection between two observed indicators without taking into account the influence of the others as well as their matching direction. The Table 6 contains the value of a coefficient of correlation between dimensions of multifunctional rural development in 2008. The calculated correlation coefficients show that the degree of matching between innovativeness and GVA (-0,737) is substantial but between innovativeness and SSI (-0,472) medium. It is interesting that these coefficients demonstrate inverse connection between observed indicators. The explanation can be found in the analysis of available data. Innovativeness as well as a social component in the observed year, did not have the expected influence on GVA, i.e. these two indicators point to insufficient investments which affected inverse connection. Taking into consideration p-value for interdependency between the innovativeness index and GVA, it can be concluded that the calculated coefficient cannot be accepted as a valid indicator. Concerning interdependency between INOV and SSI, the fact that bigger investments and innovations have negative influence on the social component, can be accepted. The other coefficients are irrelevant and they will not be the subject of the analysis.

Table 6: *Value of the coefficient of correlation between dimensions*
of multi-functional rural development in 2008

		GVA2008	EPI2008	SSI2008	INOV2008
GVA2008	Pirson's correlation coefficient	1			
	p-value				
EPI2008	Pirson's correlation coefficient	**0.071**	**1**		
	p-value	0.856			
SSI2008	Pirson's correlation coefficient	**0.317**	**-0.105**	**1**	
	p-value	0.342	0.788		
INOV2008	Pirson's correlation coefficient	**-0.737***	**0.003**	**-0.472**	**1**
	p-value	0.010	0.994	0.142	

*The correlation is statistically significant on the level of significance 0.05.
Source: The author's own calculation

The *multiple linear correlation coefficient* for **2010** is 0,679 (between 0,5 and 1,0) which suggests that the interdependence between all four indicators is substantial and of practical importance. Analyzing of obtained *partial correlation coefficients* leads to the conclusion that there is still substantial correlation degree between INOV and GVA .It is actually an inverse connection between observed indicators (-0,516). There is a substantial matching degree between SSI and EPI- it is a direct (0,509) connection. One should be cautious with the interpretation of the obtained indicators, as they are close to the lower limit for the intensity of the connection considered as a substantial one.

Table 7: *Values of coefficient of correlation between dimensions of multi-functional*
rural development in 2010

		GVA2010	EPI2010	SSI2010	INOV2010
GVA2010	Pirson's correlation coefficient	**1**			
	p-value				
EPI2010	Pirson's correlation coefficient	**0.304**	**1**		
	p-value	0.363			

SSI2010	Pirson's correlation coefficient	**0.152**	**0.509**	**1**	
	p-value	0.665	0.110		
INOV2010	Pirson's correlation coefficient	**-0,516**	**0,240**	**0.116**	**1**
	p-value	0.104	0.477	0.734	

Source: The author's own calculation

The *multiple correlation coefficients* which is 0,707 has been calculated for **2012**. This coefficient shows a substantial connection (between 0,5 and 1,0) between observed indicators. In order to get the idea concerning observed indicators interdependence, the values of the *coefficient of correlation* between dimensions of multifunctional rural development will be analyzed (Table 8). According to the Table 8 data, it can be noticed that there is a high degree of inverse matching between INOV and GVA (-0,580), as well as between social and economical component – a direct (positive) connection which is 0,539.

Table 8: *Values of coefficient of correlation between dimensions of multifunctional rural development in 2012*

		GVA2012	EPI2012	SSI2012	INOV2012
GVA2012	Pirson's correlation coefficient	**1**			
	p-value				
EPI2012	Pirson's correlation coefficient	**0.129**	**1**		
	p-value	0.706			
SSI2012	Pirson's correlation coefficient	**0.309**	**0.539**	**1**	
	p-value	0.355	0.087		
INOV2012	Pirson's correlation coefficient	**-0.580**	**-0.047**	**0.122**	**1**
	p-value	0.062	0.890	0.722	

Source: The author's own calculation

The *multiple correlation coefficient* which is 0,610 has been calculated for **2014**. This coefficient shows a substantial connection (between 0,5 and 1,0) between observed indicators. In order to get the idea concerning observed indicators interdependence,

the values of the *coefficient of correlation* between dimensions of multifunctional rural development will be analyzed (Table 9.). According to the Table 9 data, it can be noticed that there is a high degree of inverse matching between INOV and GVA (- 0,530).

Table 9: *Values of coefficient of correlation between dimensions of multifunctional rural development in 2014.*

		GVA2014	EPI2014	SSI2014	INOV2014
GVA2014	Pirson's correlation coefficient	**1**			
	p-value				
EPI2014	Pirson's correlation coefficient	**0.321**	**1**		
	p-value	-0.336			
SSI2014	Pirson's correlation coefficient	**-0.038**	**-0.105**	**1**	
	p-value	0.911	00.758		
INOV2014	Pirson's correlation coefficient	**-0.530**	**0.037**	**0.171**	**1**
	p-value	0.094	0.915	0.615	

Source: The author's own calculation

The calculation results presented in the previous tables suggest that the interdependence between observed indicators of multi-functionality is irrelevant for a practical analysis, besides the fact that multiple correlation coefficients are high. The detailed analysis of the level of partial coefficients of correlation points to this conclusion. Such researching result is expected taking into account that it refers to the countries on their way to multi-functionality. Multifunctional agrarian and rural development is characteristic for the EU countries, whereas the countries of Southeast Europe are just at the point of finding their way towards multifunctional agrarian and rural development.

Conclusion

The quantitative analysis of multi-functionality basic dimensions, through composite indicators, measures multidimensional concepts that cannot be comprised within a single indicator. Composite indicators include economic, ecological and social indicators, as well as innovative dimensions of multi-functionality. Each dimension of multi-functionality is equally important, but in some specific circumstances, some of them are given priority. The concrete analysis of composite indicators reflects the real situation in our agricultural production, besides the fact that the taken sample is

small. The interdependence, i.e. .the power of connection between observed indicators is irrelevant for practical analysis even besides the fact that that multiple correlation coefficients are high, meaning that that Serbia is at the beginning of its multifunctional agrarian and rural development.

Multifunctional agriculture is characteristic for the European countries and it is characterized by the smallest participation of agricultural population and relatively favorable ratio of land and population.

Modernization of agriculture, as well as market influences, implies existence of the most competitive agricultural producers. Its consequence is significant participation of rural population which, after abandoning agriculture as the basic activity, find employment in non-agricultural sphere The non-agricultural activities sector is an extremely important promoter of the all economic activities in rural districts.

If the measures concerning employment in rural districts are not taken, migrations in the direction rural districts – towns are often imposed as the only "solution" .Besides all these difficulties, poor quality and difficult living conditions in the country favor migratory movements a lot.

In order to carry out .rural developing processes, great attention must be paid to capability of rural population to manage these processes and influence improvement of quality of life in their local communities.

If conditional separation of two paradigms, modernization and rural development, is accepted, Serbia must follow both ways. In order to increase competitiveness of agriculture, it is necessary to modernize it. Strategic orientation to rural development must be on the priority list.

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ATTAINING THE STRATEGIC ADVANTAGE IN LARGE BUSINESS SYSTEMS THROUGH THE PUBLIC PROCUREMENT SYSTEM

Abstract

Purchasers and bidders, in the sense of Public procurement law, represent one of the most important factors of the economic and social system as a whole. Their significance is multiple, and due to a difficult situation and the period of post-economic crisis, the idea of necessity of a change in business operations of the participants in business environment is emphasized, especially in the public sector, in order to reduce to a minimum or completely eliminate the multiyear losses in business operations, which represent a crucial, but not the only, indicator of business success. Radical turn in the sense of business operations of the purchasers represents a risk. The more radical the strategic option, the greater the risk. However, this paper rests on the idea that the turn is not the strategy which should be applied to the purchasers and the large business systems in public sector, because by radical changes in one segment of the large system we can disturb its other parts and experience fatal consequences for the system as a whole. Instead, a situational, adaptive model is suggested, with the dominant application of incremental, „step-by-step“ strategic steps, in order not to disturb the structure of the system. Also, besides the measures connected to the current business operations, in certain segments we mention the factors which are not absolutely in reach of large business systems, but they would significantly contribute to better business operations and of course to rehabilitation of losses. Everything mentioned, regardless of the level and correlations between the mentioned factors, is shown through the thematic of public procurements, through which the contracting of the largest number of businesses in public sector happens.

Key words: *public procurements, strategy, system, transformation, risk*

JEL classification: M2, M21, H11

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ОСТВАРИВАЊЕ СТРАТЕШКЕ ПРЕДНОСТИ
У ВЕЛИКИМ ПОСЛОВНИМ СИСТЕМИМА
КРОЗ СИСТЕМ ЈАВНИХ НАБАВКИ

Апстракт

Наручиоци и понуђачи у смислу Закона о јавним набавкама, заједно представљају један од најбитнијих чинилаца, како економског, тако и друштвеног сытема у целини. Њихов значај је вишеструк, а због тешке ситуације и периода пост-економске кризе, често се истиче идеја о неопходности заокрета у пословању учесика у пословном окружењу, а нарочуто у јавном сектору, како би вишегодишњи губици у пословању, који представљају веома важан, мада не једини индикатор пословне успешност, били сведени на минимум или потпуно елиминисани. Радикални заокрет у смислу пословања, наручилаца представља ризик. Што је стратегијска опција радикалнија, то је ризик већи. Ипак, овај рад почива на идеји, да заокрет није стратегија коју треба применити на наручиоце и велике пословне системе у јавном сектору, јер радикалним променама у једном сегменту великог система, можемо пореметити остале његове делове и доживети фаталне последице за систем у целини. Уместо тога, сугерише се ситуациони, адаптивни модел, уз доминантну примену инкременталних, „степ-бу-степ" стратегијских корака, како се структура система не би пореметила. Такође, поред мера везаних за текуће пословање, у извесним сегментима су поменути и фактори који апсолутно нису у домашају великих пословних система, али би у великој мери допринели бољем пословању и наравно санирању губитака. Сво ово, без обзира на ниво и корелације између поменутих фактора, прожето је кроз тематику јавних набавки, кроз које се врши уговарање највећег броја послова у јавном сектору.

Кључне речи: *јавне набавке, стратегија, систем, трансформација, ризик*

Introduction – significance of the adequate
strategy defining

Defining the best strategy for large business systems management, in public, private, mixed ownership sectors, represents a challenge for the theoreticians in the long run, and as it seems, it shall remain a challenge in the future period due to changes and the dynamics of the environment. Management of every large business system must have a defined strategy of business, growth, i.e. development of the company, especially in the dynamic environment, such as today's business environment. In this context, it must define the long-term business and growth strategy.[4] This represents an issue and a challenge in the already mentioned dynamic environment, which we can freely define as – constant revolutionary environment. The constancy of changes in the modern business

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[4] Period of five years represents a real framework.

operations asks for finding the new ways to approach the issues of large companies' transformation. As the time passes and the conditions in which business operations are done change, new definitions and versions of transformation strategies of the mentioned systems, become necessary.

On the other hand, the area of public procurement management represents a young branch of science on management and the area whose studying, empirical researches and application should in the future provide real results. There are multiple reasons for this. First of all the enormous amount of money which is spent through public procurements, which is around 20% of GDP of European Union, according to the estimates[5]. Besides this, more and more people work in the field of public procurements, and the need for new public procurement managers is constant. The problem of corruption, which is real in public procurements, also can be eased, or removed by constant education, by educating the employees who work in public procurements and by raising awareness of all participants in these businesses[6].

The changes represent the necessity and a reality. Therefore the management must, in the adequate way, react to them and adjust to them or oppose them if necessary. That is why, the papers such as this one, have a great significance and conduct their own mission, in order to contribute, in a quality manner, to the development of the theoretical aspect, of the strategic management, connected mainly to large business systems, but also to the economic and legal science in general. Result of the research published in this way, refers also to the contribution to management and science of economics in general, but also to the preparation of the domestic professional public. According to the results of the mentioned analysis, we conducted the elaboration with the goal of modelling and conducting of certain elements for the necessary harmonization of the regulations related to the mentioned areas, as well as provide the suggestions of key elements for constant monitoring and analysis. Successful business operations of the modern large business systems in current market conditions, imply the management of quality resources, necessary for the functioning of the company and successful operational and strategic management, directed towards the realization of the goals of the organization. Older concepts, which once implied the classical term of management and organization of the company, today are no longer adapted to the new commercial, social and economic movements and are subjected to changes.

When we look for a common denominator in large business systems in private and state ownership, through whose improvement an increase of competitive advantage can be achieved, we find – public procurement management. When we speak of public procurement management we should observe it in three ways:

- Public procurement management as a process of management of business operations of public procurements, of the steps, actions or overall public procurement system, in order to achieve goals in accordance with the provisions of law,
- Public procurement management is also defined as a special group of people whose job is to manage the execution of business operations and tasks in the

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[5] Prof. Gustavo Piga, Sarajevo 2015.

[6] Špiler, M.. (2016). **Menadžment javnih nabavki,** Center for procurement management, Belgrade, p. 9

field of public procurements, as well as operations done by other people, in order to achieve more efficiently the foreseen, common goals in accordance with provisions of law.

- Public procurement management is defined as the special scientific area which deals with examining the problem of public procurement management, as well as the special scientific discipline[7].

Basic start of this research represents the idea on the new perspective of the existing segments of studying and defining of large business systems, as well as defining the new, made paradigms and strategies of their transformation in the current period, through the prism of analysis of the advantages of the upgrading the strategy of public procurements. The challenge of deeper consideration of the business systems, as the group of institutions and mechanisms for delivering and implementation of the decisions which relate to the division, exchange and consumption in one country in a certain time frame, is not to be neglected and represents a great motive. Large business systems must be defined and considered as exceptionally complex category. According to the general theory of the system, every system represents the group of parts which form one functional system, thus connected by the links which make it. Defining the strategies of transformation of large systems is approached in accordance with the factors which have an influence on the system. Here we have primary factors of the production, social and historical factors, as well as the sequence of interconnected active elements. Business system is a part of the large social system which consists of large number of subsystems, therefore there is a large number of connections between the business and other systems. It is open and very dynamic, complex and has a large number of connections, and there are also the return connections. A significant area of research also represents the consideration of tendencies which happen in the world in the field of restructuring the large systems and analysis of strategies of their transformation, not only in the developed countries but also in the countries in transition. Their experience can be of great significance for the continuous changes in Serbian companies. Strategies of company reorganization include a wide field of analysis which imposes numerous dilemmas and requires solving many issues of strategic, organizational, financial and technical nature.

Constant changes in the environment, change in the ownership structure of the companies, their business restructuring and changes in the financial structure are a constituent part of business operations of companies nowadays. Phenomenon of public goods and the process of privatization, towards which the relation was different in different stages of development, shall also represent the challenge which requires a precise strategic defining. This issue becomes especially emphasized today, especially in countries in transition. Since Serbia is currently in the phase of general transition and anticipation of the final stage of process of transformation of social, state, i.e. public into private assets, this issue gains its significance. The consequences of the privatization should be analyzed in detail at different levels, but also to mark very precisely the negative effects. Therefore it is clear, how complex it is to reach and point to all the aspects of public goods and especially organizations owned by the state, as well as the

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[7] Špiler, M.. (2016). **Menadžment javnih nabavki,** Center for procurement management, Belgrade, p. 10

transformation of the companies which are entrusted with the management of the goods. Having in mind the specificity of the situation in which the companies in Serbia are, and which is characterized by general insolvency, losses, vulnerability of existence of majority of companies, this problematics gains significance and actuality.

Uncertainty and risk of poor choice and not matching the strategy to the concept of public procurements

If we start from the previously mentioned fact that 20% GDP of European Union relates to business operations involved with public procurements, as well as to the fact that this area is not at the adequate level theoretically and scientifically, and that it is also not determined practically to a great extent, it is obvious that there is the need for further examination of this field. Generally accepted attitude that one should influence, in all possible ways, the decrease of corruption and obtaining the best prices and quality of the goods, services and works, which are procured by the state, has contributed to the development of the system of public procurements in the entire world. However, despite that for example the Government of the USA spends around 15 to 20 percent of their GDP to the contracts for the goods and services, there is still more space to improve these procedures[8]. Therefore, authors in this area try to define the way of functioning of the public procurement system, but public procurement in general, searching for the best ways of improvement of the profitability of the procurement system. By taking the multidisciplinary approach, one should be focused on the managerial, economic, political and legal aspects, when defining this problematics. In order to achieve the best results, one should analyze the conceptual framework, as well as the suggestions and the reforms which occur in certain countries which apply the same or similar systems, based on what, from the legal aspect, we can apply the knowledge on creating the individual strategies. It should be emphasized that public procurements did not find their application only in the countries of the European Union, but also in the USA, China, South Africa, Cambodia, Uganda etc.[9].

Having in mind these data, it is clear that while defining the new strategic option, which the management plans to apply in a large business system, there is a common thread – public procurement management, as a way to prevent the uncertainty and loss. Even though they are used as synonyms, because of their significance regarding this subject, it is necessary to explain that relation between the risk and uncertainty. Namely, uncertainty relates to the state which characterizes the possibility of some event happening or not. So, there is not enough knowledge about the event itself, whether it will happen or not. Uncertainty is the opposite state of the state of certainty, in which state there is knowledge and certainty on whether a certain event shall happen or not. So, for example, certain events are unattainable (uncertain), the probability is equal to zero, while certain events have the probability of happening equal to 1. In terminology

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[8] Khi V. Thai: International Handbook of Public Procurement, Florida Atlantic University, Boca Raton, USA Louisiana State University, Baton Rouge, 2008.

[9] Špiler, M.. (2016). **Menadžment javnih nabavki,** Center for procurement management, Belgrade, p. 10

(scientific approach to probability) the uncertainty means that the probability is estimated between 0 and 1. That is why certain authors equate the uncertainty and risk. In other words, they talk about the uncertainty and the subjective and objective risk. The existence of risk or the set of circumstances in which a loss can happen, creates the uncertainty for an individual who recognizes risk. Assurance of the individual, or the absence of the assurance regarding a certain state can but not necessarily be equal to the real state. Subjective risk is defined as individual understanding of risk, or as uncertainty based on the individual mental understanding of risk or individual understanding of risk by the managers. Objective risk is called the degree of risk and it is defined as relative deviation of the real from the expected loss.

The probability of material loss during inadequate strategic decision, as well as poor application of the strategy, is tightly connected to the notion of risk. Namely, the probability of loss is most often defined as probability that a certain unfortunate event shall happen. Objective probability of loss represents long-term relative frequency of some accidental event based on the assumptions of endless number of observations and unchanged outcome (basic) conditions. Subjective probability represents individual personal assessment of the probability of realization of loss (damage). Subjective probability requires incongruity with the objective probability.

Public procurement law represents a constituent part of legislation, of not only the members of European Union, as well as other countries which tend to gain membership in the Union, but also of all the modern democratic countries. Still, the fact that they delivered the Public procurement law, does not liberate them of responsibility of application of the same. This mentioned application and the conducting of the Public procurement law, represents a problematic segment, because even after the Country delivers the laws, their adequate application often remains inadequately conducted, which is, to a great extent, a case with the Public procurement law. The mentioned fact represents a great problem, because the list of interested parties, the so-called stakeholders, in this area is large. Therefore the basic task of the managers of the large business system, is to incorporate all aspects of the public procurement system, i.e. to plan, organize and control the system of public procurements they manage. In this sense, organization implies arranging, coordination and management of overall relations in the process of public procurements, in order to realize goals in the most successful way and in accordance with the provisions of the law[10].

Choice of business strategy of large business systems

Based on the set problem, the goal of the research is the choice of adequate transformation strategy and the acquiring of conditions for the best possible functioning, especially of large business systems and the purchaser in the dynamic environment. It is necessary to contribute, to a great extent, to the creation of conditions for future successful business operations, and eventually the growth of the company, but also to assess the effects of the change in productivity, employment and expenses of labor,

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[10] Špiler, M.. (2016). **Menadžment javnih nabavki,** Center for procurement management, Belgrade, p. 12

which shall, in the future period, happen in Serbian but also in other companies, with all limitations which the legislative framework bears, especially in the part of conducting the public procurements, which is the subject of this paper. In that sense, it is important to define what are the elements of legislative framework, not only of the public procurements, but also any other field. It includes the laws, provisions, decisions and rulebooks. Besides the Public procurement law[11], which arranges public procurements in the Republic of Serbia in a systematic way, the legislative framework also includes laws which apply to the public procurements, such as: Budget system law[12], Law on Budget of the Republic of Serbia, Law on public enterprises[13], Law on obligations, Law on administrative procedures[14], special laws which define the areas within which the subject of the procurement is, such as: Law on Planning and Construction, the Law on railways, the Law on energy, Law on insurance, Law on financial leasing, Sports law, Law on postal services, Tourism law and other laws[15].

Having in mind the mentioned laws, it is undoubtable why the conducting of public procurements is complex to such a great extent, but also the standpoint which imposes itself is that by conquering this problematics a vast possibility is opened for the creation of the competitive advantage of the company, regardless of the legal form. Also, it is extremely important to look into the segment of covering the potential losses, which can be created in case of selecting a strategy which shall not deliver the results which the management of the company anticipated and wanted.

Inability of defining a uniform startegy

The starting idea of the research of the best business strategy of the large business systems, logically has the starting point in the need to define one, best applied, first among equals – strategy. Still, by analyzing all the applied business strategies in modern economic, as well as science on management and having in mind the abovementioned facts on the dynamics of the environment and modern market conditions, the thesis which imposes itself is that it would be wrong to set one, ideal strategy, applicable to the group or all large business systems. In order to reach the mentioned hypothesis, through strategic analysis or general and special goals of large business systems, analysis of external environment, as well as analysis of internal environment, a theoretical framework is created for formulation of the strategy at the level of business unit, and then at the level of the company, in order to obtain the preconditions for formulating the strategy of a large business system or, in perspective international strategy or the strategy of digital business etc. All of this represents the precondition for the implementation of the strategy in a large business system, which includes: strategic control and corporate management, creation of effective organizational design, creation of learning organization and ethical

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[11] „Official gazette of RS", no. 124/12, 14/15 and 68/15

[12] „Official gazette of RS", no. 54/09, 73/10,101/10, 101/11, 93/12, 62/13, 63/13 and 108/13

[13] „Official gazette of RS", number 119/12

[14] „Official gazette of FRJ", no. 33/97, 31/01 and „Official gazette of RS", number 30/10

[15] Mitrović – Žitko, N., Špiler, M. (2015.). *Javne naabavke u Republici Srbiji*, IEP, Belgrade, p. 54.

organization, but also the creation of new business ventures. But in order to achieve the implementation, it is necessary to set the strategic paradigm. In the best possible way in accordance with the needs and possibilities of a business system. It is clear that depending on the degree of risk and the level of the change which is brought by the strategic choice, we define the mentioned level of risk i.e. security[16].

The significance of the document Public Procurement Development Strategy in the Republic of Serbia, delivered by the Government of the Republic of Serbia for the period from 2014. to 2018., should be added to this analysis. The strategy itself is based on the standpoint that a well arranged and unique public procurement system provides the conditions for free action of the competition among the bidders[17]. Free competition enables the state to, under the most favorable conditions, procure goods, services and works of the necessary quality and by doing so, in the most economical way, to use the money of the tax payers ("value for money"). In such a way significant savings are made and it is enabled for the saved means to be used for the increase of the quantity and quality of services which the state provides to the citizens, which improves the standard of living. Strategic goals of the public procurement reform are: creation and development of a unique system of public procurements in the Republic of Serbia, strengthening of the competition at the public procurement market, decrease in irregularities in the public procurement system, increase in the economy and efficiency of public procurements, promoting and encouraging the ecological and social aspect in public procurements, share of small and medium enterprises and encouraging of innovation, complete harmonization of domestic regulations with the directives and other acts of the European Union (hereinafter: EU) in the area of public procurements and their complete conducting in practice.

Strategic defining and source of adequate strategic option in the dynamic environment, represent the essential decision for the business of the purchaser and bidder, which is delivered after the comprehensive analysis. Basic strategic options in large business systems can be divided in so-called defensive, reactive and proactive strategies, or in three so-called "strategic front". Depending on the strategic source, i.e. strategy which the company shall apply, we shall define the risks and threats, and in accordance with that we shall consider the forms and height of the insurance of the assets of business system.

The lowest risks are brought by the strategies based on the smallest changes, and those are defensive strategic options. Defensive strategies include: status-quo strategies, strategies of minimum growth, pause strategy, caution strategy, strategy of expense leadership, differentiation strategy and focusing strategy. These are strategic options with the defensive connotation: narrowing, disinvestment and liquidation. Large systems are forced to apply defensive strategies in the period of recession, crisis but also when the company faces the problems of liquidity it is necessary to strengthen the working capital and when the roots to the problem are deeper the side activities are stopped, but also in the situations when the management assesses that it wants to "stop" at the existing level

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[16] Špiler, M. (2014.), *The importance of the Ensuring of Implementation of Strategic Management in Large Business Systems in Dynamic Environment*, Versicherungsgeschichte Osterreichs, Wien

[17] Ćurčić, N., Muhović, A., & Jovanović, Z. (2013.) *Konkurentnost firme kao ishodište efikasnog sistema motivisanja zaposlenih.* Ekonomika, vol.59 (4), 203-212.

of development. These strategies are absolutely most applicable to the organizations owned by the state, but also to the largest number of large business systems[18].

If, in the longer time interval, the business results are not improved in a large business system, a "recovery" has to be done by internal efforts, often with the support of the banks and eventually of the state. The so-called secondary strategic front, or reactive strategies, includes: downsizing[19], upsizing[20], downscoping[21], disinvestment strategies, strategies of collecting profit or strategies of liquidation of large systems.

These are the strategic options which carry a larger level of risk and therefore each of the options should be considered individually, in order for the decision on the need and the level of security to be evaluated as adequately as possible and delivered in the right way. This strategic modality, refers to the situation when the management is satisfied with the business results, so it opts for a stable strategic option, with the elements of the constant growth. Moreover, it reacts to the changes in the environment and adapts to them, because logically, every year it is expected at least a similar growth rate in the same business areas (mostly same products at the same market). Proactive strategies include the so-called "third front" and include the strategies of vertical integration, diversification, strategic option of the turn etc. The mentioned strategic options are connected to the changes motivated by the desire of the management of the large system to proactively react and prevents potential situations, i.e. reacts in advance. Firstly, this approach refers to the potential diversification, as the strategic option represents the attractive decision, but also the numerous limitations connected to its conducting, especially in large systems. Higher degree of diversification – linearly carries the higher degree of risk of consequences of thus conducted strategic decision. The mentioned strategic models could be applied more realistically in organizations from the private sector.

Still, comprehensively analyzing the problem, we should emphasize that the essence of setting the adequate strategic framework in a large business system, is usually based on the assumption that there is one best applicable strategy model, for the observed research area. All abovementioned strategies can be applied in business operations of the large business systems, but after the comprehensive analysis, none of them can be selected and defined as – first among equals. Instead, a large business system, due to its complexity, but also the environment in which the operations are conducted nowadays, should opt for a compromise solution and alternative strategic option, which shall include the best from all previously mentioned. Basic thesis, in that sense, lies in suggesting the consistency of incremental "step-by-step" changes which the large business system applies depending on the situation which it is in. Large business systems are slow and huge organizations, so it is practically impossible to impose one strategy and to apply it, not to all the large, but also to the one large business system and all its parts. Due to its size and complexity, large companies cannot be suggested to "detour" from the course in certain direction, because such huge structures can be potentially destroyed by it. In

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[18] Špiler M.: *Strategijski menadžment velikih poslovnih sistema*, Tronik dizajn, Belgrade, 2012.

[19] "downsizing " strategy

[20] "upsizing " strategy

[21] Downscoping strategy

addition to this there is also the awareness on the potential damage necessary for the height of the insurance premium, which grows analogously to the choice of the more radical strategic option. Basic starting point lies in the fact that the large companies must not be advised to use one – uniform strategy for all. Instead, large companies, just like large ocean liners, as is explained on one example, must constantly analyze the environment, strategically adapt to it and through „step-by-step", incremental changes, change and adapt to the dynamic environment which they are a part of.

Large systems, i.e. companies shall, according to the situation they are in, within business politics for the upcoming period, business they do, level of risk which is threatening from the internal and external environment (and which should be covered by the insurance policy) etc., define i.e. adopt and apply, the transformation strategy which is closest to the company. Of course, here we are not questioning the need for constant, at least incremental changes within the organization. In accordance with the general hypothesis, there are also the separate ones, which logically come out of the general and based on the following assumptions: constancy of the transformational process is caused and initiated by the changes from the environment, but also the internal need for the improvements at all levels. Large business system can wait for the external changes and events, but instead, it is more desirable to react proactively and to meet the changes in the environment, instead to wait for the consequences of those changes. Pursuant to this it shall define the best applicable transformation strategy. Within this paper we defined a large number of differently organized transformation strategies. It is clear that they are different to a greater or smaller extent. This is why their results cannot be equal, i.e. cannot bring the same level of changes in the company. The idea of this paper is to define, in the best possible way, rate and present the relevant strategies, out of which the company should choose the most favorable one in accordance with its own scope of activities and business policy, which has been previously defined.

It is important to mention that between the quality of selection of a strategy and transformation there is a high level of correlation and that by using the appropriate strategy one can conduct a successful transformation of large business systems in conditions of dynamic, i.e. permanently revolutionary environment. Therefore it is important to analyze, in detail, a large number of the mentioned transformation strategies and their application to the large business systems, and by that to prove that there is a large number of transformation strategies (of different levels) which are applicable to large business systems, and the management of large systems should choose the best one at a certain time, i.e. most applicable one and most appropriate strategy.

In accordance with the mentioned hypothesis, we should emphasize the following as well, which is based on the assumption that by studying certain strategic models in the developed market economies, but also in the countries in transition, at the example of large business systems, one can conceive a model of successful strategy of large business systems in Serbia. From the mentioned hypothesis of the research, a conclusion is created, that large business systems, i.e. companies, in accordance with the situation which they are in, within the business policy for the upcoming period, according to the business they conduct etc., that they should define, i.e. adopt and apply transformation strategy which is most logical and appropriate at that moment, of course not questioning the needs for constant, incremental (but also big) changes within the organization.

It is necessary to emphasize again the significance of the public sector, i.e. the fact that a large number of large business systems operates in the public sector, i.e. public companies still make a great part of large business systems in our country. Interest in economic and business aspects of actions of public sector is growing in the world. For Serbia and the environment, economic domain of movements in public sector has a special meaning, knowing the fact that public sector is handling almost the half of gross domestic product and by its behavior and measures it directs the decisions in the sector of economics and population sector. The issue is additionally sharpened by the insufficient economic growth, the issue of sustainability of trends which nowadays support growth (personal consumption and state infrastructural investments) and politically conditioned delays in getting closer to the European Union (which itself is entering a crisis with the unrealistic outcome).

Analyzing the action model of the domestic public sector, monitoring the positive world experiences and their cautious adaptation to the domestic needs is a crucial issue.

Conclusion

Until 2002 the Republic of Serbia, did not have the law which would arrange the field of public procurements in a wholesome way for all procurements conducted by the government entities and organizations, institutions, public institutions and other entities, which, in the context of Law which arranges the budget system, are considered to be direct or indirect users of budget means. So far, this issue of procurement of goods, services or execution of works has either not been normatively arranged at all or that regulating has been partial and incomplete and it referred only to the individual procurements, so that the choice of the bidders depended on the discretionary decisions of purchasers, more accurately, on the discretionary decisions of the competent authority, which had a consequence of inefficient usage of public means and creation of favorable environment for the appearance of corruption. Long-term consequences of such a state are the procurements of goods whose technology is outdated, i.e. overcome in the developed countries, disinterest of the quality foreign bidders to offer their products and services in such circumstances and due to absence of precise rules which would provide healthy competence, i.e. equality of all bidders, as well as public in the procedure of selection of the best among them. Further consequences would be delay in economic development, delay in advancement of economic international relations, saturation of the market with goods of insufficient quality, insufficient presence of customer service maintenance of such goods, and in the end, weakening of the economic power of the population[22].

Introducing the Public procurement law should be followed by the development of public procurement management, which appears, as academic field, only in the previous few years as a module of master programs at several faculties, with the nonexistence of the textbooks which would describe this field in the right way. On the other hand, the development of public procurement management as a management model, also does not follow the modern business flows to a right extent, so the elements of planning, organizing and control of public procurements are organized and treated in a way which

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[22] Nadežda Mitrović Žitko, Dr Marko Špiler – Public procurements in the Republic of Serbia

would have to be better. Pursuant to the mentioned reasons, we should raise the level of public procurement management in Serbia, based on the international experience, but also on the significant experience of the domestic professionals.

This paper represents the attempt to approach, in a new way, this issue of creating strategies of large business systems, but also the role of public procurement management in part of strategic decision making. As the time passes and the conditions in which business is done are changing, new definitions are necessary as well as versions and suggestions of business system strategies. Changes are inevitable and real. Therefore the management must, in adequate way, react to them and when the need occurs to adapt to them or oppose them, but also to decrease the potential consequences and negative effects. That is why this paper, like other similar, should contribute, in the quality way, to the development of theoretical aspect of strategic management as well as the public procurement management, related firstly to the purchasers and bidders but also to the economic and management science in general. The result of the research should relate to the contribution to the management and economic science in general, especially to the strategic management, as its field. Finally the contribution should represent the preparation of the professional public according to the results of the mentioned analysis, elaboration with the goal of modeling and performing certain elements for the necessary harmonization of the legislation in this area, as well as the suggestion of key elements for its constant monitoring and analysis.

By defining the best applicable strategy in a large business system, we search for the most adequate strategic response, i.e. strategy which shall be the best response to market challenges but also to the constant business, by introducing the institutes regulated by Public procurement law, but also all opportunities provided by the its application. In that sense, the following quote is appropriate:"Public finance must be healthy, budget must be balanced, public debt must be decreased, we must fight the arrogance of state administration and monitor it, help to other countries must be reduced in order for Rome not to go bankrupt, and the people must learn to work instead of living of welfare". These words had been written by Cicero, 55 years before Jesus Christ came to this world. So, the crisis is lasting for 2065 and the odds are that it shall last for at least the same number of years. That is why business systems must realize that the "constancy" is the most important word while defining the strategy of their own transformation and they should create their own policy accordingly.

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MANAGING CORPORATIONS

Abstract

Corporations as legal entities act over their law regulated bodies. What makes a company of a certain type are bodies within it which make a functionally regulated organization of that company.

Bodies in a company are: Assembly as the highest body, Steering committee which runs affairs and represents the body and the Supervisory committee which supervises business management of the body.

The Steering committee is elected by the Assembly and it is accountable for its work to the Assembly. The Assembly often elects the Supervisory Board as well, which controls the Steering committee and is responsible to the Stockholder Assembly. The Steering committee chooses an executive body – the management, to perform executive functions in the field of representation and business leadership of the body.

The most important difference in managing structure of a Limited Liability Company and a Joint-stock company is that it is possible to revoke the members in the Steering committee or the director in a Limited Liability Company at any time without a reason, while in a Joint-stock company it is not possible considering that every body is sovereign in its domain without the possibility of any other body which is, in terms of status hierarchically "above" that body, to interfere in its the work scope.

Key words: *Managing companies, Joint-stock company Assembly, conference of a Joint-stock company Assembly, members of the Steering committee, Executive board.*

JEL classification: Q13

УПРАВЉАЊЕ ДРУШТВИМА КАПИТАЛА

Апстракт

Друштва капитала, као правна лица, дјелују преко својих органа уређених законом. Да би друштво било одређеног типа у њему морају постојати органи који чине функционално уређену организацију тог друштва.

Органи у друштву су: Скупштина као највиши орган, Управни одбор који води послове и заступа друштво и Надзорни одбор који врши надзор у вођењу послава друштва.

Скупштина бира Управни одбор који њој одговара за свој рад, а често

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истовремено бира и Надзорни одбор, који је стручни орган који контролише Управни одбор, а одговоран је Скупштини акционара. Управни одбор, за обављање извршних функција из области заступања и пословног вођења друштва, бира извршни орган – менаџмент.

Најважнија разлика у структури управљања друштва са ограниченом одговорношћу и акционарског друштва је у томе што је могуће опозвати чланове Управног одбора или директора у друштву са ограниченом одговорношћу у свако доба и без навођења било каквог разлога, док код акционарског друштва то није могуће обзиром да је сваки орган суверен у своме домену без могућности другог органа, који је у статусном смислу хијерархијски „изнад" тог органа, да се мијеша у дјелокруг рада тог органа.

Кључне речи: Управљање друштвима капитала, Скупштина АД, не физичка сједница Скупштине АД, Управни одбор, чланови Управног одбора, извршни одбор.

Introduction

Bodies in a company are: Assembly as the highest body, Steering committee which runs affairs and represents the body and the Supervisory committee which supervises business management of the body.

The Steering committee is elected by the Assembly and is accountable for its work to it. The Assembly often elects the Supervisory Board as well, which controls the Steering committee and is responsible to the Stockholder Assembly. The Steering committee chooses an executive body – the management, to perform executive functions in the field of representation and business leadership of the body. Each of the listed bodies is sovereign in its domain without the possibility of any other body which is, in terms of status hierarchically above the body determined by law or statute, to interfere in its work scope (Vasiljević, 2012a, p. 538). Body being hierarchically above another is exclusively a status matter in electing or dismissal of lower body members.

In a Limited Liability Company which is organized differently from a Joint-stock company and which is regulated more modestly with a possibility of greater autonomy of its members, there is a different hierarchical relationship in position of the Steering committee to the Assembly in relation to the Joint-stock companies.

Duties and responsibilities of management of corporations

In order for a company to be of a certain type there have to be certain bodies which make a functionally established organization of that company.

Bodies of a company are the Assembly as the highest body, Steering committee which leads operations and represents the company and the Supervisory board which supervises operations of the company.

Corporations as legal entities act over their law regulated bodies.

Assembly as a body of the owner of a Joint-stock company or a Limited Liability Company has a hierarchically higher place in the society. The Assembly reserves the most important segments of the ownership-management function and creates the structure of other bodies in a Joint-stock company which will perform management and supervisory functions and it especially creates position holders for managing operations of the company. In partnership and proprietorship companies with limited liability functions of managing it is united in the same body, and often in the same person, while in Joint-stock companies management is separated from ownership over the company.

Management is the executive body of a company, Supervisory board is the body that supervises the operations of the company, and the Assembly is the supreme, fundamental body which makes decisions and creates the will of the company (Raiser, 2015, p. 79).

Limited Liability Company is organized differently from a Joint-stock company and is regulated more modestly, with fewer regulations which at the same time give greater possibilities for internal regulations to be adjusted to the real needs of its members. Limited Liability Company has fewer members and less capital then Joint-stock companies which is why the reasons for more modest law regulations and the possibility of greater autonomy of its members come from the very nature of the company. Stocks in a Limited Liability Company can't be expressed in securities. In a Limited Liability Company the hierarchy for the Steering committee is different in relation to others, the Assembly in relation to Joint-stock companies. The most important difference in the management structure between Limited Liability Companies and Joint-stock companies is that in Limited Liability Companies it is possible to recall the Steering committee or the Director at any time without giving a reason. This is why the Steering committee or the Director in a Limited Liability Company have greater obligations in performing operations and processes in accordance with the Assembly or the owner of the company. Structure of managing bodies of Joint-stock companies in the Republic of Serbia depends on whether the company is of an open or closed type. A closed Joint-stock company has a director or the Steering committee, and an open Joint-stock company has the Steering committee. Closed Joint-stock company doesn't always have the need for the Steering committee which is a collective body, and if it does have the need, the law provides for the company to choose that body.

Yearly Assembly

Yearly Assembly is held at the time specified by the founding act or decision of the Steering committee of the company in accordance with the founding act or statute. According to the Law on commercial companies of the Republic of Serbia, the Stockholder Assembly must be held at the latest 6 months after a business year ends or 3 months after the day the financial report for each financial year is submitted to the Steering committee (Zakon o privrednim društvima, Official Gazzete no. 36/2011, 99/2011). Yearly Assembly is held at the headquarters of the company if the founding act doesn't specify otherwise. Joint-stock company Assemblies which are held between yearly Stockholder Assemblies are called special Assemblies (Zakon o privrednim društvima, Official Gazzete no. 36/2011, 99/2011). Special Assemblies can be convened

by the Steering committee or any other person that is authorized by the founding act, liquidator in case of company liquidation, stockholders who own at least 10% of the company stock with the right to vote on questions proposed on the Special Assembly by minority stockholders. Company Stockholder Assembly is obligatory when it is determined that the company performs with a loss which doesn't exceed 50% of base capital (financial report or other cases).

Majority of national laws do not explicitly lay down regulations which Assemblies are regular and which are special. A difference can be made on the matter which is addressed and on the things which need to be solved in specific deadlines. Theoretically there is a difference between them. The difference is in the decisions which needs to be made in each business year (for example adoption of yearly financial reports, decisions on distribution of profits and cover of losses), and in certain time periods (for example appointment and absolution of members of the Steering committee and Supervisory Board, auditors and the like). Regular Assembly would be the one on which stockholders would discuss about things for which it is required to meet no matter who convened it, the Steering committee or minority stockholders.

All national laws give rights to minority stockholders to demand convening of the Stockholder Assembly if the Assembly isn't summoned by informed bodies or individuals. Minority stockholders also have the right to demand for certain questions to be addressed during the Assembly.

In German law some authors consider as Regular Assemblies the ones that are convened in a way regulated by law or statute or when interests of the company demand it, and Special Assemblies would be the ones that are convened by stockholders which have a total of 20% of base capital, or ones that have a nominal amount of stock values worth 500,000.00 euros. According to those authors Regular Assembly is convened by management and Special Assembly is convened by stockholders with the aforementioned base capital (du Plessis, Luttermann & Sandrock, 2012, pp. 173-175).

Court order Assembly

If the yearly Assembly of a Joint-stock company isn't held in a regulated deadline on demand by any stockholder which has the right to attend and vote on the yearly Assembly or demand by the director or member of Steering committee, court can demand its convening in extra-judicial proceedings, and has the authority to name a temporary representative with the authority to convene and chair the session of Stockholder Assembly and determine the date and place where it will be held, as well as the daily order of the session. If the Special Assembly of a Joint-stock company isn't held at the latest within 30 days of the day of receiving the request or on the day that is determined by the Steering committee it will be held by court order determined in extra-judicial proceedings, on request by any stockholder which signed the request for convening the Assembly.

Court practice of the republic of Serbia took a stand on the possibility for the yearly Assembly to be held on court order in current year for previous year in which the Assembly wasn't convened and the yearly Assembly which was scheduled by the Steering committee within the legal deadline of six months when a business year ends.

According to the Law on trading companies of the Republic of Croatia the statute can define that the initiative for convening the Assembly is initiated by the stockholders which have a minority of stocks in the base capital than the one determined by law (Zakon o trgovačkim društvima Hrvatske, Official Gazette 111/93, 34/99, 121/99, 52/00, 118/03, 107/07, 146/08, 137/09, 125/11, 152/11, 111/12, 68/13, 110/15).

In German law the percentage of stock needed for convening the Stockholder Assembly can be reduced to 1/20 with the statute, also the request can be filed by a stockholder or stockholders which participate in base capital of the company with the amount of stocks worth 500,000.00 euros no matter the stocks.

Failure to convene by an authorized convener

Majority of legal systems regulated that, in case of failure to convene by an authorized convener in a regulated deadline, minority stockholders/copartners are given the right to address the court to and demand a court order to convene the Assembly by extra-judicial proceedings and authorize minority stockholders/copartners that have filed the request to convene it.

The right to convene the Assembly in English law can be done by a competent administrative authority on any stockholder's demand, and if it isn't done by the Board of Directors, the right falls to minority stockholders themselves. The court only acts on stockholders' demands, and decides with reasoned verdicts (Hamilton & Freer, 2011, p. 367).

Special assembly of a closed joint-stock company

Special Assembly of a closed Joint-stock company is even held without convening and publishing the agenda if all stockholders with the right to vote are attending and if none of the stockholders are against. This kind of Stockholder Assembly is known as the so-called **Universal Assembly** which gathers all stockholders with the right to vote, recognized in some other laws. This Assembly doesn't have any legal or statute formalities regarding its work and convening. This kind of Assembly is quite suitable for a closed Joint-stock company of family type.

Serbian law allows for the founding act of the company and statute to deviate from the mentioned legal disposition. We consider that deviation isn't recommendable, especially in closed Joint-stock companies, because the regulated formality can be detrimental for stockholders. If all stockholders that have the right to vote or their representatives attend a Special Assembly of a closed Joint-stock company and no one opposes, then there is no reason for the Assembly not be held without compliance with formal regulations anticipated for convening a special Assembly. If all of the stockholders or their representatives are present, they can decide on all questions. In bigger closed Joint-stock companies this is hard to accomplish in practice, but in smaller companies it is possible.

USA law allows unanimous written consent from all stockholders for decision making without convening an Assembly.

English law recognizes the so-called Universal Stockholder Assembly which can make a decision by unanimous acceptance of propositions by the management without convening an Assembly (Pennington, 2001, p. 124).

Special assembly of a joint-stock company
in case of doing business with a loss

Law on commercial companies of the Republic of Serbia regulates that it is necessary, without delay to convene a Joint-stock company Assembly if, while making the financial report or in other cases, it is determined that the company is doing business with a loss that doesn't exceed the amount of 50% of base capital. The second EU Directive regulates that in case of serious loss of capital the Assembly needs to be convened in time regulated by the national legal system (Mäntysaari, 2010, p. 138).

In case there is a serious loss, which means loss that doesn't exceed 50% of company's base capital, company Assembly makes the decision on taking certain precautions to protect the interests of the company's creditors, stockholders and the company itself.

Nonphysical session of the stockholder assembly

Law on commercial companies of the Republic of Serbia allows for sessions of the Stockholder Assembly to be held without physical presence of stockholders for Joint-stock companies that have up to 10 stockholders, but instead using conference lines or other audio or visual communication devices (Vasiljević, 1996, p. 341). It is not necessary for stockholders to see each other, but to hear each other and to talk between themselves. Communication among stockholders in such a way is considered participation in the session and that they are present. Sessions of the Stockholder Assembly in which there are less than 10 stockholders can be held in the abovementioned way without physical presence of the stockholders or a representative. Due to technical development which will make communication of stockholders through video possible, it should be expected that "nonphysical" sessions should be possible in Joint-stock companies regardless of the number of stockholders that the company has. This is slowly accepted in French, German, Croatian and Slovenian legal systems (European Bank for Reconstruction & Development, 1999, p. 235).

In Law on trading companies of the Republic of Croatia it is regulated that "Statute or Rules of Procedures of the Main Assembly can define that the work of the Main Assembly can be transferred by sound and image".

Steering committee

Number of members of the Steering committee in an open Joint-stock company, according to the Law on commercial companies of the Republic of Serbia is determined by the founding act and has at least 3 and at most 15 members.

This type of simplified schematic of authority of Joint-stock company's bodies isn't good. Namely, the executive body performs operations of the company and representing the company and in it is not independent. The supervisory board doesn't only supervise the work of the company in technical and accounting way, but gives reports on its work to the Assembly of a Joint-stock company in which it gives its opinion whether the company is compliant with the Law. The Supervisory board has the right to summon the Assembly of the company and name members of the Steering committee. The Assembly decides on questions determined by the Law (changing the statute, electing the Supervisory board, increase and decrease of base capital etc.). The Assembly can decide on the question of running the business only on demand by the Steering committee while they can't talk on questions of representation.

The exception is the Law on commercial companies of the Republic of Serbia. Even though it basically adopts the bicameral system with certain specificities, it allows for the Assembly to elect the Steering committee.

When we talk about a Joint-stock company bodies we need to take into consideration the willingness and functionality criteria, then their jurisdictions and relations within the company and relations outwards. When we look at what is happening in reality, the influence of the bodies and certain stockholders or members has a great influence on running the business which depends on various circumstances, and the difference is visible in numerous companies. If the Supervisory board is solely limited to work supervision of the Steering committee and it doesn't show initiative or interest for company's operations, then it becomes only the body of honorary members. However if it takes over all of the possibilities that the law and statute of the company give it, then it can become the leading body of the company/ This exclusively depends on the persons that participate in company's founding and later in creating work of the company, and before all of the stockholders themselves and their relation to power.

Law on commercial companies of the Republic of Serbia leaves complete freedom to a Joint-stock company to determine the conditions of choice and structure of the Steering committee (Vasiljević, 2006, p. 420). This means that the members of the Steering committee can be stockholders or people who aren't stockholders, employees of the company or people who aren't employed in the company, domestic or foreigners. Statute of a Joint-stock company determines the conditions of choosing the Steering committee. Members of the Steering committee of a Joint-stock company are chosen by stockholders on every yearly Assembly, and can be chosen on any special Assembly which is convened for that choice. Members of the Steering committee can only be physical entities.

The purpose of existence of the Steering committee as a special body of a Joint-stock company is in that the stockholders hire people which will know how to run operations of the company. This means that these people need to have special knowledge and expertise, which is determined by company statute in conditions when electing Steering committee members, and in bicameral systems the Supervisory board chooses the members of the Steering committee, and exceptionally the company's Assembly. The Steering committee is chosen by criteria determined by company statute. The voting system can be direct or cumulative. When a stockholder has 51% of votes he practically chooses the Steering committee – a direct choice. In cumulative voting even a relatively small percentage of capital can secure the choice of Steering committee member. This is especially important

for minority stockholders. Practically every stockholder with the right to vote multiplies the number of votes at his disposal with the number of members of the Steering committee which are elected and all votes can be given to one candidate is elected for a member of the Steering committee, and he can divide his votes to candidates according to will.

According to Law on commercial companies of the Republic of Serbia members of the Steering committee in an Open Joint-stock company are chosen by cumulative voting if the founding act or statute doesn't specify otherwise. The founding act or statute of a Closed Joint-stock company can decide on cumulative voting for choosing a Steering committee member.

Court practice:

"Members of the Steering committee of a Joint-stock company can be elected by stockholders on any Special Assembly which is convened for that reason, which includes a special Assembly convened by court order in contentious procedure" (from Solution of Higher trade court Pž-1367/05 from 31.03.2015).

In French law it is possible to elect by cumulative voting if for example the majority has 75% of votes, and the minority 25% of votes, the minority can elect a member of the Steering committee who enters the total number of members of this body according to statute (Guyon, 1984, p. 213).

Voting is usually implemented by ballots so that every stockholder can determine his voting strategy. One unwanted aspect of electoral voting is that it can be perplexed. If a stockholder gives his votes in an irrational or inefficient way he can't elect directors which a different voting strategy could guarantee. When voting is summary it is very to make a mistake in dispersing votes.

A graphic illustration of the said case is:

A has 60 stocks, and B has 40 stocks. 5 directors are elected. If A votes directly and B knows that A is doing it in such a way, then B can elect the majority of Committee members. The results will be:

A1 – 60; A2 – 60; A3 – 60; A4 – 60; A5 – 60   B1 – 67; B2 – 66; B3 – 65; B4 – 1; B5 - 1

If A finds out that B will try to elect 3 persons than A can elect 4 directors by summing votes..

A graphical illustration of the said case is as follows:

A1 – 73; A2 – 74; A3 – 75; A4 – 76; A5 – 2   B1 – 67; B2 – 66; B3 – 65; B4 – 1; B5 - 1

It is mathematically proven that cumulative voting allows for protection of rights of minority stockholders because it enables election of "their" member in the Steering committee in the mentioned way. Next formula is useful in determining the number of stocks necessary to elect the member of the Steering committee.

$$\frac{S}{D+1}+1$$

S is the total number of stocks used for voting and D is the number of members of the Steering committee elected.

Analogous formula is to elect majority of Steering committee members is

$$\frac{nS}{D+1}+1 \text{ (Hamilton, 1991, p.179)}$$

A smaller change is sometimes necessary. First part of the formula $\dfrac{S}{D+1}$ determines the maximal number of stocks that vote for one person which is insufficient to elect that person for a Steering committee member. Any stock that transgresses that number will be sufficient to elect a Steering committee member. If for example, there are 100 voting stocks and 5 members of the Steering committee are being elected, the first part of the formula $\dfrac{100}{5+1}$ or $\dfrac{100}{6}$ will not elect a member of the Steering committee because the first formula gives $16\dfrac{2}{3}$, and the following formula $\dfrac{100}{5+1}+1$ mechanically gives $17\dfrac{2}{3}$.

It is democracy for people with big capital to represent the minority, since they should have a voice in running of the company. The presence of a minority member on the Steering committee can sometimes discourage conflict of interests by the management.

In companies which choose majority of members in the Steering committee cumulative voting simplifies the assignment of institutional investors or "public interest" or other groups whose goal is representation in the Steering committee, and not taking control over the company.

Independent and non-exective members of the steering committee

According to the Law on commercial companies of the Republic of Serbia a non-executive member of the Steering committee is the person who isn't a member of the Executive board. The Executive board of the company is chosen from people who are members of the Steering committee and other people, while members of the Executive board are made of less than half of the members of the Steering committee. Listed Open Joint-stock companies must have the majority of non-executive members on the Steering committee in their structure, which is logical when we have in mind that the Steering committee elects members of the Executive members. The term independent member of the Steering committee is defined by law. Independent member of the Steering committee is a person who isn't a member of the Executive board. The definition of independence needs to be understood as the fact that, that person and his family members weren't connected with company's work, status, property or ownership within framework defined by law two years before his candidacy for electing an independent member of the Steering committee. The term for the director or members of the Steering committee of a Joint-stock company, including members which are elected for vacancies expires on the first yearly Assembly after their appointment.

Law on commercial companies of the Republic of Serbia regulated that the vacant seat on the Steering committee is filled by cooptation on next session of the board, unless the founding act or company statute defines differently. Law on commercial companies

of the Republic of Serbia allows cooptation even when the number of members of the Steering committee falls under half from the number determined by the founding act or company statute. If cooptation isn't performed for any reason, rest of the members of the Steering committee are obliged to convene the session of the Stockholder Assembly for election of missing members.

According to the Law on commercial companies of the Republic of Serbia the president of the Steering committee of a Joint-stock company is elected by the Steering committee amongst its members by majority of the total number of members, unless the founding act or statute of the company defines some other majority. President of the Steering committee is elected in the same way as other members (Vasiljević, 2008, p. 195).

In comparative legal systems the president of the Steering committee is elected directly by the Stockholder Assembly or the Supervisory board or even by the members among themselves.

President of the Steering committee of a Joint-stock company can have the rights and obligations of the president of the company. President of the Steering committee of a Joint-stock company is also the managing director of the company unless the founding act or statute of the company determines otherwise.

Scope and work method

As a managing body the Steering committee manages a Joint-stock company with a specific fiduciary managing duty on company interests. The Steering committee convenes Assembly sessions of a Joint-stock company and determines proposals for the agenda, prepares decisions for the company's Assembly, cares for timely preparation of period reports and yearly financial statements (balance sheet), prepares reports on business, managing business policy, proposes distribution of profit and loss coverage, proposes establishment and approval of business plan of the company, appoints and resolves executive directors of the company, proposes determining the amount of dividend, day of payment and payment method of dividends if the company act gives such authorization, undertakes and makes all decision that do not fall in the jurisdiction of the Assembly in order to promote company management and for the company to be profitable. The Steering committee approves the company's business plan, manages company development, issues stock following Assembly decision, issues replaceable bonds and other securities in accordance with the founding act or company statute and determines stock value and other assets in the company. Members of the Steering committee attend the sessions of a Joint-stock company's Assembly.

Certain legal systems regulate that the Steering committee manages the company, leads business and represents the company.

Law on commercial companies of the Republic of Serbia doesn't recognize the institute, the so called presumptions of the scope of jurisdiction of the Steering committee in the sense that it is authorized to decide on all questions which aren't put in the work scope of other bodies by law, statute or other acts of a Joint-stock company. The stated assumption applies in comparative legal systems for the Steering committee by rule. Everything that isn't under the jurisdiction of the Assembly falls under the

Steering committee considering that the Supervisory board controls legality of work of the Steering committee and the director is the member of the Board of Directors by law i.e. member of the Steering committee.

Law on commercial companies of the Republic of Serbia gave solution, for the Steering committee of a Joint-stock company which has jurisdictions only for questions which are normed leaving out the assumption of authorization in a sense that it is authorized to decide on all questions which aren't put in work scope of other bodies by law, statute and other acts of the company. In conditions which are in Serbia, and specially for enhancing responsibility, lack of tradition and preventing dispersion of responsibility, this is a temporary solution.

Executive board

According to the Law on commercial companies of the Republic of Serbia, in Open Joint-stock companies the Executive board is an obligatory body, while in Closed Joint-stock companies the Executive board is facultative (Vasiljević, 2012b, p. 221). The Steering committee chooses members of the Executive board. Members of the Executive board are executive directors. The Steering committee can resolve a member of the Executive board at any time if it is in the interest of the company. If there is dismissal of a member of the Executive board, his contractual rights can't be violated. Under half of the members of the Steering committee are elected into members of the Executive board and other members are elected from other persons.

As an executive body of the company's Steering committee, the Executive board can't make decisions which fall under the score of the Steering committee or the Joint-stock company's Assembly. Statute of a company determines all important questions on the statute, organization and authorizations of the Executive board. Work scope of the Executive board includes implementation of decisions of a Joint-stock company's Steering committee and all questions that are tied to business management and company's current affairs which are transferred into its jurisdiction.

The managing director of a Joint-stock company which is the president of the Executive board picks the Steering committee. A Joint-stock company is represented by the managing director by law, who enters the company into the register during registration of the company and represents the company without a special warrant in accordance with the founding act, statute and contract of company members or decisions by a competent authority. A Joint-stock company can be represented by members of the Steering committee, i.e. Executive board other than the managing director if it is determined by the founding act of the company. Other representatives are also registered and published. A representative acts in the name and for the account of a company and with that takes over the rights and obligations for the company from concluded legal affairs. The founding act can predict for the representatives to be able to only act together which also must be registered and published for third persons to be familiarized with it.

Members of the executive board are employed in the company, while members of the Steering committee who aren't members of the Executive board regulate their right, obligations and responsibilities to a Joint-stock company by a special work contract.

Non-executive members of the Steering committee can be employed in the company with prior consent of the Stockholder Assembly.

In an open Joint-stock company the law proposes for the financial reports to the yearly Stockholder Assembly to contain the amount of fees that are payed to the members of the Steering committee, as well as the members of the Executive board of a Joint-stock company.

Mutual right and obligations of members of the Steering committee and the company are defined by the contract in accordance with the law and statute. Work contract determines the rights and responsibilities of members of the Steering committee which are employed in the company. A member of the Steering committee (Board of Directors) who was named a member entered a specific status-legal relation with a Joint-stock company and that relation is specified by the contract.

In Anglo-Saxon law if there is a contract on regulating the rights and obligations, which isn't obligatory, it must be available to all of the stockholders.

Conclusion

In order for a company to be of a specific type there have to be bodies within it who form a functionally organized organization of that company. In this paper we defined what makes a company a Joint-stock company or a limited liability company and what are their key features in order to dedicate our attention to Joint-stock companies. It is very important to know what the rights and obligations of their members in order to review key differences with comparative legislations.

Law on commercial companies of the Republic of Serbia norms the work scope of the Steering committee unlike comparative legislations which mostly don't. The French law somewhat norms the work scope of the Steering committee. In comparative legislations functions of the Assembly are limitative with consequent incorporation of the assumption of the work scope of the Steering committee. This practically determines the work scope of the Steering committee in an indirect way i.e. everything that isn't the work scope of the Assembly falls under the work scope of the Steering committee.

Comparative legislations solve the matter of fees (pay, participation in profits, other fess, other payments of insurance premiums, provisions, stimulations and other benefits) differently to members of the Steering committee and even members of the Executive board. The question of participation in profits of the company is particularly differently solved.

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SPECIFIC FUNDING OF FISCAL DEFICIT IN SERBIA

Abstract

This paper will examine whether the privatization receipts were used as a means of reducing the fiscal deficit and public debt servicing in the Republic of Serbia. The empirical study incorporates monthly data series from 2005 to 2012. The results of the study show that revenues from privatization in Serbia increased the fiscal deficit and public spending, and thus jeopardize the long-term fiscal sustainability. The paper analyzes the level of reduction of external debt and the movement of foreign exchange reserves as an alternative to the use of privatization funds. The analysis shows, although on the short sample, that revenues from privatization in Serbia are not used to pay off debt, but were partially preserved (and accumulated in the form of foreign currency reserves) and partly used to finance current expenditures of the state (and to a lesser extent for financing capital expenditures).

***Keywords**: privatization receipts, public debt, fiscal defici, current expenditure, capital expenditure.*

JEL classification: E6

СПЕЦИФИЧНОСТ ФИНАНСИРАЊА ФИСКАЛНОГ ДЕФИЦИТА У РЕПУБЛИЦИ СРБИЈИ

Апстакт

У овом раду испитаће се да ли су приватизациони приходи коришћени као средство смањења фискалног дефицита и сервисирања јавног дуга у Републици Србији. Емпиријска студија обухвата месечне серије података од 2005.-2012. године. Резултати студије показују да су приходи од приватизације у Републици Србији повећали фискални дефицит и јавну потрошњу и тако угрозили дугорочну фискалну одрживост. У раду се анализира и ниво смањења спољног дуга и кретање девизних резерви, као алтернатива за коришћење приватизационих средстава. Анализа показује, иако на кратком узорку, да се приходи од приватизације у Републици Србији не користе за отплату дуга, већ су делимично сачувани (и акумулирани у

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виду девизних резеви), а делом коришћени за финансирање текућих расхода државе (а у мањој мери за финансирање капиталних расхода).

Кључне речи: приватизациони приходи, јавни диг, фискални дефицит.

Introduction

Specificity of financing the fiscal deficit in Serbia is reflected in the fact that until 2009 it was mainly financed by non-credit sources (revenues from privatization and donations). The aforementioned method of financing the fiscal deficit deviates from the standard theoretical models and contributes to the disruption of connections between fiscal deficit and public debt. In this chapter will examine whether the privatization receipts were used as a means of reducing the fiscal deficit and public debt servicing in the Republic of Serbia. The empirical study incorporates monthly data series from 2005 to 2012. The study results show that revenues from privatization in Serbia increased the fiscal deficit and public spending, and thus jeopardize the long-term fiscal sustainability. The paper also analyzes the level of reduction of external debt and the movement of foreign exchange reserves as an alternative to the use of privatization funds.

Privatization receipts in Serbia were a significant category of the budget in the period up to 2009, which is typical for transition economies. As possible ways of using privatization revenues in the literature stand out debt repayment, savings and public spending (current and capital expenditures) (Owyang et al., 2013). Economic theory suggests that it is advisable that the privatization proceeds are used to repay debt, depending on the level of indebtedness of the economy. If, possibly, there is a government decision that they spend, the theory recommends investing in capital investment, and not covering the current expenditures of the economy (Blanchard, 2005; Romer, 2012).

The paper sets three hypotheses consistent with economic theory. The first hypothesis is that privatization receipts were used to finance the fiscal deficit in the Republic of Serbia. The second hypothesis is based on the recommendations of economic theory that privatization revenues were being used for servicing the public debt. Due to the decision of the Government of Serbia that the privatization receipts are used for financing public expenditure, the third hypothesis implies capital investments.

The first part provides an overview of relevant literature on a given topic. The second part econometrically estimates interdependence of privatization receipts and fiscal deficit. The third part of the paper analyzes alternative methods of use of privatization receipts in Serbia. The last section of the paper is conclusion.

Theoretical background

Privatisation has started in many developed and undeveloped countries. The primary goal of ownership transformation of SOEs were inefficient and which used to be an additional burden to the state budget. The government had to cover the losses of state enterprises. In addition to the primary objective, there are also specific objectives of privatization. These include reduction of state subsidies to public enterprises and the

tax revenue from private enterprises. Many empirical studies have investigated the fiscal impact of privatization observing subsidies as public expenditure and tax revenues as public revenue (Flangan, 2008; Yar et al, 2013). The results of these studies show that privatization has failed to meet expectations, and that it has a positive impact on the fiscal deficit.

In the empirical literature macroeconomic effects of privatization are not precluded. Privatization of state enterprises has long been promoted in developing countries because of the belief that it contributes to improving the efficiency of these enterprises and stimulates growth as the macroeconomic objective (Davis et al., 2000; Katsoulakos & Likoianni, 2002). However, as countries have begun the process of privatization, some governments have clearly defined explicitly that the aim of their privatization program is improving the fiscal deficit (Khan, 2006). Numerous studies have aimed to determine the impact of privatization revenue in the fiscal budget balance in developing countries (Rubin, 2008; Rosen & Gayer, 2010). Privatization revenues represent direct budget inflow and governments have the option of saving this money or to spend it (Ramey, 2009; Blias, 2010). As the government is faced with liquidity constraints, privatization revenues are used to finance an even larger deficit (Barnett, 2000; Davis et al. 2000). However, the decision to increase spending using the proceeds from privatization should be done carefully, because the revenues from privatization temporary and spending would be moved up to a higher level of revenue collection that the government is able to exercise (Davis et al., 2000).   In the Republic of Serbia interdependence fiscal deficit and privatization revenues is analyzed in the paper Basic T. (2007) using the *OLS* method estimates. This paper served as an inspiration for this paper. The difference is in the methodology, because this paper uses *VAR* methodology. This paper examines whether the privatization revenues are associated with improvement in the budget balance due to servicing external public debt and lower interest payments, or the funds are used to finance an even larger deficit.

Interdependence of the fiscal deficit and privatization receipts in Serbia

The Republic of Serbia has privatized a total of 851 companies, in the period from 2005 to 2009, and the revenues obtained from privatization are shown in Graph 1. Looking at the fiscal deficit (Graph 2) and privatization revenues as a potential source of its financing (Graph 1) shows that both categories are fairly unstable and that behind the large deficits are the large privatization proceeds with a certain delay.

The hypothesis which starts in econometric research is that privatization revenues in the Republic of Serbia are largely expendable to finance the fiscal deficit. In econometric testing it was first necessary to determine the order cointegation of certain variables by testing the presence of unit root in the time series. After that there is a cointegration analysis by Johansen method (Johansen, 2002; Lutkepohl, 2005; Mladenovic & Nojković, 2005). The summary of results of the expanded Dickey-Fuller unit root test is shown in Table 1. All series are non-stationary level, i.e. stationary during the first differential. For evaluation we used monthly data from the Ministry of Finance of the Republic of Serbia (Bulletin of Public Finance) with quarterly payments.

Graph 1: Trends in privatization receipts in Serbia in RSD million in 2005- 2012
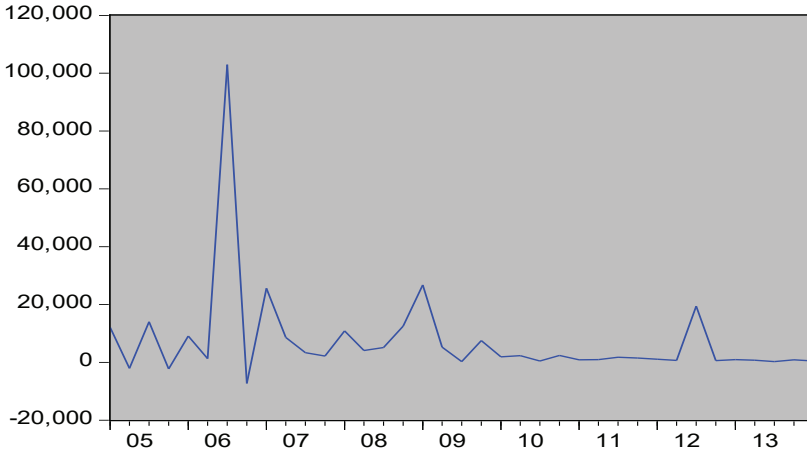
Source: Data are from the database of the Ministry of Finance of the Republic of Serbia, made a graphic illustration of the authors.

Figure 2: Trends in fiscal deficits in Serbia, in millions of RSD, 2005-2014 (I quarter)
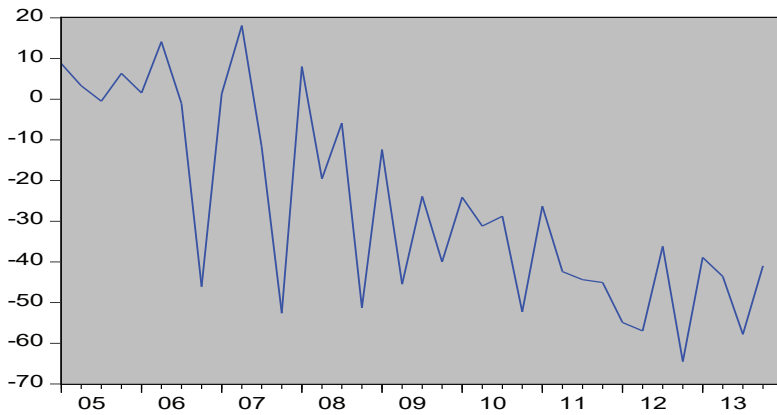
Source: Data are from the database of the Ministry of Finance of the Republic of Serbia, made a graphic illustration of the authors.

Table 1: Summary of results with me Dickey-Fuller test time series of fiscal balance, privatization receipts, current expenditure and capital expenditure

Time series	Level of integration
fiscal balance	$I\,(1)$
privatization receipts	$I\,(1)$
current expenditure	$I\,(1)$
capital expenditure	$I\,(1)$

Source: data from the databases of the Republic Institute for Statistics, the Dickey-Fuller test has conducted the authors.

From Table 1 we can see that all-time series with a unit root, which means they are integrated of order one (mark $I\,(1)$). In addition to statistics, the unit root has an economic interpretation. The presence of unit root in the analyzed time series suggest that negative shocks from the phase of recession permanently reduce their level, in which the economy can return to the stage of prosperity. In general, the presence of unit root in the analyzed time series means that their departure from the long-term trend will be occasional, as emphasized by the traditional theory, but permanent for an indefinite period of time. Illustration and certificates considered linear correlation is evident in the scatter diagram shown in Graph 3.

Graph3: Diagram of dispersion the interdependence of the fiscal deficit and privatization receipts in Serbia in the period 2005-2012
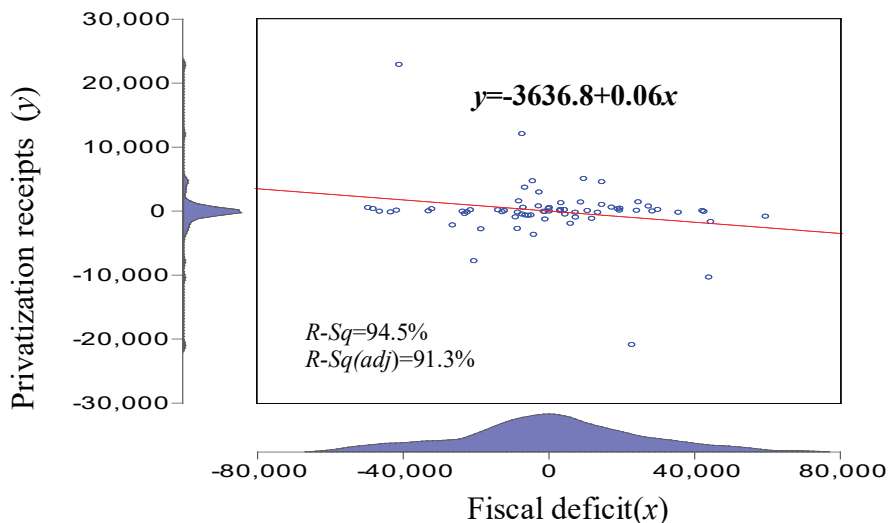
Source: Original data from the database of the Ministry of Finance, the fiscal deficit diagram interdependencies and privatization has produced the authors.

Let us consider a pair of linearly related variables, diagram dispersion of observations of the pairs of their values is shrinking around the straight lines. Conversely,

if the linear relationship does not exist, then scatter diagram will not follow the straight line (Newbold et al., 2010, pp.403). Therefore, the positive econometric estimate (0.061), with a delay of 4 quarters indicates that the fiscal deficit has a statistically significant coefficient depending on the privatization inflows, suggesting that increased privatization revenues in the reporting period are used to increase spending.

Public debt servicing by privatization receipts in Serbia

Although the previous analysis showed that privatization revenues are still used to finance the fiscal deficit, this paper will show whether there was any alternative use of privatization receipts in Serbia. It involves the analysis of the first level of external debt, for whose financing, according to economic theory, it is the most appropriate to use privatization revenues. Secondly, there is the analysis of changes in foreign exchange reserves, as a form of any accumulated savings of privatization receipts. Thirdly, if privatization revenues are already spent, the paper will show whether it was in the form of investment spending which, according to economic theory, is the preferred form of public spending (Hernandez-Cata, 2004; IMF, 2005.; IMF, 2005.; Leeper et al., 2010.; Dabla-Noris et al., 2011.). The research on the hypotheses on the financing of public debt by privatization receipts in Serbia begins by observing the movement of foreign debt.

Graph 4: Trends in foreign debt in the Republic of Serbia, 2005- 2014 (I quarter), millions of euros
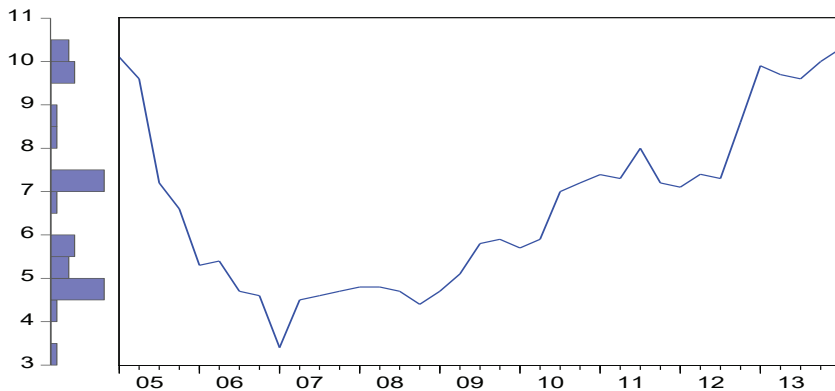
Source: Data are from the database of the Ministry of Finance of the Republic of Serbia, the graphic display are done by the authors.

Graph 4 shows a trend of foreign debt in the period from 2005 to 2014 (the first quarter) in millions of euros. It cannot be seen in the graph that there was a significant reduction in debt during the period. The reduction was only up to the III quarter of 2006, and then, despite the huge inflow of privatization receipts until 2009, external debt still slightly increased, which suggests that privatization receipts were spent for this purpose.

Graph 5 represents the movement of foreign exchange reserves, which marked a steady growth during the inflow of privatization receipts. This trend clearly indicates some savings of the government from privatization receipts.

Graph 5: Trends in foreign exchange reserves in the Republic of Serbia, the period from 2005 to 2014. (I quarter), in millions of euros
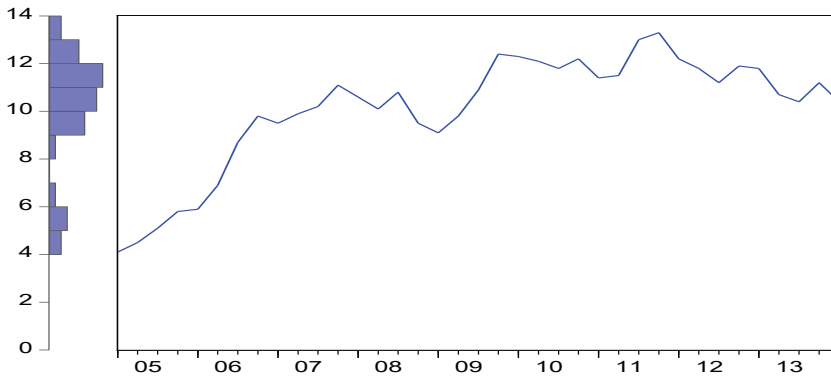
Source: Data are from the database of the Ministry of Finance of the Republic of Serbia, the graphic display are done by the authors.

The Graph 6 shows information about the current and capital expenditure budget of the Republic of Serbia in the period from the I quarter of 2005 to the IV quarter of 2012. We see that both categories show a rising trend, where growth is more obvious in the current expenditures. Also, the data clearly show seasonal behavior, which coincides in both series.

Based on the data which can be seen on Graph 6 it can be concluded that the growth of current expenditure substantially higher than the growth in capital expenditure, thus indicating the likelihood that the revenues from privatization were used to fund increased current spending.

Graph 6: Trends in current and investment spending in the Republic of Serbia in the period from 2005 to 2012, millions of RSD
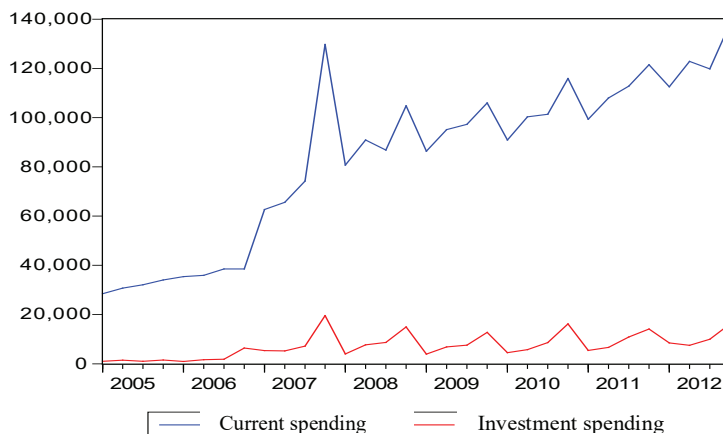
Source: Ministry of Finance of the Republic of Serbia, the publication Bulletin of Public Finance Published in December during the period from 2005 to 2012. The graphic display are done by the authors.

Econometrically, in the same way that the relationship between privatization and the deficit in this part of the paper has been tested, we tested the relationship between privatization and liquid components of public expenditure as well as the ratio of privatization and capital components of public expenditure. The analysis of the short-term elasticity of current expenditures and privatization revenues using the VAR model shows that privatization revenues significantly affect the increase in current spending, with a delay of two quarters (positive elasticity coefficient 0.1687). The results of the integration analysis are given in the Graph 7 and the Graph 8.

The analysis shows, although on the short sample, that privatization receipts in the Republic of Serbia are not used for debt repayment, but were partially preserved (and accumulated in the form of foreign exchange reserves) and partly used to finance current expenditures of the state (and to a lesser extent for financing capital expenditures).

The positive and statistically significant relationship is between the privatization receipts and the deficit, as well as revenues from privatization and current and capital expenditures, where the link between privatization and current expenditures is stronger. The resulting positive correlation between privatization receipts and fiscal deficit in Serbia is in contradiction with the results from a sample of OECD countries and even with results from some transition countries which is even more worrying.

Graph 7: Cointegration relationship the current spending and privatization receipts in Serbia, 2005- 2012
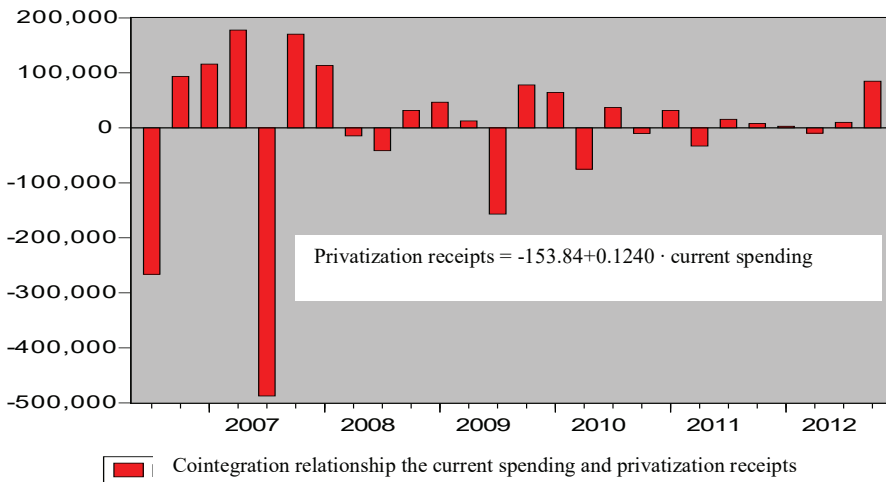
Privatization receipts = -153.84+0.1240 · current spending

Cointegration relationship the current spending and privatization receipts

Source: Data are from the database of the Ministry of Finance of the Republic of Serbia, as well as the integration ratio is calculated and graphically interpreted by the authors.

Graph 8: The relationship of cointegration investment spending and privatization receipts in the Republic of Serbia, 2005-2012
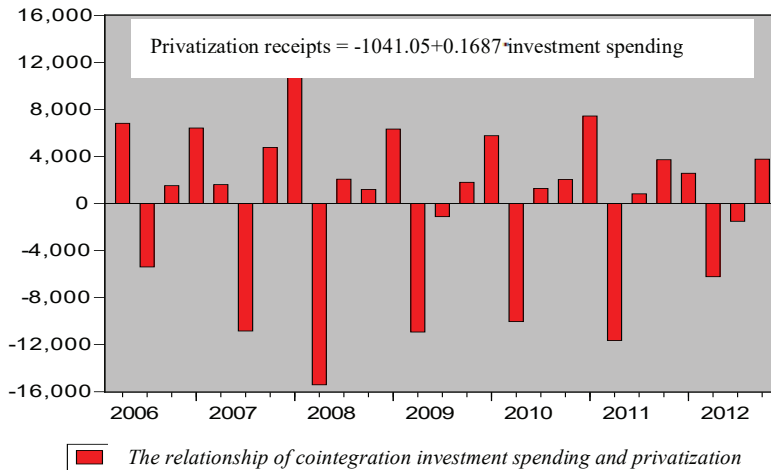
Privatization receipts = -1041.05+0.1687·investment spending

The relationship of cointegration investment spending and privatization

Source: Data are from the database of the Ministry of Finance of the Republic of Serbia, as well as the integration ratio is calculated and graphically interpreted by the authors.

By forming a statistical relationship, it can be concluded that the financing of current expenditures from a new source is wrong, and suggests that it would be better to keep these funds (i.e. pay off debt or to accumulate reserves), or spend them in the form of capital investments (with monitoring financial effects of these placement).

Conclusion

The privatization process in Serbia was intensified in the period from 2005 to 2009 with different objectives, including the reduction of the fiscal deficit. Thus, 851 SOEs were privatized using different methods of privatization. Privatization revenues were present by 2009, but the goal of reducing the fiscal deficit is not reached. The main reason for the failure in achieving this goal in Serbia is that the current spending enormously greater than the investment. The use of privatization revenues to finance current spending had a positive impact on the fiscal deficit. Our aim was to determine whether the privatization receipts were used for repayment of foreign debt or for the accumulation of foreign exchange reserves. The reduction of the external debt was only up to the third quarter of 2006, and then, despite the huge inflow of privatization proceeds until 2009, external debt still slightly increased, which suggests that privatization revenues were spent for this purpose. The movements in foreign exchange reserves recorded a constant growth during the inflow of privatization proceeds. Their movement clearly indicates some state savings from privatization revenues. The analysis and comparison of data before and after the privatization process reveals that the efforts towards reducing the fiscal deficit do not seem to have been achieved.

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THE IMPORTANCE OF CREATIVE AND INNOVATIVE SMALL AND MEDIUM ENTERPRISES IN OVERCOMINGOF CRISIS IN TERMS OF MODERN BUSINESS

Abstract

Creativity and innovations have become the true national wealth of the modern era. Future of the World which we operate in will be based on a completely new concept, so- called "innovation economy". In order to sustain the existence, growth and development in the times of crisis, it is imposed as necessary that small and medium-sized enterprises use intellectual and creative resources not only in developed butalso in developing countries.

The twenty-first century economies will be able to overcome crisis and progress if they accept creativity and innovations in accordance with changes. In the aforementioned processes, special emphasis is put on entrepreneurial creativity and innovations as elements of development policy and strategy of national economies.

Keywords: *innovation, creativity, entrepreneurship, crisis, economy*

Jel classification: A1, O310, G010

УЛОГА КРЕАТИВНИХ И ИНОВАТИВНИХ МАЛИХ И СРЕДЊИХ ПРЕДУЗЕЋА У ПРЕВАЗИЛАЖЕЊУ КРИЗНИХ СТАЊА У УСЛОВИМА САВРЕМЕНОГ ПОСЛОВАЊА

Апстракт

Креативност и иновације су постали право национално богатство савре- меног доба. Будућност света у коме послујемо ће се заснивати на потпуно новом правцу тзв. Иновацијској привреди. У циљу даљег опстанка, раста и развоја у условима кризе намеће се као нужност примена интелектуалних и креативних ресурса од стране малих и средњих предузећа не само у развије- нијим већ и у земљама у развоју.

Привреде двадесет првог века ће бити у стању да превазилазе кризна стања и да напредују уколико у складу са променама прихватају креатив- ност и иновације. У поменутим процесима посебан значај се придаје преду-

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зетничкој креативности и иновативности, као елементу развојне политике и статегије националних економија.

Кључне речи: иновативност, креативност, предузетништво, криза

Introduction

Both creativity and innovation of modern economy are pillars of the future growth and development. The creative economy gains the leading role under modern business conditions. It is an economy branch considerably contributing to realization of income and creation of new jobs, as well as to increase of exports. According to the Creative Economy Report 2013 (CERs) statistics, parts of the World intellectual and creative resources invested in culture based industries are considerably bigger in new millennium than before. Therefore, creative industries present a new model of economy featured by self-employment, autonomy and flexibility as well as by highly educated workforce.

According to the 2013 UNDP Report (UNDP/UNESCO, 2013, p. 20), "creative industry as a term refers to a wider productivity set including both goods and services made by the culture based industry and by industries subject to innovation, including many kinds of software research and development. The term was first used in the process of creation of policies such as Australian national culture policy of the early 1990s, as well as in the course of transition of the influential Department for Culture, Media and Sport of the United Kingdom from cultural to creative industries, at the end of the decade". The wider application of creative industry resulted from connection between creativity and both economic development and town planning.

One of the most outstanding XX century philosophers, J. Schumpeter, pointed at entrepreneurship as the key to economic prosperity as well as at the fact that cultural and institutional rules are important since they influence opinions referring to the ways of acting in economically profitable manner. Concerning the above, Schumpeter observed two problems of economic development. The first one relates to the fact that leaders realize considerable power in the course of business competition which makes them able to change rules in their favor as well as to block new business initiatives offering better products or better production processes. The second one is that the process of economic development itself leads into the process of superannuation of institutional regulation (Marklund, 2009, p. 11).

In his early papers Schumpeter praised the entrepreneur as "a hero", motivated and keen to create, to strive and to prove his superiority to others. Entrepreneurs are leaders ready to break antagonism within their environment in order to get innovations realized. Realization of innovations brings about many problems relevant to newly emerged situations. Innovations dictate, unlike the standard routine activities, numerous more active approaches of their agents. Whereas it is not possible to get all effects of a planned business anticipated, innovations do bring uncertainties about (Schumpeter, 1989, p. 85). In his later works he used to emphasize the notion that at the length of time innovation process is going to be more and more automated and red-taped, while individual work is going to be superseded by collective endeavor.

Creativity and entrepreneurship

Creativity and entrepreneurship are points of interest of many researchers, chieflybecause of the impacts they make on employment, innovation and economic development. The relative literature gets these concepts analyzed both individually and altogether, depending on their treatment that could be realized either in the creative entrepreneurship context or out of it. Creative entrepreneurship actions could be analyzed starting from few aspects, the most important of which are the following: future profitability and growth, forms of employment, access to financial resources, market access and possibility of further education, specialization and training (Protogerou, Caloghirou & Markou, 2015, p. 1).

Stimulation of profitability and growth is of special importance to entrepreneurship activities within creative industry. They are motivated,above all, by value making on financial, social, emotional and non-financial basis. Creative entrepreneurs are mainly led by their own ideas and are less oriented towards business activities as compared to archetype entrepreneurs, *inter alia* because they are less experienced in both managerial and growth stimulation activities. There are numerous empirical studies showing that, notwithstanding that many entrepreneurs involved in art businesses are able to survive, they are rarely successful in realization of growth in environments featured by both local and global competition. In addition to that, many of them are not able to attract capital investments, being at the same time less inclined to risk taking or to rising of loans (Protogerou, Caloghirou & Markou, 2015, p. 10).

The importance of culture sector on both global and national levels, as well as the fact that it has become a protagonist of economic development, especially in developed market economies, is presented by statistics published by the most outstanding periodicals of the domain. The average participation of the creative sector gross value added totals around 6% in Australia (2000–2005), around 7.3% in Great Britain (2005), 13% in Canada (1981–2007), 7.75% in the USA (1997–2005), 2.6% inthe EU-25 (1999–2003). The average growth of gross value added generated by the sector totaled around 6% (1997–2005) in Great Britain, 7% in the USA (1977–2001), 10.4% in Australia (2000–2005), 13.4% in Singapore (1986–2000), 4% in Canada 1995–2007), 5.4% inthe EU-25 (1999–2003) (UNDP/UNCTAD, 2008, p. 106).

Creative industries considerably contribute to production, added value, income and balance of payments. UNDP (UNDP/UNESCO, 2010, p. 30) estimated that the average participation of these industries innational GDPs ranged from 2 to 6 per cent, depending on standards applied. In 2002 culture industry participated in GDPs of Canada and Great Britain 3.5% and 5.8% respectively. The above results in conclusion that creative economy considerably contributes to economic growth of the above mentioned countries.

The importance of creative economy to national economic development was illustrated by the following UNCTAD statistics (UNDP/UNESCO, 2013, pp. 162-163): global trade in creative goods and services reached record USD 624 billion in 2011 - considerably more than USD 559.5 billion in 2010. Global exports of goods and services in the domains of arts and crafts, books, graphic and interior works, fashion, cinema, music, new media, printed media and visual and audio-visual products, increased in 2011 as compared to both 2010 (USD 559 billion) and 2009 (USD 536 billion).

Creative industries make their contributions to growth, creation of new jobs and internationalization of businesses. They make a dynamic part of economy since they are more resistant to recession as compared to the other sectors. In times of financial and economic crises these industries are even more attractive since they are generally perceived as sources of potential new employments and business initiatives (Henry & De Bruin, 2011, p. 55). According to the available 2011 statistics, creative EU-27 industries realized total value of EUR 558 billion, which makes around 4.4% of total European GDP and 8.1 million full time jobs (Protogerou, Caloghirou & Markou, 2015, p. 2). The data stated above point at the importance of creative industry in Europe.

The leading role in the changing World is played by "creativeindustries " with trade in goods superseded by an economy based on ideas, i.e., on knowledge and information. Creative industries make a new economic model featured by self-employment, autonomy and flexibility, highly educated workforce comprising highly motivated "freelancers" included in teams and networks of specialists and experts.

On the basis of acquired knowledge, applied experience, technology and professional skills the creative capital is created, making itself a main promoter of economic growth. States able to attract these "creative resources" will develop much faster than the others. Many data published in UNCTAD and UNDP reports point at the rising contribution creative sector makes to formation of global GDP. However, although the structure of creative industry is quite similar in developed and developing countries, there are some differences between particular countries concerning relative importance of various creative economy components, depending on various development phases in individual countries. Differences are reflected in starting points – whether small or middle enterprises or big corporations, public institutions of culture or individual artists and producers are considered.

The recent economic crisis resulted in lost jobs and surplus of workforce that induced many people to start their own businesses. It might therefore be held that economic crisis affected development of entrepreneurship based on stimulation of both creativity and innovativity. To that effect, authors Larroulet and Coyiomdijan (Larroulet & Couyoumdjian, 2009, p. 84) claim that the very nature of entrepreneurship explains reasons why some countries featured by developed entrepreneurship recorded lower economic development rate than less active economies. The reason lies in the fact that opportunity entrepreneurs often take advantages of real market preferences to make their profits, as long ago, in 1942, was described by Schumpeter`s theory as "a creative destruction". Kružić (2007, p. 171) points out the following: "introduction of new combinations of production factors, according to Schumpeter, is the main function of entrepreneurs with their scope of duties not including a duty to come up with new technologies or new organization by their owns, but to violate (overcome) the occurring resistance to introduction of new inventions and innovations in general, making therefore the entrepreneurship itself "a creative destruction" of individuals that perceive and realize business opportunities to make profits."

According to the "Global Entrepreneurship Monitor " (2015, p. 7) data, there are important oscillations not only of entrepreneurship rates by countries, but of sorts of entrepreneurs as well. Depending on a phase of entrepreneurship development the following are distinguished: early phase of entrepreneurship activity, ambitious entrepreneurs and innovative entrepreneurs. The innovative entrepreneurship rate

is considerably variable in countries included in GEM[3] sample, as well as the entrepreneurship rate. The range starts from innovative entrepreneurship activity almost absent from Brazil, to the one making above 50% of innovative activity in early phase of Chilean entrepreneurship activity (World Economic Forum & Global Entrepreneurship Monitor, 2015, p. 17).

However, the necessity entrepreneurs, especially in periods of crisis when that is the only condition of self-supporting, do not necessarily make use of market advantages. To that effect, in the referent works could be found almost unanimous position that a crisis is much more about necessity entrepreneurship (Okamuro, van Stel & Verheul, 2010, p. 14). Authors Roland *et alia* (2013, p. 28) emphasize that "in the year 2012 EU entrepreneurs had 2.7 more chance in average to be improvement-driven entrepreneurs than the necessity-driven ones". The same report bears out that the above relation was around 2 to 1 in Latin America, not including Ecuador.

Contrary to the standing opinion that processes of transformation of knowledge into innovation are more frequent in big enterprises, the most recent studies show that both small and medium enterprises (SME) are able to realize the process as well. There are instances showing that SME are sometimes more efficient in processes of creation and transformation of knowledge that necessarily implies availability of intellectual capital (http://www.madrimasd.org/revista/revista40/tribuna/tribuna2.asp).

Roots of both intellectual capital theory and knowledge management concept could be traced in works of Frederick Taylor, Joseph Schumpeter, Herbert Simon, Michael Polanyi, Robert Solow and the other economists whose ideas were widely accepted in economy of the former century. Paul Romer, prominent by his criticism of Solow`s assumptions concerning economic growth, has been considered the founder of intellectual capital concept. Romer`s "New Theory of Growth" proved that competition between companies was a prompter of economic growth, as well as that competition itself was based on innovations (Kolaković, 2003, pp. 928-929).

Analyzing the economy of knowledge paradigm, Cvetković (2007, p. 39) pinpoints the following: „Underlining the role knowledge nowadays plays is a consequence of important structural changes in the frame of economic development. It was totally changed at the end of the former century and, after its transition from industrial into post-industrial economy, main resources are not material ones anymore, but resources based on application of knowledge. World-wide experience already showed that knowledge was a resource of the futureand that companies willing to surviveon the global market were due to acquire knowledge continuously and promptly." Therefore, knowledge, education, professional training, free movement of work and capital, as well as the other factors of quality became generators of growth leading into development and improvement of competitive advantage. Reality of modern times is that more than half of gross domestic products of the most developed countries are based on knowledge.

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[3] Analysis published in 2015 report was based on the sample including 44 economies, made by merging GCI (Global Competitiveness Index) and GEM (Global Entrepreneurship Monitor) data sets.

Figure 1. A simplified framework for the analysis of economic growth
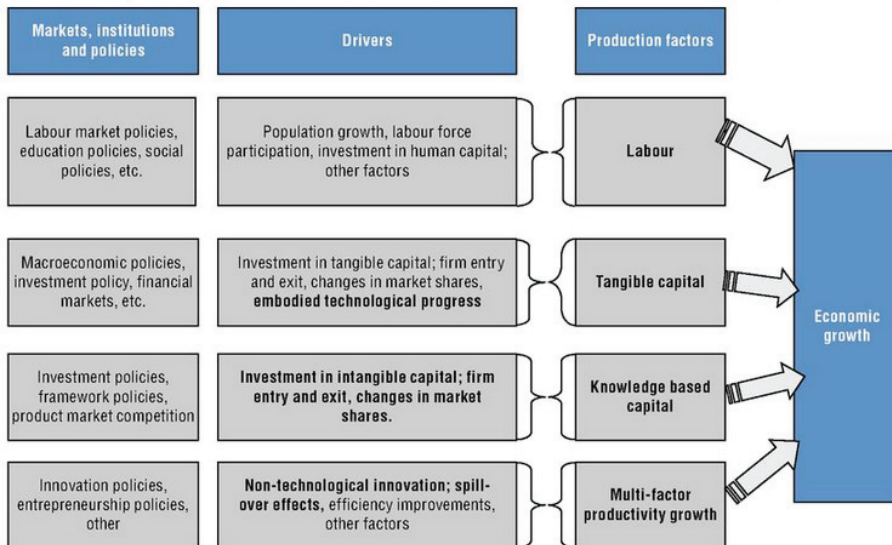
The most important interest in formulation and implementation of innovation policy is based on its potential contribution to economic growth. The best way to perceive the connection between innovations and economic growth could be through function of production. Namely, economic growth is realized through inputs including work, tangible and intangible capital as well as through multifactor productivity (MFP) growth, i.e., a part of output growth which could not be explained by growth of the input factor. The following reflects innovative contribution to growth:

1. Contribution being a result of technological process recasted into physical capital. According to the most recent OECD estimates, around 0.35% of total GDP growth could be accounted to investments made in information and communications technologies capital – ICT in the 1995-2013 period.
2. Contribution being a result of investments made in intangible capital, such as R&D, software, design, data, skills of specific companies as well as in organizational capital. OECD data indicate a constant growth of this kind of investments in OECD countries, with results of analyses made in 2012 by a group of authors (Corrado, et. al., 2012, p. 18) especially emphasized as claiming that investments into intangible capital made around 0.5% and 0.9% GDP growth in EU countries and the USA respectively in the 1995-2007 period.
3. Contribution connected with the increase of multi-factor productivity. It reflects the increased efficiency in domain of engagement of both work and

capital due to social and organizational innovations as well as due to effects of recasting investments into technology or into knowledge-based capital (KBC), on global level. Multi-factor productivity made more than 0.7% GDP growth in OECD countries in the period from 1995 to 2013 (OECD, 2015, p. 18).

Numerous empirical analyses have shown that innovations, in their various forms, could make their impact on economic growth depending on both level of economic development and phase of economic cycle of a country. The most important features of modern innovations refer to the following):

- Social and organizational innovations, including new business patterns, are becoming increasingly important additions to technological innovations.
- Inclusion of a wide range of participants - such as companies, entrepreneurs, funds and non-profit organizations, universities, scientific institutes and the like – which are closely connected in their business relations.
- Dynamic digital economy growth facilitating growth of mobile communication, internet communication and fast data input in both advanced and growing economies.
- Increased participation of fast growing economies, especially Chinese one which is the second biggest country to the USA by funding of R&D projects.
- Global context relying with innovations on knowledge and ideas from all over the World.
- Appearance of "the next revolution of production" which will bring transformation of the very nature of production in businesses related to production, and also change locations of these businesses, transforming both environmental impacts they make and respective parts production and services play.
- Growing necessity for innovations that should not only support growth and creation of jobs but also enable efficient public services and efficiently cope with specific social and global challenges. (https://innovationpolicyplatform. org/content/innovation-today)

Therefore, the intellectual capital paradigm is based on capability to get adapted, to learn and develop new knowledge. According to Sundać and Fatur, the authors (Sundać & Fatur, 2004, p. 89): "Only a synergy of human, structural and consumercapitals could result in adamantintellectual capitalto be a source of a company`s competitive advantage". Human capital is often both a key factor and a bottleneck of efficient application of information technology. Corporative staff and their knowledge make the biggest resource of a company. Artificially made vertical hierarchy connections cease to exist, and communication and transfer of knowledge become imperative at all levels instead.(Cvetković & Kotlica, 2007, p. 45).

Corporative structural capital is connected to organizational capital theplatform of which includes structure of knowledge and enables coordination in the course of performing the duties within a company. Its construction comprises seven items measuring protection of innovations, adaptability and flexibility of production processes, access to information, innovation support processes, knowledge keeping routine, and the like.

Intellectual capital makes an intangible resource creating organization`s strategic value. In times of new economy the intellectual capital concept is used as a synonym for employees able to transform knowledge and include it in value creating products and services (Navarro, Ruiz & Peña, 2011, p. 111). Pena (Peña, 2002, p. 185) emphasizes the existence of a direct connection between human capital and positive results companies achieve.

Human capital, innovation and transfer of technology are of crucial importance to creation of intellectual capital model and its relationship network. As resulting from interchange of information and knowledge within various socio-economic circles, both value and social wellbeing are created in developed economies, in accordance with "intelligent nations" (Navarro, Ruiz & Peña, 2011, p. 111).

We live in turbulent times featured by permanent change leading often to lower or higher recessions in particular countries, regions or at the global level. With a view of getting accommodated to requirements of international competition and surpassing states of crisis, intellectual capital, technological development and research gain their special importance.

Surpassing crises through investments in innovation and development

Global economic crisis made its various intensity impactson almost all economies of the World, on all casts and individuals. There is virtually not a single country, developed or industrial, that did not avoid impacts of spreading crisis. Out of 20 developing countries with economies that experienced serious deterioration of business conditions, seven were European and Central Asian and eight Latin American ones (World Bank, 2008, p. 2). Crisis caused the decrease of macroeconomic aggregates and indexes of almost all countries of the World. Crisis brought a deep decline of economic activity, production and exports, productivity, employment, direct foreign investments and standard of living.

Global economic crisis is considered the one which is not of predominantly cyclic character, in spite of conventionally accepted rule of its regularity. Its cyclic character arises from the very nature of economic system aiming to get modified and developed. Modern crisis is, above all, a system one since nowadays big and heavy structural problems are typical to global economic crisis and they penetrate the very essence of operation of the global economic system.

In the initial phase of its manifestation the crisis took a form of financial one, regarding that it directly influenced various financial institutions. At the very moment when effects of the crisis were felt within real economy as well, it became an economic crisis. It started in 2007 as the one resulting from endeavor of financial institutions to diversify risks and convert insolvent assets into solvent papers on the one hand, and from existence of insufficient and low quality information on, often very complex, securities of the kind - on the other hand.

Due to fiscal stimulation in developed countries more severe consequences were avoided. Observed at the time length, both global growth and development require a range of measures, i.e. "to get initiated cleaning of disputable and toxic assets of financial institutions finished,and to perform institutional improvement in financial sector whose

cancelations generated global financial crisis, and afterwards economic crisis as well" (Bošnjak, 2011, p. 4).

Financial innovations that lead into expansion of so-called subprime (secondary) credits in the USA caused a discrepancy between financial and real spheres. Incongruity between financial and real sectors that resulted in deceleration of real sector growth is considered the main cause of global financial and economic crisis. For instance, financial sector share in the USA corporate profits was duplicated in the last two decades just before crisis itself started, and that caused a necessity of state interventionism in financial sector (Mladenović & Kitanović, 2014, p. 5).

In distinction to financial innovations, the idea that successive waves of technological innovations represent the main agents of long-term performances of both new and existing businesses seems to be absolutely the right one. It is well known that innovations in domains of technology, processes and methodology always used to emergeand that they are certainties in modern economy of the World. The entire new way of doing business emerged in the last two centuries, together with prosperity of production, transport, services and communications. It was manifested in the form of fast subsequent cycles in a trend of exponential acceleration which was realized in the course of last few decades. However, the important lesson on history of economy reads that innovation as such does not ensure success of any particular company, be it a pioneer in application of it or nothing but the one pursuing ever changing circumstances (Helfert, 2000, p.19).

Investments in research and development (R&D) are immanent to companies in every phase of their life, so much more because they enable creation of new products, as well as accomplishment of primacy in their own branches of business. This form of investment brought considerable results due to, *inter alia*, rights of protection of intellectual property of companies.

Trend of modern economy facing numerous problems and potential crisis is to increase investments in intangible assets, e. i., investments in research and development (R&D) instead of increasing investments in material goods. This is about investments enabling creation of new products, promotion of enterprises and establishment of the leading enterprise in the respective business sector. In a word, the "innovation economy" will change the very nature of work, businesses, capital, competition, market and consumers. The key chance that innovation economy offers to individuals is a chance to create wealth the range of what has never been recorded before.

Special efforts have been made by the most developed countries of the World, including the European Union, to encourage, by virtue of numerous obstacles caused, *inter alia*, by states of crisis, creation of environment within which both knowledge and innovation will be stimulated (Jovetić & Janković, 2012, p. 512). Whereas the foundation of the Europe 2020 Strategy is creation of a kind of "Innovational Union", the biggest challenge it is going to face will be the attempt to make innovations its long-term strategic priority. To that end, not only financial resources but simulative and coordinated instruments and measures of both national and regional policies are available to protagonists of innovations.

The Main Science and Technology Indicators[4] (MSTI) published preliminary data for the year 2015, showing that research and development (R&D) budgets of OECD countries continued their decreasing trends starting from 2010, not including a short period of stabilization recorded in 2014. Out of total of analyzed countries, about two thirds of them reduced their real R&D budgets so that estimated total value decreased by 1.3%. It is forecasted that spending on research and development performed by governments and high education institutions in OECD countries is going to be calculated as decreased in 2015 as well (OECD, 2016).

Table 1. *R&D budgets - Total GBAORD[5] ($ million in 2010, constant prices, basic 2008=100)*
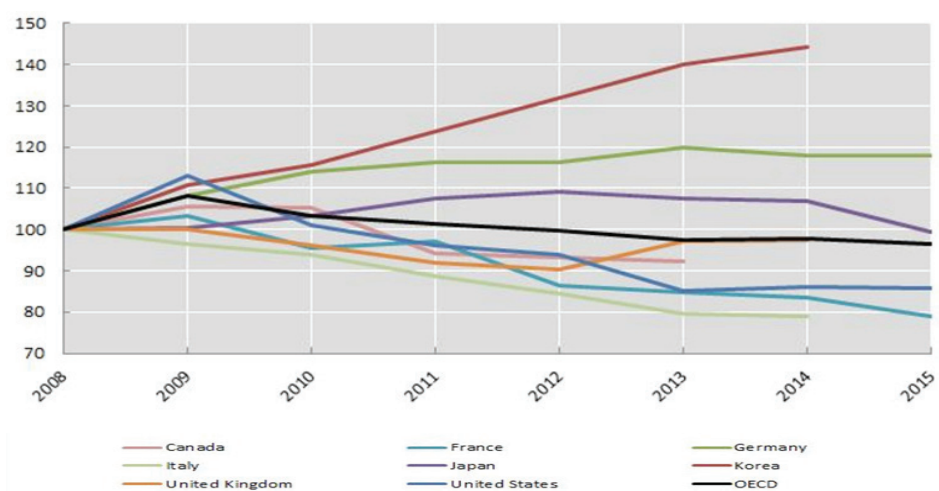
Source: OECD, calculation based on the Main Science and Technology Indicators, January 2016; http://www.oecd.org/sti/sci-tech/msti.htm

The most recent OECD data (OECD, 2016) on gross domestic expenditure on R&D (GERD) indicate that annual GERD of OECD countries increased in 2014 in real terms by 2.1%, and that the increase was slugged as compared to 2.8% in the previous year. It has been indicated that outlays for R&D in state institutions increased to 1.0%,

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[4] Main Science and Technology Indicators (MSTI) – stands for a data base showing a range of indicators reflecting levels and structure of endeavours made by both OECD member-states and seven non-member states (Argentina, China, Romania, Russian Federation, Singapore, South Africa, Chinese Taipei) in science and technology domains, starting from 1981.

[5] GABORD - Goverment budget appropriations or outlays for R&D

while at the same time they slightly decreased in high education institutions (-0.2%). GERD share of GDP remained unchanged in OECD countries, at the level of 2.4% (Table 2).

Table 2. R&D Intensity: Gross Domestic Expenditure on R&D as percentage of GDP, 2000-2014.
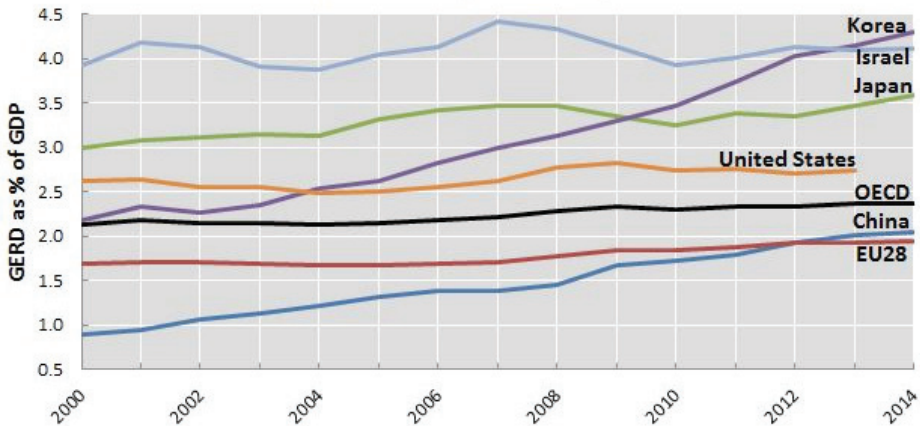
Source: OECD, the Main Science and Technology Indicators data base, January 2016; http://www.oecd.org/sti/sci-tech/msti.htm

The same source (OECD, 2016) recorded a turning point in China concerning outlays for R&D whereas they reached the level of 2% of GDP, which was a goal established in plan for 2010. Even though GERD continued to rise quite quickly in China, at the rate of 9% in 2014, it was the lowest increase of Chinese GERD since 1996. The highest intensity of outlays for R&D in the World recorded Korea, amounting 4.3% in 2014. Second to Korea was Israel with the rate of 4.1%.

By facing negative effects of global financial crisis, both innovation and innovation stimulation strategy took up a special and important place in government policies of many countries. As early as in 2009 OECD (Marklund, 2009, p. 7) published a study emphasizing the importance of research and innovations in overcoming of crisis. In addition to that, the study comprises measures aimed at stabilization of financial systems.

Concerning investments in innovations, OECD countries also invest in capital based on knowledge which promotes innovations, as well as in physical, i.e. material means. Development of innovations is encouraged by structural and political reforms. Structural reforms should enable maximizing of effects of investments made in knowledge, *inter alia* by relieving movement of both capital and workforce. Political reforms can also discourage placement of resources to nonefficient enterprises. Open markets and competition are of a special importance when it comes to expansion of innovations (https://innovationpolicyplatform.org/content/business-environment-innovation).

The DynEmp (The Dynamics of Employment Growth) data (Criscuolo, Gal & Menon, 2014, p. 9), recorded by OECD, comprise comparative data on proportion and lifetime of

enterprises and on employment rates in the period from 2001 to 2011 in domains of production, civil engineering and non-financial services in 18 countries.[6] In addition to the above, the project comprises the analysis of influence global financial crisis made on creation and loss of jobs.

Global economic crisis influenced relationship between creation of new jobs and various ways of losing jobs. Under the influence a drastic decline of employment rate took place, without any new conditions being made in order to get new jobs created. The data indicate that in the USA the difference in net rate of creation of new jobs between young/small and big/mature enterprises decreases cyclically. They also consider old small enterprises less sensitive to crisis then small and young ones. The crisis especially hits younger enterprises because they are deprived from access to financial funds and loans. Therefore, in a long-term, it makes an obstacle to creation of new jobs since it has considerably contributed to abolishment of already existing businesses (Criscuolo, Gal & Menon, 2014, p. 45).

On the basis of exhaustive analysis of The Dynamics of Employment Growth project, the following conclusions can be made:

- Among small and medium enterprises (SME), young enterprises play a central role in job creation and improvement of both growth and innovations. Generally, in all countries and by lifetime, young enterprises make 17% of total employment but create 42% jobs.
- Important difference between countries is based on contribution young enterprises make in employment process.
- Many countries recorded considerable decline of start-up rate.
- Young enterprises were more damaged by impacts of financial crisis.
- Young enterprises were more influenced by financial crisis than the other ones.
- Start-up businesses in unstable sectors and in sectors manifesting higher dispersion of growth are much more exposed to influence of national policies than start-ups in other sectors.
- Public policies can help creation of potentials for growing of young, innovative enterprises. Structural reforms in the form of functional improvements of product, work and capital markets, as well as promotion of adequate legislation, are of crucial importance to the matter (Criscuolo, Gal & Menon, 2014, p. 9).

Policies applied in OECD countries are not encouraging enough concerning experiments with new ideas, technologies and business models, without which success of innovative companies is hardly possible. Young enterprises are especially important to growth of both new sectors and growing ones. However, proportion of an average young enterprise in numerous OECD countries is small, which is the fact restricting their influence in domains of innovation, economy and society.

Conclusion

The twenty-first century economies will thrive if they accept innovations in accordance to changes. If they do that, and if individuals understand and use innovation, they will be able

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[6] Data presented by this report comprise the following countries: Austria, Belgium, Brasil, Canada, Finland, Italy, France, Hungary, Luxemburg, Japan, Netherlands, Norway, New Zealand, Portugal, Spain, Sweden, Great Britain and the United States.

to enjoy the fruits offered by the largest generator of progress ever. The future of the World in which we operate will be based on a completely new trend, on so-calledinnovation economy. It is no longer based on capital, knowledge and natural resources only but also on a personal approach to radical innovation. The time to come will be marked by radical new ideas influencing emergence of new markets, creating new industries and attracting new investments. Traditional factors determining success of an economy will be not sufficient anymore.

Small and medium companies in the creative industries face similar problems as those faced by small businesses in other domains of economy. One of the major constraints in efforts to transform a creative idea into merchandise or service is aggravated access to capital. Development of creative entrepreneurial projects is not possible without providing of the necessary financial resources. Creative SMEs operate better in countries with financial sectors adjusted in order to finance small and medium enterprises and where creative industries are officially recognized. In this regard, small and medium enterprises in most developing countries are at disadvantage, especially because the concept of creative industries itself is still quite new.

Creative industries are important segments of national economies. The increase of developmental performances in creative industries is expected in both developed and developing countries as well as in countries in transition. By making their contributions to economic development of countries, creative industries affect the growth of creative capital and establishment of creative class which a priori makes an investment attracting factor, reducing therefore negative effects of potential states of crisis.

The "Innovation Economy" will change the very nature of work, businesses, capital, competition, markets and consumers and enable creation of conditions for overcoming a crisis. Key option that the innovation economy provides for entrepreneurs is creation of wealth of unprecedented scale. Almost all countries of the World, faced with the problem of recession, in their efforts to overcome situations of crisis, create environments stimulating the advancement of knowledge and innovation. To this end policies of many countries are focused on innovations and the adequate stimulating strategies.

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ANALYSIS OF CONSUMPTION OF ORGANIC PRODUCTS IN NIŠAVA DISTRICT[2]

Abstract

Current living conditions have imposed the imperative need for transition to organic way of production due to enormous environmental pollution and excessive exploration of natural resources by traditional way of production. Organic production combine tradition, innovations and science in order to improve environment, develop fair relationships and good life quality for everyone involved. The aim of this work was to analyze the consumption of organic products in Nis district by using multivariate analyze method. Technics of multivariate analyze determine the types of organic products represented in consumption of Nis district population, way of supplying with this products, influence of media and world economic crisis to their consumption. The results obtained in this study indicate the existence of significant growth and development of organic production and consumption of organic products.

Key words: organic production, organic ariculture, consumption, multivariate analysis

JEL classification: Q11, C38

АНАЛИЗА ПОТРОШЊЕ ОРГАНСКИХ ПРОИЗВОДА У НИШАВСКОМ ОКРУГУ

Апстракт

Савремени услови живота императивно су наметнули прелазак на орган-ски начин производње због све већег загађења животне средине и претеране искоришћености природних ресурса традиционалним начином производње. Органска производња комбинује традицију, иновације и науку како би побољ-шала окружење, развила фер односе и добар квалитет живота за све укљу-чене. Циљ овог рада је био да се анализира потрошња органских производа у Нишавском округу применом метода мултиваријационе анализе. Техникама мултиваријационе анализе одређене су врсте органских производа заступље-не у потрошњи становника Нишавског округа, начин снабдевања овим про-изводима, утицај медија и светске економске кризе на њихову потрошњу.

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Резултати до којих се дошло путем истраживања указују на постојање тренда раста развоја органске производње и повећања потрошње органских производа.

   Kључне речи: *organski proizvodi, organska poljoprivreda, potrošnja, multivarijaciona analiza*

Introduction

Agricultural production in the world has passed a long way of development. Organic farming is a very old method, used by people in ancient times for their life in the jungles. It was created in response to the increasing environmental degradation and increasing appreciation of health of the population, through the idea of growing plants with reduced use of chemicals, controlled use of fertilizers, use of crop rotation, deep plowing, and the like. Its main task is to provide sufficient quantities of food and raw materials for current human population.

In order to emphasize the importance of a healthy lifestyle, especially the importance of healthy food and organic production, the survey was conducted on the territory of Nišava district The research was conducted on a random sample of 98 respondents of different gender, age, and educational structure, using the questionnaire on the consumption of organic products in Nišava district. All data was included in a database, and its analysis was performed with the help of SPSS program.

The aim of the work is to analyze the consumption of organic products in Nišava district based on multivariate analysis methods. The work will aim at determining interdependence between the awareness of Nišava district inhabitants of organic products and their use in everyday life. In addition, the above-mentioned analysis methods will be used to determine the most consumed organic products among the population in Nišava district, the ability to purchase these products, as well as the influence of the media, the world economic crisis, and the social position of respondents on their use. Also, using χ^2 test will be testing the significance of differences between the selected categorical variables.

Theoretical background of organic method of production within the agricultural sector

In modern life conditions, the concept of organic production is equated with the concept of organic farming. Certainly, the two terms are not synonymous, and it is necessary to make a distinction between them and fully delineate them. In this regard, it should be noted that organic production is broader, i.e. more comprehensive concept than organic farming. Organic farming is a term that means the production of food in a safe manner, while organic production relates to the production of all products in accordance with the prescribed legal measures and the preservation of the natural environment.

Organic production is a production system that, in accordance with the law and regulations, responds to site-specific conditions by integrating cultural, biological, and

mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity (USDA – NOP National Organic Program).

Organic production is not only avoidance of conventional chemical inputs, nor is it a replacement of natural by synthetic inputs. The primary concern of organic production is the health system that interacts with the practice of managing this production method. Organic producers implement a wide range of strategies for the development and maintenance of biological diversity and renewal of soil fertility. In fact, organic production does not exclude chemical treatment, but, instead of harmful agents, relies on the use of agents after which it is possible to use products without consequences for human health (Angelovski et al., 2012).

Organic production is fully controlled production, with production conditions being defined by the IFOAM regulations, based on which rules must be adapted to the specific conditions of each country in which this type of production is carried out. Basic guidelines for organic production are the use of materials and practices that enhance the ecological balance of natural systems and that integrate the parts of the farming system into an ecological whole (Mirecki et al., 2011).

Organic farming is a production system that maintains the health of land, ecosystems, and people. It relies on ecological processes, biodiversity, and cycles adapted to local conditions, rather than use of inputs with adverse effects. Organic farming combines tradition, innovation, and science to use a common environment, and promotes fair relationships and a good quality of life for all involved (IFOAM – International Federation of Organic Agriculture Movements). As defined by FAO (United Nations Food and Agriculture Organization) and the World Health Organization, organic farming is a production management system that promotes the recovery of ecosystems, including biodiversity and biological cycles, and emphasizes the use of methods that largely exclude the use of off-farm inputs.

Based on the above definitions of organic farming, it can be concluded that the basic elements of each of them are as follows: organic agriculture is a production system; it contributes to the conservation of biodiversity, land, water; it avoids the use of hazardous substances in the production process; it improves human health and influences the maintenance of ecological balance.

For more successful organic farming, organic farmers use thousand-year-old techniques, such as crop rotation, composting animal manure and green manure crops, which are economically viable in today's world. Besides applying traditional techniques used in agriculture, modern scientific knowledge in this field is also used, which affects the creation of a healthy balance between nature and agriculture. Using these cultivation techniques will help to conserve the natural environment, achieve good yields, and preserve health and safety of the people who live and work in that area (Vittersø & Tangeland, 2015)

Organic farming is a solution to all the negative influences of conventional ways of food production and over-exploitation of resources, as well as of disturbed balance in ecosystems. Accordingly, organic farming is designed to protect all existing resources, is not harmful to the environment, is technically enforceable, socially acceptable, and economically viable (Ghimire, 2002).

The presence of organic farming in the world and Serbia

The rapid development of organic production has been evident worldwide for years. Institute of Organic Agriculture (FiBL) is engaged in the monitoring of the growth and existence of organic farming in the world, with its latest report issued in 2015 in cooperation with IFOAM.

The report covers 170 countries, where 2 million farmers deal with organic farming on more than 43.1 million hectares of agricultural land. Therefore, it is a relatively small area, with only 1%, in relation to the total agricultural land in the world (FiBL, 2015). At the same time, the growth rates of areas and number of organic producers are significant. From the period when FiBL started recording statistics on the development of organic farming (1999), organic farmland areas tripled.

Regions with the largest areas of organic agricultural land are Oceania (17.3 million hectares), followed by Europe (11.5 million hectares), and Latin America (6.6 million hectares). Asia, Africa, and North America have a much smaller share of organic agricultural land. Oceania has 40% of global organic farmland. Europe is characterized by a continuous growth of organic areas in recent years. In the last couple of years, areas under this production system have significantly increased in Oceania, whereas Europe and Latin America recorded decrease (FiBL, 2015).

At this point, 1% of agricultural land is organic. The largest share of these areas is found in Oceania (4.1%), followed by Europe (2.4%), while in other regions the share is less than 1%. The European Union records a 5.7% share of organic land in total agricultural land. Of course, there are countries that have a much larger share of organic land: Falkland Islands (36.3%), Liechtenstein (31%), Austria (19.5%). There are only ten countries in the world with more than 10% of organic farmland area. Countries with the largest organic farmland areas are Australia, Argentina, and the United States of America (FiBL, 2015).

The latest FiBL/IFOAM report of 2015 has registered 2 million organic producers in 2013, 200,000 more than in 2011. Asia records the highest percentage share of these producers with as much as 36%, followed by Africa with 29%, Latin America with 16%, Europe with 17%, while Oceania and North America had only 1%. Regardless of the fact that Oceania has the highest percentage of organic farmland, India, Uganda, and Mexico have the largest number of organic producers. Almost 80% of producers come from developing countries and emerging markets.

Market research company, Organic Monitor, estimated the global organic production market in 2013 to 72 billion dollars or 66 billion euros. The leading market is the USA with 24.3 billion euros, followed by Europe, where Germany is the leading country with 7.6 billion euros (FiBL, 2015). The greatest demand for organic food is concentrated in the USA and Europe, which reflects an imbalance between production and consumption. Countries with the highest per capita consumption of organic product group are Switzerland and Denmark.

Over the years, organic farmland areas in Serbia have increased with light intensity. Organic production in 2014 covered the area of 9430 hectares, which is approximately 0.28% of the total utilized agricultural area (Ministry of Agriculture and Environmental Protection, 2015). In 2014, organic farmland area increased by approximately 12.7% compared to the previous year, i.e. about one thousand hectares.

Organic field crops are the most common, amounting to 72% and including meadows and pastures, followed by fruit growing with 25%, while vegetables are grown on 3% of the total organic farmland (Kalentić, 2014). Livestock organic production faces a number of problems, such as the lack of certified nutrients, specific growing conditions, and low profitability of this type of production, which is why it is in initial development stages. After years of stagnation in the development, organic livestock is starting to record intense growth. This fact is confirmed by the trend of increasing number of small animals, number of cattle, and number of poultry (Kalentić et al., 2014).

Prospects of organic agriculture in the world and Serbia

In recent years, production and processing of organic products is becoming more popular and economically important. The measures and procedures used in conventional production are aimed at productivity, without paying attention to the impact on the environment and sustainable development. Given that these procedures cast doubts on the future level of production by destroying the conditions that contribute to long-term maintenance of fertility, increasing interest in organic production is understandable. Starting organic production is certainly not cheap investment, but, in the long term, it can be very profitable. The final product of organic production is by 30 to 50 percent more expensive than conventional products (FAO, 2011).

Perceiving the presence of this type of production, it is recognized that the opportunities are not sufficiently utilized. More intense development of organic production is becoming a trend, as existing demands for organic products are not met. Due to the imbalance between the supply and demand for these products, both in the world and in our country, attempts should be made to intensify organic production and use this chance for better economic development (Shehrawat et al., 2015).

Organic production globally is recording an upward trend. In developed countries, such as the United States, the current offer of organic products is not enough to satisfy the demand that exists in this part of the world. Serbia should join the world trends and take its place among the distinctive organic producers. Turning to this economic activity would bring Serbia stable and constant development (FiBL, 2015).

The primary and important role of organic production lies in the development of rural areas, as it enables the diversification of activities, attracts financial resources, and stands for an integral part of the agriculture and rural development strategy (National Action Plan for Organic Production Development in Serbia). Aspects that reflect the importance of organic production are the protection of natural resources from pollution due to non-use of chemicals, conservation of biodiversity through the protection and long-term maintenance and increasing of soil fertility (Bengtsson et al., 2005). According to economic indicators, organic production is becoming increasingly important nowadays. Trade in organic products in the last four years has increased substantially, while prices of organic products remain high, as a special motivation for producers.

The importance of organic farming certainly lies in sustainable development, reflected in the long-term well-being of society through the provision of sufficiently stable and safe production of food and other products, while preserving the quality of the environment and natural resources on which production is based. Special emphasis

is placed on producing high-quality products. It can be concluded that this system of production contributes to economically viable, environmentally sound, and socially acceptable production sector (Subić, 2010).

Research results and discussion

In order to emphasize the importance of a healthy lifestyle, especially the importance of healthy food and organic production, the survey was conducted on the territory of Nišava district. Nišava district is located in the southeastern part of the Republic of Serbia, and is made of eleven municipalities. This district numbers about 373,404 inhabitants according to the last census conducted in 2011, and is the second largest district in Serbia (SORS, 2013). The research was conducted on a random sample of 98 respondents of different gender, age, and educational structure, using the questionnaire on the consumption of organic products in Nišava district. All data was included in a database, and its analysis was performed with the help of SPSS program.

The first part of the questionnaire focused on determining the gender, age, status, education, and monthly income of respondents. The research included 98 (100%) respondents, of which 95 gave the answer to this question, there being 55 (56.1%) women and 40 (40.8%) men. Three respondents did not declare themselves, which made 3.1% of total number of respondents.

By age, the youngest respondent was 19 years old, while the oldest was 81 years old. The average age was 41.36 years, and standard deviation, as a measure of variability in respect of this value, was 16.791. All respondents were classified into several groups according to age. Most respondents were in the age group of up to 25 years of age, 31 of them, or 32.6%, followed by group of up to 55 years with 19 respondents, or 20%. The least number of respondents was in the group of respondents older than 75, only three of them, or 3.2%.

Status of the respondents was the characteristic according to which the category of permanent employees numbered 41 respondents (44.6%), while the least number, only one respondent, was found in the category of temporarily employed. The number of the unemployed respondents was half as small as the number of permanently employed, and included 20 respondents, or 21.7%. The following was the category of students with 17 (18.5%) respondents, while the remainder included pensioners, i.e. 14.1% of respondents. According to educational background, respondents were divided into three groups. 58 (61.7%) respondents had university degree, 24 (25.5%) of them had secondary education, while 12 (12.8%) respondents had college degree.

When asked "Do you have your own source of income?", 64 respondents, or 65.3% of the total of 98 (100%), gave a positive answer. Three respondents did not declare themselves, and 31 (31.6%) respondents did not have their own source of income. The next question concerned the monthly income per household, and respondents were offered four categories. 26 respondents, or 27.4% of the total number, had up to 40,000 RSD of monthly income per household. 31 (32.6%) respondents belonged to the category of 40,001 to 70,000 RSD, followed by 70,001 to 100,000 RSD of monthly income per household recorded with respect to 22 (23.2%) respondents. Income of over 100,000 RSD per household per month was the case with 16 respondents, or 16.8%.

The second part of the questionnaire contained questions for obtaining relevant information essential to the determination of the consumption of organic products on the territory of Nišava district. In order to be able to investigate anything about organic products, it was necessary to determine whether the respondents knew what organic products are and how they define them. Out of a total of 98 (100%) respondents, over 93 (94.9%) respondents heard of organic products, while only two respondents never heard of the existence of organic products.

The largest number of respondents (38%) defined organic products as those that contribute to human health and the preservation of the human environment. About 30% of those who answered this question on organic products said that these were products produced under strictly controlled and legally regulated production methods. Approximately the same percentage of respondents defined them as products with no genetically modified organisms. Only 3% said that these were high-tech quality products.

The part which examined the awareness of organic products was followed by a set of questions regarding the purchase of organic products, the frequency of purchase, product type, and mode of supply. Of the total number of respondents, 65.3% bought organic products, while 26.5% of them did not.

According to the frequency of purchase, the respondents could opt for one of the four categories. The first category, which referred to purchasing several times a week, included 18 respondents, or 26.7%. The most respondents were found in the category referring to purchasing once a week, i.e. 23 (34.3%) out of 64 who responded to this question. It was followed by the category referring to making purchase once a month with 23.9%, and purchasing several times a year, with 14.9% of respondents who gave this answer. Out of 98 respondents, 34 of them did not answer this question.

One of the starting hypotheses in this study was that older population was less informed about organic products and organic production. In order to test this hypothesis, an analysis that focused on the age of respondents and their familiarity with organic products was conducted. The results of the analysis showed that all respondents older than 65 were familiar with organic products, while two respondents under the age of 25 responded that they had not heard of organic products. In terms of percentage, 97.9% of the total number of respondents, regardless of the age category they belonged to, heard about organic products. Furthermore, χ^2 test showed that there was no link between categorical variables, the age structure of respondents and awareness of organic products. Out of the total number of respondents who answered this question, 95 of them, most of the respondents found themselves in a group of up to 25 of age, i.e. 32%.

What followed was the analysis relating to the monthly income per household and frequency of purchase of organic products. The highest frequency of purchase occurring several times a week was recorded among the respondents whose monthly income per household was up to 40,000 dinars. Out of 21 respondents belonging to the category of respondents with monthly income per household of up to 40,000 RSD, only two of them, i.e. 9.5%, bought organic products several times a year. The next category with a monthly income per household of up to 70,000 RSD was characterized by the frequency of purchase of organic products once a week. This fact came from the result based on which as many as 10 out of 21 respondents replied that they bought organic products once a week. 35.8% of respondents with monthly income of up to 100,000 RSD usually bought organic products once a month. The least number of respondents was found in the

category with a monthly income of over 100,000 dinars, where the percentage share of frequency of purchase was the same as regards the purchase occurring several times a week and once a week. This question was answered by 67 respondents, out of which 34.3% bought organic products once a week. It can be concluded based on the results that the amount of monthly income does not affect the purchase of organic products.

Based on the answers of 63% of respondents, the type of product with the largest share in the purchase of organic products was food. Organic cosmetics and clothes were bought by significantly smaller number of respondents, which may be due to the absence of these products on our market as well as the high price of the purchase in other countries. As regards food, fruit and vegetables produced organically are purchased the most, followed by milk and dairy products. Out of 63 respondents, 35% gave preference to fruit and vegetables as the most important type of organic food. This fact confirms that, regardless of the age structure and average monthly income per household, residents of Nišava district try to lead a healthy life. A large share of fruit and vegetables, as the type of commonly purchased food, was the result of organic production of this food in Nišava district. Respondents most often purchase organic products in supermarkets, as evidenced by 26% of respondents who gave this response. The second mode of supply is purchasing directly from the producer, followed by purchase in specialized stores and green markets.

The question referring to the essential characteristics of organic products contained five categories, which the respondents were supposed to rank with the scores from 1 to 5, where score 5 indicated the most important characteristic. Seventy respondents performed the ranking, and rated quality as the most important, followed by taste and color of the product. Shape and design, as the characteristics of organic products, were the least important for the respondents. For a more detailed analysis of this question, factor analysis was applied, based on the correlation matrix determining correlation between these characteristics (variables).

Table 1. Correlation matrix of the characteristics of organic products

	Taste and color	Shape/desing	Quality	Price	Impact on human health and environmental protection
Taste and color	1.000	-.061	-.270	-.151	-.329
Shape/desing	-.061	1.000	-.200	-.109	-.382
Quality	-.270	-.200	1.000	-.365	-.129
Price	-.151	-.109	-.365	1.000	-.271
Impact on human health and environmental protection	-.329	-.382	-.129	-.271	1.000

Source: Autor presentation

Correlation matrix points to the conclusion that the greatest degree of correlation exists between the same variables, i.e. taste and color and taste and color, which applies to each of the product characteristics. Taste and color, as a characteristic, to a somewhat lesser degree correlates with the impact on human health and environmental protection, with even lower degree of correlation with quality and price. The lowest degree of correlation exists between taste and color and shape and design. To determine the number of factors, Eigenvalue criterion was applied.

Based on the results shown in Table 2, it can be seen that three components have eigenvalue greater than 1, which means that the rated characteristics of organic products can be classified into three factors. These factors explain 78.926% of the total variance in the answers. The first factor is constituted by characteristics of shape and design and the impact on human health and environmental protection, the second factor consists of quality and price, and the third refers to taste and color.

Table 2. The results the factor analysis

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	*1.576*	31.527	31.527
2	*1.268*	25.368	56.895
3	*1.102*	22.031	*78.926*
4	.972	19.434	98.361
5	.082	1.639	100.000

Source: Autor presentation

Factor loadings of the rated characteristics of organic products are shown in Table 3. The squared values of factor loadings represent the share of variability of the rated characteristics explained with the given factor.

Table 3. Factor load

Characteristics	Factor		
	1	2	3
Taste and color	0.497	0.213	**-0.813**
Shape/ desing	**0.536**	0.404	0.385
Quality	-0.545	**0.627**	0.286
Price	0.458	**-0.680**	0.395
Impact on human health and environmental protection	**-0.732**	-0.452	-0.236

Source: Autor presentation

The last part of the questionnaire was aimed at examining the attitudes of consumers on the importance of organic products for human health, prices, consumer trust in the information broadcast by the media, and the impact of the global economic crisis. Almost 84% of respondents believed that organic products were healthier for use than conventional products, and gave them preference in consumption. Those who gave negative answer to this question justified their attitude by misrepresentation of information on the usefulness of organic products in the media. To the question "Is the price of organic products in your view high?" 69 respondents gave an affirmative answer. However, 25% of the total number of respondents answered that the price was not high, because it was justified by the high quality of products. Although the price of organic products is considered high by a large number of respondents, 63% of the respondents would continue to purchase these products regardless of the price increase trends in the future. 60% of the respondents who participated in the survey had trust in information about organic products which is published in the media. The remaining respondents did not trust the information presented in the media because they considered it a marketing trick for increasing sales of organic products.

In order to raise consumer trust in organic products, certain measures were proposed, which respondents ranked according to importance. The respondents attached greatest significance to the measure relating to the improvement of the regulatory norms by the government, followed by the scientific evidence on the packaging, and sustainable investment by brand. Promoting products through celebrity endorsement is the least important for the respondents. This question offered the possibility to the respondents themselves to write the measure which they considered important for raising trust in organic products. The measures entered by respondents were: recommendations of friends, quality credibility, and increasing the awareness of producers in terms of optimal use of stimuli allowed in organic production.

For a more detailed analysis, cluster analysis was applied, which classifies a larger number of variables into groups – clusters. These few ranking measures were grouped into three clusters. The first cluster consisted of respondents that attached the greatest importance to sustainable investment by brand. The second cluster was made by respondents that gave importance to the improvement in regulatory norms by the Government and the scientific evidence on the packaging. The third cluster included respondents that highly valued the promotion of products through celebrity endorsement and some other measures (Table 4).

Table 4: Number of respondents per cluster

Cluster	Frequency
1	29
2	48
3	17
Total	94
Without answer	4
Total	98

Source: Autor presentation

To determine the age structure of the respondents in the clusters, another analysis was performed, which showed that the largest number of respondents of up to 25 years of age belonged to the second cluster, while older respondents with over 55 years of age were evenly distributed in clusters. Furthermore, it was noted that there was no correlation between the age and belonging to a cluster, as belonging to a cluster was determined only on the basis of importance of these measures.

The last question in the questionnaire concerned the impact of the global economic crisis on the consumption of organic products. 93 respondents responded to this question, representing 95% of the total number of those involved in the survey. About 70% of respondents believed that the consumption of organic products in the period of economic crisis decreased. 23% of respondents claimed that consumption remained the same, while only 2% said that consumption increased during the crisis.

Conclusion

According to the set goal and research on the consumption of organic products in Nišava district, application of multivariate analysis techniques produced certain conclusions. Processing the collected data through multiple correlation analysis pointed to the conclusion

that there is no correlation between the age of respondents and their awareness of organic products. Moreover, older population has more information about organic products as they seek to take care of their health by consuming healthy food.

Furthermore, it was found that the monthly income per household is not a limiting factor for the inhabitants of Nišava district when buying organic products. Type of organic products that is commonly purchased is food, with a large share of fruit and vegetables. The purchase of organic products is mainly carried out in supermarkets, and the characteristic of organic products that is highly valued by respondents is quality. A large number of respondents believe in the fact that organic products are healthier. The price of organic products for residents of Nišava district is high, but they will in most cases continue buying these products despite the upward price trend over time.

Organic product consumer trust in the information published in the media exists, and measures that are, in the opinion of respondents, best to raise trust in organic products are improvement of the regulatory norms by the Government and the scientific evidence on the packaging. The global economic crisis has a strong effect on reducing the consumption of organic products according to the respondents' answers. The consequence of the reduction is lower consumer purchasing power due to reduced monthly income per household given the deteriorated economic situation in the country.

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INFLUENCE OF STABILIZED SEWAGE SLUDGE ON THE YIELD OF POTATO (*SOLANUM TUBEROSUM*)

Abstract

The author has examined the application of different doses of stabilized-hydrated sewage sludge in two potato varieties in field conditions. Next to an unfertilized plot, he followed the growth, development and yield of varieties Agria and Aladin on soil treated with an amount of 50 t/ha and 30 t/ha of sludge from wastewater treatment plant in Subotica. He found that the highest yield was achieved at the variety Aladin (44.5 t/ha), when applying 30 t/ha of sludge. Agria produced 29.65 t/ha of tubers with the same amount of fertilizer. In both varieties the yields were higher on plots fertilized with 50 t/ha than on unfertilized soil. It was found that, in contrast to fertilizing with manure from 50 t/ha, half the amount of stabilized sludge produced similar, if not higher yields. In the future it will be possible to substitute or supplement manure with stabilized sludge under controlled conditions.

Key words: potato, fertilization, stabilized sludge, yield, income

JEL classification: Q01, Q110

УТИЦАЈ СТАБИЛИЗОВАНОГ ОТПАДНОГ МУЉА НА ПРИНОС КРОМПИРА (*SOLANUM TUBEROSUM*)

Апстракт

Аутор је испитивао примену различитих доза стабилизованог-дехидратисаног отпадног муља код две сорте кромпира у пољским условима. Поред парцеле без ђубрења пратио је раст, развитак и принос сорте Агриа и Аладин на парцелама третиране са количином од 50 т/ха и 30 т/ха муља са Суботичког пречистача отпадних вода. Установио је да се највећи принос (44,5 т/ха) остварује код сорте Аладин при примени 30 т/ха муља. Агриа је родила 29,65 т/ха кртола при истом количином ђубрења. Код обе сорте је био већи принос на парцелама ђубрене са 50 т/ха него на неђубренима. Установљено је да, насупрот ђубрењу стајњаком од 50-60т/ха, упола мања количина стабилизованог муља продукује сличне приносе, ако не и веће. У будуће под контролисаним условима могућа ће бити замена или допуна стајског ђубрива са стабилизованим муљем.

Кључне речи: кромпир, ђубрење, стабилизовани муљ, принос, приход

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Introduction

In 2008 the European Community adopted directive 2008/98/EC, which regulates the disposal, recycling and distruction of industrial, municipal and hazardous waste. Based on this act, experts recommend an integrated and hierarchical scheme from minimization of waste until its final destruction (EC No. 2008/98 / EEC, Official Gazette of RS, 135/2004, 36/2009, 72/2009).

In developing countries, disposal and treatment of industrial and municipal wastewater are a large problem. In major cities in the Republic of Serbia, modern wastewater treatment plants are either already working or are under construction, but no municipality has a solution for unstable pressed sludge. The situation is the same in Subotica. The construction of a new treatment plant began in 2010. The recipient of purified water is Lake Palić, and solid waste is transported to the city dump. The dehydrated sludge is stored between the plant and the lake. The final deposition, further processing and use of sludge has not been resolved yet (Czekus, 2014b, p. 408; Jovičić, 2015).

The wastewater treatment plant in Subotica started working with new technology for purification of municipal and industrial wastewater in 2012. Due to this technology, the recipient (Lake Palić) now receives five to ten times less organic matter than before. Because the industry of the city is poorly developed, wastewater does not contain significant concentrations of heavy metals and impurities harmful to health. However, the resulting stabilized - pressed sludge from wastewater contains about 4.54% total nitrogen, 2.05% total phosphorus (4.69% P_2O_5), 0.715% potassium (0.858% K_2O), 64.3% of organic compounds, and it is usable in crop production under controlled conditions (Czekus, 2014b, p. 408).

In 2013 the author conducted experiments with corn hybrid NS 640 in order to determine the potential of wastewater in Subotica - expressed in yield and profits. The first experimental plot was fertilized with pressed sludge from the treatment plant in Subotica, the second one with the same amount of cattle manure, whereas the control plot remained unfertilized. His assumption was that the nutritional value of sludge is at least as high as that of the best organic fertilizer used so far. The results confirmed his expectations. The yield of the plot treated with sludge was by 25% greater than the yield of the plot fertilized with manure in combination with artificial fertilizer (Czekus, 2014a, p. 81).

As a continuation of this project, he researched into the optimal amount of stabilized sludge in crop production and certain vegetable crops that shall be subject to heat treatment. As a result of his experiments with corn, he found that 50 t/ha of stabilized sludge provides a higher yield than the same amount of manure (Czekus, 2014, p. 329). The aim of this paper is to present the results of potato yield obtained from experimental plots fertilized with different amounts of stabilized sludge. The assumption was that even a smaller amount of this substance can generate as much yield as such as on plots fertilized with 50 t/ha of stabilized sludge.

Stabilized-dehydrated sludge

Sludge separated from wastewater is digested in digesters at 33-37 ^{O}C, with a retention time of at least 20 days. During this time, 80-85% of biogas is released. Anaerobic digestion reduces odors and the number of bacteria in the sludge, making it stabilized sludge that is relatively innocuous, harmless and has no odor. Stabilized sludge is drained into a special silo, from where it is sent to the filter press to separate the water. This sludge contains about 5-6% of dry matter. What comes out of the press is dehydrated, so-called pressed mud.

Sludge, as a by-product of wastewater, can be treated as a product and sold on the specialized market. Economical exploatation of sludge is an important aspect because by its placement wastewater companies not only get rid of material that occupies a large space, but also produce a revenue that reduces the operating costs of the company itself. It is also useful for the population, because its nutrients improve soil fertility in the long run, as opposed to artificial fertilizers, which provide high and stable yields of cultivated plants in the course of a year, but have a negative impact on soil fertility in the long run. In the short term they provide spectacular yields in the cultivation of plants, but after a while their harmful and devastating effects come to the fore (Cvijanović, 2013, p. 157, Cvijanović, 2016, p.132).

The best and final solution for the use of sludge would be a kind of processing, such as composting and briquetting. Sludge prepared this way could easily be stored and used for improving the qualities of light sandy soils of Subotica-Horgoš sands.

In 1986, the European Union adopted directive 86/278/EEC, which regulates the treatment of sludge and its application in agriculture. The primary aim of this law is to preserve the health of people and animals, as well as to protect the environment.

Direct use of sludge is allowed only in exceptional cases, otherwise it must be processed in some way. The seventh point of the Directive prohibits its use:
- on pastures, if grazing is planned within three weeks after dispersal,
- in orchards and vegetable gardens during the growing season,
- in vegetable cultivation, with plants whose fruit is used directly, without processing, ie. cooking.

In cases other than these, sludge can be used in plant production. Each member of the community regulates the use of dehydrated sludge in particular. The first factor in the issuance of permits for the application depends on the composition of the sludge. The main emphasis is placed on the concentration of heavy metals in the sludge. The geographical area where it would be applied, the crops that would be grown and the plants that inhabit the given area are also of importance.

The law obliges institutions applying sludge to examine its composition at least every six months. If the parameters of wastewater significantly change, the analysis should be carried out every three months. When carrying out the required analisys, the amount of dry matter, organic compounds, nitrogen, phosphorus, heavy metals and ph are to be examined (EC No. 2008/98/EEC).

Potato (*Solanum tuberosum*)

In Serbia, the implementation of this type of organic fertilizer has not clearly been defined yet. Potato fertilization significantly affects the yield. The nutrition demand of potatoes is much greater than that of most cultivated plants. On average, a yield of 10t requires 48 kg nitrogen, 15 kg phosphorus and 85 kg of potassium (Lazić, 1998, p. 252).

In our country potatoes are grown on about about 110 thousand hectares. Its share of total arable land is 3.2%. On the available land, the potato is the third most important food crop after corn and wheat. 870 thousand tons of potatoes, that is 80 kg per capita are produced each year. Within vegetable production in our country potatoes are the clear leader, with a share of 41% (Vlahović, 2003, p. 115).

It is an important and very widespread food product. More than 150 kinds of potatoes, which are used for the preparation of 700 various dishes, are produced worldwide for human consumption. In addition to being used in human nutrition, a certain amount of potatoes are used for the purposes of chemical, food and pharmaceutical industries, and as highly valuable forage. It is also used for the production of starch, alcohol, glucose, dextrin, rubber, glue and the like.

Therefore potatoes are used either as raw material for industry, or as human food that must be subject to heat treatment. For this reason, the experiment was carried out with potatoes.

Material and Methods

The experiment was carried out in Subotica on the author´s own land, on black sand. It was not irrigated. The main meteorological parameters (Table 1) were obtained from the automatic weather station in the center of Subotica, located approximately 4 km from the experimental field. For this experiment, he used a Nexus instrument and the Weather Display software (www.sumeteo.info).

Month/parameter	March	April	May	June	July	August
precipitation (mm)	32,8	17,2	95,3	12,9	45,5	50,2
deviation from the long-term average	-3,2	-21,4	-13,6	-36,2	-17,9	+5,8
average monthly temperature (°C)	7,4	11,9	17,3	20,9	24,3	23,7
deviation from the long-term average	+0,2	-1,0	+0,5	-0,1	+0,9	+1,0

Table 1: Meteorological parameters for Subotica 2015

From Table 1 we can see that in spring and summer months in Subotica the precipitation was lower than the monthly average in previous years. The deficit for these six months was 92.3 mm. According to the statistics of the Republic Hydrometeorological Service of Serbia, the average amount of annual precipitation for this region is about 600 mm (www.hidmet.gov.rs). The monthly temperature averages ranged around the average of the past decades, although in summer 2015 there were 38 days when the average daily temperature was above 25 °C.

The experimental plot was divided into three equal parts. The first third was the control plot, that is, a plot without fertilization. The second part was treated with 3 kg/

m² (30 t/ha) of stabilized sludge, and the third one with 5 kg/m², or 50 t/ha (Figure 1). The experiment was carried out with potato varieties "Agria" and "Aladdin", category C2, the first reproduction, calibration 35-55 mm, produced in Serbia. The seed was not treated. The fifth reproduction of "Desiree" was also planted, but the results related to this variety are not the subject of this paper.
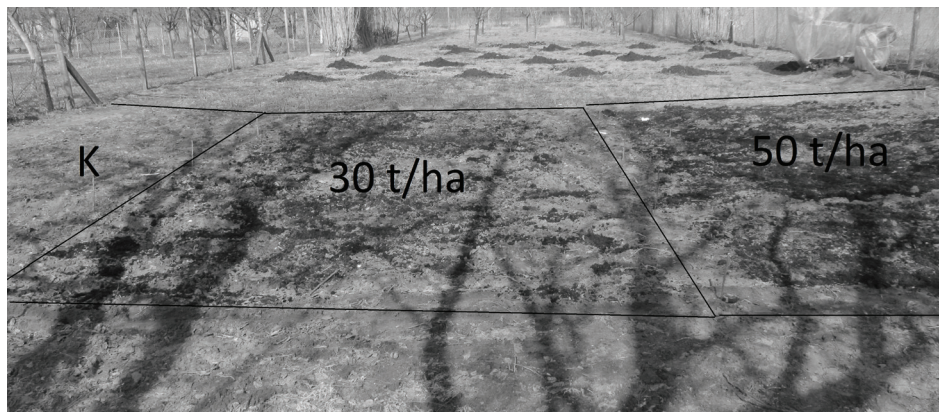
Figure 1. Various amounts of stabilized sludge

The preculture was peas (year 2014). The autumn tillage was conducted in October 2014 with a land milling machine, to a depth of about 25 cm. After the spring frosts, the experimental field was divided into three equal parts (control plot, fertilization with 3 kg/m² and 5 kg/m²). The composition of the pressed sludge was the following: 4.54% of total nitrogen, total phosphorus 2.05% (4.69% P_2O_5), 0.715% potassium (K_2O 0.858%), 64.3% of organic compounds. After sowing preparations (milling-blending at a depth of 15 cm) were carried out, the tubers were planted at a depth of 10-12 cm on March 21. The distance between tubers within the row was 22-25 cm, and the distance between rows was 50 cm. For each type of fertilization and in both cultivars there were three repetitions. The distance between the individual varieties and plots was

1 m.

Care and protection of crops was conducted in accordance with the requirements (Tošev, 2002, p. 105). During the growing season, interrow processing was performed twice, and treatment against potato blight (caused by Phytophthora infestans) and the Colorado potato beetle (Leptinotarsa decemlineata) three times. Spray mixtures "Mospilan 20 SG" and "Antracol WP-70" were used for crop protection, 2.5 g/10 lit and 15-20 g/10lit respectively.

The harvest was carried out on the 171st day of vegetation, on 8 September. Tubers from each plot were collected in special paper bags, and then classified and measured (Figure 2).

Figure 2. Part of the yield from the experimental field

Tubers were classified into three categories:
- Class I - physiologically ripe, normally developed and uniform in shape, size and colour. They are healthy, without sprouts, wrinkled or damaged crust. The tolerance of impurities and tubers infected by potato mold is up to 1%.
- Class II - tubers have to be healthy and suitable for human consumption. 2% of impurities (soil or sprouts) are tolerated, and up to 10% of tuber weight of potatoes with imperfections that meet the minimum quality requirements. The amount of tubers with cracks, cuts, and bruises can be up to 5%. The size of tubers must be at least such, that it is suitable for manual or automated peeling.
- small – useless, with a diameter less than 30 mm, unripe, infected, cut apart or containing bite marks (Vlahović, 2003, p. 119).

After calibrating, each category was measured and recorded.

Research results

According to the latest data of the Republic Institute for Statistics of the Republic of Serbia, in 2014 the average yield of potatoes in Vojvodina was 17.00 t/ha (www. webrzs.stat.gov.rs). Two climatic factors, water and temperature are of crutial importance for the successful cultivation of potatoes and achieving high yields. When irrigated, tuber yield can reach up to 80 t/ha (Bročić, 2015), and in our calculations we took 30 t/ha as expected yield (Đorđević, 2014).

In the municipality of Subotica, climatic conditions during the growing season were almost ideal for potato production. There was more than 260 mm of rainfall while

the potatoes were in the soil (Table 1). When we add the winter precipitation, we get close to 300 mm, and optimal precipitation for the successful production of medium-late and late varieties is about 460 mm (Bročić, 2015). The crucial point for this vegetation period was the temporal distribution of precipitation. It was far more favourable than in previous years, and thus compensated for the lack of spring moisture.

The total yield on the experimental plots in each type of treatment and in both varieties was far above the average in Vojvodina. The average yield of the three replications is given in Table 2.

Sort	Agria	Aladin
Control		
Average	23,30	32,80
Index level	*100,00*	*100,00*
30 t/ha		
Average	34,30	49,65
Index level	*147,21*	*151,37*
60 t/ha		
Average	31,00	34,30
Index level	*133,05*	*104,57*

Table 2: Average tuber yield (t / ha)

The data in Table 2 clearly shows that the highest yield was achieved in the plots fertilized with 30 t/ha of stabilized sludge. "Aladdin" has proven to be a higher-yielding variety. In treatment with

30 t/ha of stabilized sludge, it yielded 51% more than the unfertilized plots, while this figure in the variety 'Agria' was 47%. Considering the data obtained from the plot fertilized with a double dose of sludge (50 t/ha), we can see that the performance-fertility rate was reversed: "Agria" yielded a third more, and "Aladdin" only 5% more.

The market of food products always requires high-quality goods. By removing small, damaged and diseased tubers from the total yield, we get a product that is suitable for placing on the market, ie. for human use. First-class and second-class tubers fall into this category (Vlahović, 2003, p. 110). The average yield of repetitions of edible potatoes (class I and class II) is given in Table 3.

Sort	Agria	Aladin
Control		
Average	19,50	31,00
Index level	*100,00*	*100,00*
Income	3510	5580
30 t/ha		
Average	29,65	44,50
Index level	*152,05*	*143,55*
Income	5337	8010
60 t/ha		
Average	26,65	29,65
Index level	*136,67*	*95,65*
Income	4797	5337

Table 3: Average yield of edible tubers (t/ha) and the realized income (€) of the same

At the time of potato harvest, the price of potatoes in Serbia ranged between 20-25 RSD (0.18 €). The yield failed because of the drought, and the price of potatoes imported from the Czech Republic, Germany and Poland was about 30 cents, exclusive of transport costs. An increase in the price of this vegetable is yet to be expected (www.proberza.co.rs, www.pss-subotica.rs).

Calculating with only 18 euro cents per kilogram, the difference in the revenue in the plots fertilized with 30 t/ha and 50t/ha is 540 € in the case of the cultivar "Agria", and 2673 € in the case of cultivar "Aladin" (Table 3). Stabilized sludge from the wastewater treatment plant in Subotica is not commercially available yet. It is used exclusively for experimental purposes, and to cover the city landfill.

As far as first and second class yield are concerned, their amount is by 5-16% less than the total yield, ie. the share unusable tubers is about 10% (Table 4). Expressed in percents, the control variety 'Agria' had the most waste (16.3%), while on the plot "Aladin", fertilized with 30 t/ha of dehydrated sludge, more than 5 tons of potatoes were unusable. Nevertheless, of the six parcels, this one produced the highest yield of consumable potatoes (44.5 t/ha).

	Agria			Aladin		
	∑	usable	not to be used	∑	usable.	not to be used
0 t/ha	23,30	19,50	3,80 (16,3%)	32,80	31,00	1,80 (5,5%)
30 t/ha	34,30	29,65	4,65 (13,6%)	49,65	44,50	5,15 (10,4%)
60 t/ha	31,00	26,65	4,35 (14,0%)	34,30	29,65	4,65 (13,6%)

Table 4: Share of consumption and unusable potatoes (t/ha)

The data in Table 4 show that, when fertilizing with dehydrated sludge from 30 t/ha, variety "Aladin" produced 66% more than the variety 'Agria'. When it comes to fertilizing with a double dose of the above-mentioned sludge, the yield is lower, and the share of useless tubers is larger, up to 3% (Chart 1).
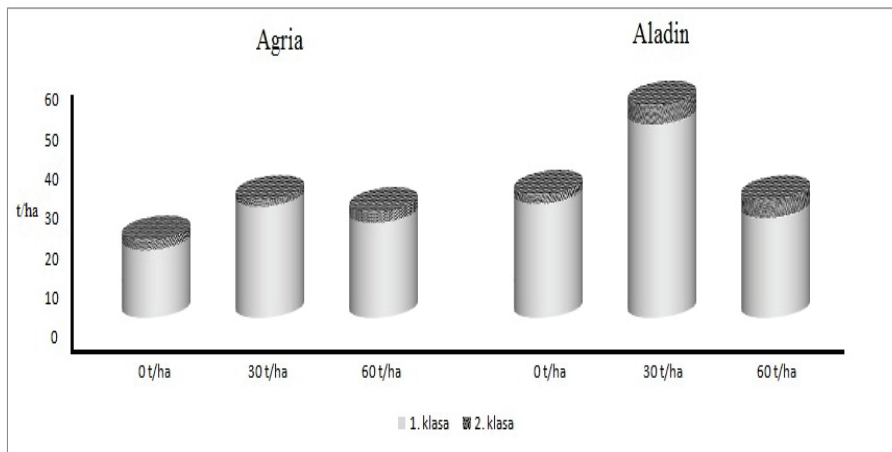

Chart 1: Total yield of two potato varieties with different doses of fertilization

Conclusion

After grading the tubers, we came to the conclusion that in all three types of fertilization the variety "Aladin" gave higher yield under this year's weather- and agro-technical conditions in Subotica. The highest yield of total and edible potato was on plots treated with 30 t/ha of dehydrated sludge. A slightly lower yield was obtained on the plots fertilized with double the amount of sludge and the lowest yield was obtained on the unfertilized plots.

The assumption was that a smaller amount (30 t/ha) of dehydrated sludge will generate similar yield as 50 t/ha of manure (or sludge), the amount used in modern vegetable production. The aim of the experiment was to find out if dispersing 50 t/ha of organic fertilizer of this type is economically viable, and whether a smaller amount would be enough as well. The hypothesis was confirmed, the goal was accomplished. Further experiments will specify the exact amount of sludge that gives the highest yield of first- and second class tubers.

In 2013, 1,600 containers (5m^3 each) of dehydrated sludge were pressed out at the wastewater treatment plant in Subotica. The net weight of sludge per container ranged from 2.5 to 3 tons. This amounts to about 4,500 tons of dehydrated sludge on an annual basis (Czekus, 2014c, p. 30). Calculating with 30 t/ha of sludge, this amount could be used to treat 150 hectares of potato crops. Today, due to more modern purification technology and larger wastewater quantities, 50% more dehydrated sludge is produced at the wastewater treatment plant in Subotica.

In Vojvodina, as well as in the whole region in this part of Europe, the number of livestock and livestock farms is decreasing rapidly, which means that the amount of first class organic fertilizer ie. manure decreases. After composting and maturing, this sludge would be a very good fertilizer for vegetable farming, horticulture and for improving soil fertility - obviously with a continuous monitoring of its composition.

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Литература

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