ISSN 0350-137X UDK: 338 (497,1)

ЕКОНОМИКА

2

LXVI NIŠ, 2020

МЕЂУНАРОДНИ ЧАСОПИС
ЗА ЕКОНОМСКУ ТЕОРИЈУ И ПРАКСУ И ДРУШТВЕНА ПИТАЊА

ЕКОНОМИКА

Часопис излази четири пута годишње Година LXVI, IV-VI 2020, број 2

ИЗДАВАЧ: Друштво економиста "Економика" Ниш
СУИЗДАВАЧИ: Институт за економику пољопривреде - Београд, Економски факултет у Суботици, Факултет за менаџмент - Сремски Карловци, Друштво економиста Ниша, Факултет за примењени менаџмент економију и финансије МЕФ - Београд

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 почев од 1995. добила статус међународног економског часописа.

5. УРЕДНИЦИ: др Јован Петровић (1954-1958), Миодраг Филиповић (1958-1962), Благоје Матић (1962-1964), др Драгољуб Стојићковић (1964-1967), др Миодраг Николић (1967-1973), др Драгољуб Симоновић (1973-1984), др Миодраг Јовановић (1984-3-4/1988), др Драгољуб Симоновић (1990-2019), проф. др Зоран Симоновић (2019-до данас).

ЧАСОПИС ЈЕ ИНДЕКСИРАН У СЛЕДЕЋИМ БАЗАМА:

ERIH Plus	RePEc	DOAJ
Index Copernicus	CEEOL	SHERPA / ROMEO
EBSCO host	EconPapers	ProQuest
J-Gate	CABI	EZB
SSRN	ECONLIT	CNKI

Лектор за енглески језик
ВЛАДИМИР ИВАНОВИЋ

Компјутерска обрада текста и графике:
МИЛАН Д. РАНЂЕЛОВИЋ

Ликовна опрема:
ПЕТАР ОГЊАНОВИЋ, ДРАГАН МОМЧИЛОВИЋ

Адреса:
"Економика" Друштво економиста
18000 Ниш, Максима Горког 5/36

Телефон Редакције: +381 (0)18 4245 763; 211 443
е-маил: zoki@medianis.net; ekonomika@sbb.rs WEB: http://www.ekonomika.org.rs
Жиро рачун: динарски 160-19452-17

Штампа:
"MEDIVEST"
18000 Ниш
Тираж: 300 примерака

INTERNATIONAL JOURNAL
FOR ECONOMIC THEORY AND PRACTICE AND SOCIAL ISSUES

ЕКОНОМИКА

The Journal is issued four times a year. Year LXVI, IV-VI 2020, Vol. 2

PUBLISHER: Society of Economists "Ekonomika", Nis
COPUBLISHERS: Institute of agricultural economics - Belgrade, Faculty of Economics - Subotica, Faculty of management - Sremski Karlovci, Economic Association of Nis, Faculty of Applied Economics and Management Finance MEF - Belgrade

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), dr Dragoljub Simonovic (1990-2019), dr Zoran Simonovic (2019-till the present day).

THE JOURNAL IS INDEXED IN THE FOLLOWING BASES:

ERIH Plus	RePEc	DOAJ
Index Copernicus	CEEOL	SHERPA / ROMEO
EBSCO host	EconPapers	ProQuest
J-Gate	CABI	EZB
SSRN	ECONLIT	CNKI

Lector
VLADIMIR IVANOVIC

Prepress:
MILAN D. RANDJELOVIC
Cover:
PETAR OGNJANOVIC, DRAGAN MOMCILOVIC

Address:
"EKONOMIKA", Society of Economists
18000 Nis, Maksima Gorkog 5/36

Phone: +381 (0)18 4245 763; 211 443
e-mail: zoki@medianis.net; ekonomika@sbb.rs WEB: http://www.ekonomika.org.rs

Bank Account: 160-19452-17

Printed by:
"MEDIVEST"
18000 Niš
Copies: 300

САДРЖАЈ / CONTENT

ОРИГИНАЛНИ НАУЧНИ РАДОВИ / ORIGINAL SCIENTIFIC ARTICLE

ПРЕГЛЕДНИ ЧЛАНЦИ / SCIENTIFIC REVIEW ARTICLE

ЕКОНОМИКА
ISSN 0350-137X, EISSN 2334-9190, UDK 338 (497,1)
Vol. 66, april-june 2020, № 2
P. 1-15

Emilija Beker Pucar[1]
Olgica Glavaški[2]
University of Novi Sad, Faculty of Economics in Subotica

ORIGINAL SCIENTIFIC ARTICLE
doi: 10.5937/ekonomika2002001B
Received: December, 23. 2019.
Accepted: February, 14. 2020.

EUROZONE NON-OPTIMALITY: AN OCA BASED ANALYSIS

Abstract

This paper deals with the reconsideration of crucial Optimum Currency Area (OCA) criteria observing Eurozone (EZ) members in the period 2007-2018. According the aim to highlight key obstacles to EZ optimality, economies are mainly grouped into the core and peripheral countries of the initial 12 EZ members (EZ12), and subsequently joined 7 Emerging European Economies (EZ19). The research is based on descriptive analysis of openness and production diversification, macroeconomic divergences and heterogeneity of EZ members, labor mobility and wage flexibility, as well as political OCA criteria. While EZ was not initially constituted as an OCA, this research has confirmed persistent difficulties in EZ functioning in the (post) crisis period. Macroeconomic divergences between member states, insufficient labor mobility and wage flexibility, as well as the absence of political will towards creation of more efficient fiscal union, are identified as the main challenges of EZ sustainability.

Key words: *Eurozone, labor mobility, wage flexibility, openness, product diversification, political criteria.*

JEL classification: F45, F36, E52.

НЕОПТИМАЛНОСТ ЕВРОЗОНЕ: АНАЛИЗА БАЗИРАНА НА ОЦА ТЕОРИЈИ

Апстракт

У овом раду се разматрају круцијални критеријуми теорије оптималне валутне зоне (ОЦА) из угла земаља чланица Еврозоне (ЕЗ) у периоду 2007-2018. У складу са циљем откривања кључних препрека оптималности ЕЗ, економије су груписане на земље језгра и периферије иницијалних чланица (ЕЗ12), и касније прикључених 7 емергентних европских економија (ЕЗ19). Истраживање је базирано на дескриптивној анализи отворености и производне диверзификације, макроекономским дивергенцијама и хетерогености чланица ЕЗ, мобилности радне снаге и флексибилности надница, као и политичким ОЦА критеријумима. Иако ЕЗ није иницијално конституисана као ОЦА, ово истраживање потврђује перзистентне потешкоће у функционисању ЕЗ у (пост)кризном периоду. Макроекономске дивергенције између земаља чланица, недовољна мобилност радне снаге и флексибилност надница, као и од-

[1] emilijabp@gmail.com, ORCID ID 0000-0002-6369-3225,

[2] glavaski.olgica@gmail.com, ORCID ID 0000-0001-6628-2301

суство политичке воље ка креирању ефикасније фискалне уније, идентификовани су као главни изазови одрживости ЕЗ.

Кључне речи: Еврозона, мобилност радне снаге, флексибилност надница, отвореност, производна диверзификација, политички критеријуми.

Introduction

The architects of the Maastricht Agreement considered sharing the same currency as another step on the road to fuller economic integration. By completing two important steps in introducing a common currency, in 1999 and 2002, the EU countries achieved full economic integration. It has been the largest monetary integration since the unification of the United States into a monetary union more than two centuries ago, with the dollar as a single currency. However, sharing the same currency is not easy and has not contributed to economic harmony.

In analyzing the monetary union in Europe, it is necessary to return to the original work of Mundell (1961), proponent or so-called "godfather" of the Eurozone (EZ). Mundell described Optimum Currency Area (OCA) as the region or area where the benefits of sharing a common currency outweigh the costs, that is, the area where the single currency creates the greatest economic efficiency or benefit. In his view, a group of countries form an OCA if the benefit from eliminating currency conversion costs outweighs the cost of not being able to stabilize country-specific shocks under a union. Generally accepted OCA criteria are: capital mobility, labor mobility, price/wage flexibility, risk-sharing system between regions (fiscal transfers), as well as relative similarity of economic cycles between regions.

Many economic theorists and researchers, including Mundell, considered the EZ an ideal candidate for OCA testing in the years leading up to the 2007-08 global crisis. More recently, however, doubts have been raised as to whether the EZ is at all able to maintain the criteria necessary for the OCA, notably given the significant economic divergence of its members. Since its inception (1999), the EZ has been faced to two major shocks: the global 2008 economic crisis and the debt 2010 European crisis. After the outbreak of the global economic crisis and the debt crisis in Europe, the problems of the EZ have come to the fore. EZ has not been created as an OCA, while mentioned global and European shocks with the asymmetric effects to its members, only amplified this vulnerability. In this paper the EZ is analyzed in the light of the fulfillment of the traditional OCA criteria. Main hypothesis is that EZ cannot be regarded as an OCA, specifically due to: (i) persistent macroeconomic divergences between member states; (ii) insufficient labor mobility and wage flexibility; (iii) the absence of political will towards creation of more efficient fiscal union. In order to shed more light into these beliefs, an empirical study is based upon descriptive analysis of the available OCA criteria in the period 2007-2018 for current 19 EZ members (EZ19). The research period was selected in accordance to the availability of OCA variables at Eurostat database, as well as the fact that Emerging European Economies - EEEs (formerly transition countries) began accession to the EZ since 2007. EZ members are first divided into the core and the periphery. These are developed European countries, older EZ members that joined the

monetary union in the initial wave of 1999/2001 (EZ12). EEEs as newer EZ members which joined the EZ since 2007 are contained in the group EZ19. The core countries are Germany, France, Belgium, the Netherlands, Luxembourg, Austria, Finland, while the periphery of the EZ12 are Greece, Spain, Portugal, Ireland, Italy. Emerging part of EZ19 consists of Slovenia, Cyprus, Malta, Slovakia, Estonia, Latvia, and Lithuania.

While EZ was not initially constituted as an OCA, this research has confirmed significant obstacles to the optimality for the period 2007-2018. The paper is structured as follows: after Introduction section, Section 2 deals with the OCA as a theoretical background of European monetary integration; openness and production diversification as OCA criteria are analysed in Section 3; macroeconomic divergences and heterogeneity within EZ are emphasized in Section 4; labor mobility and wage flexibility are explored within Section 5; Section 6 covers political OCA criteria; Section 7 outlines concluding remarks.

An OCA as a theoretical background of European monetary integration: Literature survey

Sixty years have passed since the founding of the OCA theory thanks to the seminal contributions of, among others, Mundell (1961), McKinnon (1963) and Kenen (1969). Theory of OCA was initiated in the circumstances of the Bretton Woods fixed exchange rate system, while the Maastricht Treaty followed three decades later. No major deregulation of trade and capital barriers in the world economy was observed during the creation of the OCA. However, trade and capital liberalization followed in the years of Maastricht Treaty or European monetary unification, while general framework of adjustable pegs was abandoned in the post-Bretton Woods era. With the move to flexible exchange rate regimes, research on OCA went out of fashion for a long time until the Delors Committee (Committee for the Study of Economic and Monetary Union, 1989) produced its blueprint for the EZ, which was later incorporated in the Treaty on the EU or the Maastricht Treaty. Regardless of crucial changes in international economic environment since the sixties, Mundell's work still has important implications for a group of countries that share the same currency.

There are several criteria, economic and political in nature, whereby an OCA is expected. It would be unrealistic to expect complete fulfilment of all criteria. Thus, no currency area is optimal. Notwithstanding the mentioned fact, it should be understood what makes one currency area optimal and towards what should be strived in the process of monetary unification. The economic criterion of labor mobility (Mundell, 1961) refers to minimizing the cost of asymmetric shock within monetary union. The next two economic criteria, openness and diversification of production, aim to identify countries that will be hit harder and more often by asymmetric shocks. Countries with large vulnerability to asymmetric shocks have no predisposition to participate in the monetary union. It is preferable to minimize the risk of asymmetric shocks on the basis of open economies (McKinnon, 1963) and diversification of production (Kenen, 1969). If this is not the case, then an alternative adjustment mechanism is labor mobility. If an asymmetric shock arises, labor mobility reduces its costs within monetary union. If labor

is not mobile, then only political support remains. Therefore, after the economic criteria (labor mobility, openness and product diversification), the political criteria answer the question of whether different countries will be ready to help one another in dealing with asymmetric shocks.

Vast literature deals with the EZ and its relation with the traditional OCA criteria. The logic of the OCA theory in the case of the EZ primarily involves the estimation of the probability of asymmetric shocks. Asymmetric shocks are more common and significant if countries are less open, less integrated in terms of trade and poorly diversified in production. From the EZ perspective, members are sufficiently trade integrated and open, with acceptable production diversification (Ricci, 1997; Horvath & Komarek, 2002; Rose, 2008). However, reality indicates susceptibility to asymmetric shocks that, according the OCA theory, leads to the identification of alternative adjustment mechanisms since exchange rate mechanism is sacrificed (Pierluigi & Sondermann, 2018).

One currency cannot fit all unless the members move to address the underlying causes of economic divergence and asymmetries. "One size fits all" common monetary framework cannot function appropriately if members are divergent, thus susceptible to asymmetric shocks. The closer the countries are, supranational monetary authority will be more effective. OCA theory stresses the degree to which convergence is sufficient to allow economies to function synchronously within the European monetary union in order to decrease the risk of asymmetric shocks (Auf dem Brinke, Enderlein & Fritz-Vannahme, 2015; Franks et al, 2018). However, it is well known fact that countries in the EZ are extremely heterogeneous and diverging from an economic viewpoint. Within the EZ there are countries with large external surpluses, good GDP growth rates, low unemployment rates and high GDP per capita levels, coexisting with other countries in significantly worse position concerning mentioned economic indicators (Bonatti & Fracasso, 2017; Pierluigi & Sondermann, 2018). Divergence of fiscal positions between EZ members, along with sovereign debt 2010 crisis, have underlined the urge for stronger fiscal integration and close coordination of fiscal policies (De Grauwe, 2018). Macroeconomic divergences initiate heterogeneous responses of EZ members to supranational monetary impulses or "one size fits some" monetary policy (Micossi, 2015; Wortmann & Stahl, 2016; Đorđević & Perović, 2017; Botta, Tippet & Onaran, 2018).

An alternative mechanism to the missing exchange rate adjustments is wage flexibility. Specifically, countries negatively affected by asymmetric shock are implementing expenditure-reducing adjustment mechanism i.e. internal devaluation. Internal devaluation implies price and wage flexibility (Gibson, Palivos & Tavlas, 2014). However, labor market is not flexible in the EZ, while wages are rigid (Mongelli, 2008). Since the criterion of wage flexibility is not met, the next alternative mechanism is the mobility of capital and labor. In the context of globalization and deregulation, mobility of capital is implied, so the focus is on examining labor mobility among member countries. In the case of the EZ, labor is not mobile enough (Mongelli, 2008; Furrutter, 2012).

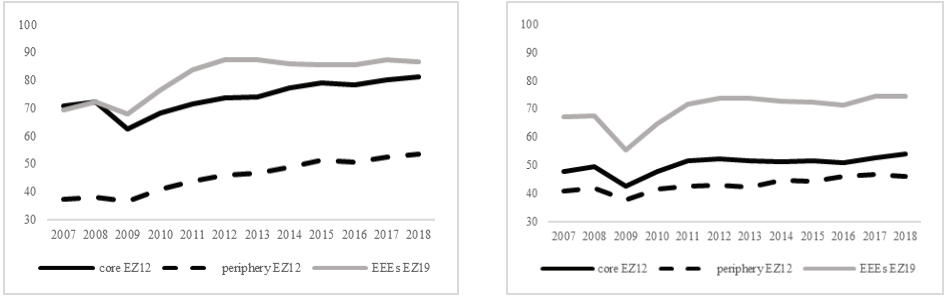
To summarize, when an asymmetric shock occurs in the EZ it is not possible to count on the exchange rate mechanism, the wage/price flexibility mechanism, nor on labor mobility. Therefore, the only remaining solution is to implement political support, i.e. financial transfers, with a homogeneity of preferences and solidarity. However, with partly expressed solidarity and homogeneity of preferences, and the absence of financial

transfers, the EZ cannot be considered an OCA (Eichengreen, 1991; Feldstein, 1997; Dibooglu & Horvath, 1997; Verdun, 2007; De Grauwe, 2009; Baldwin & Wyplosz, 2012).

Openess and production diversification

Most EZ members are open and, in line with the aforementioned indicator, are good candidates for monetary integration. The economic openness is measured by the ratio of total trade (sum of exports and imports) in GDP. As a rule, smaller countries are more open because they are forced to export most of their production which coincides with large percentage of imports. EZ members (and the EU in general) have fairly high openness ratios, which according to McKinnon (1963) maximizes the benefits of sharing the same currency. The EZ19 Openness Index (average share of exports and imports in GDP) increased from 39% to 46% in the period 2007-2018. Despite this general insight concerning the openness of EZ members, Figure 1 shows the divergence related to average ratio of exports and imports in GDP for the periphery, core and emerging countries of the EZ19. Divergence between core-periphery EZ12 is clearly observed. The core countries are, on average, more open compared to the periphery by both parameters. There is a high average openness of the emerging part of the EZ19, which particularly holds for import activities. While relatively high openness can be noted for the core and emerging part of the EZ, there is room for improvement of the OCA openness criteria in the case of the periphery.

Figure 1: Openness of the EZ19 members expressed as average export (left) and import (right) ratio in GDP in the period 2007-2018

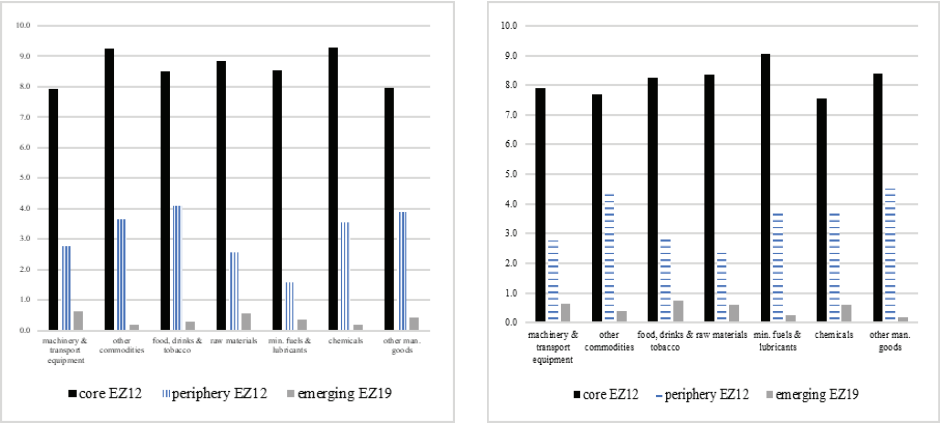


Source: Authors' calculations and review on the basis of Eurostat yearly data (https://ec.europa.eu/eurostat/data/database).

European countries have long history of trade because trade has been at the heart of integration processes from the very beginning. A common trade policy, a common market and a single currency have all contributed to a highly concentrated trading area within Europe. Greater diversification of production by EZ members (Kenen, 1969) implies less sensitivity to asymmetric shocks as opposed to production concentration in a particular sector. The diversification of the export structure within the single European

market according to the Standard International Trade Classification (SITC) is generally considered as acceptable. According to the 2018 data (Eurostat database), there is a dominant share in the exports of the core countries, as well as a diversity in terms of export structure (Figure 2). None of the EZ19 members has a pronounced export concentration which exposes the country to asymmetric shock in the event of a fall in demand for products of the dominant export sector. The aforementioned general conclusion does not diminish the divergence in terms of the predominantly export orientation of the core countries compared to the periphery countries and the emerging part of the EZ (Figure 2). The core countries dominated the exports of all SITC product groups in both years under review, 2007 and 2018. EEEs are far behind in terms of exports, and the traditional core-periphery gap has not been reduced in the post-crisis period.

Figure 2: Share of exports (%) according SITC sectors for the core, the periphery and emerging EZ19 in 2007 (left) and 2018 (right)



Source: Authors' review on the basis of Eurostat yearly data (https://ec.europa.eu/eurostat/data/database).

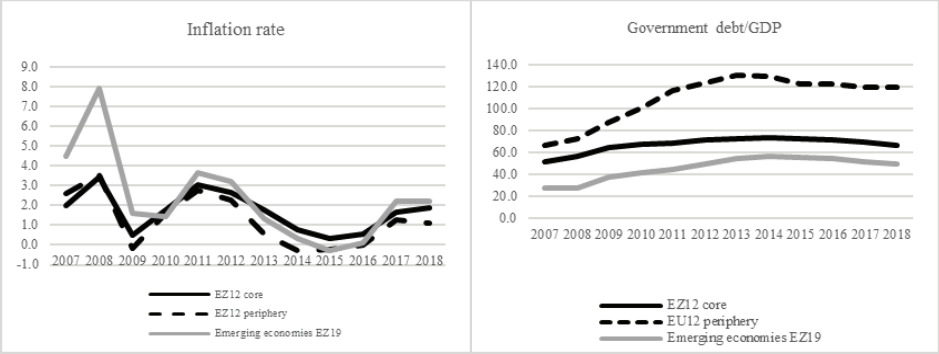
The specialization paradigm points to a potential increase in the EZ specialization, which reduces diversification and increases exposure to asymmetric shocks. Specialization exists within the EZ, but this process is very slow (Mongelli, Reihnold & Papadopoulos, 2016). The largest index of specialization is in production, which has been expected due to the positive effects of economies of scale. The smallest degree of specialization is evident in the services sector. As the share of services in total GDP in the EU is around 70%, specialization is not considered to be a major cause of the increasing differences between EZ members. Although the criteria of openness and production diversification are not regarded as crucial obstacle towards OCA, nevertheless the divergence between three country groups (namely core-periphery-emerging EZ part) is evident.

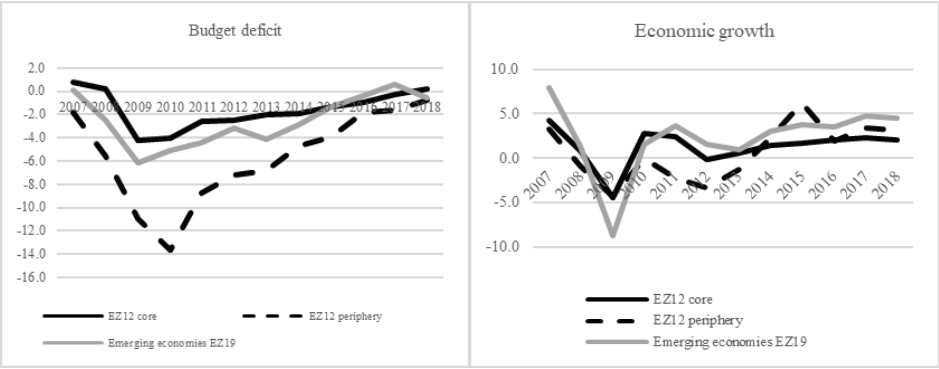
Divergences and heterogeneity of EZ members

Most obvious benefit of sharing the same currency is lower transaction costs. The complexity of having many currencies in such a geographically small area (such as Europe), in which the significant difficulty of doing business is the exchange of different currencies at different rates, was avoided by the formation of a single currency area. From the other side, the most obvious cost of monetary union is the loss of some, if not complete, autonomy over fiscal and monetary policy. EZ members lose the stabilizing or counter-cyclical role of key economic policy instruments. In the event of an asymmetric shock affecting one country/region of the currency area, the question remains what is available to national economic authorities. Increasing the money supply by supranational central bank would curb unemployment in the affected countries/regions, but would trigger inflation in other countries/regions. Mundell stresses that inflation in the monetary union should be targeted so that the single central bank allows unemployment in deficit regions, negatively affected by the external shock.

The fact is that the similarity of economies makes the unique monetary policy more „one-size-fits-all". However, the divergence of key macro-indicators of internal and external balance is the key problem for EZ stable functioning (Figure 3). While some members are facing a recession and a deficit external position, other members are in the opposite situation. Several years before the global crisis, all EZ countries were in expansion phase. However, after the crisis outbreak all EZ members went into recession. The accumulation of macroeconomic imbalances in the first decade of the EZ functioning became unsustainable, followed with a painful post-crisis adjustment with double-dip recession in the EZ between 2009 and 2012. Besides these general remarks, however, significant differences are evident in terms of their post-crisis adjustment. While some countries have regained a stable economic growth trajectory and pre-crisis output levels, other countries have experienced a recurrent economic crisis. Figure 3 reveals especially sensitive position of the periphery and emerging EZ countries compared to the core countries in the period 2007-2018.

Figure 3: The divergence of inflation rate, public debt/GDP, budget deficit and economic growth for the core, periphery and emerging part of the EZ19 members in the





Source: authors' review based on yearly Eurostat data (https://ec.europa.eu/eurostat/data/database).

The periphery expresses worse fiscal position according public debt/GDP and budget deficit/GDP indicators in the period 2007-2018. Also, periphery EZ countries have had unstable economic growth and are more prone to a sharp fall, significantly higher unemployment rate (Figure 4), as well as worse external position (current account deficit). Observed asymmetries and divergences even in the post-crisis period are not encouraging background for proper functioning of single European currency area. The divergences are therefore proved to be persistent.

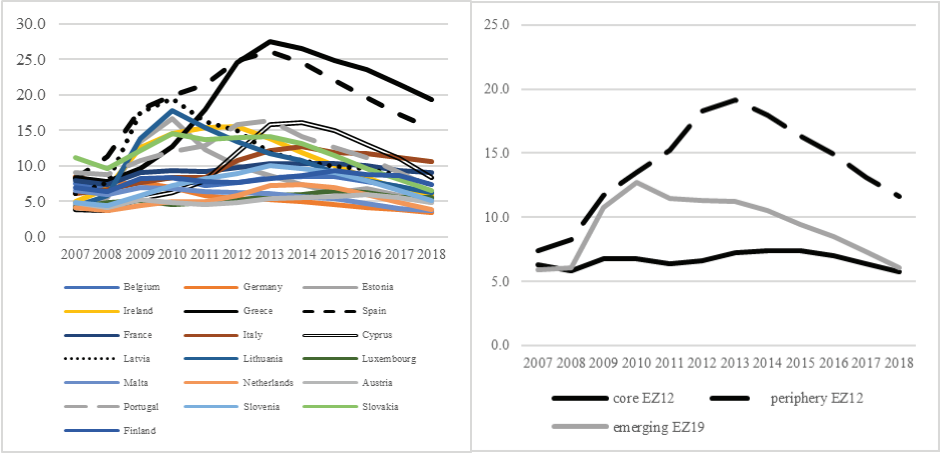
Concerning the adjustment, members of a monetary union don't have at disposal nominal exchange rate variations as a way of expenditure-switching external adjustment, only expenditure-reducing external adjustment or internal devaluation. Exchange rate as a shock absorber is a major sacrifice for countries hit by negative external shock with recessionary consequences. Monetary union members can no longer count on currency weakening as a mechanism for current account improvement, as well as stimulation of economic activities (Wood, 2014). Having in mind persistent divergences, as well as the loss of exchange rate as a shock absorber, alternative adjustment mechanisms are therefore necessary, such as wage flexibility, labor mobility and the system of fiscal transfers.

Labor mobility and wage flexibility

One of the key stabilization mechanisms within single currency area is the mobility of factors of production (labor and capital). With decades of globalization, increasing mobility of capital is implied and European economy is no exception. Capital is extremely mobile in Europe, and European financial markets are significantly integrated. Attention is therefore directed to labor mobility. Free movement of labor is one of the four EU freedoms as an integral part of the common market (Single European Act, 1987). The Delors Report (1989) stated that a high degree of labor and wage mobility would be necessary to suppress differences in competitiveness between different countries in the functioning of the European Community. Failure to achieve competitiveness convergence would produce a sharp drop in output in those parts of the monetary union with lower productivity.

The freedom and ability to move workers from one region (country) to another depending on job opportunities is one of the key obstacles to EZ optimality. The combination of different national cultures and languages in a small geographical area, especially when compared to large economic players (such as the USA, China, etc), is significant difficulty in EZ functioning. By comparison, labor mobility in the USA is estimated to be three to four times higher than in Europe (Schiliro, 2017). If labor mobility were preferably high, asymmetric shocks would not imply a sharp destabilization of the affected economies. In the event of rising unemployment in one EZ member, people would emigrate to other EZ members in search of work. Figure 4 shows the marked differences in the unemployment rates of the EZ19 in the period 1999-2018. There has been a persistent diversity in unemployment within the EZ since its inception, which does not indicate sufficient labor mobility. A mobile labor would imply milder differences in unemployment than is the case in the EZ. Although labor market flexibility in the EZ19 is generally low, differences are evident between members, in the sense that EEEs show higher levels of flexibility.

Figure 4: The divergence of unemployment rate in the EZ19 in the period 2007-2018



Source: Authors' review on the basis of Eurostat yearly data (https://ec.europa.eu/eurostat/data/database).

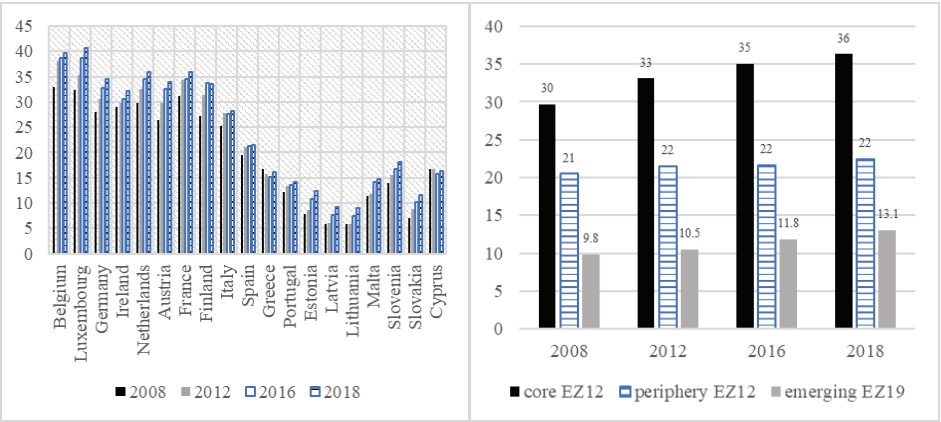
Figure 4 shows the divergence related to unemployment rate of the core-periphery-emerging part of EZ19. Peripheral EZ12 countries have an average higher unemployment rate, which is especially pronounced after the global economic crisis. Even the position of EEEs of the EZ19, which began accession to the EZ in the period 2007-2015 has been more favourable compared to the EZ12 periphery. The divergence of the unemployment rate, especially evident in the post-crisis period, is a sign of weak labor mobility within the EZ and rigidity of the labor market.

The main reasons for the low labor mobility between EZ members are language barriers, the historical and cultural traditions of European countries, European bureaucracy, rigid labor markets, different educational systems and the need to recognize

diplomas and other educational qualifications. Poor mobility of people in Europe is not a temporary situation and cannot be changed in the near future. The EZ is nowhere near the concept of labor mobility predicted by OCA theory. At present, the criterion of flexibility and mobility of the OCA labor is not at a satisfactory level, lacking a mechanism for stabilizing and mitigating economic shocks (Vrňáková & Bartušková, 2013; Furceri, Dai & Prakash, 2014).

The rigidity of wages downwards is negative from the aspect of stable EZ functioning. A downward wage rigidity is particularly pronounced in more developed countries with stricter labor protection laws. Differences in the EZ labor market institutions contribute to different consequences (asymmetric effects) of even symmetric shocks (Heinz & Rusinova, 2013). Wage rigidity is reflected in the pronounced differences in labor costs between EZ members (Figure 5).

Figure 5: Average labor costs (by hour, in euros) in 2008/2012/2016/2018 by EZ members (left) and divergence of core/periphery/emerging part of EZ19 (right)



Source: Authors' review on the basis of Eurostat yearly data (https://ec.europa.eu/eurostat/data/database).

Figure 5 indicates an increase in labor costs per hour in the years observed, as well as significant differences between EU19 members. However, taking into account specific members, labor costs per hour ranged from 9 €/hour in Latvia/Lithuania to 40 €/hour in Belgium/Luxembourg. Such expressed differences in labor costs could be an impulse for greater mobility within the EZ, but the abovementioned obstacles to higher labor mobility maintain these differences between EZ members. In addition, the signal of labor market rigidity within the EZ19 is also represented with clear divergence in labor costs in all observed years between the core-periphery EZ12 and the emerging part of EZ19. Moreover, the divergence has increased over time as labor costs have significantly rose in the core, with a slight increase in the peripheral part of the EZ12. Particularly evident is the difference between developed EZ countries (core and periphery) and newer members (the emerging part of EZ19), which is a source of further problems in terms of labor market flexibility.

Significant steps have been taken in the last decades to improve labor and capital mobility within Europe. However, greater progress is needed from the perspective of labor mobility. Monetary union is more sustainable with greater labor mobility, as labor migration from peripheral countries to core countries is a substitute for adjusting the ER in the short term. However, the long-term effects on the peripheral economy should be kept in mind. Namely, in the long run such migration undermines the capacity for economic growth of the peripheral economies due to the export of (human) capital and the increase in the productive capacity of the core countries at the expense of the periphery countries. Migration of workers from the periphery threatens the financial sustainability of the public pension system of these countries, while contributing to the financing of pensions of core countries where society is aging faster compared to the periphery.

Political OCA criteria

For an effective monetary union, the similarity of economies is not sufficient, and, as the example of the United States suggests, not a necessary condition. Countries of the USA have even more pronounced differences compared to EZ members, with the level of production diversification even lower compared to European countries. But the key difference between the USA and the EZ is in the level of political integration (Gillingham, 2003; Jovanovic, 2005; De Grauwe, 2010; Pantelis & Maris, 2012). There is not only a lack of a mechanism for fiscal transfers but also of a coordination mechanism between fiscal and monetary policies. The EU needs an economic institution that could organise not only the monetary but also the fiscal policies in the EZ. The lagging behind of political integration and the lack of institutions that would provide assistance to countries affected by asymmetric negative shocks are major disadvantage (in addition to low labor mobility) of the EZ.

Regardless the obvious need to implement fiscal transfers, assumed by the OCA theory, they aren't yet the focus of economic and political authorities. EU common budget is strictly used for common policies and should not serve as a single fiscal policy for EZ countries. There is no willingness of member states to transfer such competences and sacrifice national fiscal policies. Political leaders have neglected theoretical and empirical studies that warned of the negative aspects of European monetary unification before its final rounding in 1999. For example, before signing the Maastricht Treaty, Eichengreen (1991) proposed a system of budget transfers, i.e. injection of liquidity from other EZ members. The need for redistributive policies that require central fiscal authority has been recognized (Dibooglu & Horvath, 1997), that is, in addition to a supranational monetary institution, a common EU fiscal policy should be established (Verdun, 2007). Given that there is no redistributive system to mitigate asymmetric shocks in the EZ, one of the scenarios for overcoming the obstacles to EZ optimality has been the creation of an alternative adjustment mechanism through the fiscal transfer system (De Grauwe, 2010; Gabrić-Molnar & Soos, 2016).

Despite the political will to initiate and deepen European economic integration, the political criteria of the OCA related to homogeneity of preferences and solidarity criteria are at best only partially met. Divergence in terms of inflation rate, especially in relation to the core-periphery, is not affirmative for meeting the political criterion of

homogeneity of preferences. Often, the two extremes of heterogeneity of preferences regarding the common monetary policy are cited by Germany as a typically low-inflation economy on the one hand, and Greece and Italy with traditionally higher inflation rates on the other. In addition to inflation preferences, there is also a gap in public finance indicators (budget deficit and public debt) in the core-periphery ratio (see Figure 3), which is also related to inflation-employment preferences.

The solidarity criterion answers the question of the extent to which citizens are prepared to relinquish national sovereignty for the common interest of the EZ. The renunciation of monetary sovereignty is a great indicator of political willingness, but the need to maintain fiscal and other aspects of national sovereignty still exists. The most efficient way of balancing between systemic differences and macroeconomic divergences stressed in the sections above, is to establish a system of EU federal fiscal transfers. If such a system existed in the EZ, those countries most affected by the global 2008 crisis (as for example, Greece and Spain) would receive assistance from economically stronger members (as Germany), which would greatly mitigate the crisis in the EZ. However, the EU budget is small, just above 1% of GDP, and is spent almost entirely on structural funds, European Commission labor costs and the Common Agricultural Policy. A serious system of financial transfers, in line with the OCA criterion, would require significant growth in the EU budget, which brings us to the political criterion of solidarity.

The traditional OCA theory has largely ignored the implications of monetary unification for fiscal policymaking, as well as potential conflicts between supranational monetary and national fiscal authorities. Monetary unification affects the interactions between national fiscal authorities with consequences for the monetary and fiscal policy mix, as well as macroeconomic outcomes. The conflict between an independent ECB and the decentralized fiscal authorities about the macroeconomic objectives is of huge importance for the EZ (in)stability. Namely, the ECB attaches a large weight to stabilizing inflation at a low level, while national fiscal authorities are more concerned with a high and stable level of economic activity (Beetsma & Giuliodori, 2010). Since monetary policy is not under the control of national authorities, over excessive fiscal expansion is seen as main problem within the monetary union (Alessandrini et al, 2014; Schiliro, 2017). Fiscal divergences within EU members have been evident from the period before EZ creation until nowadays. Glavaški & Beker (2019) and Dragutinović-Mitrović, Glavaški & Beker Pucar (2019) explored the fiscal sustainability and the necessity of fiscal transformations in the period 1995-2018. The authors have outlined weak fiscal sustainability with heterogeneous evidence of fiscal adjustments in the EU economies, emphasizing that new mechanisms for strengthening of fiscal frameworks could have a potential to improve fiscal performances.

Conclusion

EZ was not initiated as an OCA, and through functioning (despite visible shifts) the fulfilment of key OCA criteria was still not ensured. Descriptive analysis presented in the paper reviewed the fulfilment of OCA criteria in the case of EZ19 in the period 2007-2018 for the core, periphery, as well as EEEs. The analytical approach to the (in)optimality of the EZ serves as the basis for reconsidering previously mentioned

stances and also as a basis for identifying the space for change towards more stable EZ functioning.

The analysis confirmed that EZ cannot be regarded as an OCA due to persistent macroeconomic divergences between member states, inadequate labor mobility, insufficient wage flexibility, the absence of political will towards creation of more efficient fiscal union. According the OCA logic, the likelihood of asymmetric shocks should be minimized first. Given the high degree of mutual trade and openness of the EZ members, with acceptable product differentiation, it can be concluded that there is no pronounced susceptibility to asymmetric shocks by these criteria. However, the analysis also highlights that there is a dominant share in the exports of the core countries and that the core countries are, on average, more open compared to other EZ members. The accumulation of imbalances in the first decade of the EZ became unsustainable and triggered a painful post-crisis adjustment. Despite adjustments of some macroeconomic indicators in the second decade of EZ, macroeconomic divergences between core, periphery and EEEs still persist, especially related to the public finances, unemployment and external balance.

According the OCA logic, if asymmetric shocks occur, alternative adjustment mechanisms must be provided. Given the exclusion of the nominal exchange rate as an automatic stabilizer, the adjustment option is an internal devaluation or expenditure-reducing adjustment within the EZ. One of the key obstacles to assessing EZ optimality is here. EZ does not meet OCA's price and wage flexibility criteria. The labor market is not flexible, wages are generally downward rigid (especially in more developed economies). Even at downward rigid wages, internal devaluation can be avoided or limited by labor mobility. Labor in economies adversely affected by external shocks should shift towards more stable economies within the single currency area. Labor within the EZ is not mobile due to cultural, linguistic and administrative barriers.

Finally, the political criteria represent one of the key disadvantages of the EZ, because there is no transfer payment system to mitigate asymmetric shocks. The EZ is nowhere near the optimum currency area. Many obstacles, especially poor labor mobility, are not easy to remove. Divergences of EZ members and unfulfilled economic OCA criteria could be mitigated with the accomplishment of political OCA criteria. Thus, fiscal co-operation and fiscal union based on stronger political will, with higher homogeneity of preferences and solidarity criteria, present the crucial challenge for further improvements of EZ functioning.

References

Alessandrini, P., Fratianni, M., Hughes, A., & Presbitero, F. (2014). External imbalances and fiscal fragility in the euro area. Open Economies Review, 25(1), 3-34.

Auf dem Brinke, A., Enderlein, H., & Fritz-Vannahme, J. (2015). What kind of convergence does the euro area need? Gütersloh: Bertelsmann Stiftung und Jacques Delors Institut – Berlin.

Baldwin, R., & Wyplosz, C. (2012). The economics of European integration. Berkshire: McGraw-Hill Higher Education.

Beetsma, R., & Giuliodori, M. (2010). The macroeconomic costs and benefits of the EMU and other monetary unions: An overview of recent research. Journal of Economic Literature, 48, 603–641.

Beker Pucar, E., & Glavaški, O. (2019). Macroeconomic external (im)balances within the EZ: Core vs periphery. Economic Themes, 57(3), 257-272.

Bonatti, L., & Francasso, A. (2017). Adressing the core-periphery imbalances in Europe: Resource misallocation and expansionary fiscal policies. EconPol working paper November volume 1, 06/2017.

Botta, A., Tippet, B. & Onaran, O. (2018). Core-periphery divergence and secular stagnation in the EZ – Macroeconomic evidence and policy proposals beyond conventional monetary policy. Foundation For European Progressive Studies Policy Paper, June 2018.

Committee for the Study of Economic and Monetary Union. (1989). Report on Economic and Monetary Union in the European Community. Luxembourg: Office for Official Publications of the European Communities.

De Grauwe, P. (2010). Crisis in the EZ and how to deal with it. Centre for European Policy Studies Policy Brief, No. 204, February.

De Grauwe, P. (2018). Core-periphery in the EZ. Paper presented at the conference "The future of central banking" in honour of Vitor Constancio, Frankfurt, 16-17 May.

Dibooglu, S., & Horvath, J. (1997). Optimum currency areas and the European monetary unification. Contemporary Economic Policy, 15(1), 37–49.

Dragutinović Mitrović, R., Glavaški, O., & Beker Pucar, E. (2019). Fiscal Sustainability in Flow Model: Panel Cointegration Approach for the EU-28. In *Ovidius University Annals Economic Sciences Series XIX* (pp. 15-24). Constanta: Ovidius University.

Đorđević, M., & Perović, D. (2017). Crisis impact on changes in implementing monetary policy of central banks. Ekonomika, 62(3), 57-67.

Eichengreen, B. (1991). Is Europe an optimal currency area? National Bureau of Economic Research Working Paper 3579.

Feldstein, M. (1997). EMU and international conflict. Foreign Affairs, Nov-Dec, 60-73.

Furceri, D., Mai, D., & Prakash, L. (2014). Regional labor market adjustments in the United States and Europe. International Monetary Fund Working Paper WP/14/26.

Furrutter, M. (2012). The EZ: An optimal currency area? IFIER Papers, 02/2012.

Gabrić-Molnar, I., & Soos, E. (2016). The instruments of the European union cross-border regional cooperation. Anali Ekonomskog fakulteta u Subotici, 36, 3-24.

Gibson, H. D., Palivos, T., & Tavlas, G.S. (2014). The crisis in the euro area: An analytic overview. Journal of Macroeconomics, 39, 233-239.

Gillingham, J. (2003). European Integration 1950–2003: Superstate or new market economy? Cambridge: Cambridge University Press.

Glavaški, O., & Beker Pucar, E. (2019). Heterogeneity of fiscal adjustments in European Union economies: Common correlated effects approach. Paper presented at the 29th Eurasian EBES Conference, 10-12th October, Lisbon, Portugal.

Heinz, F., & Rusinova, D. (2011). How flexible are real wages in EU countries? Working Paper 1360.

Horvath, R., & Komarek, L. (2002). Optimum currency area theory: An approach for thinking about monetary integration. Warwick economics research papers no 647.

Jovanovic, M. (2005). The economics of the European integration: Limits and prospects. Massachusetts: Edward Elgar.

Kenen, P. B. (1969). The optimum currency area: An eclectic view. In Mundell & Swoboda, (Eds.), *Monetary problems of the international economy*. Chicago: University of Chicago Press.

McKinnon, R. (1963). Optimum currency areas. American Economic Review, 53(4), 509-517.

Micossi, S. (2015). The monetary policy of the European Central Bank. Centre for European Policy Studies special report no. 109.

Mongelli, F. P. (2008). European economic and monetary integration, and the optimum currency area theory. European Economy, Economic Papers 302.

Mongelli, F. P., Reihnold, E., & Papadopoulos, G. (2016). What's so special about specialisation in the euro area? European Central Bank occasional paper no. 168.

Mundell, R. A. (1961). A theory of optimum currency areas. The American Economic Review, 51(4), 657-665.

Pantelis, S., & Maris, G. (2012). Reassessment of the OCA criteria in the euro area: The case of Greece. Int. J. Monetary Economics and Finance, 5(2), 124-138.

Pierluigi, B., & Sondermann, D. (2018). Macroeconomic imbalances in the euro area: Where do we stand? European Central Bank occasional paper no. 211.

Ricci, L. A. (1997). A model of an optimum currency area. International Monetary Fund working paper 97/76.

Rose, A. K. (2008). Is EMU becoming an optimum currency area? The evidence on trade and business cycle synchronization. Berkeley: University of California.

Schiliro, D. (2017). Imbalances and policies in the EZ. Munich Personal RePEc Archive Working Paper 82847.

Verdun, A. (2007). Economic and monetary union. In M. Cini (Ed.), *European Union Politics* (pp. 324-229). Oxford: Oxford University Press.

Vrňáková, I., & Bartušková, H. (2013). Is euro area an optimal currency area and what barriers could obstruct its future development? ACTA VŠPS, 2(7), 123-144.

Wood, R. (2014). EZ macroeconomic framework: Reducing internal and external imbalances. Munich Personal RePEc Archive 53569.

Wortmann, M., & Stahl, M. (2016). One size fits some: A reassessment of EMU's core-periphery framework. Journal of Economic Integration, 31(2), 377-413.

ЕКОНОМИКА
ISSN 0350-137X, EISSN 2334-9190, UDK 338 (497,1)
Vol. 66, april-june 2020, № 2
P. 17-35

Rajko M. Bukvić[1]
Association Srpski krivak,
Belgrade, Serbia

ORIGINAL SCIENTIFIC ARTICLE
doi: 10.5937/ekonomika2002017B
Received: April, 01. 2019.
Accepted: May, 14. 2020.

CONCENTRATION AND COMPETITION IN SERBIAN BANKING SECTOR IN THE PERIOD 2016–2018

Abstract

The paper deals with the analysis of the degree of concentration and competition in Serbian banking sector in the period 2016–2018. The analyses are based on the data of bank financial statements for relevant years, as well the results of other researchers and reports of the National Bank of Serbia. It was used the traditional concentration indicators (CRn and HH indices), as well as the Gini coefficients and not only in Serbia the relatively rarely used Linda indices. The concentration degree in all cases is calculated based on five variables: total assets, deposits, capital, bank operating income and loans. Although these variables are highly correlated, the results show relative important differences. In the case of such variable as capital, the Linda indices suggested the existence of the oligopoly structure. As conclusion, it was demonstrated that in the case of the relatively large number of banks in Serbia, the existing concentration degree is generally moderate low, which provides suitable conditions for the development of healthy competition among them.

Key Words*: concentration, competition, banking sector, SCP paradigm, Serbia, indices Linda, Gini coefficient, Herfindahl-Hirschman index, Lorenz curve, concentration ratio, oligopoly*

JEL classification*: C38, G21, L10*

КОНЦЕНТРАЦИЈА И КОНКУРЕНЦИЈА У БАНКОВНОМ СЕКТОРУ СРБИЈЕ У ПЕРИОДУ 2016–2018

Апстракт

Чланак се бави анализом степена концентрације и конкуренције у банковном сектору Србије у периоду 2016–2018. Анализе су засноване на подацима из финансијских извештаја банака за одговарајуће године, као и других истраживања и извештаја Народне банке Србије. Коришћени су традиционални показатељи концентрације (CRn и HH индекси), као и Џинијев коефицијент и не само у Србији релативно ретко коришћени индекси Линда. Степен концентрације у свим случајевима обрачунат је за пет променљивих: укупна актива, депозити, капитал, пословни приход и кредити. Иако су ове променљиве високо корелисане, резултати показују релативно значајне разлике. У случају капитала као променљиве, Линда индекси сугеришу постојање олигополске

[1] r.bukvic@mail.ru, ORCID ID 0000-0001-6744-3912

структуре. Као закључак, показано је да је у условима постојања релативно великог броја банака у Србији постојећи степен концентрације умерен, што даје добре услове за развој здраве конкуренције између њих.

***Кључне речи**: концентрација, конкуренција, банковни сектор, СПР парадигма, Србија, индекси Линда, Ђинијев коефицијент, Херфиндал-Хиршманов коефицијент, Лоренцова крива, стопа концентрације, олигопол*

The last few decades have seen considerable attention being put towards the analysis of development of market competition and affirmation of market principles. This coincided with the collapse of planned economies and the beginning of their transformation into market economies. In emerging market economies one of the most important problems was the building new, market oriented financial system, with new role of the financial and bank institutions. As a result, the question of the evolution of the financial system which having been, and still remaining, outside the mainstream neo-classical modelling, has come to the top of research work [Rybczynski 1997]. Consequently, considerations of the conditions for the building the market circumstances are characteristics not only in so called real economy sector but in other branches, as well. Among these other branches, which are infrastructural both on a state level and for the international economy, the banking sector is of particular interest. Its importance has been growing not only in the countries of the former socialist world, which is related with the hugely increased role of market and the consequent deregulation in this and other sectors, but also in developed countries, where deregulation and liberalization processes have also taken place, followed by an integration (mergers and acquisitions) of banks. At the same time, the developed financial markets, especially the European ones, have become more market-oriented (Rajan & Zingales, 2003).

In modern economic theory it is assumed that in order to create an efficient market system in all economy segments, especially in the banking sector, it is necessary to provide a competitive environment. It is argued that the potential benefits of competition in banking are similar to its benefits for other industries, such as: it can improve allocative, productive, and dynamic efficiencies (by promoting innovation, e.g.), with the ultimate benefit being stronger economic growth (Northcott, 2004). However, the authors in last few decades emphasized not only benefits, but also the negative effects of the banking competition. We will not focus specifically on this issue, and will instead use this overview created by Moiseev (see Table 1, slightly modified).

Table 1. Positive and negative effects of the banking competition

Author(s)	Year	Effects of banking competition: Conclusion
Petersen M. and Rajan R.	1995	In highly-concentrated markets, small-business loans are more accessible, and in addition to that, new companies can take out loans with lower interest rates.
Jayaratne J. and Strahan P.	1996	Salaries and production grow faster after new bank branches can open unrestrained, therefore we can conclude that banking competition has a positive effect on the economic growth.

Shaffer S.	1998	Household income grows faster in areas with a larger number of banks.
Black S. and Strahan P.*	2000	The number of new companies and business associations is smaller in areas with higher market concentration.
Collender R. and Shaffer S.	2000	While the effect of market concentration on household income between 1973 and 1984 was negative, it became positive between 1984 and 1996.
Bonaccorsi D. and Dell'Ariccia G.*	2000	The start-up scene is more active in markets with a concentrated banking sector.

* Mimeo, used by Moiseev.
Source: (Moiseev, 2008, p. 104)

Competition in the banking sector is one of the forms of market competition. It appeared lather than competition in industry, but it is characterized by a high intensity and a great diversity of forms and methods. The main characteristics of the bank competition are described in detail in (Коробова, 2006, pp. 76–100).

The development of modern banking sector in serbia

The development of market economy and the affirmation of market business principles are some of the main tasks in all countries in transition, including Serbia. In addition to the efforts of the lawmakers and the economic policy creators, this task is reflected in theoretical and practical interest of the academia, where a growing number of scientific papers in different scientific journals tackle different related issues. Unlike other so-called socialist countries, in Serbia, i.e. Yugoslavia, the problems tied to the creation of market relations were not unknown starting from the 1950's, however this country still started this process significantly later than those countries due to the circumstances in which it found itself at the time. Regardless of some not insignificant controversies in regards to the character of the current socialist market relations, the decade long experience of its existence and effects was not adequately evaluated and it was not utilized in the current conditions. Instead, the principle of "not saying the obvious" was adopted and present in the documents of the highest international organizations. Alternatively a demeaning approach was adopted. The effect of this on the overall results is probably yet to be fully understood, but that issue is not the object of research in this paper. It is, in fact, a mere base for the conclusion that Serbia entered the transition process without considering and valuing its past experience.

The said observation certainly had an effect on the reforms and the development of the banking system. Although banks had until then been treated as a "service of the economy", with a strong influence of the political establishment, banks as well as other branches of economy did know the market principles and were in part exposed to them. But in this case also, the previous experience was not considered. After the political changes that took place in 2000, the Serbian banking sector has also undergone some great and significant changes. At the beginning of 2001, a total of 86 banks operated on the territory of Serbia, but during the same year, 23 lost their licenses, which combined

with some other changes lowered the number of banks to 49 at the end of the year (Bankarski sektor SRJ 31.12.2001.g., 2000, 1–2). Right at the beginning of 2002, four major banks underwent bankruptcy proceedings (Beobanka AD Beograd, Beogradska banka AD Beograd, Investbanka AD Beograd and Jugobanka AD Beograd), and their share in the total bank assets was over 57%.

In the following years, changes continued to take place: the once biggest banks ceased to exist (they were liquidated), some foreign banks entered the market, there were a few acquisitions, etc. All in all, we can notice that there is a decreasing trend in the number of banks, usually through acquisition and merger processes, and only exceptionally because the National Bank of Serbia stripped them of operating licenses. At the same time, foreign capital continued penetrating into the banking sector, especially stimulated in 2001, when five foreign banks obtained license by the National Bank of Yugoslavia: Micro finance banka AD Beograd, Raiffeisenbank Jugoslavija AD Beograd, Alpha bank AE (Beogradska afilijacija), HVB banka Jugoslavija AD Beograd i National bank of Greece (filijala Beograd). At the end of 2018, there were 27 banks in the market, none of them having a significantly bigger share in the market. For small countries like Serbia, it is a considerable number, and it provides for a development of competition. Foreign banks entering the market and the processes of deregulation and liberalization have naturally created a tougher competition in the banking market. However, there are seemingly no serious and consequent analyses of competition in the market in question. The competition in this sector has not been of particular interest of researchers in the past, although Serbia (Yugoslavia) has had, unlike other socialist countries, considerably developed market relationships, at least in the real sector. Therefore, the most extensive and comprehensive monograph [Begović et al. 2002] does not consider the competition in this sector.

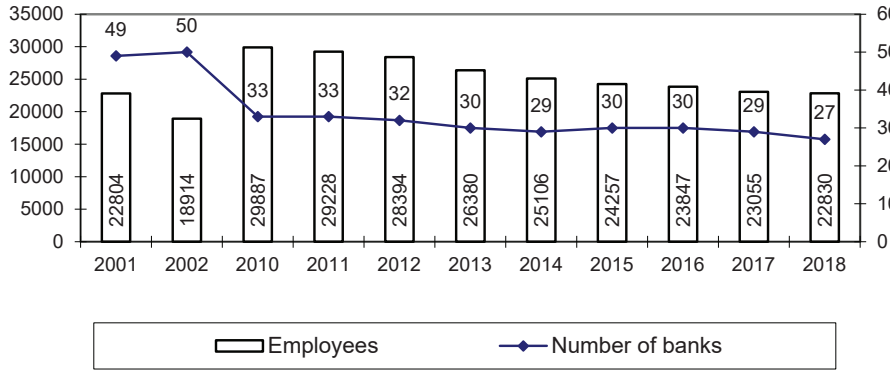


Figure 1. Number of banks and employees in the Serbian banking sector 2010–2018
Source: Банкарски сектор 2002, Banking Sector in Serbia. Quarterly Report. (2010–2019)

The number of banks and employees in banking sector in the period between 2010 and 2018 is shown on the figure 1.[2] Both the bank and employee figures have

[2] In October 2018 the Direktna banka integrated the Piraeus Bank, so the number of banks further

decreased substantially in the present decade, by more than 10% and 20% respectively. However, both figures are still considerable for the relatively small financial market of Serbia. According to Quarterly Report for the 4rd quarter 2018, out of the total number of banks, 7 are domestic while 20 are foreign. The domestic – foreign ratio in total assets is 24.5:75.5, and in capital it is 24.1:75.9. The total number of business units (all forms of business network parts: corporate offices, banking subsidiaries, branch offices, counters and other business units) amounts to 1,598. The total number of business units also decreased in previous years. It amounted 1,719 at the end of 2016 and 1,627 at the end of 2017.

Methodological considerations

Competition in general and especially in the banking sector, is a complex process difficult to measure, since there is no generally accepted or best approach to measuring it, nor is there a unit indicator. Therefore, different approaches have been developed in order to measure the degree of competition in a market. They can be divided into direct and indirect approaches. Direct approaches are based on the degree of market power, as the source of addition to the market price. The direct estimation assumes the existence of data about bank service prices and their marginal costs, which is often lacking. In those cases, we use the indirect estimation method, which can be structural and nonstructural. The first one is based on the paradigm "structure – behavior – result", first published by Edward Chamberlin and Joan Robinson in 1933 and Mason in 1939, and suggests using the market concentration degree to measure the degree of competition. The structure–conduct–performance (S–C–P) paradigm, also known as the Bain/Mason paradigm or concept, has been a very popular model in industrial economics since the Second World War. It is largely empirical, i.e. it relies on empirical data but for the most part, lacks a theoretical base.[2] Of course, the S–C–P is not originally developed for banks. But, applied to this sector, S–C–P paradigm means a change in the market structure or concentration of banking firms affects the way banks behave and perform:

Structure → Conduct (higher prices) → Performance (higher profits) (1)

assuming that a concentrated market allows firms to set prices (e.g. relatively low deposit rates, high loan rates) which boost profitability, i.e. bank profit rate.

In opposite to S–C–P approach, the Relative Efficiency Hypothesis (RE) assume that some firms are enormous profitable because they are more efficient than others. In other words, efficiency is exogenous. The hypothesis states that the causality goes from greater efficiency, lower prices and higher concentration/market share:

Efficiency→Conduct (Higher Output and/or Lower Prices)→Market Share→ Performance (Higher Profits) (2)

and can be linked to the X-efficiency (hypothesis): some firms have superior management or production technology, which makes them relatively more cost X-efficient with lower costs.

The nonstructural estimation denies the correlation between concentration and competition, especially in systems with low entry and exit costs (contestable markets),

decreased to 27.

see (Baumol, 1982). Within this approach many models examine the relationships between banks performances depending on different exogenous factors (models Panzar-Rosse, Boone and others).

The Structure–Conduct–Performance (S–C–P) paradigm dominated industrial organization studies until the early 1970s. But, researches in banking sector generally not approved the main S–C–P hypothesis, i.e. the structure (market shares) was in many empirical investigations not correlated with profitability of banks. In fact, in our case, for 2018, the simple correlation coefficient between rate of profit (profit/total assets) and market share was small – only 0.2469. Such result, of course, is not surprise, see for example (Smirlock, 1985, p. 70).

Although we do not identify competition with concentration, our approach can formally be considered as structural. As this research is one of the first steps in competition analysis of the banking sector in Serbia is, we will not apply this approach. After all, concentration coefficients also can be used in the nonstructural approach. We can define concentration as it is defined in the OECD Glossary: "Concentration refers to the extent to which a small number of firms or enterprises account for a large proportion of economic activity such as total sales, assets or employment" (Khemani & Shapiro, 1993), without considering different contexts, which are observed by the Glossary.

Before carrying out an appropriate empirical analysis, some issues are to be resolved. First of them concerns the variables relative to banks and its business that are to be used. While in the case of manufacture and other branches in real economy sector this issue is less or more solved, the situation is different in the banking sector: variables such as volume of production or sales cannot be used. Therefore, other indicators are necessary. They can be, for instance, attracting deposits (Berger & Hannan, 1989), assets (Маринковић, 2007) assets and deposits (Berger et al., 1999), assets, loans and deposits (Vuković, 2006), (Ljumović et al., 2014) and (Alihodžić, 2019), total assets, net interest income and capital (Eraković, 2017), deposits and loans to legal and physical persons (Коцофана и Стажкова, 2011), deposits, loans to legal and physical persons and assets (Ракша, 2010), deposits, loans to legal and physical persons and capital (Lončar & Rajić, 2012), assets, capital, loans, deposits, interest income and net profit (loss) after tax (Miljković et al., 2013).[3] Finally, National Bank of Serbia's regular quarterly reports (Банкарски сектор у Србији. Квартални извештај, 2010–2018) give short surveys of concentration and competition in the banking sector, using nine financial balance variables: assets, loans (total), loans to population, loans to companies, deposits (total), deposits of population, income (total), interest income, income from fees and commissions. As we can notice, the most frequently used variable is total assets, although its use does not exclude other variables. We will also not limit our research to using only variable, therefore we have chosen five indicators: total assets (X1), deposits (X2), capital (X3), operating income (X4) and loans (X5). The choice is due not only to theoretical reasons, but also to the sources accessible to the author: bank financial statements available on the website of National Bank of Serbia (Биланс стања/успеха банака, 2018). In this paper we will analyze the data from the balances of Serbian banks for the year 2016–2018, but in certain cases we will refer to works pertaining to the previous years.

Although the problem of the choice of variables seems of great importance, the data we analyzed show that this is not so. The correlations between the selected

indicators (see Table 2) are very high, and differences practically negligible. Smallest are the coefficients between capital and other variables, that can be explained with the nature of capital as the residual variable, as we will see in further.

Table 2. Correlation coefficients for the selected variables X1–X5 in 2016 and 2018

Year	2016				2018			
Variable	Deposits (X2)	Capital (X3)	Operating income (X4)	Loans (X5)	Deposits (X2)	Capital (X3)	Operating income (X4)	Loans (X5)
Total assets (X1)	0.9975	0.9548	0.9923	0.9807	0.9979	0.9516	0.9894	0.9652
Deposits (X2)		0.9327	0.9910	0.9720		0.9315	0.9856	0.9551
Capital (X3)			0.9432	0.9549			0.9470	0.9437
Operating income (X4)				0.9719				0.9679

Source: Calculated on basis of Financial Statements, http://www.nbs.rs/internet/cirilica/50/50_5.html

The second methodological question is the choice of concentration indicators (index). Among the many indicators, see for instance (Martić, 1986), two have been used by researchers and by the practical antimonopoly policy: coefficients of concentration, or concentration ratios CRn (the share of n largest companies in a certain market, where n mostly stood for 4) and HH index (Herfindahl-Hirschman index, or simply Herfindahl index, the sum of the squares of the shares of all participants' in a market). Both indices are based on individual company shares in a market

(3) $s_i = \frac{Q_i}{Q}$

where: Qi = volume of company production i, Q = total production volume in an industry branch. Instead of the volume of production, other variables can be used, as it often occurs even in analyses within the real economy sector, for example income or company assets etc. Coefficients CRn are defined as the sum of n greatest shares, as follows:

(4) $CRn = s_1 + s_2 + \cdots + s_n = \sum_{i=1}^{n} s_i$

and coefficients (indices) HH as the sum of share squares of all participants in a market:

(5) $I_{HH} = \sum_{i=1}^{m} (s_i)^2$

We will also use these indices. But, unlike the mentioned work (Ljumović et al., 2014), where were used indices CR4 and CR8, we will use also index CR3. We consider, and this has been demonstrated on multiple occasions, that index CR8 is too high for Serbia, and therefore considered insignificant for the purpose of our work. It is therefore strange that the National Bank of Serbia uses it in its reports, along with CR5 index and CR10 index, which is even less significant than CR8.

The advantages and disadvantages of the indicators (3) and (4) in literature are well described, see for example (Буквич, 2015). In addition to the mentioned indices (coefficients), we will also use the Gini-coefficient, another commonly used method to determine concentration degrees. In a multitude of ways to determine this coefficient, we have opted for the following (Lipczynski et al., 2017, 278):

(6) $G = \frac{\sum_{n=1}^{N}\sum_{i-1}^{n} s_i}{0.5(1+N)\sum_{i=1}^{N} s_i} - 1$

where s_i indicate shares (3), and N is the number of observed units (in this case banks). This formula is inverse in comparison with the usual ways to present and calculate the Lorenz curve and the Gini-coefficient, as it organizes the sequence into a decreasing one, resulting in a graphic depiction double symetrical when compared to a Lorenz curve – diagonally from (0.0) to (1.1) and vertically.

We determined in our calculations both of these indicators (4) and (5), see Table 3. In addition to that, considering their disadvantages, we choose one more index not yet used in Serbian literature[4], but also rarely used in other countries, especially in the so-called transition economies. One of the examples of its uses (Коцофана и Стажкова, 2011) refers to the banking sector (in Russia). This index (more precisely, the system of indices) is calculated by following general formula, which is developed into a specific formula for every value of m:

(7) $IL_m = \frac{1}{m(m-1)}\sum_{i=1}^{m-1}\frac{m-i}{i}\cdot\frac{CRi}{CRm-CRi}$

This index was constructed by the EU Commission consultant Rémo Linda (Linda, 1976). As well as the index CRn, it is only calculated in case of the few (m) largest enterprises and, therefore, also analyzes the "nucleus" but not the "periphery" of the market in question. However, unlike the concentration ratio CRn, Linda-index (L-index) focuses on the differences in the market "nucleus". In other words, the L-index has to be considered in combination with the concentration-ratio, it measures the "oligopolistic equilibrium" by giving information about the relative shares and their evolution of the top-firms. We have already showed the advantages of the use of Linda-indices in (Буквич, 2013), although this article was primarily illustrative. The calculations of this index are alternate and demanding. Of course, the use of personal computers renders the last note insignificant.

In (Ljumović et al., 2014), (Lončar & Rajić, 2012) and (Miljković et al., 2013) Linda-index was not used, but CRn, HH and others were: reciprocity index, comprehensive concentration index or Horvath-index (CCI), Entropy-index (E-index) and Gini-coefficient. For our purposes, all other indices except the CRn index bear no importance. In his PhD thesis, M. Kostic (Костић, 2013) gave an overview of concentration indices, however his analyses did not refer to the banking sector but to oil and beer markets.

Concentration and competition in serbian banking sector

Unlike some empirical researches, which divide the banking sector into small, middle and large banks, see for example (Bikker & Haaf, 2002a), we will consider the whole sector as one set. Clearly, it doesn't mean that in a theoretical sense we prefer such approach. The main reason for our choice is obvious enough: regardless of the relatively large number of banks, the banking and financial markets in Serbia are small, by all relevant indicators: total bank assets at the end of 2018 amounted to 3,774,055,499 thousand dinars, while the capital equaled to 676,704,699 thousand dinars (i.e. 31,930,862 and 5,725,344 thousand euros, by exchange rate of 1 euro = 118.1687 dinars). Therefore, for this work purposes we don't find this division useful by any criteria.

This paper can be considered as a continuation of our research of the concentration and market structures in modern Serbian banking sector. In previous works we analyzed the status in this sector in 2016 (Bukvić, 2017) and 2017 (Bukvić 2019). But, recent work is not only renewed with data and analysis for 2018. We have made some new calculations by using indicators that there were not used and some other considerations, that make possible the better observation of the bank concentration by used variables.

Table 3. Concentration indices in Serbian banking sector in 2016–2018

Criterion	CR3			CR4			CR8			HH		
	2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017	2018
Total assets	39.6	38.5	37.4	47.4	47.0	45.8	69.4	70.6	70.1	813	813	779
Deposits and other liabilities	40.1	38.8	37.6	47.9	47.7	45.9	69.7	71.0	70.9	819	818	786
Capital	38.7	37.7	37.2	47.4	46.9	45.8	73.6	73.3	72.3	882	848	807
Operating income	36.8	34.8	37.0	44.6	43.4	46.2	67.9	69.0	70.2	764	762	805
Loans and receivables	36.9	37.5	37.3	45.3	46.2	45.1	67.9	70.2	69.0	763	787	771

Source: Calculated on basis of Financial Statements, http://www.nbs.rs/internet/cirilica/50/50_5.html

The degree of concentration according to traditional indices is shown on table 3. Coefficients CR3 were chosen, which are used in antimonopoly practice in many countries, as well as CR4, which was often used in research works in former Yugoslavia, see (Bukvić, 1999), also in monograph (Begović et al., 2002), and finally CR8.[3] The table shows also Herfindahl-Hirschman indices, since the author had access to the financial statements of all the subjects, which is not always possible in similar analyses.

Table 4. Hirschman-Herfindahl indices for chosen indicators in Serbian banking sector 2010–2018

Balance variable	2010	2011	2012	2013	2014	2015	2016	2017	2018
Assets	629	660	678	741	794	796	813	812	779
Loans (total)	649	722	721	774	771	763	736	744	793
to population	687	684	687	714	715	729	728	747	812
to companies				788	779	782	768	765	821
Deposits (total)	720	714	726	777	818	816	817	825	798
from population	796	799	811	866	903	930	939	956	967
Income (total)	679	721	916	844	719	734	804	710	746
interest income	620	640	678	712	736	734	737	744	776
from fees and commissions	739	722	760	828	849	860	879	879	927

Source: *Банкарски сектор у Србији. Квартални извештај*. (2010–2018)

[3] National bank of Serbia in its quarterly reports uses the coefficients CR5 and CR10. We will not consider the issue of whether the use of one of the CRn coefficients is justifiable in terms of its informative significance in general sense, as well as in the specific context of baking sector in Serbia.

The indices of CRn and HH are also used by the National Bank of Serbia in the mentioned reviews of concentration and competition presented in the Bank's quarterly reports, earlier in Economic Overview. However, due to reasons unknown to the author of this work, they do not use the indices CR3 and CR4, which are justified from the standpoint of small markets and a small number of participant in the market, but they use indices CR5 and CR10 instead, considering share of five, i.e. ten largest banks. We deem that the use of these indices is not adequate and argumentative, and we will not consider them. Instead, we can consider the results obtained from the NBS report through the use of HH index (see table 4).

All index values in table 2 are less than 1,000, therefore the market should by all indicators be classified as low concentrated. This is constantly emphasized in the NBS reports. However, there is an obvious growth trend in practically all values, with a significant increase in some cases. In this sense, even if we ignore the the problem of arbitrary limits between the different market concentration types, there is hardly any room for the satisfactory report estimations that are constantly being repeated ("The banking market in Serbia is still characterized by a satisfactory level of competition and a low concentration of activity"). The paper (Miljković et al., 2013), that analyzes the period between 2008 and 2012, demonstrated a growth trend of HH index practically for all observed financial balances variables, with very small exceptions only in certain years and for some variables, so it can be concluded that there is an almost ten years' growth trend of HH indices in the Serbian banking sector.

Table 5. Degree of concentration in economy branches by the values of HHI (in antimonopoly practice in USA)

Types of market concentration	In Guidelines 1997	In Guidelines 2010
Highly concentrated markets	Above 1,800	Above 2,500
Moderately concentrated markets	Between 1,000 and 1,800	Between 1,500 and 2,500
Unconcentrated markets	Below 1,000	Below 1,500

Source: (Horizontal Merger Guidelines, 1997; Horizontal Merger Guidelines, 2010)

In case of both coefficients (CRn and HH), the limits between different market concentration degrees are set arbitrarily. So, USA has been using HH-indices for market classifications since 1982. Before that, the limits had been set on 1,000 and 1,800, and since 2010, they have been 1,500 and 2,500 (see Table 5). In evaluating horizontal mergers, the Agency (or Agencies, i.e. Department of Justice and the Federal Trade Commission) will consider both the post-merger market concentration and the increase in concentration resulting from the acquisitions and merger.

Table 6. Classification of industry markets based on concentration degree, which is used by the Federal Antimonopoly Service of Russia (FAS)

Classification of industry markets	K3 concentration coefficient value	Herfindahl-Hirschman (HHI) index value
Lowly concentrated markets	K3≤45%	HHI≤1,000
Moderately concentrated markets	45%<K3<70%	1,000<HHI<2,000
Highly concentrated markets	K3>70%	HHI>2,000

Source: (Федеральная антимонопольная служба, 2016)

The antimonopoly authority in Russia (Federal Antimonopoly Service of Russia, FAS) uses simultaneously both indices, CR and HH. The limits for the three types of market concentration are 45% and 70% for CR3, and 1,000 and 2,000 for HH, that separate lowly, moderately, and highly concentrated markets (see Table 6). The values of HH indices for all variants in our analysis are less than 1,000, so the market should be classified as lowly concentrated. On the other hand, according to the CR3 index, it also belongs to non-concentrated markets, but if were to use the CR4 index, we would have to classify the market as a moderately concentrated one (except for the third variant, the capital, but in that case, the value of CR4 is practically on the limit between a non-concentrated and a moderately-concentrated market).

Table 7. The degree of concentration in economy sectors based on the HH index values (modified classification):

Degree of concentration	Values of HHI
Absolutely concentrated	10,000
Extra concentrated	From 2,600 to 10,000
Highly concentrated	From 1,800 to 2,600
Moderately concentrated	From 1,000 to 1,800
Unconcentrated markets	Below 1,000

Source: (Begović et al., 2002)

Clearly, other possible limits between lowly, moderately and highly concentrated markets could result in a different classification. This is one of the main flaws of the CRn and HH index use. Therefore, other approaches to researching concentration and competition are also necessary. Considering the conditions and circumstances of Serbian economy (smaller overall market, fewer producers across industries, etc.), it is evident that such market classification according to the concentration degrees is inadequate (in almost every industry HHI values would be in the second group), therefore it is possible and desirable to make the necessary and useful modifications to table 5. One such successful attempt was made in the monograph [Begović et al. 2002]. (See Table 7.)

Obviously, the indices from tables 3 and 4 show different tendencies through the times. It is, therefore, useful to examine the concentration by using some other indicators. In such analyses, the researchers use also the Gini coefficients and Lorenz curve. So, we shaped the Lorenz curve (see figure 2), for the V1, i.e. total assets in 2018. After them, we calculated these (Gini) indices for observed five variables, for the 2016 and 2018. The results are shown on table 8.

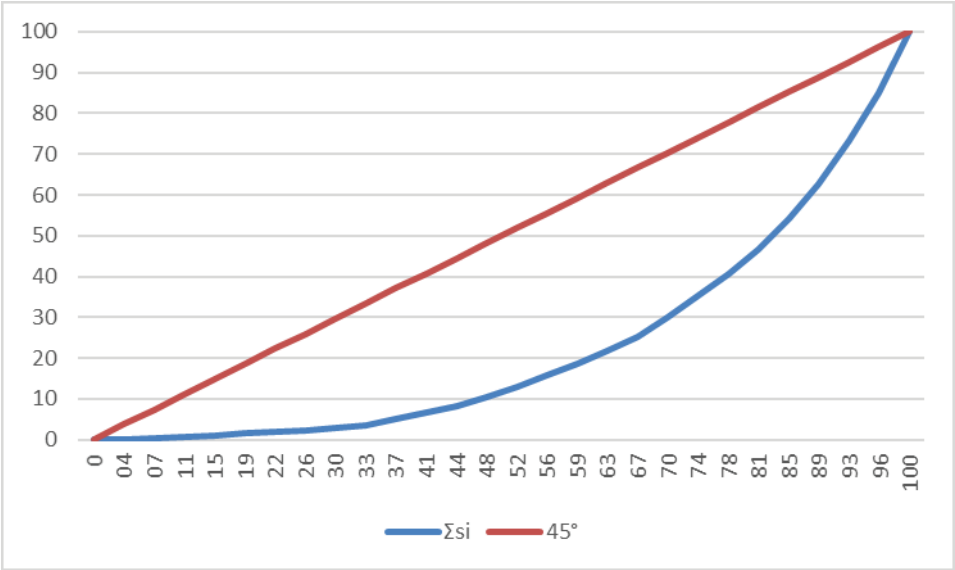


Figure 2. Lorenz curve for the variable total assets in 2018
Source: Calculated on basis of Financial Statements, http://www.nbs.rs/internet/cirilica/50/50_5.html

As we can see, Gini coefficients for all five variables increased from 2016 to 2018. This shows (undoubtedly?) that the concentration in 2018 is greater than in 2016 (see Table 8). It may be an opposite result compared with the results from the use of coefficients CRn and HH. On the other hand, both Lorenz curve and Gini coefficient show the same problem that exists in the standard coefficients CRn and HHI. It is, namely, necessary to set limits in advance, which will help classify certain empirically calculated concentration degree as high, moderate or low or according to another generally accepted concentration degree scale.

Table 8. Gini coefficients for the observed indicators in 2016 and 2018

	2016	2018
Total assets	0.5681	0.5808
Deposits and other liabilities	0.5722	0.5856
Capital	0.5833	0.5935
Operating income	0.5489	0.5855
Loans and receivables	0.5544	0.5719

Source: Calculated on basis of Financial Statements, http://www.nbs.rs/internet/cirilica/50/50_5.html

This is, also, the one more reason to further research, i. e. for the use of other methods.

One of them are Linda-indices. Unlike the previously mentioned ones, Linda-indices are meant to reveal the existence of oligopoly structures without using any arbitrarily established limits. In contrast, the index values indicate whether oligopoly is present or not in a given market. In the case of a competitive market, the index value decreases ($IL_{m+1} > IL_m$ for all m). If this pattern is broken, it indicates that there is an

oligopoly situation in a given market. In our case, only the third variant points out to the existence of oligopoly, which are the Linda-indices calculated on the basis of the capital value (see Table 9). Besides the Linda-indices (V1, V2, V3, V4, and V5, for five values in Table 9), it also shows the column (PE). It represents the so-called perfect equilibrium curve, which is the situation of perfect equality among the participants in a marketplace. The shares of such perfect competitors are the same one to another, and equal to the value 1/n (n = number of participants in market).

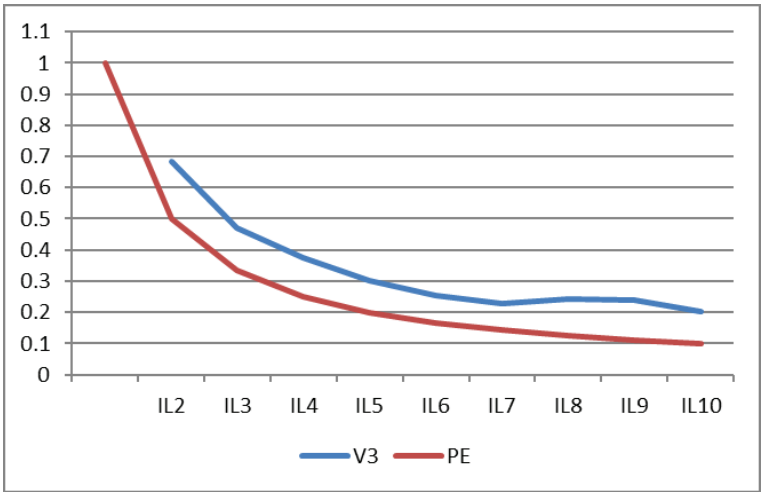
Table 9. Linda indices for selected variables in Serbian banking sector in 2016, 2017 and 2018

Year	2016					2017					2018					
IL	V1	V2	V3	V4	V5	V1	V2	V3	V4	V5	V1	V2	V3	V4	V5	PE
																1
IL2	0.69	0.63	0.97	0.76	0.70	0.77	0.72	0.86	0.85	0.68	0.65	0.64	0.68	0.83	0.67	0.500
IL3	0.49	0.48	0.62	0.51	0.48	0.47	0.46	0.55	0.52	0.47	0.44	0,43	0.47	0.52	0.47	0.333
IL4	0.42	0.41	0.44	0.41	0.38	0.38	0.37	0.39	0.38	0.37	0.36	0.37	0.37	0.38	0.39	0.250
IL5	0.35	0.35	0.34	0.32	0.32	0.32	0.31	0.31	0.30	0.32	0.31	0.31	0.30	0.31	0.34	0.200
IL6	0.32	0.33	0.28	0.29	0.30	0.29	0.30	0.27	0.25	0.29	0.29	0.27	0.25	0.30	0.30	0.167
IL7	0.30	0.30	0.25	0.27	0.28	0.28	0.28	0.25	0.24	0.26	0.26	0.25	0.23	0.27	0.27	0.143
IL8	0.27	0.27	0.27	0.25	0.25	0.26	0.26	0.25	0.24	0.24	0.23	0.23	0.24	0.25	0.23	0.125
IL9	0.25	0.25	0.27	0.23	0.24	0.24	0.24	0.25	0.22	0.23	0.22	0.23	0.24	0.22	0.23	0.111
IL10	0.21	0.21	0.23	0.20	0.20	0.20	0.20	0.21	0.19	0.20	0.19	0.19	0.20	0.19	0.19	0.100

Source: Обрачун на основу Financial Statements, http://www.nbs.rs/internet/cirilica/50/50_5.html

The third variant (variable V3, i.e. capital) indicates the existence of oligopoly (IL8>IL7) in all three years: the sequence of indices ILi is not monotonically decreasing function. However, the observed variable (capital), as residual of assets and liabilities, is the "worst quality" variable among the chosen ones. Therefore, having taken into consideration the other results from Table 5, it could be said with great certainty that the results obtained by coefficients CR3, CR4 and HH were confirmed, i.e. that the Serbian banking sector in analyzed years is lowly concentrated. And this is the good foundation for competition development.

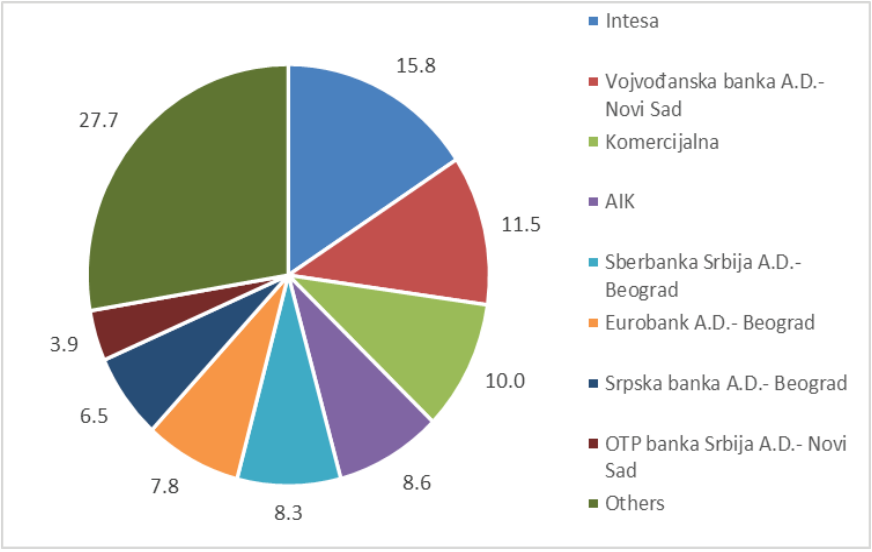
Figure 3. Linda indices for capital and "perfect equilibrium" curve for banking sector, Serbia 2018



Source: On the base of Financial Statements, http://www.nbs.rs/internet/cirilica/50/50_5.html

The graphical representation of Linda-index is also of great interest (see Figure 3). It shows indices for capital, where, as shown in Table 3, there is a suspicion of oligopolistic structures. Unlike the indices CRn, which are a monotonically increasing function as each next participant is added (CR1<CR2<…<CRn), Linda indices form a broken curve (Figure 3). The area between IL and PE is named "oligopolistic arena" and it even visually shows the difference between the real situation and an ideal, perfect competition.

Figure 4. The shares of leading banks in total banking sector capital in 2018



Source: On the base of Financial Statements, http://www.nbs.rs/internet/cirilica/50/50_5.html

The bank shares in the total banking sector capital are shown on Figure 4. They suggest, that the first seven banks form an oligopolistic structure – the seventh one in range (Srpska banka) is greater by over 68% in terms of capital than the next, eighth one (OTP banka) (the shares are 6.5 : 3.9). If so, of course, this could be a case of so-called loose oligopoly, in which, by theoretical propositions, 6–7 firms participate in a market with a 70–80% share. In our case, this share for the first seven firms in 2018 is 68.4%, very close to down limit of theoretical loose oligopoly. Therefore, such a conclusion can be drawn. The state of the banking market must be permanently observed, because the values of coefficients HH, even CR4 are close to being moderately concentrated. As shown previously, the National Bank of Serbia does so, although through the use of simple instruments.

Conclusion

In spite of the many years long decreasing trend in the number of banks, banking market in Serbia is still characterized by a relatively large number of banks (27). Among them there are no prominently large banks. According to all the chosen indicators (total assets, deposits, capital, operating income, and loans), the greatest share is held by the Intesa Bank 15.1; 15.1; 15.8; 17.1 and 15.7%, respectively. These results are somewhat lower than in 2016 (16.4; 19.6; 16.6; 17.0 and 15.8%, respectively). The concentration indices (CR3, CR4, HH, G and Linda indices IL) indicate a low concentration degree, although close to being moderately concentrated, but also an absence of oligopoly, with the mentioned exception by the results of capital. Even though this does not assume the existence of true competition, these results point out to good perspectives for creation and development of competition. In fact, we could consider that our results confirm the results obtained by (Lončar & Rajić, 2012) and (Miljković et al., 2013), which referred to three quarters of 2012, as well as those of (Ljumović et al., 2014), for the period between 2003 and 2012. However, we should take account of a slight growth in concentration. It is difficult to compare the results of these works due to the differing approaches that were used, although the application of the HH index is a solid foundation for comparison in such cases.

Concentration in the banking sector can have many implications, namely on the competitiveness and efficiency (not only in the banking sector). Therefore, it is important on one hand that regulatory bodies follow the concentration degree trends, especially since in the future the trend of merges and acquisitions can be expected to increase. On the other hand, it is necessary to thoroughly observe and analyze the competition in the banking sector, which should by no means be limited only to the concentration degree. As banking competition is very complex, this paper should be considered as one of the first analyses of concentration and competition in Serbian banking, and in the Serbian financial market in general. We emphasize that this research continues our deal with concentration and competition in Serbian banking sector. However, we hope that it will be a research subject of other researchers. New approaches would, naturally, be desirable in such future researches. On the other side, of some interest may be the comparative analysis of the concentration and competition in Serbian and banking sector of the neighbouring countries, as well the other former socialist countries, by more indicators than in (Barjaktarović et al., 2013).

In addition to the fact that the concentration degree is not high despite its increase through many years, more attention should be put towards the actions of banks in the market, which falls under the scope of regulation and control. In particular, the issues of collusion and deals between banks should be dealt with, although they have not been considered in this paper.

References

Alihodžić, Almir (2019). Tržišna koncentracija banaka i nezaposlenost: Evidencija na tržištu banaka Bosne i Hercegovine i Srbije, *Bankarstvo*, 48(2), 32–59.

Bankarski sektor SRJ 31.12.2001.g. (2000) Beograd: Narodna banka Jugoslavije.

Barjaktarović, Lidija i Dejan Ječmenica (2011). Optimizam vs pesimizam konkurentnosti bankarskog sektora Srbije, *Industrija*, 39(2), 137–150.

Barjaktarović, Lidija; Sanja Filipović, Maja Dimić (2013). Concentration Level of the Banking Industry in CEE Countries, *Industrija*, 41(3), 39–54.

Baumol, William J. (1982). Contestable Markets: An Uprising in the Theory of Industry Structure, *The American Economic Review*, 72 (1), 1–15.

Begović, Boris; Rajko Bukvić, Boško Mijatović, Marko Paunović, Robert Sepi & Dragor Hiber (2002). *Competition Policy in FR Yugoslavia – Existing Market Structures and Competition Institutions*, Belgrade: Center for Liberal-democratic Studies.

Berger, Allen N.; Rebecca S.Demsetz, Philip E. Strahan (1999). The consolidation of the financial services industry: Causes, consequences, and implications for the future, *Journal of Banking & Finance*, 23 (2–4), 135–194.

Berger, Allen N. & T.H. Hannan (1989). The Price-Concentration Relationship in Banking, *The Review of Economics and Statistics*, 71 (2), 291–299.

Bikker, Jacob A. & Katharina Haaf (2002a). Competition, concentration and their relationship: An empirical analysis of the banking industry, *Journal of Banking & Finance*, 26 (11), 2191–2214.

Bikker, Jacob A. & Katharina Haaf (2002b). Measures of Competition and Concentration in the Banking Industry: a Review of the Literature, *Economic & Financial Modelling*, 9 (2), 53–98.

Bukvić, Rajko (1999). Istraživanja tržišnih struktura u privredi druge Jugoslavije, *Ekonomika*, 35 (1), 4–16. /Researches of the Market Structures in the Economy of the Former Yugoslavia, *Ekonomika*, 35 (1), 4–16./

Bukvić, Rajko M. (2017). Concentration and Competition in Serbian Banking Sector, *The Scientific Journal of Cahul State University "Bogdan Petriceicu Hasdeu": Economic and Engineering Studies*, 2(2), 4–12.

Bukvić, Rajko M. (2019). Evolution and Current State of the Competitive Environment in Serbian Banking Sector: Concentration Indices Analysis, In: Igor Janev (ed.) Serbia: Current Political, Economic and Social Issues and Challenges, Nova Science Publishers, Inc., New York, 23–42.

Collender, Robert N. and Sherrill L. Shaffer (2000). Local bank office ownership, deposit control, market structure, and economic growth, *Technical bulletin of U.S. Department of Agriculture*, № 1886.

Eraković, Eva (2017). Concentration Effect on the Efficiency Banking Sector in the Republic of Serbia, *Facta Universitatis Series: Economics and Organization*, 14(3), 281–289.

Hannan, Timothy H. (1991). Foundations of the Structure–Conduct–Performance Paradigm in Banking, *Journal of Money, Credit and Banking*, 23(1), 68–84.

Horizontal Merger Guidelines, U.S. Department of Justice and the Federal Trade Commission, Issued: April 2, 1992, Revised: April 8, 1997. www.justice.gov/atr/public/guidelines/hmg.pdf

Horizontal Merger Guidelines, U.S. Department of Justice and the Federal Trade Commission, Issued: August 19, 2010. www.justice.gov/atr/public/guidelines/hmg-2010.pdf

Jayaratne, Jith & Philip E. Strahan (1996). The Finance Growth Nexus: Evidence from Bank Branch Deregulation, *Quarterly Journal of Economics*, 111(3), 639–670.

Khemani, R. Shyam & Daniel M. Shapiro (compiled by) (1993). *Glossary of Industrial Organisation Economics and Competition Law*, commissioned by the Directorate for Financial, Fiscal and Enterprise Affairs, OECD.

Linda, Rémo (1976). Methodology of concentration analysis applied to the study of industries and markets, Brussels: Commission of the European Communities.

Lipczynski, John; John O.S. Wilson, John Goddard (2017). *Industrial Organization. Competition, Strategy and Policy*, Pearson Education Limited, Harlow.

Ljumović, Isidora; Vladan Pavlović, Janko M. Cvijanović (2014). Two Aspects of Concentration in Serbian Banking Sector, *Industrija*, 42 (3), 61–77.

Lončar, Dragan & Vesna Rajić (2012). Concentration and Competitiveness of Banking Market in Serbia: Current Situation and Possible Future Changes under the Influence of Market Consolidation, *Ekonomika preduzeća*, 60 (7–8), 372–385.

Maksimović, Ljiljana i Kostić Milan (2012). Limitations in the Application of Concentration Indicators, *Ekonomika preduzeća*, 60(3–4), 199–205.

Martić, Ljubomir (1986). *Mjere nejednakosti i siromaštva*, Zagreb: Brotehnika. / Inequality and Poverty Measures, Zagreb: Birotehnika, 1986./

Miljković, Marko; Sanja Filipović, Svetozar Tanasković (2013). Market Concentration in the Banking Sector – Evidence from Serbia, *Industrija*, 41 (2), 7–25.

Miller, Roger Leroy & David D. Vanhoose (1993). *Modern money and banking*, 3rd ed., New York: McGraw-Hill.

Northcott, Carol Ann (2004). Competition in Banking, *Financial System Review*, 6, June, 75–77.

Petersen, Mitchell A. and Raghuram G. Rajan (1995). The effect of credit market competition on lending relationship, *Quarterly Journal of Economics*, 110(2), 407–443.

Rajan, Raghuram G. & Luigi Zingales (2003). Banks and Markets: The Changing Character of European Finance, NBER Working Paper 9595, Cambridge.

Rybczynski, Tad M. (1997). A New Look at the Evolution of the Financial System, in Revell, Jack (ed.) *The Recent Evolution of Financial Systems*, London: Macmillan, 3–15.

Shaffer, Sherrill L. (1998). The winner's curse in banking, *Journal of Financial Intermediation*, 7(4). 359–392.

Smirlock, Michael (1985). Evidence on the (Non) Relationship between Concentration and Profitability in Banking, *Journal of Money, Credit and Banking*, 17 (1), 69–83.

Vuković, Vlastimir. Tržišna koncentracija domaćih banaka, *Finansije*, godina 61, № 1–6, 2006, str. 5–17.

World Development Report 1996 (1996). New York: Oxford University Press.

Банкарски сектор 2002 (2002). Београд: Народна банка Србије. /Banking sector 2002, Belgrade: National Bank of Serbia./

Банкарски сектор у Србији. Квартални извештај. (2010–2018) Београд: Народна банка Србије. /Banking Sector in Serbia. Quarterly Report. (2010–2018) Belgrade: National Bank of Serbia./

Биланс стања/успеха банака, Београд: Народна банка Србије, 2016, 2017, 2018. / Financial Statements/ http://www.nbs.rs/internet/cirilica/50/50_5.html

Буквић, Рајко М. (2017). Концентрација и конкуренција у банковном сектору Србије, XLIV Simpozijum o operacionim istraživanjima, SYM-OP-IS 2017 Zlatibor 25–28 septembar 2017, Zbornik radova, ur. Goran Ćirović, Visoka građevinsko-geodetska škola, Beograd, стр. 472–477. /Bukvić, Rajko M. (2017) Concentration and Competition in Serbian Banking Sector, XLIV Szmposium n Operations Research, SYM-OP-IS Zlatibor 25–28 September 2017, Proceedings, ed. Goran Ćirović, Visoka građevinsko-geodetska škola, Belgrade, pp. 472–477./

Буквич, Райко (2013). Исследование рыночных структур: индекс концентрации Линда, *Проблемы теории и практики управления*, (10), 49–55. /Bukvić, Rajko. (2013) Research of Market Structure: concentration index Linda, *Problems of the Theory and Practice of Management*, (10), 49–55./

Буквич, Райко (2015). *Рынок: конкуренция и монополия*, Княгинино: Нижегородский государственный инженерно-экономический университет. /Bukvić, Rajko (2015) *Market: Competition and Monopoly*, Knyaginino: Nizhny Novgorod State University of Engineering and Economics./

Коробова, Галина Григорьевна (ред.) (2006). *Банковское дело*, Москва: Экономистъ. /Korobova, Galina Grigorevna (red.) (2006) *Banking*, Moscow: Ekonomist./

Костић, Милан Т. (2013). *Тржишна моћ корпорација и конкуренција у грани*, докторска дисертација, Крагујевац: Економски факултет. /Kostić, Milan T. (2013). Market Power of Corporations and Competition in the Branch, Doctoral Dissertation, Kragujevac: Faculty of Economics./

Коцофана, Татьяна Викторовна и Полина Сергеевна Стажкова (2011). Сравнительный анализ применения показателей концентрации на примере банковского сектора РФ, *Вестник Санкт-Петербургского Государственного Университета. Серия Экономика*, (4), 30–40. /Kotsofana,

Tatyana Viktorovna & Polina Sergeevna Stazhkova (2011) Comparative analysis of the use of concentration indicators on the example of banking sector of RF, *Vestnik of Sankt-Petersburg State University. Series Economics*, (4), 30–40./

Маринковић, Срђан (2007). Стање и динамика степена концентрације у банкарском сектору Србије, *Теме*, 31(2), 283–299. /Marinković, Srđan (2007). The Industrial Concentration in Serbian Banking: The Degree and Its Dynamics, *Teme*, 31(2), 283–299.

Моисеев, Сергей Рустамович (2008). Эффекты банковской концентрации, *Современная конкуренция*, 1(7), 103–112. /Moiseev, Sergey Rustamovich (2008). Effects of banking concentration, *Modern Competition*, 1(7), 103–112./

Ракша, Александр Денисович (2010). Конкуренция в банковской сфере, *Банковское дело*, (11), 25–27. /Raksha, Alexander Denisovich (2010) Competition in Banking Sphere, *Banking*, (11), 25–27./

Федеральная антимонопольная служба (2016). Об утверждении Порядка проведения анализа состояния конкуренции на товарном рынке (с изменениями на 20 июля 2016 года) от 28 апреля 2010 года N 220, http://docs.cntd.ru/document/902215421 /Federal Antimonopoly Service. On approval of the analysis of the state of competition in the commodity market (as amended on July 20, 2016)./

Endnotes

1. In addition to the four mentioned banks, which were stripped of operating licence in 2002, Marinkovic cites examples of three such cases in the first half of the 2010's: Raj Bank Belgrade, Credit-Export Banks Belgrade and MB Bank Nis (Маринковић, 2007, p. 284).
2. For the theoretical backgrounds of the S–C–P paradigm see for example: (Hannan, 1991).
3. A review of literature about the use of concentration measures in banking sector until the beginning of 2000s is given in (Bikker & Haaf, 2002b).
4. Except are my own articles: (Bukvić, 2017), (Bukvić, 2019), (Буквић, 2017). All three refer to banking sector.

ЕКОНОМИКА
ISSN 0350-137X, EISSN 2334-9190, UDK 338 (497,1)
Vol. 66, april-june 2020, № 2
P. 37-48

Živorad Gligorijević[1]
Faculty of Economics University of Nis

Enes Ćorović[2]
State University of Novi Pazar department of economic science

Aleksandar Manasijević[3]
Faculty of Economics University of Nis

ORIGINAL SCIENTIFIC ARTICLE
doi: 10.5937/ekonomika2002037G
Received: January, 25. 2020.
Accepted: February, 27. 2020.

STRUCTURAL CHANGES AND ECONOMIC GROWTH OF THE REPUBLIC OF SERBIA: A CONTRIBUTION TO THE ECONOMIC HISTORY OF THE SECOND HALF OF THE 20th CENTURY

Abstract

The main characteristic of the economic development of the Republic of Serbia during the second half of the 20th century was contained in the development of industry, which, according to all relevant indicators, led to rapid and very large structural changes that were accompanied by high rates of economic growth. However, at the very beginning of the observed period, large structural mismatches occurred in the economy of the Republic of Serbia as a consequence of the mentioned changes. Due to their continuous presence throughout the analyzed period, these mismatches represent a basic characteristic of development processes, and also a confirmation (obtained through research on the example of the Republic of Serbia) of a theoretically established cause and effect relationship between structural changes and economic growth.

Key words: *Economy, Economic history, structural changes, economic growth, the Republic of Serbia*

JEL classification: O11, O14, O25, O40, P23, P24.

СТРУКТУРНЕ ПРОМЕНЕ И ПРИВРЕДНИ РАСТ РЕПУБЛИКЕ СРБИЈЕ: ПРИЛОГ ЗА ПРИВРЕДНУ ИСТОРИЈУ ДРУГЕ ПОЛОВИНЕ 20. ВЕКА

Апстракт

Основна карактеристика привредног развоја Републике Србије, током друге половине 20. века, садржана је у развоју индустрије која је, према свим релевантним показатељима, довела до брзих и веома крупних структурних промена које су биле праћене високим стопама привредног раста. Међутим,

[1] prof.z.gligorijevic@gmail.com, ORCID ID 0000-0003-0055-5228

[2] encorovic@np.ac.rs, ORCID ID 0000-0002-3458-4548

[3] aleksandar.manasijevic.eknfak@gmail.com, ORCID ID 0000-0002-2268-8403

на самом почетку посматраног периода у привреди Републике Србије, као последица поменутих промена, настале су крупне структурне неусклађености. Због њиховог континуираног присуства у целокупном анализираном периоду, те неусклађености представљају основну карактеристику развојних процеса, а исто тако, и потврду (добијену путем истраживања на примеру Републике Србије) теоријски установљене узрочно-последичне везе између структурних промена и привредног раста.

Кључне речи: *Привреда, привредна историја, структурне промене, привредни раст, Република Србија.*

Introduction

The main characteristics of economic development of the Republic of Serbia in the period 1947-2000 involve major structural changes, as well as changes in the rate of economic growth. Moreover, the most significant development features, in the period 1947-1990 are rapid and profound structural changes caused by high rates of economic growth. However, in the last two decades of the observed period, the Republic of Serbia faced adverse developments. Unfavorable development tendencies, under extremely unstable macroeconomic conditions (high trade deficit and galloping inflation rate), marked the functioning of the economy of the Republic of Serbia during the 1990s.

At the same time, the negative effects of the aforementioned economic trends were exacerbated by the effects of non-economic factors (collapse of the common state, sanctions by the international community, etc.), which caused huge direct and indirect losses, primarily through the reduction of gross domestic product and further destabilisation of economic flows. The partial recovery occurring after this period stagnated due to the bombing of the country by NATO countries in 1999.

Having in mind the above facts, the article aims to analyse the structural changes and trends of economic growth of the Republic of Serbia over a long period of time (during the second half of the 20th century), by means of the reference statistical material, trying as well to highlight the key consequences of the cause-and-effect relationship between these phenomena.

1. Research on structural change and economic growth

The terms 'economic structure' and 'structural change' represent categories that are widely used in economic research, although including different meanings and interpretations. 'When conscientious, meticulous, Fritz Machlup tried to retrieve different meanings of the word 'structure' from the scientific economic literature, he found a total of 25 meanings, 10 of which were clear and definite, 9 less clear, and 6 with some tendentious, suggestive meanings' (Stojanovic, 1972, p. 31).

There is a strong, two-way, cause-and-effect link between structural change and economic growth: a structural change is the most important consequence of economic growth, but at the same time, one of the most significant factors related to it. '... Structural changes are a central element of the development process and an essential element of the

growth model, they can slow down growth if they are slow or inefficient, but they can also contribute to growth if resource allocation is improved' (Kuznets, 1957). Therefore, the analyses of economic structure and structural changes during the 20th century were, for the most part, tied to different theories and models of growth.

The first model of economic growth was formulated shortly after World War II. It is a one-factor model of economic growth that observes the role of investment in achieving high growth rates. This model assumes that growth in production volumes is the result of capital accumulation, while other factors (employment and technological change) are neglected (Domar, 1947; Harod, 1948).

In numerous studies related to structural changes, during the 1950s and 1960s, economic growth was presented, in the historical context, as a result of the changing structure of the economic system. In two-sector model, economic growth is explained by the shift of labour from the agricultural sector to the industrial sector (Lewis, 1954). In the analysis of the economic growth of European countries, during the first half of the twentieth century, economic growth and structural change are also considered by using a historical approach. The results of the analysis show that long-term economic growth is related to a number of structural changes, such as: mechanisation, changes in the input-output ratio, changes in distribution and consumption, changes in import and export, and redistribution of labour between different sectors (Svennilson, 1954).

The neoclassical model of growth, which, in many opinions, represents a particular contribution to the development of economic science, used the analysis of the production function as a starting point. The author of the model came to the conclusion that the basic factors of growth were: an increase in the workforce (population growth), an increase in capital (accumulation and investment) and an improvement in technology (Solow, 1956).

By studying the development patterns of different countries the strong links between the growth of industrial production and economic growth at the level of the whole economy were emphasised. In order to identify the determinants of structural changes the analysis included one of the first applications of econometric methods. By doing so, the following basic factors that determine the economic growth of a country were included: the size of the country, geographical location and natural resources (Chenery, 1960).

Changes in the structure of national economies, from a historical point of view, occurred as an integral part of the process of diversification, the development of human creativity and their needs. Because of that, the dynamics of the change in the participation of individual economic sectors in the creation of GDP were different depending on the technical and technological progress and its influence on the activities within these sectors. Accordingly, in the late 1970s, many authors, engaged in the study of structural changes, began to largely analyse the role of technical and technological progress in the process of structural transformation: technological innovation (Kuznets, 1971) and the technological gap between developed and less developed countries (Abramowitz, 1986).

The economic crisis in developed countries during the 1970s and early 1980s, which, according to the majority of authors, had a structural character, initiated the emergence of more empirical research into the causes and desirable directions of structural change in those countries. The basis of these studies involved long statistical series of growth of individual sectors of the economy and individual branches and groups within. In comparison, these studies were, to a far greater extent, analytical, applying specially designed models and aimed at confirming the existence of a two-way cause-and-effect

relationship between structural change and economic growth (Chenery, Robinson, & Syrquin, 1986; Chatterjee, 1995; Fosu, 2010).

Structural change is an extremely complex phenomenon that should enable economic growth if appropriate changes are implemented in society (changes in the structure of production and employment etc.). In this sense, structural changes are referred to as changes in the composite structure of production, employment, exports, and so on (Landesman, 2000).

Economic growth, in individual economic sectors, occurs at irregular stages, with the aim of changing the growth rate of the total factor productivity of the sector. In addition, structural changes imply, among other things, changes in the participation of employees in individual sectors, and therefore, it is necessary, in the long run, to make changes in compliance with changes in the education system (Ngai & Christopher, 2007).

Structural changes and economic growth in the Republic of Serbia during the second half of the 20th century was a subject of particular interest in economic research. Hence, considerable attention was paid to: theoretical analysis of factors and models of economic growth (Čobeljic, 1972; Stojanovic, 1977), structural changes that led to the emergence of serious discrepancies in the 1960s between the production of raw materials and energy, on the one hand, and processing capacity, on the other hand (Gligorijević, 1984; Rosić, 2002), the pace of economic growth and structural changes in the three-sector model (Aranđelović & Gligorijević, 2008), structural changes and a new model of economic growth (Gligorijević & Ćorović, 2019) and so on.

2. Structural changes an economic growth of the Republic of Serbia in the period 1947-1990

The economic structure of the Republic of Serbia after the Second World War was formed under the influence of industrial development and industrialisation as a general development concept of the Socialist Federal Republic of Yugoslavia. Until the early 1970s, this development model had functioned as a unified and plan-coordinated nationwide development process. However, after the adoption of the constitutional amendments in 1971, and especially the 1974 Constitution, until the final dissolution of the state in the early 1990s, the economic development of the individual republics began to take on the characteristics of autarchic development.

Industrialisation in the Republic of Serbia, with its primary focus on the development of heavy industry, according to all relevant indicators, has led to rapid and profound structural changes, which, in the first decade of post-war development, were accompanied by high rates of economic growth. However, the emergence and deepening of structural disproportions (sectoral and regional) in the early 1960s raised the question of evaluating the applied model. The key dilemmas are related to the developmental potential of accelerated industrialisation and the legitimate production of structural discrepancies, in the economy as a whole, and in the industry in particular (Gligorijević, 1984), '... as germs to create barriers to future development. In line with the above, there are opinions that development cannot be highly valued till the end of the 1970s' (Marsenic, 2003, 97).

During the observed period (from 1947 to 1990), the GDP of the economy of the Republic of Serbia was growing at an average annual rate of 4.9% and it was more than sevenfolded by the base year (index 748), at the same time, the GDP per capita quadrupled (index 500), corresponding to an average annual growth rate of 3.9%. In addition, in the late 1980s, GDP per capita was, at the official exchange rate, proximatally about US $ 2,500 and more than US $ 5,500 in terms of purchasing power.

The reached dynamics of macroeconomic aggregates was the result of different growth rates of certain elements of the economic structure. The social sector had significantly higher growth dynamics than the private sector, so its share in the GDP increased more than tenfold in the observed period, while private sector share increased 2.6 times.

If analised by sectors of economy, the fastest growth was achieved in the industry, whose GDP in 1989 was almost eighteen times higher than in 1947. The highest growth of the industrial production was recorded in the period from 1953 to 1965, when the average annual growth rate was 13% (Drobnjak, 2013). Agricultural production's annual growth rate was 3.1% between 1947 and 1989, so its total growth tripled.

These differences in the dynamics of growth of individual elements, led to significant changes in the economic structure of the Republic of Serbia (Table 1). The social sector, from 57.4% in 1955, increased its relative share in the creation of the GDP to 85.1% in 1989, while the private sector stabilised its relative share at the level of 14.9%.

Table 1: Economic structure of the Republic of Serbia by sectors from 1955 to 1989

Sectors	**1955**	**1965**	**1975**	**1985**	**1989**
Idustries - total	100,0	100,0	100,0	100,0	100,0
Social property	57,4	76,7	80,5	85,0	85,1
Private property	42,6	23,3	29,5	15,0	14,9
Primary industries	**42,6**	**27,5**	**21,9**	**18,2**	**18,9**
Agriculture and fisheries	41,7	26,6	21,2	17,5	18,2
Water management	0,2	0,4	0,4	0,4	0,4
Forestry	0,7	0,5	0,3	0,3	0,3
Secundary industries	**32,7**	**46,1**	**43,1**	**52,7**	**53,0**
Industry and mining	18,3	30,7	34,6	42,7	44,5
Construction	8,8	9,6	5,7	7,3	6,3
Craftsmanship	5,6	5,8	2,8	2,7	2,2
Tertiary industries	**21,3**	**25,4**	**27,6**	**25,2**	**24,2**
Traffic and connections	6,3	6,9	7,6	7,0	7,9
Trade	11,1	16,0	17,8	16,3	14,8
Catering and tourism	3,9	2,5	2,2	1,9	1,5
Other industries	**3,4**	**1,0**	**7,4**	**3,9**	**3,9**

Source: Federal Bureau of Statistics, Statistical Yearbook of Yugoslavia 1976, 1977, 1987, 1991.

The most significant changes occurred in the sectoral structure of the GDP. Secondary idustries, led by industry, were a key driver of economic growth. They increased their relative share in the creation of the GDP from 32.7% in 1955 to 53% in 1989. Primary industries drastically reduced their relative share in the creation of the GDP, from 42.6% in 1955 to 18.9% in 1989. Tertiary industries were characterised by a slight uneven movement of the relative share in the creation of the GDP, with the largest share of trade.

According to the above data, the fastest changes in the structure of the economy had been made in the period until the mid 1960s, which was characterised by accelerated

progress of the economy and society in general. In the early 1960s, the relative share of agriculture and industry in the creation of the GDP appeared, and then, with the absolute increase in production in both sectors, a more dynamic growth of the industry increased its relative share. The tertiary industries, taken as a whole, increased relative share in the structure of the GDP from 21.3% in 1955 to 25.2% in 1985, while in 1989 its relative share was 24.2%.

Structural changes in the economy of the Republic of Serbia during this period resulted in an increase in the relative share of the industry in the creation of GDP at the expense of share, above all, in agriculture. However, the change in the relationship between the two sectors was a large and a rapid one. Therefore, adequate internal changes that would make this transformation structurally complete and developmentally efficient were not made. This is best evidenced by the course of structural changes in the industry sector (Gligorijević & Ćorović. 2019).

3. Structural changes an economic growth of the Republic of Serbia in the period 1990-2000

The economy of the Republic of Serbia, during the 1990s, was marked by the continuation of unfavourable development tendencies created in the previous decade, extremely unstable macroeconomic conditions, but also by the action of numerous non-economic factors.

After a long period of stagnation in the 1980s, the industrial production fell below 10% in 1990. This, with the decrease in the volume of activities in other sectors, led to the beginning of the recessionary phase and the fall of the GDP in that year by almost 8% (Statistical Yearbook of Serbia, 2004). After a period of *forced* repayment of the external debt and a positive current account balance, the economy reentered the external imbalance with a trade deficit of more than US $ 1.6 billion. Due to the lack of its own accumulation and limitations in external (foreign) borrowing, the already present tendency of declining investments continued.

The expressive macroeconomic instability, in the late 1980s and early 1990s, had its origins in a fundamental imbalance between available GDP and consumption. This was particularly evident in the conditions of a drastic decline in economic activity, and in the absence of real sources for filling the state budget. Due to the inability to finance the high deficit by borrowing abroad, the primary issue, ie inflationary budget financing, was conducted.

As a consequence of internal structural imbalances, the emergence of inflation is linked to the emergence of economic stagnation in the early 1980s. Inflation had been galloping over the years: in 1989 it stood at 1,256%, while in 1990 it dropped to near 700%, and 221% in 1991. In 1992, inflation was at the level of over 55% per month, and in 1993 over 1,000% per month, while in December of the same year it reached the level of 180,000% (Aranđelović & Gligorijević, 2008, 211).

The negative effect of hyperinflation on the economy of the Republic of Serbia, at the same time, was exacerbated by the influence of non-economic factors. With the breakup of the common state, several decades of economic planned structural links

between the republic members of the Socialist Federal Republic of Yugoslavia broke off. In addition to the loss of a large part of the domestic market for placement of final products, significant supply channels of raw materials were discontinued, which increased the already high import dependence of the manufacturing industry of the Republic of Serbia.

Along with the disintegration of the SFRY and the creation of independent states from the former republics, international sanctions were imposed on the Federal Republic of Yugoslavia. First, at the end of 1991, the European Community imposed economic sanctions, while, in the following year, the UN Security Council Resolution imposed a full trade embargo, with a ban on oil deliveries and a suspension of traffic across the territory of the Federal Republic of Yugoslavia.

Sanctions, in the short term, caused enormous negative macroeconomic effects (direct and indirect), primarily through the diminution of the GDP and further destabilisation of economic flows (Aranđelović & Gligorijević, 2008, p. 218-222). However, the most significant long-term consequence of sanctions is certainly the loss of the international market and trade links, at a very sensitive stage of development. The partial economic recovery that followed these events was halted in 1999 by the bombing of the Federal Republic of Yugoslavia by NATO members. The destruction of industrial capacites and infrastructure, the disruption of production and human casualties, reduced the material basis of development and destabilised already devastated economy. The process of rebuilding international economic relationships, with enormous financial damages done to businesses, was stopped again (Gligorijević, 1999).

The impact of negative factors on the economy of the Republic of Serbia, in this period, was most drastically reflected in the movement of GDP.

Table 2: Growth rate of the GDP of the Republic of Serbia in the period 1990-2000

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
%	-7,7	-11,7	-28,1	-30,4	2,6	5,7	4,7	7,4	2,4	-22,8	5,7

Source: Statistical Office of the Republic of Serbia, *Statistical Yearbook of Serbia, 2008.*

The recessionary flows started in 1990, continued in the following year with increased intensity, so the GDP was further reduced by more than 11%. The decline of the social product reached its culmination in 1992 and 1993, with negative growth rates of -28,1% and -30,4%, so in 1993 its amount was on the level of 44% of the 1990 GDP. In the following years, a partial recovery followed, thanks to the large-scale government investment that was partly the source of the sale of Telekom's part. By the end of 1998, there was an average annual growth in the GDP of about 4%.

As the result of the NATO aggression, in 1999 there was a dramatic fall in the GDP of close to -23%, which, nullified the effects of economic growth from previous years: the GDP fell from $ 25.51 billion in 1990 to $ 10.47 billion in 2000.

During this period, certain sectors of the economy reacted differently to the aforementioned adverse conditions, so significant changes in the structure of the social product took place. In the 1990s, on the one hand, there was a tendency of declining of share of the industry in the formation of the GDP of the Republic of Serbia, while, on the other hand, there was a slight increase in agriculture and dominance of the services sector. Namely, in 2000, the industry participated with 33.6%, agriculture with 19.9%, and the

services sector with 46.5% in the formation of the GDP (Arandelović & Gligorijević, 2008, 233). This was obviously the beginning of an accelerated deformation of the economic structure.

During the 1990s, there were also significant changes in the ownership structure of the GDP. The institutional transformation of property, started in 1988 and continued on two occasions over the next decade, was accompanied by non-institutional forms of private enterprise emergence.

The private sector more easily endured turbulence from the beginning of this period relative to the social sector, so that, despite the absolute decline in the economic activity, it recorded an increase in relative share in the formation of the GDP. Its relative share rose from 13% in 1990, to 40% in 2000 (Statistical Yearbook of Serbia, 2002).

The recessionary flows, in the early 1990s, also had a significant impact on employment trends during this period. The number of employees decreased year after year, so that in 1993 it was down more than 12% compared to 1991, or, in absolute terms, by 343,000 workers. This tendency, with slightly less intensity, continued until 2000, so in the Republic of Serbia, the number of employees were decreased by almost 700,000 over the whole period.

The decline in employment is mainly related to the social enterprise sector, despite the prohibition of layoffs during economic sanctions. The fall in employment was far greater, due to hidden unemployment. It is estimated that over 30% of employees were on paid leave, while a significant number of workers were hired in the private sector, employing around 9% of the total number of workers in 1993. The number of workers in the private sector was realistically higher due to the growing gray and black labour market. In addition, the number of workers in the private sector increased continuously, reaching level of 321,000, or 15.8% of total employees in 2000 (Federal Republic of Yugoslavia - Selected Issues and Statistical Appendix, 2002, 46).

The number of the unemployed was steadily increasing during this period. The unemployment rate from 19.1% in 1990 increased to 29,2% in 2000 (an increase of more than 150,000 unemployed in absolute terms).

Table 3: Unemployment rate in the Republic of Serbia in the period 1990-2000

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998*	1999*	2000
%	19,1	21,0	22,2	22,6	22,7	24,2	25,4	25,4	26,3	27,2	29,2

*Without Kosovo and Metohia

Source: Republican Institute for Labor Market.

The structure of the unemployed had the highest number of unskilled workers, although the fastest growth was recorded by the categories of skilled and highly skilled workers and those seeking employment for the first time. In this way, unemployment became a burning economic and social issue during this period.

Negative economic flows in the 1990s also reflected the foreign trade flows of the country. The total volume of foreign trade was in a continuous decline, with dynamics that was closer to or greater than the decline of the realised social product. In 1996, the volume of foreign trade was 43.8% of achieved in 1990. The downward trend continued, so that in 2000, foreign trade was at the level of 39%, compared to 1990.

The Import and export in this period had uneven contraction dynamics. The coverage of export by import was steadily declining, from 77.4% in 1990 to 46.8% in 2000.

Table 4: Level of coverage of import by export in the Republic of Serbia in the period 1990-2000

Year	1990	1991	1992*	1993*	1994*	1995*	1996	1997	1998	1999	2000
%	77,4	86,5	...	...	...	...	45,8	56,2	60,8	47,5	46,8

*The period of OUN sanctions

Source: Statistical Office of the Republic of Serbia, *Statistical Yearbook of Serbia, 2008.*

During this period, there were changes in the regional structure of export and import. The most important export market was still the European Union. The relative share of this market in total export from 47% in 1990 decreased to 42% in 2000. Export to Eastern European countries also decreased from 25% to 14%. Second in importance is the market of former Yugoslav republics, with a relative export share of 30% in 2000. In the regional import structure in 2000, the import from the European Union dominated with relative share of 40%, while import share from Eastern European was 29% and import share from the former Yugoslav republics was about 10% (Statistical Yearbook of Yugoslavia 1997-2000 and Statistical Yearbook of Serbia 2000-2004).

Conclusion

The economic structure of the Republic of Serbia after the Second World War was formed under the influence of industrialisation, as a general development concept of the SFRY. Industrialisation in Serbia, with a particular focus on the development of heavy industry, led, by all indicators, to rapid and profound structural changes which were accompanied by high rates of economic growth, especially in the first fifteen years of post-war development. Until the early 1960s, this development concept had functioned as a unified and plan-coordinated process.

In the coming period of industrialisation, there was a radical shift in development priorities towards faster development of the light processing industry and agriculture, but with a gradual decrease in the share of accumulation and economic investment, as well as an increase in the share of personal consumption and non-economic investment in the distribution of the social product. The aim was to balance the economic structure, by reducing the gaps between agriculture and industry, as well as within industry (between production of production goods and consumer goods). However, the abrupt break with the logic of rapid development of the branches producing basic raw materials and energy contained the germ of basic structural disorders: faster growth in consumption relative to the dynamics of domestic product growth.

The declining growth rate of GDP and industrial production, with already evident balance of payments difficulties, a decrease in accumulation and domestic sources of investment, led to the creation of external imbalances, as another major structural deformation. The misdirected goals of the reform (decentralization of distribution, transfer of disposal and management of accumulation and investment from the state to the enterprises), through a more free market functioning in the country, has not been an adequate mechanism for eliminating these structural disproportions.

The consequences of a sudden change in the focus of industrial development, through an increase in the relative share of branches of the processing industry, have resulted in faster growth of production of higher, compared to lower stages of processing. This process of change in the relations between the processing and base branches has resulted in a shortage of raw materials, incomplete use of certain processing capacities, an increase in the import of reproductive materials and a gradual creation of disproportions in the material structure of industrial production. The consequences of this are very pronounced under modern conditions.

The established industrial structure was aimed at satisfying domestic investment demand and realisation of the model of extensive growth, through a quantitative increase in production capacity. As such, it was chronically dependent on imports of raw materials from abroad, which, owing to marked inefficiency and non-competitiveness on the international market, generated a rise in borrowing due to a constant lack of export revenues.

Therefore, the Republic of Serbia, quite obviously, entered into transition processes with serious structural problems, the impact of which was most visible in the absence of economic growth.

References

Abramovitz, M. (1986). Catching Up, Forging Ahead, and Falling Behind. *Journal of Economic History*,

XLVI (2).

Aranđelović, Z., & Gligorijević, Ž. (2008). *Nacionalna ekonomija* (National economy), Niš: Petrograf.

Chatterjee, S. (1995). *Structural Change, Growth and Optimal Poverty Interventions.* Asian Development Bank, Mimeo.

Chenery, H. B. (1960). Patterns of industrial growth. *The American Economic Review*, 50(4).

Chenery, H. B. (1975). *The structuralist approach to development policy*, American Economic Association.

Chenery, H., Robinson, S., & Syrquin, M. (1986). *Industrialization and growth: A comparative study.* New York, NY: Oxford University Press.

Čobeljić, N. (1972). *Privreda Jugoslavije, rast, struktura i funkcionisanje* (Yugoslav economy, growth, structure functioning) knjiga prva (book one), Beograd: Savremena administrcija.

Ćorović, E. (2012). *Uloga tekstilne industrije u procesu strukturnog prilagođavanja privrede Srbije.* (The role of the textile industry in the process of structural adjustment of the Serbian economy) (doktorska disertacija) (Phd thesis), Niš: Ekonomski fakultet.

Domar, E. (1947). *Essays in Theory of Economic Growt*, New York: Oxford University Press.

Drbonjak, J. (2013). *Nova reindustrijalizacija (New reindustrialization).* preuzeto sa linka: http://www.ekonomskisavetdss.com/2013/09/-jovo-r-drobnjakreindustrija lizacijarealnost-ili-rec-koja-samo-lepo-zvuci/.

European Central Bank (2016). *Statistics.* Preuzeto sa linka (taken from the link):

Fosu, A. (2010). *Growth, Inequality and Poverty Reduction in Developing Countries: Recent Global Evidence.* OECD, Development Centre Background Paper for the Global Development Outlook 2010, Shifting Wealth: Implications for Developmen.

Gligorijević Ž. & Ćorović, E. (2019). *Strukturne promene i novi model privrednog rasta Republike Srbije* (Structural changes and a new model of economic growth in the Republic of Serbia). Niš: Ekonomki fakultet.

Gligorijević, Ž. (1999). *Uticaj agresije NATO-a na svojinsku transformaciju jugoslovenske privrede* (The Impact of NATO Aggression on the Property Transformation of the Yugoslav Economy). Ekonomske teme broj 1-2*,* Niš: Ekonomski fakultet.

Gligorijević, Ž. (2019). *Ekonomika industrije* (Industry Economics). Niš: SVEN.

Gligorijević, Ž. (1984). Strukturne disproporcije u privredi i nezaposlenost radnosposobnog stanovništva (Structural disproportions in the economy and unemployment of the working-age population). *Ekonomika,* 6/84. Niš: Društvo ekonomista.

Harod, R. (1948). *Towards a Dynamic Economics*. London: MacMillan.

Herrendorf, B., Rogerson, R., & Valentinyi, A. (2014). Growth and structural transformation. In Aghion, P., & Durlauf, S. (Eds.): *Handbook of economic growth*, vol. 2, pp. 855–941. Amsterdam & New York: North Holland.

https://www.ecb.europa.eu/stats/html/index.en.html.

International Monetary Fund, (2002). *Federal Republic of Yugoslavia - Selected Issues and Statistical Appendix,* Washington.

Kruger, J. J. (2008). Productivity and structural change: A review of the literature. *Journal of Economic Surveys*, No: 22 (2), page 330–363.

Kuznets, S. (1957). Quantitative Aspects of the Economic Growth of Nations. Chicago: The University of Chicago Press.

Kuznets, S. (1966). *Modern economic growth: Rate, structure, and spread.* New Haven, CT: Yale University Press.

Kuznets, S. (1973). Modern economic growth: Findings and refections. *American Economic Review*, No: 63 (3), page 247–258.

Laitner, J. (2000). Structural Change and Economic Growth. *The Review of Economic Studies* Vol. 67, No. 3.

Landesmann, M. (2000). *Structural Change in the Transition Economies, 1989 to 1999,* Wien: WIIW working paper.

Lewis, W. A., (1954) *Economic development with unlimited supplies of labour*, The Manchester School, 22 (2).

Marsenić, D. (2003). *Ekonomika Jugoslavije* (Economics of Yugoslavia). Beograd: Ekonomski fakultet.

McMillan, M. S., & Rodrik, D. (2011). Globalization, structural change and productivity growth. *NBER Working Papers Series*, No. 17143.

Nelson, R. R., & Phelps, E. S. (1966). Investment in humans, technological diffusion and economic growth, *American Economic Review*, LVI(2).

Ngai Rachel, L., & Pissarides, C. (2007) Structural change in a multi-sector model of growth. *American economic review*, 97 (1).

Republički zavod za statistiku, (2000, 2002, 2004, 2007, 2008) *Statistički godišnjak Srbije* (Statistical Yearbook of Serbia) Beograd.

Rosić, I., (2002) *Rast, strukturne promne i funkcionisanje privrede* (Growth, structural change and the functioning of the economy). Kragujevac: Ekonomski fakultet.

Savezni zavod za statistiku (1997-2000). *Statistički godišnjak Jugoslavije* (Statistical yearbook of Yugoslavia). Beograd.

Savezni zavod za statitiku, (1976, 1977, 1987, 1991) *Statistički godišnjak Jugoslavije* (Statistical yearbook of Yugoslavia). Beograd

Savić, LJ., (2009). Srpska industrijalizacija za dvadesetprvi vek (Serbian industrialization for the twenty-first century). Industrija broj 1, Beograd: Ekonomki Institut.

Simonović, Z., & Simonović, D. (2010). A review of agricultural policy of Serbia in the period of First Serbian Uprising to World War II (1804-1941). *Facta universitatis - series: Economics and Organization*, 7(4), 469-476.

Simonović, Z. (2014). *Upravljanje agrarom Srbije u tranziciji*. Institut za ekonomiku poljoprivrede, Beograd.

Stojanović, R. (1972). *Veliki ekonomski sistemi*, (Large economic systems). Beograd: Ekonomski fakultet.

Stojanović, R. (1977). *Optimalna strategija privrednog razvoja* (Optimal economic development strategy). Beograd: Savremena administracija i Institut za ekonomska istraživanja.

Svennilson, I. (1954). The Process of Economic Growth. in: Hagemann, H., Landesmann, M., Scazzieri, R., (eds.) *The Economics of Structural Change*, Volume III, Critical Writings, Edward Elgar, Aldershot.

ЕКОНОМИКА
ISSN 0350-137X, EISSN 2334-9190, UDK 338 (497,1)
Vol. 66, april-june 2020, № 2
P. 49-61

Marijana Joksimović[1]
College of Academic Studies "Dositej", Belgrade

Dušan Joksimović[2]
University of Criminal Investigation and Police Studies, Belgrade

Biljana Grujić Vučkovski[3]
Institute of Agricultural Economics, Belgrade

ORIGINAL SCIENTIFIC ARTICLE
doi: 10.5937/ekonomika2002049J
Received: March, 25. 2020.
Accepted: April, 24. 2020.

A TEST OF INTERNATIONAL FISHER EFFECT: RESEARCHING FROM SERBIA AND THE EUROPEAN UNION[4]

Abstract

The aim of this paper is to explore the International Fisher Effect (IFE) between Serbia and European Union (EU) in period between 2004 and 2015. The authors in this paper explore the IFE by applying regression analysis. They were used historical annual data for exchange rates, real interest rate and inflation, in this research. Like a home country and foreign country the authors were used each of these areas (Serbia and EU) like interchangeably and track the trail of the effect. Explore was based on the time series of observed annual data in period between 2004 and 2015. The authors were used the data of authorized central banks from databases: the World Bank, the National Bank of Serbia and the European Central Bank. Regression analysis was performed using a software package SPSS 20. The contribution of this paper is reflected in the obtained results.The results show that a 1% increase in the nominal interest rate differential, on average, lead to approximately a 0.3% offsetting change in the exchange rate in both cases (Serbia-home EU-foreign and EU-home Serbia-foreign).The coefficients of determination R^2 are very low, also in both cases. Only 3.3% of the annual changes in the RSD/EUR exchange rate and 4.2% of the annual changes in the EUR/RSD exchange rate can be explained by the nominal interest differentials. Therefore, about 96% of the annual changes in the exchange rates depend on other factors.

***Key words**: IFE (International Fisher Effect), Inflation, Interest Rates, Exchange Rates, Regression Analysis, Serbia and European Union.*

JEL classification: C00, E43

[1] joksimovicmarijana80@gmail.com; ORCID ID 0000-0002-5939-5137

[2] dusan.joksimovic@kpu.edu.rs; ORCID ID 0000-0001-7972-1991

[3] biljana_g@iep.bg.ac.rs; ORCID ID 0000-0003-2588-4888

[4] Paper was financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

ТЕСТ МЕЂУНАРОДНОГ ФИШЕРОВОГ ЕФЕКТА: ИСТРАЖИВАЊЕ ИЗ СРБИЈЕ И ЕВРОПСКЕ УНИЈЕ

Апстракт

Циљ овог рада је истраживање Међународног Фишеровог ефекта (IFE) између Србије и Европске уније у периоду 2004-2015 године. Аутори у овом раду IFE истражују регресионом анализом. Користили су се историјски подаци курса РДС и ЕУР, реалне каматне стопе и инфлације посматраних земаља. Свака од поменутих земаља (Србија и ЕУ) су се наизменично користилие као матична и страна земља. Истраживање се заснивало на временским серијама посматраних података од 2004. до 2015. године. Коришћени су подаци овлашћених централних банака из база: Светске банке, Народне банке Србије и Европске централне Банке. Регресиона анализа извршена је помоћу програмског пакета СПСС 20. Допринос овог рада се огледа у добијеним резултатима. Резултати показују да раст номиналне каматне стопе од 1%, у просеку, доводи до промене девизног курса за око 0,3% у оба случаја (Србија – ЕУ и ЕУ – Србија). Коефицијент детерминације Р2 је веома мали, такође у оба случаја. Само 3.3% годишње промене курса РСД/ЕУР и 4.2% годишње промене курса ЕУР/РСД може бити објашњено променом номиналне каматне стопе. Око 96% годишње промене курса зависи од других фактора.

Кључне речи: *IFE (Међународни Фишеров ефекат), инфлација, каматне стопе, девизни курсеви, регресиона анализа, Србија и ЕУ*

Introduction

Stable financial institutions are necessary for the country's economy to develop. Accordingly, banks play an extremely important role in this process because economic growth requires an efficient banking sector that would provide macroeconomic stability (Muhović, Subić, 2019). The authors (Ercegovac et al., 2019) state that the banking sector is the most significant segment of the financial system of any modern and developed economy. As such, it enables the entire economic system to function undisturbed, contributing to sustainable economic growth and development. Serbia is obliged to adjust its legal framework with other EU members (Grujić, Joksimović, 2019).

The International Fisher Effect (IFE) theory suggests that foreign currencies with relatively high nominal interest rates will tend to depreciate because higher nominal interest rates reflect expected rate of inflation (Korab, Svatopluk, 2013; Anokye, Ofori, 2017; El Khawaga et. al., 2013; Ucak et. al., 2014; Uyaebo et. al., 2016; He, 2018).

In this paper, regression results for empirical testing of IFE showed that nominal interest rate differentials had positive but no significant effect on changes in exchange rate between Serbia and EU. The authors have already applied regression analysis to their earlier research (Joksimovic et. al., 2018) and analyzed money markets (Kaludjerovic et. al., 2016).

The relationship between nominal interest rates and expected inflation is crucial in the global financial markets. The International Fisher Effect has suggested that nominal interest rates and expected inflation move together, as one follows the other (Shalishali, Maurice, 2012).

A regression analysis of IFE was applied to historical annual data for exchange rates, real interest rate and inflation for Serbia and EU, in period between 2004 and 2015. Like a home country and foreign country we used each of these areas like interchangeably and track the trail of the effect.

Depreciation of currency prices is directly related to differences in nominal interest rates. The IFE theory is a key link in the field of economics and finance that connects real interest rates, inflation, respectively nominal interest rates and exchange rates. This theory is a combination of two theories: the generalized version of the Fisher effect theory (GFE) and the relative version of the Purchasing Power Parity theory (PPP).

The generalized version of the Fisher effect theory states that if the real interest rate is equal between different countries, it follows that the differences in their observed nominal interest rates must arise from differences in expected inflation.

The relative version of the PPP theory implies that inflation differential will be offset by exchange rate changes.

In the short term, the IFE theory proved unreliable due to various short-term factors that directly affect exchange rates and predictions of nominal rates and inflation. On the other hand, the long-term international effects of IFE have proved to be better, but not much. Foreign exchange rate courses compensate for interest rate differences, but forecasting errors often arise when the goal is to try to predict the spot rate in the future. This is in line with Maduro's, (Madura, 2010) claim that the IFE theory does not indicate that the relationship will exist at any time, but periodic investments that try to capitalize at a higher interest rate would achieve a similar yield on average that they were simply made in the domestic market and periodically.

Previous research

The last years, many authors were explored IFE theory in between different areas.

Anokye and Ofori (2017) investigated the validity of the International Fisher Effect in the West African Monetary Zone (WAMZ). The conventional Engle-Granger and fractional cointegration tests were employed on nominal exchange differentials and exchange rates change of all the countries within the WAMZ except Liberia due to lack of data. They observed cointegrating relationship in fifteen out of the twenty country pairs; indicating evidence of common stochastic drift in nominal exchange differentials and exchange rates change.

Bayat et. al. (2018) investigated the relation between consumer price index and policy interest rate variables in Brazil, India, Indonesia, South Africa and Turkey in the context of Fisher hypothesis in the period between January 2000 and January 2016. In the initial finding of the empirical analysis, they find cross – sectional dependence between the countries.

Authors El Khawaga et. al. (2013) examined the validity of the International Fisher Effect (IFE) theory for the Egyptian economy. Two case studies are investigated: Egypt vs. USA and Egypt vs. Germany during the period 2003-2012. The empirical findings revealed partial significance of IFE in the case of Egyptian pound vs. US dollars, while no sign of IFE was detected in the case of Egyptian pound vs. Euro currency. The irrelevance of IFE could be attributed to the irrelevance of Purchasing Power Parity theory in Egypt. This is in addition to Egypt's limited financial integration with international financial markets.

Author He (2018) investigated the Fisher effect and the international Fisher effect between China and South Korea in the long and short run, respectively. The results exhibit whenever in the long or short run, the Fisher effect exists in China and South Korea. However, the Fisher effect in South Korea is more significant than that of in China. This result also certifies that the South Korea's marketization of the economy is higher than that of China's.

Korab and Svatopluk (2013) studied the behavior of inflation rate, short-term interest rate and nominal exchange rate after leaving fixed exchange rate arrangement and move to floating. They found that countries with rigid exchange rate policy, less frequently adjusted central parity and narrow exchange rate bands experienced sharp depreciation after leaving peg, but the depreciation was only temporary with no long trend. In this group of countries the exchange rate adjustment is weakly exogenous to inflation and interest rate differentials and the theory of International Fisher Effect was not mostly confirmed. On the contrary, countries with flexibly adjusted central parity and wider exchange rate bands did not experience rapid depreciation.

In the paper from authors Machobani et. al. (2017) the International Fisher Effect (IFE) were tested in the context of South Africa as an emerging economy. The results from the International Fisher Effect were predominantly insignificant, though there seems to be some moderate evidence in support of the International Fisher Effect for the case of the South Africa-EUR. The R-squares were found to be low, suggesting the exchange rate is instead explained by many other factors, not just the changes in nominal and real interest rates and the rate of inflation.

Nchor and Darkwah (2015) investigated the impact of exchange rate movement and the nominal interest rate on inflation in Ghana. They also looked at the presence of the Fisher Effect and the International Fisher Effect scenarios. Ordinary Least Squares regression methods were employed to determine the presence of the Fischer Effect and the International Fisher Effect. The results from the study show that in the short run a percentage point increase in the level of depreciation of the Ghana cedi leads to an increase in the rate of inflation by 0.20%. A percentage point increase in the level of nominal interest rates however results in a decrease in inflation by 0.98%. Inflation increases by 1.33% for every percentage point increase in the nominal interest rate in the long run. An increase in inflation on the other hand increases the nominal interest rate by 0.51% which demonstrates the partial Fisher effect. A 1% increase in the interest rate diff erential leads to a depreciation of the Ghana cedi by approximately 1% which indicates the full International Fisher effect.

In the paper (Shalishali, 2012), in a statistical test of the IFE, a regression analysis was applied to historical exchange rates and interest differentials data for eight selected Asian countries namely: China, India, Japan, South Korea, Malaysia, Thailand, Vietnam, and Indonesia. Each of these countries was used interchangeably as the home country, and foreign country so as to investigate the direction of the parity. The results are mixed. While the theory holds for some countries, it does not hold for others. The theory holds when some countries were used as home country but was refuted when they were used as foreign countries. This suggests that there may be some impediments to foreign trade that may affect exchange rate adjustment apart from interest and inflation rates differentials.

Ucak et. al. (2014) investigated the Fisher effect in four EU member states: Czech Republic, Hungary, Poland and Slovak Republic. They applied the new bootstrap

method. The result of this study shows that Fisher effect for selected EU member states are more than one. This value might be explained by the agreement regarding taxation of the interest income.

Uyaebo et all. (2016) tested the validity of the Fisher hypothesis in Nigeria during the period 1970 – 2014. The Gregory and Hansen Co-integration test confirmed the existence of a long-run relationship between nominal interest rates and inflation, albeit with a structural break in October 2005. The obtained Fisher coefficient in the cointegrating relation was 0.08, implying a weak form of Fisher effect in the long-run. On the basis of these findings, they upheld a weak Fisher effect in the long-run and non-existence of Fisher effect in the short-run. This implied that short term nominal interest rate is a good characterization of monetary policy stance. Also, the obtained partial Fisher effect indicated that changes in monetary policy are capable of altering the long term real interest rate and influencing economic growth through the interest rate channel.

The main purpose of study Varamini et. al. (2017) is to examine if the International Fisher Effect holds between Mexico and the United States for the period from Q1: 2005 through Q3: 2016. The results of this study indicate a significant relationship between the interest rate differentials and the changes in the currency value between the two countries. The regression model suggest that the independent variable, change in interest rate differential, has a correlation to change in exchange rates over the period observed. Even though the result of this study provides some support in favor of the International Fisher effect, the low value of the R-squared would suggest there are other left-out variables that have an effect on change in exchange rates between the two countries. These variables could be inflation, confidence in the currencies, expectations, currency risk, transaction costs, current account on balance of payments and economic growth, among others. Despite the existence of such factors that could positively and negatively affect the changes in exchange rate between the United States and Mexico, the change in interest rate differential must be included as an important determinant of the currency value.

Methodology and data collection

Like we said IFE is a combination of two theories: the generalized version of the Fisher effect theory (GFE) and the relative version of the Purchasing Power Parity theory (PPP).

The Fisher effect theory states that the nominal interest rate (r_n) in a country is determined by the real interest rate (r_r) and by expected inflation rate $(E(i))$ as follows:

$$1 + r_n = (1 + r_r)(1 + E(i)) \qquad (1).$$

So, if we analyze two countries, home (index *h*) and foreign (index *f*) country, we have

$$1 + r_{n,h} = (1 + r_{r,h})(1 + E(i)_h) \qquad (2)$$

$$1 + r_{n,f} = (1 + r_{r,f})(1 + E(i)_f) \qquad (3).$$

Divided equation (2) by (3), assume that $r_{r,h} = r_{r,f}$, we obtained the generalized version of the Fisher effect theory (GFE):

$$\frac{1 + r_{n,h}}{1 + r_{n,f}} = \frac{1 + E(i)_h}{1 + E(i)_f} \qquad (4).$$

The GFE theory states that if the real interest rate is equal between different countries, it follows that the differences in their observed nominal interest rates must arise from differences in expected inflation.

The PPP theory states that the exchange rate between any two countries (in our case between home and foreign country) will adjust to reflect changes in the price levels of the same two countries, as follows:

$$\frac{S_{t+1} - S_t}{S_t} = \frac{i_{t,h} - i_{t,f}}{1 + i_{t,f}} \qquad (5)$$

where

S_{t+1} is the home currency value of one unit of foreign currency at time *t+1*,

S_t is the home value of one unit of foreign currency at time *t*,

$i_{t,h}$ is the inflation rate in the home country at time *t*,

$i_{t,f}$ is the inflation rate in the foreign country at time *t*.

By combining equations (4) and (5), and taking into account that expected inflation rate at time *t* is inflation rate at time *t*, ($E(i)_t = i_t$), we obtained IFE relation:

$$\frac{S_{t+1} - S_t}{S_t} = \frac{r_{n,h,t} - r_{n,f,t}}{1 + r_{n,f,t}} \qquad (6)$$

where

S_{t+1} is the home currency value of one unit of foreign currency at time *t+1*,

S_t is the home currency value of one unit of foreign currency at time *t*,

$r_{n,h,t}$ is the nominal interest rate in the home country at time *t*,

$r_{n,f,t}$ is the nominal interest rate in the foreign country at time *t*.

IFE relation shows the dependence changes of exchange rate the home currency value of one unit of foreign currency on the nominal interest rate in the home and foreign country.

If $r_{n,h,t} - r_{n,f,t} > 0$ then $S_{t+1} - S_t > 0$ and we expect an appreciation of the foreign currency.

If $r_{n,h,t} - r_{n,f,t} < 0$ then $S_{t+1} - S_t < 0$ and we expect a deprecation of the foreign currency.

A test IFE by applying linear regression analysis takes the following form:

$$\frac{S_{t+1} - S_t}{S_t} = \alpha + \beta \cdot \left(\frac{r_{n,h,t} - r_{n,f,t}}{1 + r_{n,f,t}} \right) + \varepsilon_{t+1} \qquad (7)$$

where ε_{t+1} is error term.

If value $\alpha = 0$ and $\beta = 1$ are in the 95% confidence interval for obtained value for α i β from linear regression analysis, then that linear regression analysis is not disprove influence IFE between analysed countries.

We were tested IFE by applying linear regression analysis between Serbia and EU, in period between 2004 and 2015 (for currency value between 2004 and 2016). Like a home country and foreign country we used each of these areas like interchangeably. Test was performed using a software package SPSS20.

We used historical annual data for currency value, real interest rate and inflation for Serbia and EU, in period between 2004 and 2015 (for currency value between 2004 and 2016). Values for nominal interest rate r_n, we obtained from equation (1), with approximation $r_r \cdot E(i) \cong 0$, as follows:

$$1 + r_n = (1 + r_r)\big(1 + E(i)\big) = 1 + r_r + E(i) + r_r \cdot E(i) \cong 1 + r_r + E(i) \Longrightarrow$$

$$r_n = r_r + E(i).$$

Taking into account that expected inflation rate at time t is inflation rate at time t, ($E(i)_t = i_t$), we obtained that at time t nominal interest rate $r_{n,t}$ is equal:

$$r_{n,t} = r_{r,t} + i_t \qquad (8).$$

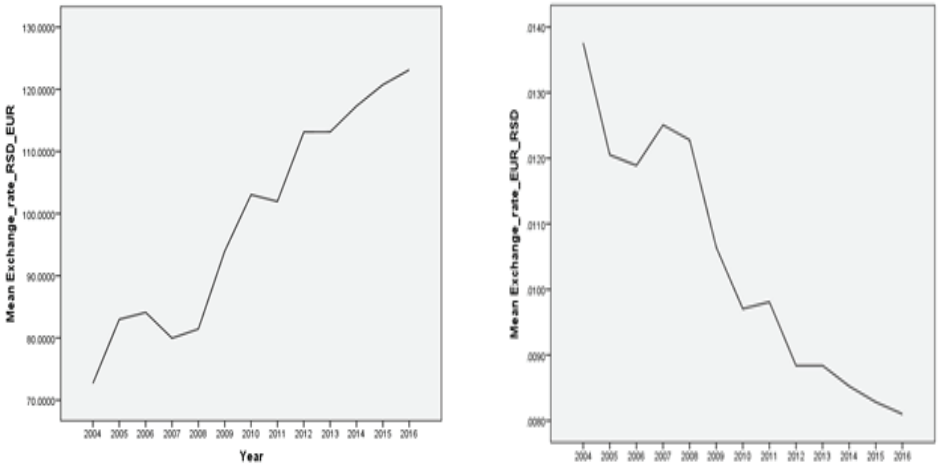
Tabular and graphical views of the historical annual data used are below.

Table 1: Used historical data

Year	Curr. value RSD/ EUR	Curr. value EUR/RSD	The real int. rate, Serbia (%)	The inflation Serbia (%)	The nom. int. rate Serbia (%)	The real int. rate EU (%)	The inflation EU (%)	The nom. int. rate EU(%)
2004	72.6937	.0138	-5.1640	11.0260	5.8620	3.0000	2.1000	5.1000
2005	82.9904	.0120	-10.3990	16.1200	5.7210	3.1000	2.2000	5.3000
2006	84.1101	.0119	-6.4440	11.7240	5.2800	4.0000	2.0000	6.0000
2007	79.9640	.0125	-3.9640	6.3920	2.4280	4.7500	2.5000	7.2500
2008	81.4405	.0123	-2.7990	12.4110	9.6120	4.0000	2.8500	6.8500
2009	93.9517	.0106	-.9430	8.1170	7.1740	2.2000	.5000	2.7000
2010	103.0431	.0097	.8100	6.1430	6.9530	1.7500	1.5000	3.2500
2011	101.9502	.0098	2.5870	11.3370	13.9240	2.0000	2.6500	4.6500
2012	113.1277	.0088	3.5630	7.3300	10.8930	1.6000	2.4500	4.0500
2013	113.1369	.0088	3.9540	7.6940	11.6480	1.1000	1.5000	2.6000
2014	117.3060	.0085	4.2030	2.0820	6.2850	.5000	.3000	.8000
2015	120.7328	.0083	3.1300	1.3920	4.5220	.3000	.1000	.4000
2016	123.1179	.0081	-	-	-	-	-	-

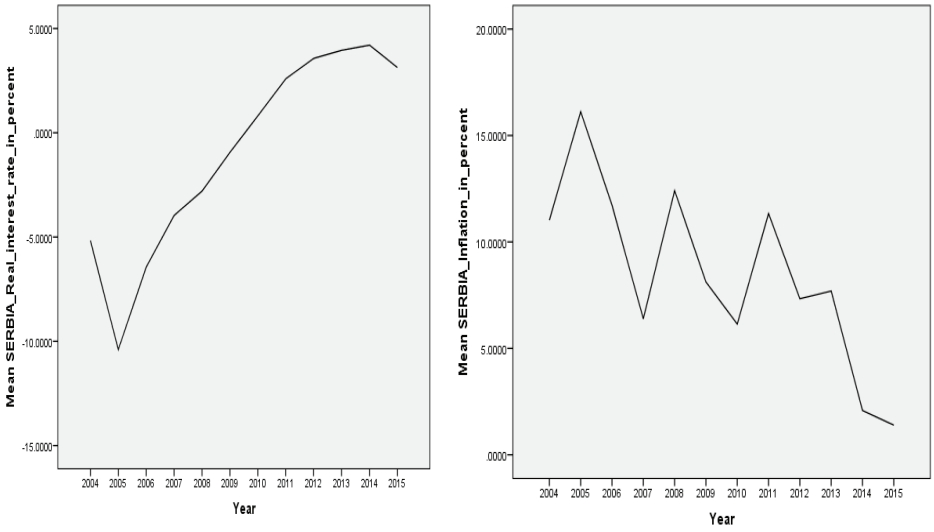
Source: The European Central Bank, The National Bank of Serbia and The World Bank

Figure 1 (left): The home currency value of one unit of foreign currency Serbia-home, EU-foreign; Figure 2 (right): The home currency value of one unit of foreign currency EU-home, Serbia-foreign



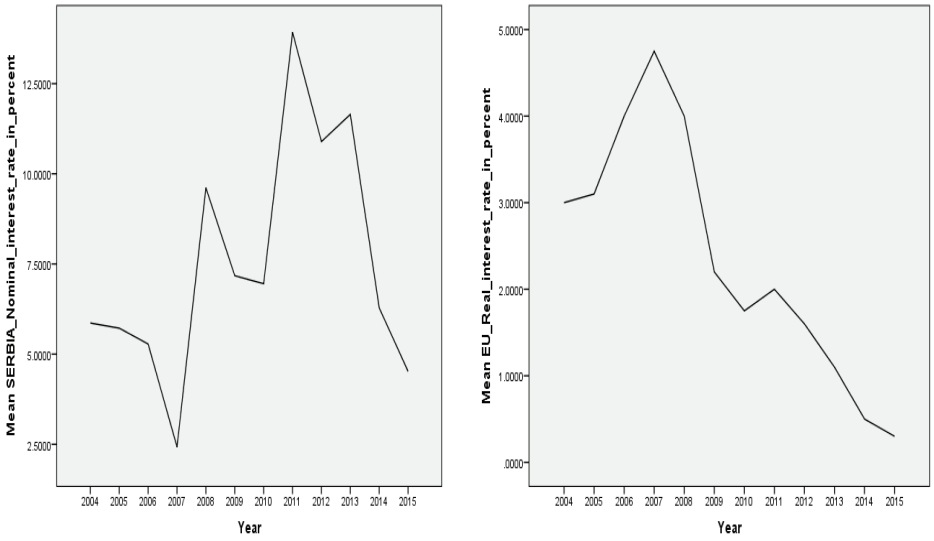
Source: National Bank of Serbia (NBS)

Figure 3 (left): The real interest rate Serbia; Figure 4 (right): The inflation Serbia



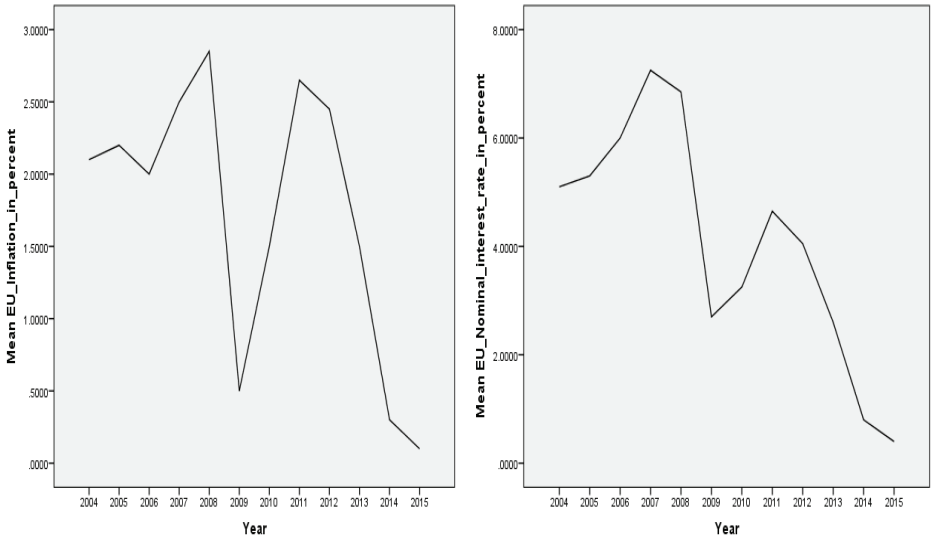
Source: The World Bank Group

Figure 5 (left): The nominal interest rate Serbia; Figure 6(right): The real interest rate EU



Source (left): Author calculation; Source (right): The European Central Bank

Figure 7 (left): The inflation EU; Figure 8 (right): The nominal interest rate EU



Source (left): The European Central Bank; Source (right): Author calculation

Results and discussion

Like we said, linear regression of IFE analysis takes form (7):

$$\frac{S_{t+1}-S_t}{S_t} = \alpha + \beta \cdot \left(\frac{r_{n,h,t} - r_{n,f,t}}{1 + r_{n,f,t}}\right) + \varepsilon_{t+1}$$

where ε_{t+1} is error term.

Testing the parameters of IFE using this regression model is in fact testing the alternative hypothesis H_1,

$$H_1: \alpha \neq 0\,;\ \beta \neq 1$$

against the null hypothesis H_0,

$$H_0: \alpha = 0\,;\ \beta = 1.$$

The alternative hypothesis H_1 will be accepted if the hypothetical values of α and β, $(\alpha = 0\,;\ \beta = 1)$, lie outside their respective acceptance regions. In that case we can say that there is no effect of IFE between the observed areas.

The alternative hypothesis H_1 cannot be accepted if the hypothetical values of α and β, $(\alpha = 0\,;\ \beta = 1)$, lie within their respective acceptance regions. In that case we cannot say that there is no effect of IFE between the observed areas.

The results of the regression analyzes are given in the following Table 2.

Table 2: IFE regression analysis output

Model		Value	95% Confidence Interval	*t* value	*p* value	R^2	Durbin-Watson
Serbia-home EU-foreign	Constant α	0.037	(-0.02-0.093)	1.451	0.177	0.033	1.772
	Coefficient β	0.292	(-0.829-1.412)	0.580	0.575		
EU-home Serbia-foreign	Constant α	-0.032	(-0.082-0.018)	-1.433	0.182	0.042	1.800
	Coefficient β	0.313	(-0.735-1.360)	0.665	0.521		

Source: Author calculation

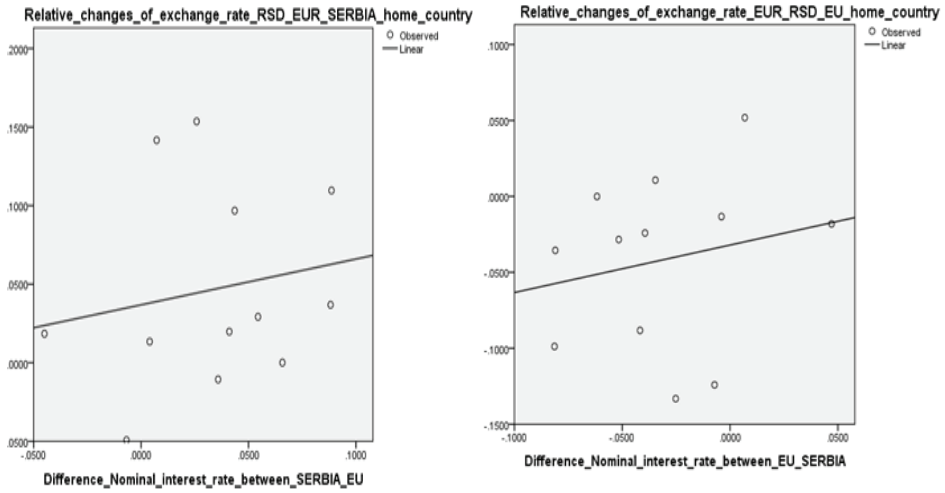
The results obtained in both cases (Serbia-home EU-foreign and EU home Serbia foreign) show:

-the values of $\alpha = 0$ and $\beta = 1$ are within 95% confidence interval, so, we cannot say that there is no effect of IFE between Serbia and EU, with the significance level of 5%, respectively H_0 cannot be rejected in both cases;

- a 1% increase in the nominal interest rate differential, on average, lead to approximately a 0.3% offsetting change in the exchange rate in both cases;

- the coefficients of determination R^2 are very low, namely only 3.3% of the annual changes in the RSD/EUR exchange rate and 4.2% of the annual changes in the EUR/RSD exchange rate can be explained by the nominal interest differentials. Graphs of regression analyzes are given below (Figure 9., and Figure 10.).

Figure 9 (left): Relative changes of exchange rate RSD/EUR Serbia-home, EU-foreign;
Figure 10 (right): Relative changes of exchange rate EUR/RSD
EU-home, Serbia-foreign



Source: Author calculation

Conclusion

In this paper we explored International Fisher Effect (IFE) by applying regression analysis between Serbia and European Union. We used historical annual data for exchange rates, real interest rate and inflation for Serbia and EU, in period between 2004 and 2015, and we tested IFE using regression analysis.

Like a home country and foreign country we used each of these countries like interchangeably and track the trail of the effect. Explore was based on the time series of observed data by 2004 to 2015. We used the data from National bank of Serbia, World Bank and European Central Bank.

Our contribution is reflected in the fact that so far there has been no analysis of the Fisher effect in the observed period between Serbia and the EU. Also, our contribution is the results obtained.

Namely, the results show that a 1% increase in the nominal interest rate differential, on average, lead to approximately a 0.3% offsetting change in the exchange rate in both cases (Serbia-home EU-foreign and EU-home Serbia-foreign).

The coefficients of determination R^2 are very low in both cases. Only 3.3% of the annual changes in the RSD/EUR exchange rate and 4.2% of the annual changes in the EUR/RSD exchange rate can be explained by the nominal interest differentials. *Therefore, about 96% of the annual changes in the exchange rates depend on other factors*.

References

Anokye M. A., & Ofori, D. (2017). Validity of International Fisher Effect in the West African Monetary Zone. Journal of Economic Cooperation & Development, 38(3), (pp. 121-143).

Bayat, T., Kayhan, S., & Taşar, İ. (2018). Re-Visiting Fisher Effect for Fragile Five Economies. Journal of Central Banking Theory and Practice, 7(2), (pp. 203-218).

El Khawaga, A., Esam, M., & Hammam, R. (2013). Exchange Rates and Interest Rates: An Empirical Investigation of International Fisher Effect Theory-The Case of Egypt (2003-2012). International Research Journal of Finance and Economics, 117(2013), (pp. 139-160).

Ercegovac, D., V. Begović, S., & Jovin, S. (2019): The analysis of the key indicators of the Republic of Serbia banking sector, Vol. 55, No. 41/2019, Journal Annals of the Faculty of Economics in Subotica, pp. 81-94.

European Central Bank, 2019, Retreived August 26, 2019, from https://www.ecb.europa.eu/stats/policy_and_exchange_rates/euro_reference_exchange_rates/html/index.en.html

Grujić, B., & Joksimović, M. (2019). Cooperation of the National Bank of Serbia (NBS) with International Funds and European countries. Chapter 3 in the Book: *Serbia: Current Political, Economic and Social Issues and Challenges,* Nova Science Publishers, New York, (pp. 43-61).

He, Y. (2018). A Study on the International Fisher Effect: An Investigation from South Korea and China. (IJIDB), 9(7), (pp. 33-42).

Joksimović, M., Grujić, B., & Joksimović, D. (2018). Correlation and Regression Analysis of The Impact of Leasing on Agricultural Production in Republic of Serbia, Economics of Agriculture 65.2, (pp. 583-600).

Kaludjerovic, N., Stanojevic, S., & Ljubic, M. (2016). Hidden Losses in Financial Reporting and the Manner of Hiding Case Serbia - Part Two. International review (Faculty of Business Economics and Entrepreneurship), No. 1/2, (pp. 125-141).

Korab, P., & Svatopluk, K. (2013). International fisher effect under exchange rate regime shifts: Evidence from 10 examples, Society and Economy 35(4), (pp. 451-469).

Madura, J. (2010). International Financial Management, 10th Edition, South-Western, College Publishing.

Machobani, D., Boako, G., & Alagidede, P. (2017). Uncovered Interest Parity, Purchasing Power Parity and the Fisher effect: Evidence from South Africa. Frontiers in Finance and Economics, 14(2), (pp. 88-134).

Muhović, A., & Subić, J. (2019). Analysis and impact of main macro and microeconomic factors on the growth of NPL-S in the emerging financial markets. Journal Ekonomika, No. 4, Society of Economists "Ekonomika", Nis, (pp. 21-30).

Nchor, D., & Darkwah, S. A. (2015). Inflation, exchange rates and interest rates in Ghana: An autoregressive distributed lag model. Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, 63(3), (pp. 969-977).

National Bank of Serbia, 2018, Average exchange rates of the RSD against the world's leading currencies, Retreived August 25, 2019, from http://www.nbs.rs/internet/english/scripts/kl_prosecni.html

Shalishali, Maurice K. (2012). A test of the international fisher effect in selected Asian countries. International Journal of Humanities and Social Science, 2(4), (pp. 86-92).

The World Bank, 2019, Retrieved August 20, 2019, from https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?locations=RS&view=chart

Ucak, H., Ozturk, I., & Aslan, A. (2014). An Examination of Fisher Effect for Selected New EU Member States. International Journal of Economics and Financial Issues, 4(4), (pp. 956-959).

Uyaebo, S. O., Bello, Y. A., Omotosho, B. S., Karu, S., Stephen, S. A., Ogbuka, R. O., ... & Mimiko, O. D. (2016). Testing the Fisher hypothesis in the presence of structural breaks and adaptive inflationary expectations: Evidence from Nigeria. CBN Journal of Applied Statistics, 7(1), (pp. 333-358).

Varamini, H., Clough, J., & McCall, M. (2017). An Empirical Investigation of the International Fisher Effect: Mexican Peso and United States Dollar. International Journal of Economics and Financial Research, 3(7), (pp. 110-113).

ЕКОНОМИКА
ISSN 0350-137X, EISSN 2334-9190, UDK 338 (497,1)
Vol. 66, april-june 2020, № 2
P. 63-74

Marija Marčetić[1]
Slađana Mušikić[2]
Belgrade Business Academy for Applied studies

Željko Dević[3]
Higher Economic School of Professional Studies Peć, Leposavić

SCIENTIFIC REVIEW ARTICLE
doi: 10.5937/ekonomika2002063M
Received: December, 21. 2019.
Accepted: February, 14. 2020.

THE CAUSALITY OF ENTREPRENEURIAL MOTIVATION AMONG THE YOUNG AND THE OBSERVED AMBIENT OBSTACLES

Abstract

The identification of opportunities in the environment and, after that, the creation of ideas have the main role in starting an entrepreneurial process. The research field of this paper includes the subjective experience of ambient opportunities for the development of an entrepreneurial initiative by the young people who have become familiar with the importance of entrepreneurship through secondary and higher education in Serbia. In this paper, the authors pose the question whether the perception of ambient conditions, i.e. the observed ratio of opportunities and obstacles, will have an impact on the development of entrepreneurial motivation amongst young people. From their perception of the business environment and the aggravating circumstances they encounter, the motivation for inclusion in the entrepreneurial process either is born or disappears. If young people's perception implies that limiting factors are more dominant than stimulating ones are, the motivation for entering the entrepreneurial zone will be low, and vice versa. The data obtained through a survey were processed by applying descriptive statistics. The results obtained can serve to alleviate bottlenecks in young people's entrepreneurial education and knowledge of information, and in a potential more rigorous approach to the barriers that young people are faced with as well.

Keywords: *entrepreneurship, motivation, the young, obstacles*

JEL classification: *J60, J62, A2, M2*

КАУЗАЛИТЕТ ПРЕДУЗЕТНИЧКЕ МОТИВАЦИЈЕ КОД МЛАДИХ И УОЧЕНИХ АМБИЈЕНТАЛНИХ ПРЕПРЕКА

Апстракт

Главну улогу у покретању предузетничког процеса има препознавање прилика у окружењу и након тога креирање идеја. Истраживачко поље овог рада обухвата субјективни доживљај амбијенталних прилика за развој предузетничке иницијативе од стране младих људи који су упознати са значајем предузетништва кроз средње и високо образовање у Србији. Аутори у овом раду постављају питање да ли ће перцепција амбијенталних услова,

[1] neimar.marija@gmail.com, ORCID ID 0000-0001-8499-7116

[2] sladjana.musikic@vpskp.edu.rs, ORCID ID 0000-0001-8251-423x

[3] zeljkodv@gmail.com, ORCID ID 0000-0001-8989-0094

тј. уочени рацио прилика и препрека има утицаја за на развој предузетничке и мотивације код младих. Из њихове перцепције пословног окружења и отежавајућих околности са којима се сусрећу рађа се или нестаје мотивација за укључење у предузетнички процес. Уколико је перцепција младих да су ограничавајући фактори доминантнији од стимулишућих, мотивација за улаз у предузетничку зону ће бити ниска и обратно. Подаци добијени анкетом су обрађени дескриптивном статистиком. Добијени резултати могу служити за ублажавање уских грла у предузетничкој едукацији и информисаности младих као и у евентуалном ригорознијем приступу баријерама са којима се млади суочавају.

Кључне речи: *предузетништво, мотивација, млади, препреке*

Introduction

Understanding entrepreneurship as a process can by no means be complete and relevant unless the motivational aspect of these activities is explained (Ventakatamaran et al. 2012). Motivation is influenced by factors from the environment and the psychological underlying concept of an individual. According to many studies, the psychological characteristic of the individuals included in the entrepreneurial process primarily determines the success of such an undertaking (Baumol, 1990; Locke, 1996; Stewart & Roth, 2001). In spite of this focus on the entrepreneur's psychological characteristics, the external environment seems to slowly start prevailing as the basis for understanding business startups (Taomina, Mei Lao Sammi, 2007). Undoubtedly, the national economy, with its characteristic ambient conditions, generates entrepreneurial conditions, and simultaneously entrepreneurial undertakings. Different levels of the development of a country exert a different influence on the entrepreneurial initiative. So, the environment models entrepreneurial behavior and represents the basic and initial impulse of entrepreneurial behavior (Levi & Autio, 2008). Other studies highlight a different order of matters – as a psychological characteristic, motivation encourages the entrepreneur to take the initial step, while impulses from the environment influence the entrepreneur's potential in a later phase (Kirkwood, 2009).

A higher level of direct support to young entrepreneurs will have an influence on a larger cope of the entrepreneurial process. National economic conditions have an influence on the creation of business opportunities for entrepreneurs, whereas direct support (capital availability, state subsidies, etc.) affect the strengthening of the exploitation of the same (Davidsson, 1989). General national conditions imply the factors impacting the business activities in a general sense, and they may be as follows: institutions, the infrastructure, macroeconomic stability, elementary and higher education, the market efficiency and size, the availability of technologies. Special conditions include the government policy through programs and funding, the openness of the market (Levi &Autio, 2008), and so on. The subjective perception of ambient conditions include the dynamism of the economy, the consumer structure and competition (Pelham & Wilson, 1995).

So, a favorable environment influences the strengthening of the motivation of a potential entrepreneur towards success and starting a business, and motivation appears through the ability of perceiving opportunities (a favorable stimulus from the

environment) and through the applied wish to take advantage of such an opportunity. That causality is the subject matter of the research conducted in this paper. The cause-and-effect relationship between the perception of ambient opportunities of the undergraduate students of the economic orientation and their motivation for entering the entrepreneurial zone is sought. The paper is divided into two parts. In the first part, institutional barriers to entrepreneurship among the young in Serbia are presented. In the second part, the answers received from the students regarding their perception of the barriers, as well as their motivation, are analyzed. Those answers are compared by the method of descriptive statistics.

With a bad legacy, the business environment for the business doing of young people in Serbia requires a detailed systematic approach to the creation and stimulation of the dynamic development of entrepreneurship since entrepreneurship exerts an influence on designing new organizations (Erić-Nielsen, J. et al. 2019). Serbia did not continue to participate in the Global Monitoring of Entrepreneurship (it stopped participating in 2009), which is conducted by the consortium of universities from about 65 countries, with the aim of analyzing the countries' entrepreneurial activities annually. For that reason, we are unable to monitor the degree of the development of entrepreneurship, make comparisons, appraise entrepreneurs' motivation (Petrović & Leković, 2019). This paper should make one part of that gap complete.

Observed Obstacles to Entrepreneurship Amongst the Young in Serbia

Certain obstacles that young entrepreneurs are faced with are much bigger, more pronounced and more intensive for them than they are for adults. First, the burdening bureaucracy and the unstable regulatory framework, i.e. the laws and bylaws supporting the development of entrepreneurship, are susceptible to frequent changes. Young, potential entrepreneurs have no time and no money to interpret numerous legal changes, which on its part creates the first obstacle of uncertainty in the business environment for young people. The legal framework is very important because of young entrepreneurs being very easily "pushed" from the market. Young people have no picture of solvent business entities, become indebted due to bad debts, and judicial proceedings are long-lasting and expensive. Businesses are often dissolved too early (Leković & Barber, 2012).

Second, the problem of financing young entrepreneurs and a lack of information about available funding programs unfavorably influence the business efficiency of the young. Own assets are still the basic source of financing. Own assets are a source accounting for 85% of the total funding of firms in Serbia; 8% originate from banks, whereas 68% of firms do not use the sources of external financing at all (Bobić, 2017). The banking sector does not find young people at the beginning of their business doing attractive because their business is risky and unstable. The majority of young entrepreneurs see a lack of financial assets as the biggest obstacle that makes them unconfident about starting their business.

Third, there is the problem of a lack of appropriate, timely information regarding business doing, lying in entrepreneurs' insufficient entrepreneurial culture, philosophy and skill to obtain the needed information. The institutions of the state must, on their part, provide the needed capacities and motivation for conveying necessary knowledge

to young entrepreneurs. There are a large number of regulations on the establishment and starting a small business (156 laws and over 250 bylaws), which are difficult to interpret and, later, monitor. It is difficult for young entrepreneurs to observe the advantages and threats posed to them out of the procedure for establishment.

Fourth, there are training programs for starting a small business, but, on the other hand, there are no programs for further running of the business. There is a lack of programs for the development of business doing skills, the development of an idea, finding business clients, product development. For example, the National Employment Service (NES) organizes training courses for the procedure for the registration of small firms, writing a business plan, but all of it is at a theoretical level, deprived of practical examples, conversations with successful entrepreneurs from a local community and environment. The examples evident in international studies lack an analysis of the influence of some of the examples of the development of young people's entrepreneurship on small business in Serbia. How to adapt the examples of the development of young people's entrepreneurship to the conditions of business doing, culture in our country, and how to implement and monitor the effects of a program and support after the first phase of starting a small business, too, is a very important question requiring a systematic, coordinated institutional approach to solving.

Fifth, Serbia pays little attention to the mentor's work that is important to the business doing of the young. Mentorship is short-term, intended for concrete cases, without later support in the development of the started business. The Development Agency of Serbia (DAS) and the National Employment Service (NES) deal with mentorship in Serbia. Both institutions conduct the programs that are short-term, time-limited irrespective of the obtained results of the conducted program, inflexible, not adapted to the needs of the program users. No good coordination of the institutions implementing support to young entrepreneurs and training courses in self-employment at the local level has been established. Thus, the effect of joint action and helping is missing. In the beginning, it is difficult for young people to observe the advantages and disadvantages of the establishment of a small firm, and they receive information about that from their families and friends. Quality mentorship is necessary in this phase, and the mentor will be interested in monitoring the further development of a young entrepreneur and give support.

Research Goals, Tasks, and Hypotheses

Young people's entrepreneurship is a dominant factor in a potential decrease in unemployment. Young people need to perceive entrepreneurship as a chance of employment, a career opportunity. The way young people treat entrepreneurship is also important as an indication of the potential of this sector for a potential growth. An insight into their understanding of, first of all, the notion of entrepreneurship, then the perception of the environment and existent limitations, may be a good information base. The results obtained may serve to mitigate bottlenecks in entrepreneurial education and young people's being informed, and in a potential more rigorous approach to the barriers that young people are faced with as well. Their motivation for inclusion in the entrepreneurial process is either born or disappears from their perception of the business environment and the aggravating circumstances they come across. Should young people perceive that the limiting factors are more dominant than stimulating ones, their motivation for entering the entrepreneurial zone will be low, and vice versa. Simultaneously, it is also

the hypothesis we start from in our research. In the research, we start from the basic hypothesis that there is no significant connectedness between the perception of the conditions for entrepreneurship in the country and the motivation for their inclusion in the entrepreneurial process. Out of the basic hypothesis set in this way, several individual hypotheses arise. The indirect indicator used is the sex and the education level; so, the difference in the answers received from the respondents according to the sex and the school they attend (a secondary school or a university) was considered.

Based on the defined goal and subject matter of the research, the following research tasks were singled out:

- determine whether young people have some idea for engaging in private business;
- if they do, determine their motives for starting a business;
- determine the respondents' assessment of the conditions for the development of entrepreneurship in Serbia;
- determine the respondents' assessment of the obstacles to starting a business;
- determine whether the respondents have the intention to start their own business or not.

Research Method, Techniques, and Instruments

In order to check the starting hypotheses in this research study, the descriptive-analytical method was used to describe, value and interpret the collected data (Bakovljev, 1997), and within it – the ANOVA method and the procedure called the $\chi 2$ test, used in the majority of cases if qualitative data are concerned. The basic research data can be measurement values, but only their frequencies are entered into the $\chi 2$ test. This is a very practical test which may serve once we want to determine whether some obtained (perceived) frequencies deviate from the frequencies that would be expected under a certain hypothesis or not. The research was done by applying the surveying technique, which was implemented through the instrument of a survey questionnaire. The data obtained were processed both qualitatively and quantitatively, whereas the results are shown textually and tabularly.

Research Sample and Organization

The conducted survey included a total of 333 respondents, of whom 63.7% accounted for the students of the Business **Belgrade Business Academy for Applied studies**, and 121 (i.e. 36.3%) were the pupils of the Vocational Secondary School for Economics and Trade. The respondents' age ranged from 16 (1.8%) to 25 years of age (0.9%). The largest number of the respondents were 18 years old (20.7%), only to be followed by those 20 years old (18.0%) and 21 years old 16.8%). The survey was conducted on the territory of Jagodina, Dimitrovgrad, Blace and Stara Pazova. The examination was finished in October 2018. The respondents had enough time to answer the questions posed. The questions were of the closed-ended type. The surveying was anonymous and the same was performed via a paper questionnaire. Although the sample has certain elements of a stratified quota sample, it was basically suitable (Kulić, 1998). The respondents had enough time to answer the questions posed. The questions were of

the closed-ended type. The surveying was anonymous and it was performed via a paper questionnaire. The defined questions the respondents answered are as follows:

1. Have you got an idea for engaging in your own business?
2. What are your motives for engaging in your own business?
3. Are there conditions for business in Serbia?
4. In your opinion, are there obstacles to engaging in entrepreneurship in Serbia?
5. Are you seriously thinking of starting your own business?

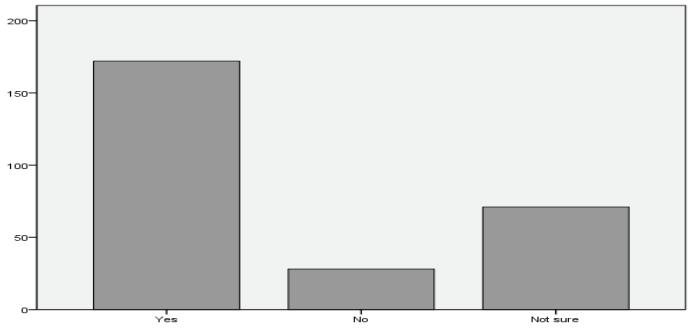
The first four questions had a possibility of being attributed an amphibolous answer ("yes" or "no"), whereas the question about the conditions for engaging in entrepreneurship is of a Likert type.

Results of the Statistical Analysis

a) *Have you got an idea for engaging in your own business?*

The completion of secondary school or university education is a step towards entering the labor market. How ready the young respondents are to integrate into the business environment can be seen through their answers to the question whether they have an idea for starting their own business or not.

Figure 1: Have you got an idea for engaging in your own business?



Source: Author

The figure reflecting whether the young have an idea for starting a new business or not is dominant. As many as 63.9% of the respondents answered positively. The least percentage, namely 10.11% of them, had no idea for starting a new business. It was further considered whether there was a significant difference between the respondents of the male and the female sexes, and those having secondary school and university education, with respect to their having an idea for engaging in business.

Given the fact that the value of the statistics of the test is p=0.98, i.e. greater than 0.05, no statistically significant difference was found with respect to the idea for starting own business according to the education level by the method of the $\chi 2$ test. It is possible to conclude that the respondents' years of age are not an obstacle to creativity and the wish to succeed independently. The difference in the sexes with respect to this question has a greater and significant influence, $\chi 2\ (1,n=333) = 0.00$, $p<0.05$.

b) How familiar are you with the stimulating measures of the Republic of Serbia?

Table 1. The respondents' familiarity with the active measures of the RoS

Familiar with stimulating measures in the RoS	Number	%	Cumulative %
Not familiar at all	80	29.6	29.6
Partly familiar	172	63.7	93.3
Familiar	18	6.7	
Σ	270	100.0	100.0

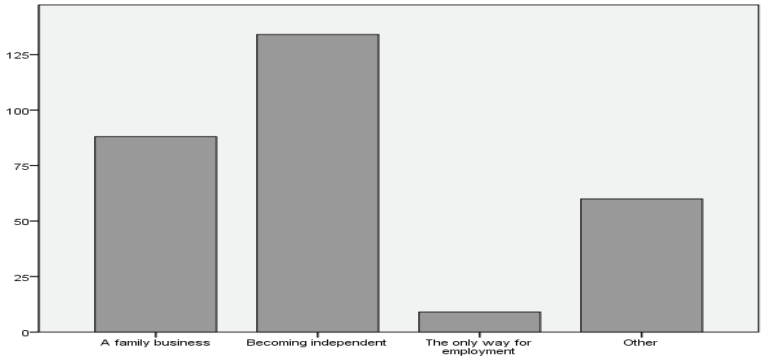
Source: Author

The answers show that only 6.7% of the respondents are familiar with the stimulating measures for young people, and as many as 63.7% are partly familiar. The data showing that a larger number of the respondents are not familiar at all with stimulating measures for young people is concerning. Here, the statistics indicate a shortcoming of our educational system when the question about entrepreneurial learning is concerned.

Similar results were obtained when respondents answered the question whether they had participated in Youth Entrepreneurship projects, which were implemented in order to develop an entrepreneurial culture. The results are as follows. Out of 269 responses, 32 (11.9%) participated in one of the projects. Even 61.3 did not participate in the project even though it was informed, while 26.8% had never heard of the project.

c) *What are your motives for engaging in your own business?*

Figure 2: The motives of students for engaging in their own business



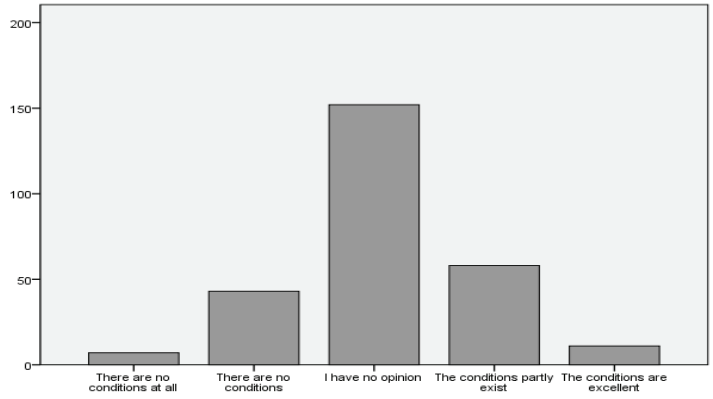
Source: Author

Figure 2 allows us to notice that employment is the last reason that would bestir the young respondents to engage themselves in small business. The method of the $\chi 2$ test was used to examine whether there was a difference in the reasons for engaging in one's own business in relation to education, given the fact that $p=0.038$, but with a weak intensity of the connection (0.18). The sex is not the significant factor that makes differences in the answers to the question of the reason for the respondents' engagement in private business. Other studies also have similar results: the finding suggest that both men and women are motivated in a similar way by a combination of the "push" and "pull" factors (Hasni che Ismail. 2011).

d) *Are there conditions for engaging in entrepreneurship in Serbia?*

This question was meant to make the respondents recognize the business environment in which they live and where they will work. Entrepreneurship in schools has the aim to make the attendees familiar with the options offered with respect to employment, the recognition of a favorable climate for the development of business, creativity and innovativeness in finding one's way in the given circumstances, so that the respondents can be considered as capable of reliably answering the posed question.

Figure 3: Are there conditions for engaging in entrepreneurship in Serbia?



Source: Author

The respondents included in this survey, i.e. 55.8% of them, answered that they had no opinion about the existence of the conditions for business in Serbia. A total of 21.6% of the respondents answered that the conditions partly existed, whereas 16% answered that there were no conditions for starting a small business. Such a result with a high percentage of the respondents who provided the answer that they had no opinion about the conditions for engaging in business in the country already shows a certain indifference in the young towards impulses from the environment. The second reason for such results can be sought in a lack of applied entrepreneurial education. The further analysis examined whether there was a difference in the respondents' opinions on the existence of the conditions for the development of private business classified according to the sex and the education level. No statistically significant difference was found. Although the analysis of the monofactorial variance shows that there is no significant difference at the statistical level in the frequencies of these answers, the range in the answer is tendentious with possible significant differences on a bigger sample.

e) *In your opinion, are there obstacles to engaging in entrepreneurship in Serbia?*

The previous question is connected with the question of the obstacles to engaging in entrepreneurship in Serbia. The results are shown in the table below. A total of 55.3% considered that there were obstacles to small business, whereas 18.9% considered that there were no obstacles. The answers given by young men and women were identical, without bigger oscillations.

Table 2. In your opinion, are there obstacles to engaging in entrepreneurship in Serbia?

	Total number	%	Cumulative %
Yes	73	55.3	55.3
Ne	25	18.9	74.2
I am not sure	34	25.8	
Σ	132	100.0	100.0

Source: Author

No significant difference was determined by applying the $\chi 2$ test in the perception of obstacles to engaging in entrepreneurship between the sexes ($p=0.77$). The perception of both sexes with respect to the obstacles to engaging in private business is identical.

Table 3. In your opinion, are there any less barriers to entrepreneurship abroad?

	Total number	%	Cumulative %
Yes	204	62,0	62,0
No	63	19,1	81,2
I am not sure	62	18,8	
Σ	329	100,0	100,0

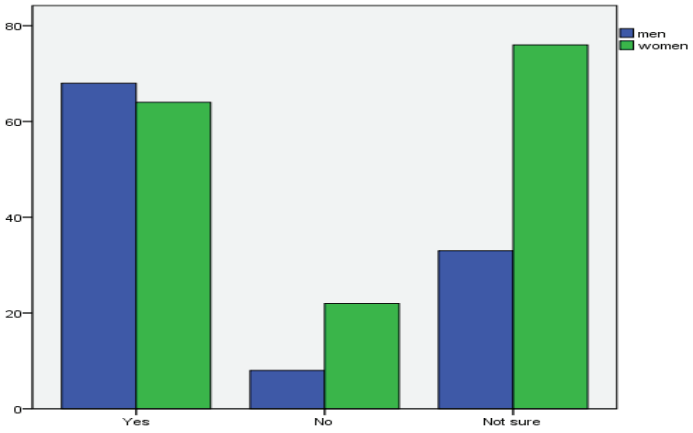
Source:Author

The majority of respondents (62%) rated the conditions for the development of entrepreneurship abroad more favorable than in Serbia. When asked which country offers the best conditions for a business career, 35% of young respondents answered that it was Germany, then Switzerland - 9.6%, America - 9.3%, Scandinavian countries (Sweden - 6.9% and Norway (5.7%), Austria - 2.7%. Germany is a country that has developed support programs for new entrepreneurial ideas, business incubators, favorable loans for young entrepreneurs, free business premises to use for small businesses. Our support and assistance could benefit from and adapt some of these youth assistance programs.

f) Are you seriously thinking of starting your own business?

Young women are readier than young men to start their own business, according to the data obtained in Figure 4 (47% of women against 30% of unconfident men). The $\chi 2$ test method confirms the finding that there is a difference between the sexes when their respective decisiveness to start their own business is concerned. The value obtained is $p=0.01$, but accompanied by low correlation, i.e. a weak intensity of the connection between the two variables (0.2) according to Cramer's Indicator V (Cramer's V). The result as this one can be attributed to by the psychological underlying concept in young women who are not prone to risk.

Figure 4. Are you seriously thinking of starting your own business?



Source: Author

The method of the monofactorial analysis of a variance was used to examine whether there is a significant difference in the answers given by the respondents to the question "Are you seriously thinking of starting your own business" and the assessment of the conditions for the development of business in Serbia. No significant difference between the mean variables was found, i.e. the variances show that there is no significant difference at the statistical level in the frequencies of these answers. There are no sufficient pieces of evidence on our statistical sample that the conditions for business doing, the perception of ambient obstacles by the young respondents, had an influence on decisiveness to start a private business.

Conclusion

A high percentage of the respondents in this survey, i.e. 56% of them, answered that they had no opinion about the existence of the conditions for business in Serbia; only 6.7% of the respondents are familiar with the stimulating measures for young entrepreneurs; only 11.9% participated in Youth Entrepreneurship projects. This outcome can lead towards a conclusion of the indifference in the young towards the influences from the environment or the weakness of applied entrepreneurial education. The method of the monofactorial analysis of a variance was used to examine whether there was a significant difference in the respondents' answers or not to the question "Are you thinking of starting your own business?" and the assessments of the "conditions for the development of business in Serbia." No significant difference between the mean variables was found. We cannot prove that perception of ambient obstacles by the young respondents, had an influence on decisiveness to start a private business. We assume that abovementioned indifference in the young towards the influences from the environment influenced the ultimate outcome.

The obtained result also confirms the data that the young are intensively thinking of their business in spite of the obstacles they perceive. Namely, as many as 63.9% of the respondents positively answered the question whether they had an idea for starting a business or not. In the answers to this question, there is a difference between the sexes,

and it has a significant influence, p= 0.00, so p<0.05. The result like this can be attributed to by the psychological underlying concept of young women not prone to risk.

References

Bakovljev, M. (1997). *Osnovi metodologije pedagoških istraživanja,* Beograd: Naučna knjiga

Baumol, W. (1990). Entrepreneurship: Productive, Unproductive and Destructive, *Journal of Political Economics*, No. 98, p.893

Bobić, D. (2017). Mapiranje prepreka za preduzetništvo mladih, CEVES, *Centar za visoke ekonomske studije*, Beograd

Hasni che Ismail.che (2011). An Exploratory Study of Motivational Factors on Women Entrepreneurship Venturing in Malaysia. *Business and Economic Research*. 2. 10.5296/ber.v2i1.1434

Davidsson, P. (1989). Continued entrepreneurship and small firm growth. *Stockholm School of Economics*, The Economic Research Institute

Erić-Nielsen,J et al. (2019). The challenges of managing the entrepreneurial organization, *Ekonomika*, vol. 65, iss. 2, pp. 87-98

Gavrić, G., Simonović, Z., & Lazović, K. (2015). Knowledge as a factor of survival and competitiveness in modern business. *Anali Ekonomskog fakulteta u Subotici*, (33), pp. 389-400.

Jovičić A., Đokić A.,Denić N., (2019) Ekonomsko-ekološki aspekti održivog razvoja preduzeća. Ecologica, Vol. 26, No 93, pp 26-30.

Kirkwood, J. (2009). Motivational factors in a push-pull theory of entrepreneurship. *Gender in Management: An International Journal*, Vol. 24 Issue: 5, pp.346-364, https://doi.org/10.1108/17542410910968805

Kulić, R. (1998). *Sadržaj rada i obrazovanje*, Andragoška biblioteka, Zavod za udžbenike i nastavna sredstva, Beograd

Lekovic, B., Berber, N., (2012). Barrier to entrepreneurship in Autonomous Province of Vojvodina: Research from aspects of age and gender. *Employment Education and Entrepreneurship,* pp. 267-286

Leković, B. (2015). *Kauzalitet preduzetničkog ponašanja, faktora uspešnosti preduzetničkog poduhvata i ambijentalnih uslova.* (doktorska disertacija), Ekonomski fakultet u Subotici, Univerzitet u Novom Sadu

Levie, J., Autio, E. (2008). A theoretical grounding and test of the Gem model. *Small Business Economics*, Vol. 31 (3), pp. 235-263

Locke, E. (1996). Motivation through conscious goal setting. *Applied & Preventive Psychology*, No. 5, pp.117-124

Pelham, A. M., Wilson, D. T. (1995), A longitudinal study of the impact of market structure, firm structure, strategy, and market orientation culture on dimensions of smallfirm performance. *Journal of the academy of marketing science*, vol. 24(1), pp. 27-43

Petrović, M., Leković, B. (2019). Characteristics of ambitious entrepreneurs in Southeast Europe region: High-growth expectation concept. *Anali Ekonomskog fakulteta u Subotici,* iss. 41, pp. 55-66

Stewart, W. H., Roth, P. L. (2001). Risk propensity differences between entrepreneurs and managers: A meta-analytic review. *Journal of Applied Psychology*, 86(1), pp.145153

Taomina J.Kin & Hyphen., Mei Lao Sammi. (2007). Measuring Chinese entrepreneurial motivation: Personality and environmental influences. *International Journal of Entrepreneurial Behaviour & Research*, Vol. 13, Issue 4, pp. 200-221

Venkataraman, S., Sarasvathy, D. S., Dew, N., Foster, W. R., (2012). Reflections on the 2010 AMR decade award: whither the promise? Moving forward with entrepreneurship as a science of the artificial. *Academy of Management Review,* 37(1), pp.21-33, doi:10.5465/amr.2011.0079.

ЕКОНОМИКА
ISSN 0350-137X, EISSN 2334-9190, UDK 338 (497,1)
Vol. 66, april-june 2020, № 2
P. 75-91

Snežana Milićević[1]
Milena Podovac[2]
Nataša Đorđević[3]
University of Kragujevac, Faculty of Hotel Management and Tourism in Vrnjačka Banja

SCIENTIFIC REVIEW ARTICLE
doi: 10.5937/ekonomika2002075M
Received: February, 22. 2019.
Accepted: April, 11. 2020.

LOCAL RESIDENTS' ATTITUDES TOWARDS TOURISM EVENTS: A CASE STUDY OF THE CARNIVAL OF VRNJCI, SERBIA[4]

Abstract

Elements of the tourism destination offer such as manifestations contributing to economic prosperity and creating a positive image of the destination may create pressure on the natural and cultural resources of the destination. Since active support of the local residents is crucial for the future planning and development of tourism, it is necessary to evaluate the tourism events by considering their impact on the quality of life of the local residents. This paper analyzes the residents` attitudes towards the event that has been taking place in Vrnjačka Banja for 14 years - the Carnival of Vrnjci. The applied method is a survey, which was conducted on a sample of 300 local residents. Research shows that the Carnival of Vrnjci has a positive impact on the quality of life of the local residents. In addition, the results indicate that there is no statistically significant difference between the attitudes of residents of different socio-demographic characteristics about the effects of Carnival of Vrnjci on their quality of life.

Key words: *local residents' attitudes, tourism events, impacts of tourism, Carnival of Vrnjci, Vrnjačka Banja.*

JEL classification: *L83, Z30, Z32*

СТАВОВИ ЛОКАЛНОГ СТАНОВНИШТВА О ТУРИСТИЧКИМ МАНИФЕСТАЦИЈАМА: СТУДИЈА СЛУЧАЈА ВРЊАЧКИ КАРНЕВАЛ

Апстракт

Елементи туристичке понуде дестинације као што су манифестације поред тога што могу допринети економском просперитету, стварању позитивног

[1] snezana.milicevic@kg.ac.rs, ORCID ID. 0000-0002-1972-9585

[2] milena.podovac@kg.ac.rs, ORCID ID. 0000-0002-0709-2927

[3] natasa.djordjevic@kg.ac.rs, ORCID ID. 0000-0002-3630-6867

[4] Project no. III 46006 - Sustainable agriculture and rural development in the function of accomplishing strategic objectives of the Republic of Serbia in the Danube region, financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia. Project period: 2011-2019.

имица дестинације, могу креирати и притисак на природне и културне ресурсе дестинације. Како за будуће планирање и развој туризма кључни значај има активна подршка локалне заједнице, потребно је вршити евалуацију манифестација сагледавањем њиховог утицаја на квалитет живота локалне заједнице. У раду су анализирани ставови локалног становништва о манифестацији која се већ 14 година одржава у врњачкој бањи – међународни врњачки карневал. Примењена је метода анкетног истраживања на узорку од 300 испитаника. Истраживање показује да манифестација врњачки карневал има позитиван утицај на квалитет живота локалне заједнице. У наставку, резултати истраживања показују да не постоји стастистички значајна разлика између ставова локалног становништва различитих социо-демографских карактеристика о утицајима врњачког карневала на квалитет њиховог живота.

Кључне речи: *ставови локалног становништва, туристичке манифестације, утицаји туризма, врњачки карневал, врњачка бања.*

Introduction

At the global level, tourism is an industry that is growing fast and has a significant economic contribution, because it generates exports of $ 1.7 trillion, 1 in 10 jobs are supported by tourism and it accounts for 10% of global GDP (UNWTO, 2019). Tourism can be observed as one of the most important elements in achieving economic growth and development, especially in certain regions and countries that have recognized their potentials in this area in time (Papić et al., 2018). At the end of the last century it became clear that tourism has a significant impact on employment growth, foreign exchange earnings, balanced regional development and it indirectly generates benefits for other economic activities (Milićević, Podovac & Jovanović, 2013). Although economic effects are the important and great signifier of industry success with the development of a new concept of tourism – sustainable tourism, it becomes necessary to observe and measure not only economic effects, but also ecological and socio-cultural effects of tourism. Sustainable tourism development is imperative that arises in modern conditions (Krstić et al., 2015). Tourism contributes to meeting different cultures, lifestyles, and consequently better understanding of different people (Podovac et al., 2019).

In addition, Yang, Ryan and Shang (2013) suggest that researchers need to begin to focus on the further reaching and more localized social impacts of tourism development. Generally, all impacts of tourism are reviewed from a positive or negative perspective (Usher & Kerstetter, 2014). Tourism events are part of the tourist offer that tourism destination can directly engage in and control and are hence highly valued for their role "as attractions, catalysts, animators, place marketers, and image-makers" (Getz, 2008). Nevertheless, tourism events could add much pressure to a local infrastructure and resources for a short period of time, which could have a long-lasting effect on the host community (Li, Hsu & Lawton, 2015).

The purpose of this paper is to examine what are the residents' attitudes towards the positive and negative impacts of tourism events,on the example of the Carnival of Vrnjci in Vrnjačka Banja. Due to its exceptional natural resources, rich cultural and

historical heritage, long tradition in tourism, Vrnjačka Banja is nowadays one of the most popular spas in the region (Podovac & Milićević, 2013), while in recent years it has complemented its tourism offer with events. One of the largest is the Carnival of Vrnjci, an entertaining seven-day event organized in July each year, which has over 200,000 visitors annually (Carnival of Vrnjci, 2019). This paper presents the results of an empirical study of the attitudes residents of Vrnjačka Banja municipality towards the positive and negative impacts of the Carnival of Vrnjci on the quality of their lives. Using the appropriate statistical techniques T-test and one-way analysis of variance (one-way ANOVA) the influence of the residents' socio-demographic characteristics on their attitudes towards the positive and negative impacts of the Carnival of Vrnjci was examined. The aim of the empirical research is to determine which of the socio-demographic characteristics of the local residents (gender, age, education, professional status, a distance of residents' homes from the central tourist zone of a destination, length of residence) influence attitudes towards the Carnival of Vrnjci. In addition, in order to get a better insight into local residents`attitudes, the aim of the empirical research is to examine the level of agreement with the findings related to the positive and negative impacts of the Carnival of Vrnjci on the quality of their lives. According to the aims of this paper, the following main hypotheses and sub-hypotheses are defined:

- H1: The local residents of Vrnjačka Banja express more positive attitudes towards Vrnjci Carnival than the negative ones.
- H2: There is a statistically significant difference between attitudes of the local residents of different socio-demographic characteristics about the effects of Vrnjci Carnival on the quality of their lives.
    - H2a: There is a statistically significant difference in the attitudes of the local residents of different gender on the positive effects of Vrnjci Carnival on the quality of their life.
    - H2b: There is a statistically significant difference in the attitudes of the local residents of different gender on the negative effects of Vrnjci Carnival on the quality of their life.
    - H2c: There is a statistically significant difference in the attitudes of local residents of different levels of education on the positive effects of Vrnjci Carnival on the quality of their life.
    - H2d: There is a statistically significant difference in the attitudes of local residents of different levels of education on the negative effects of Vrnjci Carnival on the quality of their life.
    - H2e: There is a statistically significant difference in the attitudes of the local residents of different ages on the positive effects of Vrnjci Carnival on the quality of their life.
    - H2f: There is a statistically significant difference in the attitudes of the local residents of different ages on the negative effects of Vrnjci Carnival on the quality of their life.
    - H2g: There is a statistically significant difference in the attitudes of the local residents of different professional status on the positive effects of Vrnjci Carnival on the quality of their life.
    - H2h: There is a statistically significant difference in the attitudes of the local residents of different professional status on the negative effects of

Vrnjci Carnival on the quality of their life.

- H2i: There is a statistically significant difference in the attitudes of the local residents about the positive effects of Vrnjci Carnival on the quality of their lives depending on the length of residence in Vrnjačka Banja.
- H2j: There is a statistically significant difference in the attitudes of the local residents about the negative effects of Vrnjci Carnival on the quality of their lives depending on the length of residence in Vrnjačka Banja.
- H2k: There is a statistically significant difference in the attitudes of the local residents about the positive effects of Vrnjci Carnival on the quality of their lives depending on the place of residence in Vrnjačka Banja relative to the central tourist zone of the destination.
- H2l: There is a statistically significant difference in the attitudes of the local residents about the negative effects of Vrnjci Carnival on the quality of their lives depending on the place of residence in Vrnjačka Banja relative to the central tourist zone of the destination.

Theoretical background

Many authors investigated the impact of tourism development on the residents' quality of life (Choi & Sirakaya, 2005; Uysal, Woo & Singal, 2012), and the relationship between residents' attitudes of the role of tourism and quality of life (Andereck & Nyupane, 2011; Kim, Uysal & Sirgy, 2013). As previously mentioned, tourism may have positive and negative influence on the residents' quality of life, which can ultimately influence the residents' attitudes toward tourism (Andereck & Nyupane, 2011). Depending on the nature of the impact, residents' support can change - positive impact induces residents to provide support for tourism development, whereas negative impact may cause residents not to provide support. Residents' support of tourism in their community is essential for tourism development, competitiveness, and sustainability (Woo, Uysal & Sirgy, 2018).

The literature contains many factors that have been shown to influence residents' attitudes toward tourism development (Sirakaya, Teye & Sönmez, 2002). These factors include: personal economic reliance on tourism (Woo, Uysal & Sirgy, 2018), degree of tourism concentration (Pizam 1978), level of contact with tourists (Huh & Vogt, 2008; Sharpley, 2014), distance of residents' home from the central tourist zone of a destination (Williams & Lawson, 2001; Jurowski & Gursoy, 2004), length of residency in the community (Allen, Long, Perdue & Kieselbach, 1988), the age of residents (Cavus & Tanrisevdi, 2002; Harrill, 2004), educational level of residents (Haralambopoulos & Pizam, 1996), level of knowledge about tourism and the local economy (Williams & Lawson, 2001), environmental impacts (Brida, Riaño & Aguirre, 2011), influence on tourism planning decisions, importance of the industry to the community, etc.

Numerous authors investigated the relationship between residents' attitudes of the socio-cultural impacts of tourism development, especially the role of gender, age and education level on these relationships (Andriotis & Vaughan, 2003; Andereck & Nyupane, 2011; Jaafar, Rasoolimanesh & Ismail, 2017). Haralambopoulos and Pizam (1996) in their study found that the more educated residents have more positive attitudes toward tourism, while the studyby Ko and Stewart (2002) demonstrated that highly

educated people tended to be more worried about the impacts of tourism. In terms of age of residents, Cavus and Tanrisevdi (2002) found in their study that the older residents have more negative attitudes toward tourism development in destination. Contrary to these findings, Tomljenović and Faulkner (2000) found that older residents displayed more positive attitudes toward the tourism and were more tolerant of tourists than younger residents, as well as Nunkoo and Ramkissoon (2007) who noted that younger residents have more negative attitudes towards tourism than older residents do. Regarding gender, according Harrill and Potts (2003), female residents have more negative attitudes toward negative tourism impacts; especially towards increase traffic congestion and noise, as well as to crime increase (Mason & Cheyne, 2000). Other factors known to moderate attitudes of tourism impacts include distance of residents' home from the central tourist zone and tourist to resident ratio. According to Diedrich and Garcia-Buades (2008), when the number of tourists exceeds the number of residents, levels of tolerance can be challenged. Williams and Lawson (2001) noted that those residents living close to tourist attractions have more negative attitudes towards tourism. However, Belisle and Hoy (1980) found that the further away residents are from tourism centres, the less supportive they are of tourism development.

In terms of residents' level of involvement in tourism, some studies have shown that the residents are not satisfied, because they cannot contribute in any decision-making processes (Andereck, Valentine, Knopf & Vogt, 2005), i.e. they could be more involved in the decision-making process about tourism development (Zamani-Farahani & Musa, 2008). Regarding the length of residency in the destination, Williams and Lawson (2001) found that the longer the resident is a part of the community the more she/he can see the differences and impacts of tourism.

Various researchers have sought to identify the impacts of tourism events and festivals, and to explain how they influence the economic, environmental and socio-cultural development of host communities (Williams & Lawson, 2001; Andriotis & Vaughan, 2003; Getz, 2008; Chen, 2011). Benefits that the festivals can bring to the community include job and investment opportunities, improved public facilities, preservation of local culture, and the creation of local pride, while negative impacts of the festivals can include crowding, traffic congestion, degradation of the environment, and higher costs, rates and taxes (Van Niekerk & Coetzee, 2011).

Research methodology

In order to examine the residents' attitudes towards positive and negative impacts of the Carnival of Vrnjci on the quality of their lives, the questionnaire was formed. The survey was conducted from 1st-31stAugust 2019 by sending a questionnaire to the e-mail addresses of potential respondents. Before completing the questionnaire, the respondents had to answer the question whether they live in the territory of Vrnjačka Banja municipality. In this way, it was established with certainty that only the people, who live in the territory of this municipality and belong to the target group of respondents, were surveyed. The questionnaire was sent to 361 e-mail addresses of which 300 respondents (83.1%) stated that they live in the territory of Vrnjačka Banja. If the respondent answered that he does not live in the territory of Vrnjačka Banja municipality, the link of the questionnaire was not available for completion.

The questionnaire is divided into two segments. The first part of the questionnaire includes questions related to the basic socio-demographic characteristics of the residents (gender, age, education and professional status). Considering the subject of the survey, this part of the questionnaire also includes questions about the distance of residents' homes from the central tourist zone of a destination and length of their residence in Vrnjačka Banja municipality. Within the second part of the questionnaire, 18 statements were formed about impacts of the Carnival of Vrnjci on the residents' quality of life, with 9 constants referring to the positive and equally negative impacts of this event on the residents` quality of life. Offered statements are related to the economic, ecological and socio-cultural impacts of the Carnival of Vrnjci on the residents` quality of life of Vrnjačka Banja. Residents provided answers using a five-point Likert scale (1 = Strongly disagree, 5 = Strongly agree). These statements were defined on the basis of an analysis of existing literature with a similar subject of research (Williams & Lawson, 2001; Andriotis & Vaughan, 2003; Bello, Carr, Lovelock, & Xu, 2017; Blešić, Pivac, Besermenji, Ivkov-Džigurski & Košić, 2014; Blešić, Pivac, Đorđević, Stamenković & Janićević, 2014; Tepavčević, Blešić, Bradić & Ivkov, 2019).

Results of the research and discussion

In the study of residents` attitudes about the impact of the Carnival of Vrnjci on the quality of their life and the degree of their satisfaction with this event, 300 residents participated, of which 189 are female (63.0%) and 111 are male (37.0%). Residents aged 20-30 years have the highest participation in the sample (121 residents, or 40.3%). When it comes to the level of education, the largest number of residents belongs to the category of residents that have a bachelor`s degree (101 residents, or 33.7%). Most of the residents are employed (211 residents, or 70.3%). Of the total number of residents, the majority stated that they live near the centre of Vrnjačka Banja (156 residents, or 52.0%). Concerning the length of residence in Vrnjačka Banja, 84 residents, or 28.0%, stated that they have been living in the territory of this municipality between 20 and 30 years (Table 1).

Table 1: Socio-demographic characteristics of residents (n=300)

		n	%	M	SD
Gender	Male	111	37.0	1.63	.484
	Female	189	63.0		
Age	20-30	121	40.3	2.01	1.079
	31-40	98	32.7		
	41-50	49	16.3		
	51-60	22	7.3		
	> 60	10	3.3		
Level of education	High school graduate	98	32.7	2.44	1.182
	Vocational degree	39	13.0		
	Bachelor's degree	101	33.7		
	Master degree	56	18.7		
	Doctoral degree	6	2.0		

Professional status	Unemployed	37	12.3	2.14	.806
	Employed	211	70.3		
	Student	42	14.0		
	Retired	10	3.3		
Part of Vrnjačka Banja municipality in which residents live	In the centre	50	16.7	2.31	.932
	Near the centre	156	52.0		
	On the outskirts of the municipality	46	15.3		
	In the surrounding village	48	16.0		
How long have the residentsbeen living in Vrnjačka Banja municipality	up to 5 years	38	12.7	3.93	1.568
	5-10	21	7.0		
	10-20	36	12.0		
	20-30	84	28.0		
	30-40	70	23.3		
	> 40 years	51	17.0		

Table 2. shows the results of descriptive statistics and the Cronbach alpha coefficient, which verifies the reliability of the measurement scale.

Table 2: Descriptive statistics and Cronbach's alpha coefficient for positive impacts of Carnival of Vrnjci on the residents' quality of life

Possitive impacts	M	SD	α
PI1: The Carnival of Vrnjci contributes positively to the tourism offer of Vrnjačka Banja	3.52	1.189	.906
PI2: Local residents are proud on the Carnival of Vrnjci because it contributes to creating a sense of togetherness among the local community	3.45	1.235	.909
PI3:The Carnival of Vrnjci influences on the creation of a positive image of the Vrnjačka Banja	3.83	1.219	.906
PI4: Local residents have equal opportunities to attend to the Carnival of Vrnjci as tourists/visitors	4.19	1.036	.918
PI5: The Carnival of Vrnjci creates opportunities for entertainment, social interaction and meeting new people	4.01	1.017	.910
PI6: The Carnival of Vrnjci creates opportunities to present talented people from the local community (musicians, players, artists)	3.83	1.143	.913
PI7: The Carnival of Vrnjci provide generation of additional income for the local residents	4.02	1.106	.910
PI8: The majority of local residents have the economic benefits from the Carnival of Vrnjci	3.46	1.327	.913
PI9: The location at which the Carnival of Vrnjci is held is adequate	3.81	1.199	.915

Note: PI-Positive impact

The residents used a five-point Likert scale to evaluate the degree of agreement with the positive impacts of the Carnival of Vrnjci on the quality of their lives. The average values for positive impacts range from 3.46 to 4.02, while the overall mean rating of positive impacts is 3.79, which indicates that the residents express the high level of agreement with the offered statements. With the Cronbach alpha coefficient, the reliability of the measuring scale was confirmed because the value of this coefficient for each of the offered statements is greater than 0.7 (Pallant, 2009, p.7). For the analyzed statements, the value of this coefficient ranges from .906 to .918 (Table 2).

Table 3: Descriptive statistics and Cronbach's alpha coefficient for negative impacts of the Carnival of Vrnjci on the residents' quality of life

Negative impacts	M	SD	α
NI1: The local residents are irritated by a large number of tourists/ visitors of the Carnival of Vrnjci	2.85	1.338	.870
NI2: During the Carnival of Vrnjci, there are traffic jams and lack of parking places in Vrnjačka Banja	4.22	.988	.875
NI3: During the Carnival of Vrnjci, the noise level throughout the destination is significantly increased	3.74	1.275	.863
NI4: During the Carnival of Vrnjci, there are crowds throughout Vrnjačka Banja (on the streets, promenade, parks, shops, restaurants, cafes)	4.21	.980	.876
NI5: During the Carnival of Vrnjci, the natural resources of Vrnjačka Banjaare endangered and a large amount of waste is created.	3.45	1.280	.864
NI6: During the Carnival of Vrnjci, the cultural and historical heritage of Vrnjačka Banja is degraded and destroyed	2.72	1.238	.863
NI7: The value system and behaviour of the local residents' changes negative under the influence of Carnival of Vrnjci	2.78	1.195	.862
NI8: Due to the Carnival of Vrnjci prices of products and services in Vrnjačka Banja increase, which is reflected in an increase in the residents `cost of living	3.64	1.263	.875
NI9: The Carnival of Vrnjci causes the increase of illegal and immoral behaviour in Vrnjačka Banja	2.76	1.320	.861

Note:NI-Negative impact

Table 3. shows the results of descriptive statistics and the Cronbach's alpha coefficient for the statements, which refer to the negative impacts of the Carnival of Vrnjci on the residents` quality of life. Average values for negative impacts range from 2.72 to 4.22, while the overall mean rating of negative impacts is 3.37. The reliability of the measuring scale for each of the offered statements was tested by the Cronbach's alpha coefficient, which values range from .861 to .876. Hypothesis H1 is confirmed by the results of descriptive statistical analysis of the residents answers. Considering that the overall mean rating of positive impacts (M=3.79) is higher than the overall rating of negative impacts of the Carnival of Vrnjci on the residents' quality of life (M = 3.37), hypothesis H1 is confirmed. As the most positive influence based on the mean scores of the local residents stands out *Local residents have equal opportunities to attend to the Carnival of Vrnjci as tourists/visitors (*M=4.19), while as the most negative influence stands out *During the Carnival of Vrnjci, there are traffic jams and lack of parking places in Vrnjačka Banja* (M=4.22).

Results of t-test of independent samples and discussion

The aim of hypothesis H2 is to determine which of the socio-demographic characteristics of the local residents (gender, age, education, professional status, a distance of residents' homes from the central tourist zone of a destination, length of residence) influence attitudes towards the Carnival of Vrnjci. An independent sample t-test was

applied to examine the existence of a statistically significant difference in the attitudes of the residents of different gender about the positive and negative effects of the Carnival of Vrnjci on the quality of their lives. Hypothesis H2 was operationalized into a few sub-hypotheses (H2a-H2l). Using the t-test of independent samples, the hypothesis H2a was tested for the existence of statistically significant difference in attitudes of the local residents of different gender about the positive effects of Vrnjci Carnival on the quality of their lives. Out of the total of 9 statements related to the positive effects of Carnival of Vrnjci on the quality of life of the residents of Vrnjačka Banja, a statistically significant difference between the attitudes of the residents exists for 4 statements: *The Carnival of Vrnjci contributes positively to the tourism offer of Vrnjačka Banja* (p=0.041); *The Carnival of Vrnjci influences on the creation of a positive image of the Vrnjačka Banja* (p=0.004); *The Carnival of Vrnjci creates opportunities for entertainment, social interaction and meeting new people* (p=0.018) and *The majority of local residents have the economic benefits from the Carnival of Vrnjci* (p=0.008) (Table 4). Female respondents rated higher the positive impacts, with a statistically significant difference compared to male respondents. Given that a statistically significant difference was observed in 4 of the 9 statements concerning positive effects, hypothesis H2a was rejected.

Table 4: Results of the t-test for positive impacts, for which a statistically significant difference in the attitudes of residents of different gender was found

Positive impacts	Residents	Mean	Levene's Test for Equality of Variances		t-test for Equality of Means	
			F	Sig.	t	p
PI1	Male	3.33	.089	.766	-2.057	.041
	Female	3.62				
PI3	Male	3.57	.494	.483	-2.893	.004
	Female	3.98				
PI5	Male	3.83	.015	.903	-2.384	.018
	Female	4.12				
PI7	Male	3.20	4.853	.028	-2.679	.008
	Female	3.62				

The accuracy of hypothesis H2b on the existence of a statistically significant difference in the attitudes of locals of different gender on the negative effects of the Carnival on their quality of life was also verified by applying a t-test of independent samples. It was found that there was no statistically significant difference in the attitudes of the residents of different gender about the negative effects of the Carnival on their quality of life, that is, no statistically significant differences were found for any of the 9 statements offered, which is why hypothesis H2b was rejected.

Results of one-way analysis of variance (ANOVA) and discussion

The purpose of applying a one-way analysis of variance ANOVA is to determine whether there is a statistically significant difference in attitudes of the local residents of

different socio-demographic characteristics about the positive and negative influences of the Carnival on their quality of life. One-way analysis of variance examined the accuracy of the H2c hypothesis that there was a statistically significant difference in the attitudes of the local residents of different degrees of education about the positive effects of the Carnival on their quality of life. A statistically significant difference in the attitudes of the residents about the positive effects of the Carnival on their quality of life at the $p \leq 0.05$ level was not found for any of the 9 statements offered, which is why the hypothesis H2c was rejected. The accuracy of the H2d hypothesis is also verified by analysis of variance ANOVA. A statistically significant difference was found at $p \leq 0.05$ for two of the nine claims for negative impacts: *During the Carnival of Vrnjci, there are traffic jams and lack of parking places in Vrnjačka Banja* (F=2.486; p=0.044) and *The value system and behaviour of the local residents' changes negative under the influence of Carnival of Vrnjci* (F=3.197, p=0.014) (Table 5).

Table 5: ANOVA according to the level of education and negative impacts of the Carnival of Vrnjci on the life quality of residents

Negative impacts		Sum of Squares	df	Mean Square	F	Sig.
NI2	Between Groups	9.524	4	2.381	2.486	.044
	Within Groups	282.513	295	.958		
	Total	292.037	299			
NI3	Between Groups	17.739	4	4.435	3.197	.014
	Within Groups	409.178	295	1.387		
	Total	426.917	299			

The attitudes of the residents, who have completed high school, and the residents with a university degree differ in their claim on creation of traffic jams and lack of parking spaces during the Vrnjci Carnival (p=0.024). In addition, the attitudes of these two groups of residents differ for the statement *The value system and behaviour of the local residents' changes negatively under the influence of the Carnival of Vrnjci* (p=0.017). Given that differences between attitudes of residents of different level of education were present for only 2 of the 9 claims offered, the H2d hypothesis was rejected. Hypothesis H2e was rejected because the analysis of variance did not establish the existence of statistically significant difference between the attitudes of the residents at the level $p \leq .0.05$ for the offered claims about the positive effects of Vrnjci Carnival on the quality of life of the residents. The one-way analysis of variance revealed the existence of a statistically significant difference in the attitudes of the residents of different ages for two of the nine offered statements about the negative effects of Vrnjci Carnival on their quality of life, namely: *The local residents are irritated by a large number of tourists/visitors of the Carnival of Vrnjci* (F=3.246, p=0.013) and *The value system and behaviour of the local residents' changes negative under the influence of Carnival of Vrnjci*(F=2.706, p=0.031) (Table 6).

Table 6: *ANOVA according to the age and positive impacts of the Carnival of Vrnjci on the life quality of residents*

Negative impacts		Sum of Squares	df	Mean Square	F	Sig.
NI1	Between Groups	22.553	4	5.638	3.246	.013
	Within Groups	512.394	295	1.737		
	Total	534.947	299			
NI7	Between Groups	15.109	4	3.777	2.706	.031
	Within Groups	411.808	295	1.396		
	Total	426.917	299			

A statistically significant difference exists for the statement *The local residents are irritated by a large number of tourists/visitors of the Carnival of Vrnjci* (p=0.007) (p=0.007) and for the statement *The value system and behaviour of the local residents' changes negatively under the influence of the Carnival of Vrnjci* (p = 0.029) and between the residents aged 20-30 and 41-50 years of age. Considering that a statistically significant difference between the attitudes of the residents was established for only 2 of the 9 statements offered, which relate to the negative effects of Vrnjci Carnival on the quality of life of the residents, the H2f hypothesis has not been proven. Hypothesis H2g was rejected due to the fact that a statistically significant difference was found for only 1 of the 9 claims offered. There is a statistically significant difference between the attitudes of the residents of different occupational status for the claim *Local residents are proud on the Carnival of Vrnjci because it contributes to creating a sense of togetherness among the local community* (F=4.546, p=0.004) (Table 7). If groups of residents are considered by professional status, a statistically significant difference for the stated claim is present between the residents, who have student status and are employed (p=0.002).

Table 7: ANOVA according to the professional status and positive impacts of the Carnival of Vrnjci on the life quality of residents

Positive impacts		Sum of Squares	df	Mean Square	F	Sig.
PI2	Between Groups	20.096	3	6.699	4.546	.004
	Within Groups	436.154	296	1.473		
	Total	456.250	299			

In the case of testing the accuracy of hypothesis H2h on the existence of statistically significant difference in the attitudes of local residents of different professional status about the negative effects of Vrnjci Carnival on their quality of life, it was found that the same exists only in the case of the statement *Due to the Carnival of Vrnjci prices of products and services in Vrnjačka Banja increase, which is reflected in an increase in residents` cost of living* (F=3.833, p=0.010), which is why hypothesis H2h is rejected (Table 8). A statistically significant difference for the claim *Due to the Carnival of Vrnjci prices of products and services in Vrnjačka Banja increase, which is reflected in an increase in residents` cost of living*, was observed in the attitudes of the local residents, who have student status and who are employed (p=0.009) and the local residents, who have the status of students and locals who are unemployed (p=0.029). The accuracy of the H2i hypothesis about the existence of a statistically significant difference in the

attitudes of the local residents about the positive effects of the Carnival on their quality of life depending on the length of residence in Vrnjačka Banja was tested using ANOVA analysis.

Table 8: ANOVA according to the professional status and negative impacts of the Carnival of Vrnjci on the life quality of residents

Negative impacts		Sum of Squares	df	Mean Square	F	Sig.
NI8	Between Groups	17.840	3	5.947	3.833	.010
	Within Groups	459.280	296	1.552		
	Total	477.120	299			

Hypothesis H2i was rejected because it was found that there was a statistically significant difference for 4 of the 9 statements: *Local residents have equal opportunities to attend to the Carnival of Vrnjci as tourists/visitors* (F=2.332, p=0.042); *The Carnival of Vrnjci creates opportunities for entertainment, social interaction and meeting new people*, (F=2.247, p=0.050); *The Carnival of Vrnjci provide generation of additional income for the local residents* (F=3.133, p=0.009) *and The location at which the Carnival of Vrnjci is held is adequate* (F=2.341, p=0.042) (Table 9).

Table 9: ANOVA according to the how long the residents live in Vrnjačka Banja and positive impacts of the Carnival of Vrnjci on the life quality of residents

Positive impacts		Sum of Squares	df	Mean Square	F	Sig.
PI4	Between Groups	12.236	5	2.447	2.332	.042
	Within Groups	308.551	294	1.049		
	Total	320.787	299			
PI5	Between Groups	11.373	5	2.275	2.247	.050
	Within Groups	297.597	294	1.012		
	Total	308.970	299			
PI7	Between Groups	18.511	5	3.702	3.133	.009
	Within Groups	347.369	294	1.182		
	Total	365.880	299			
PI9	Between Groups	16.469	5	3.294	2.341	.042
	Within Groups	413.701	294	1.407		
	Total	430.170	299			

Subsequent measurements indicated that the attitudes of residents living in Vrnjačka Banja between the ages of 5 and 10 and those living between 20-30 years differed *Local residents have equal opportunities to attend to the Carnival of Vrnjci as tourists/visitors* (p=0.022). When verifying the accuracy of hypothesis H2j on the existence of a statistically significant difference in the attitudes of the local residents about the negative effects of Carnival of Vrnjci on their quality of life depending on the length of residence in Vrnjačka Banja, a statistically significant difference between the attitudes of the residents was established for the following statements: *The local residents are irritated by a large number of tourists/ visitors of the Carnival of Vrnjci* (F=2.961, p=0.013); *During the Carnival of Vrnjci, the natural resources of Vrnjačka Banja are endangered and a large amount of waste is created*

(F=3.639, p=0.003) and *The value system and behaviour of the local residents' changes negative under the influence of Carnival of Vrnjci* (F=2.287, p=0.046). Bearing in mind that a statistical difference exists with 3 out of 9 claims concerning the negative effects of the Carnival, hypothesis H2j was rejected.

Table 10: ANOVA according to the how long have the residents been living in Vrnjačka Banja and negative impacts of the Carnival of Vrnjci on the life quality of residents

Negative impacts		Sum of Squares	df	Mean Square	F	Sig.
NI1	Between Groups	25.650	5	5.130	2.961	.013
	Within Groups	509.297	294	1.732		
	Total	534.947	299			
NI5	Between Groups	28.574	5	5.715	3.639	.003
	Within Groups	461.676	294	1.570		
	Total	490.250	299			
NI7	Between Groups	15.981	5	3.196	2.287	.046
	Within Groups	410.935	294	1.398		
	Total	426.917	299			

Subsequent measurements have shown that the attitudes of residents living in Vrnjačka Banja up to 5 years and those living between 20 and 30 years differ only in claim *During the Carnival of Vrnjci, the natural resources of Vrnjačka Banja are endangered and a large amount of waste is created* (p=0.020) as well as between the residents who have been living in Vrnjačka Banja for up to 5 years and those living in this place for over 40 years (p=0.002). When checking the accuracy of the H2k hypothesis, it was found that there is a statistically significant difference in the attitudes of the residents depending on the place of residence about the positive effects of the the Carnival manifestation on the quality of their life in relation to the central tourist zone of the destination for the following statements: *Local residents are proud on the Carnival of Vrnjci because this event contributes to creating a sense of togetherness among the local community* (F=3.559, p=0.018); *Local residents have equal opportunities to attend to the Carnival of Vrnjci as tourists/visitors* (F=4.471, p=0.004) and *The Carnival of Vrnjci provide generation of additional income for the local residents* (F=3.475, p=0.016) (Table 11).

Table 11: *ANOVA according to place of residence and positive impacts of the Carnival of Vrnjci on the life quality of residents*

Positive impacts		Sum of Squares	df	Mean Square	F	Sig.
PI2	Between Groups	15.883	3	5.294	3.559	.015
	Within Groups	440.367	296	1.488		
	Total	456.250	299			
PI4	Between Groups	13.907	3	4.636	4.471	.004
	Within Groups	306.880	296	1.037		
	Total	320.787	299			
PI7	Between Groups	12.446	3	4.149	3.475	.016
	Within Groups	353.434	296	1.194		
	Total	365.880	299			

The residents' attitudes living in the centre of the city and on the outskirts of the municipality differ in terms of claiming that *Local residents are proud on the Carnival of Vrnjci because it contributes to creating a sense of togetherness among the local community* (p=0.010). The attitudes who live in the centre and near the centre, differ in terms of the statement *Local residents have equal opportunities to attend the Carnival of Vrnjci as tourists/visitors* (p=0.009) as well as between locals living on the outskirts of the municipality and in the centre (p=0.014). The attitudes living in and near the centre of the centre differ in terms of claiming that *The Carnival of Vrnjci provides generation of additional income for the local residents* (p = 0.023) as well as between the residents who live in the centre and at the periphery of the municipality (p=0.023). Considering that there are no statistically significant differences for other claims between the attitudes of the local residents about the negative effects of the Carnival on the quality of their life from the aspect of Vrnjačka Banja residence, hypothesis H2k was rejected. When checking the accuracy of hypothesis H2l, it was found that there is no statistically significant difference in the attitudes of the residents, depending on their place of residence, about the negative effects of the the Carnival manifestation on the quality of their lives, which is why this hypothesis was rejected. Hypothesis H2 on the existence of a statistically significant difference between the attitudes of the residents of different socio-demographic characteristics about the effects of the Carnival on the quality of their life has not been confirmed because none of the sub-hypotheses has been proven.

Conclusion

Events play an important role in attracting tourists and have a strong effect on the tourism development, recognition of a tourism destination and the economic activity of a country (Mandarić & Stamenković, 2017). There are many studies that have dealt with tourism positive and negative impacts on a destination in general, but less with the focus on the tourism events, especially when it comes to the events placed in spas. Bearing this in mind, the great contribution of this article is a case study of the residents` attitudes towards positive and negative effects of the Carnival of Vrnjci, the event that is placed in a famous Serbian spa Vrnjačka Banja.

According to this study, by observing average rates of residents`satisfaction level with positive and negative impacts, it is confirmed that residents have rather positive attitudes towards the Carnival of Vrnjci, which means that the H1 is proven true. Speaking individually about the impact of the Carnival of Vrnjci on the residents quality of life, most of the residents agree that they have equal chances to visit the event as tourist/visitors and that it may create opportunity for additional income, but on the other side most of the residents agree that there are crowds throughout the destination (on the streets, promenades, parks, shops, restaurants, cafes, etc.), traffic jams and lack of parking spaces in the destination during the event.

Considering thatthe results of T-test and one-way analysis of variance (one-way ANOVA) showed that none of the sub-hypotheses wereproved, it can be concluded that there is no statistically significant difference between the attitudes of residents of different socio-demographic characteristics about the effects of Vrnjci Carnival on their quality of life, i.e. that H2 is rejected.

The main limitation of this study is the small number of residents comparing the total number of population of the Vrnjačka Banja municipality (27,527) (Statistical Office of the Republic of Serbia, 2019).

The research on this basis has a perspective for further development, for improving the quality of the Carnival of Vrnjci and tourism offer of Vrnjačka Banja, as well as for the scientific basis in the form of comparative analysis of events in Vrnjačka Banja, events in other spas, events in the country, and perhaps even more widely.

References

Allen, L. R., Long, P. T., Perdue, R. R., & Kieselbach, S. (1988). The impact of tourism development on residents' perceptions of community life. Journal of Travel Research, 27(1), 16–21.

Andereck, K.,& Nyaupane, G. (2011). Exploring the nature of tourism and quality of life perceptions among residents. Journal of Travel Research, 50(3), 248-260.

Andereck, K., Valentine, K. M., Knopf, R., & Vogt, C. (2005).Residents' perceptions of community tourism impacts. Annals of Tourism Research, 32(4), 1056-1076.

Andriotis, K., & Vaughan, R. (2003). Urban residents' attitudes toward tourism development: The case of Crete. Journal of Travel Research, 42(2), 172–185.

Belisle, F.J., & Hoy, D.R. (1980). The perceived impact of tourism by residents: A case study in Santa Marta, Colombia. Annals of Tourism Research 7(1), 83–101.

Bello, F. G., Carr, N., Lovelock, B., & Xu, F., (2017). Local residents' perceptions of socio-cultural impacts of tourism in Mangochi, Malawi. Advances in Hospitality and Tourism Research, 5(1), 1-22.

Blešić, I., Pivac, T., Besermenji, S., Ivkov-Džigurski, A., & Košić, K. (2014). Residents' attitudes and perception towards tourism development: A case study of rural tourism in Dragačevo, Serbia. Eastern European Countryside, 20(1), 151-165.

Blešić, I., Pivac, T., Đorđević, J., Stamenković, I., & Janićević, S. (2014). Cultural events as part of cultural tourism development. Case study: Sombor and Apatin (Serbia). Acta geographica Slovenica, 54(2), 381-390.

Brida, J., Riaño, E., & Aguirre, S. (2011). Residents' attitudes and perceptions towards cruise tourism development: A case study of Cartagena de Indias (Colombia). Tourism and Hospitality Research, 11(3), 181-196.

Carnival of Vrnjci (2019). *About Carnival of Vrnjci*. Retrieved from: 10 October 2019 http://www.vrnjackikarneval.rs/pages/okarnevalu.html

Cavus, S., & Tanrisevdi, A. (2002). Residents' attitudes toward tourism: A case study of Kusadasi, Turkey. Tourism Analysis, 7(3), 259-268.

Chen, S.C. (2011). Residents' perceptions of the impact of major annual tourism events in Macao: cluster analysis. Journal of Convention & Event Tourism, 12(2), 106-128.

Choi, H. S. C., & Sirakaya, E. (2005). Measuring residents' attitude toward sustainable tourism: Development of sustainable tourism attitude scale. Journal of Travel Research, 43(4), 380-394.

Diedrich, A., & Garcia-Buades, E. (2009). Local perceptions of tourism as indicators of destination decline. Tourism Management, 30(4). pp. 512-521.

Getz, D. (2008). Event tourism: definition, evolution, & research. Tourism Management, 29(3), 403-28.

Haralambopoulos, N., & Pizam, A. (1996). Perceived impacts of tourism: The case of Samos. Annals of Tourism Research, 23(3), 503-526.

Harrill, R., & Potts, T. (2003). Tourism planning in historic districts: Attitudes toward tourism development in Charleston. Journal of the American Planning Association, 69(3), 233-244.

Huh, C., & Vogt, C. A. (2008). Changes in residents' attitudes toward tourism over time: a Cohort analytical approach. Journal of Travel Research, 46(4), 446–455.

Jaafar, M., Rasoolimanesh, S. M., & Ismail, S. (2017). Perceived sociocultural impacts of tourism and community participation: A case study of Langkawi Island. Tourism and Hospitality Research, 17(2), 123–134.

Jurowski, C., & Gursoy, D. (2004). Distance effects on residents' attitudes toward tourism. Annals of Tourism Research, 31(2), 296–312.

Kim, K., Uysal, M., & Sirgy, M. J. (2013). How does tourism in a community impact the quality of life of community residents? Tourism Management, 36(5), 527-540.

Ko, D., & Stewart, W. (2002). A structural equation model of residents' attitudes for tourism development. Tourism Management, 23(5), 521–530.

Krstić, B., Petrović, J., & Stanišić, T. (2015). Analysis of key indicators of economic dimensions of spas' sustainable development in Serbia as tourism destinations. Ekonomika, 61(3), 61-71.

Li, X., Hsu, C. H. C., & Lawton, L. J. (2015). Understanding residents' perception changes toward a mega-event through a dual-theory lens. Journal of Travel Research, 54(3), 396–410.

Mandarić, M., & Stamenković, I. (2017). The research of the importance of events for the development and branding of the city of Niš as a tourism destination. Hotel and Tourism Management, 5(1), 64-74.

Mason, P. (2008). Tourism Impacts, Planning and Management. Amsterdam: Elsevier/ Butterworth.

Mason, P., & Cheyne, J. (2000).Residents' attitudes to proposed tourism development. Annals of Tourism research, 27(2), 391-411.

Milićević, S., Podovac, M., & Jovanović, D. (2013). Sustainable tourism development with special reference to the European Union. Hotel and Tourism Management, 1(1),2–30.

Milićević, S., Podovac, M. (2013). Konkurentnost Vrnjačke Banje na turističkom tržištu. U monografiji *Konkurentnost preduzeća u Srbiji*, urednici: Nebojša Janićijević, Stipe Lovreta. Univerzitet u Beogradu. Ekonomski fakultet – Centar za izdavačku delatnost, Beograd, 2017-218.

Nunkoo, R., & Ramkissoon, H. (2007). Residents' perceptions of the socio-cultural impact of tourism in Mauritius. Anatolia, 18(1), 138-145.

Pallant, J. (2009). *SPSS* priručnik za preživljavanje.Beograd: Mikroknjiga.

Papić, M., Garabinović, D., & Blagojević, M. (2018). An overview of online marketing promotion activities in the event tourism of the Moravica district. Hotel and Tourism Management, 6(1), 41 - 51.

Pizam, A. (1978). Tourism impacts: The social costs to the destination community as perceived by its residents. Journal of Travel Research, 16(4), 8-12.

Podovac, M., Đorđević, N., & Milićević, S. (2019). Rural tourism in the function of life quality improvement of rural population on Goč mountain. Ekonomika poljoprivrede, 66(1), 205-220.

Sharpley, R. (2014). Host perceptions of tourism: A review of the research. Tourism Management, 42(1), 37-49. DOI: 10.1016/j.tourman.2013.10.007

Sirakaya, E., Teye, V.,& Sönmez,S. (2002). Understanding residents support for tourism development in the Central Region of Ghana. Journal of Travel Research, 41(1), 57-67.

Statistical Office of the Republic of Serbia (2019), *Census 2011*. Retrieved 12 October 2019 from:http://www.stat.gov.rs/en-US/oblasti/popis

Tepavčević, J., Blešić, I., Bradić, M., & Ivkov, M. (2019).Attitudes of local residents towards tourism development in Vrbas. TIMS Acta, 13(1), 15-25.

Tomljenović, R., & Faulkner, B. (2000). Tourism and older residents in a sunbelt resort. Annals of Tourism Research, 27(1), 93-114.

UNWTO (2019). Tourism Highlights: 2019 Edition. UNWTO: Madrid.

Usher, L. E., & Kerstetter, D. (2014). Residents' perceptions of quality of life in a surf tourism destination: A case study of Las Salinas, Nicaragua, Progress in Development Studies, 14(4), 321–333.

Uysal, M., Woo, E., & Singal, M. (2012). The tourist area life cycle (TALC) and its effect on the quality-of-life (QOL) of destination community. In M. Uysal, R. Perdue, & M. J. Sirgy (Eds.), *Handbook of tourism and quality-of-life research* (pp. 423-443). Dordrecht, Netherlands: Springer.

Van Niekerk, M., & Coetzee, W. J. L. (2011). Utilizing the VICE model for the sustainable development of the Innibos Arts Festival. Journal of Hospitality Marketing & Management, 20(3-4), 347-365.

Williams, J., & Lawson, R. (2001).Community issues and resident opinions of tourism. Annals of Tourism Research, 28(2), 269-290.

Woo, E., Uysal, M., & Sirgy, M.J. (2018). Tourism impact and stakeholders' quality of life. Journal of Hospitality & Tourism Research, 42(2), 260–286.

Yang, J., Ryan, C.,& Shang, L. (2013).Social conflict in communities impacted by tourism. Tourism Management 35, 82–93.

Zamani-Farahani, H., & Musa, G. (2008). Residents' attitudes and perception towards tourism development: A case study of Masooleh, Iran. Tourism Management, 29(6), 1233-1236.

ЕКОНОМИКА
ISSN 0350-137X, EISSN 2334-9190, UDK 338 (497,1)
Vol. 66, april-june 2020, № 2
P. 93-102

Sandra Milanović[1]
Milan Marković[2]
Ivana Marjanović[3]
Innovation Center of the University of Niš

SCIENTIFIC REVIEW ARTICLE
doi: 10.5937/ekonomika2002093M
Received: October, 07. 2019.
Accepted: February, 02. 2020.

RELATIONSHIP BETWEEN LABOUR MARKET AND BUSINESS DYNAMISM: CASE OF EUROPEAN COUNTRIES

Abstract

The concept of competitiveness and its drivers has drawn increasing attention in recent years. Global Competitiveness Index (GCI), as one of the measurements of this phenomenon, consist of 12 pillars which are determining the level of national competitiveness. This study aims to explore the linkage between Labour market (LM) and Business dynamism (BD) as two pillars of GCI 2019 in case of 34 European countries (28 European Union (EU) member states and 6 candidate countries). Canonical correlation analysis was employed for analyzing the relationship between these two sets of sub-indexes. The results indicate that there is a positive and statistically significant relationship between these two variables.

Keywords: *Global Competitiveness Index, labour market, business dynamism, canonical correlation analysis.*

JEL classification: *J40, C14, C38, E24.*

ВЕЗА ИЗМЕЂУ ТРЖИШТА РАДА И ПОСЛОВНЕ ДИНАМИКЕ: ПРИМЕР ЕВРОПСКИХ ДРЖАВА

Апстракт

Концепт конкурентности и њених покретача последњих година привлачи све већу пажњу. Глобални индекс конкурентности (ГЦИ), као мерило овог феномена, састоји се од 12 стубова који одређују ниво конкурентности једне земље. Циљ овог рада је истраживање повезаности између тржишта рада и пословне динамике као два стуба ГЦИ 2019 на примеру 34 европске земље (28 земаља чланица Европске уније (ЕУ) и 6 земаља кандидата). За анализу односа између ова два скупа подиндекса примењена је канонička корелациона анализа. Резултати показују да постоји позитиван и статистички значајан однос између ове две варијабле.

Кључне речи: *Глобални индекс конкурентности, тржиште рада, пословна динамика, канонička корелациона анализа.*

[1] sandramilanovic89@yahoo.com, ORCID ID 0000-0002-0582-045X

[2] markovicmilan89@gmail.com, ORCID ID 0000-0002-9617-6697

[3] ivana.veselinovic@eknfak.ni.ac.rs, ORCID ID 0000-0002-9526-0467

Introduction

In today's global market economy, the modern economy must work on its competitiveness and development of innovation (Đurić et al., 2018). "Applied to the level of national economies, competitiveness represents the ability to survive long-term in a market economy" (Stanković & Popović, 2016, p. 191). "In modern economy foundations competitiveness are located in the high technologies, knowledge and innovation, global connectivity and strategic pooling" (Nešković et al., 2016, p. 448).

Competitiveness, as one of the most researched areas in recent years, could be defined as "the set of institutions, policies, and factors that determine the level of productivity of a country" (Schwab, 2018, p. 42). Likewise, both productivity and rates of return on investments of one economy will define growth rates and finally the level of countries competitiveness. Numerous indicators are designed to measure the progress of one national economy. Some of these are Gross Domestic Product (GDP), Genuine Progress Indicator (GPI), Happy Planet Index (HPI), Happiness/Life Evaluation Index, OECD Better Life Initiative, Human Development Index (HDI), Index of Sustainable Economic Welfare (ISEW) and among them, the most commonly used is Global Competitiveness Index (GCI) (Costanza et al., 2009; Popescu et al., 2017; Günseli, 2018).

GCI is measuring through its 12 pillars level of national competitiveness. There are examples that the economy's competitiveness is being assessed by one of the pillars of GCI – Labour Market (LM) (Ostoj, 2015). Accordingly, Mohaghar et al. (2018) perceive efficiency and flexibility of the labour market as critical drivers of workforce allocation to the most effective use and for motivation to give a maximum of their efforts to complete work obligations.

Similarly, competitiveness is also supported by Busines dynamism (BD) as a pillar of GCI, in order for a country to reach the advanced level of requirements needed for global competitiveness. Additionally, BD could be influenced by a variety of variables such as technological improvements, macroeconomic environment, the efficiency of labour market etc. (Vesal et al., 2013; Kirikkaleli & Ozun, 2019).

The paper aims to answer the question: Is there a significant relationship between LM and BD of 28 member countries of the European Union (EU) and 6 countries in the process of joining? Answering this question is important because it will show how important is the labour market and optimal allocation of skills for productivity and doing business in a constantly changing environment.

With the purpose of answering this question, the paper is structured as follows: the first section introduces the research topic; after that, the second part gives a brief review of literature which deals with labour market and business dynamism; the third section describes research methodology through the sample, the variables, the methods used for the empirical investigation and proposes the research hypothesis; the fourth part presents the obtained results and discussion; the last section summarizes the conclusions.

Theoretical background and Literature review

All aspects which are having a major influence on productivity and growth of almost 140 countries throughout 40 years period of time are being measured by the Global

Competitiveness Index (GCI). This index puts special emphasize on drivers of economic success: enabling environment, markets, human capital and innovation ecosystem. In addition, all countries are put in one of three stages of development: (1) factor-driven stage, (2) efficiency-driven stage and (3) innovation-driven stage (Porter et al., 2002).

GCI 4.0 index consists of 103 indicators measuring a country's performance using a 'progress score' on a 0-to-100 scale, where 100 means an ideal state (Schwab, 2019). It is designed to measure global competitiveness divided into groups of 12 pillars: Institutions; Infrastructure; ICT adoption; Macroeconomic stability; Health; Skills; Product market; Labour market; Financial system; Market size; Business dynamism; and Innovation capability (Schwab, 2019).

As one of GCI pillars, LM influences the level of country's productivity and its competitiveness, therefore, as a result, "it is worth knowing the specificity and context of this value" (Ostoj, 2015, p. 82). Since its launching as a separate pillar in 2007, there have been few changes in LM's structure thorough history. The last structure, which was introduced with the GCI 4.0 report from 2018, includes measures of talent reward and respect of workers' rights. There are 12 elements of LM valued on the scale from 1 to 100 and divided into two groups (Table 1):

- Group A (Flexibility) – Indicators from 1 to 8 in this group are measuring the flexibility of workers or their possibility to change jobs fast and at low costs, and flexibility of wage or its fluctuations without negative social effects.
- Group B (Meritocracy and incentivization) – Indicators from 9 to 12 in this group are assessing factors of workers' performance and female participation in the labour force.

Table 1: The structure of LM and BD pillars

8th pillar: Labour market	***11th pillar: Business dynamism***
8.01 Redundancy costs (weeks of salary)	11.01 Cost of starting a business
8.02 Hiring and firing practices	11.02 Time to start a business
8.03 Cooperation in labour-employer relations	11.03 Insolvency recovery rate
8.04 Flexibility of wage determination	11.04 Insolvency regulatory framework
8.05 Active labour market policies	11.05 Attitudes towards entrepreneurial risk
8.06 Workers' rights	11.06 Willingness to delegate authority
8.07 Ease of hiring foreign labour	11.07 Growth of innovative companies
8.08 Internal labour mobility	11.08 Companies embracing disruptive ideas
8.09 Reliance on professional management	
8.10 Pay and productivity	
8.11 Ratio of wage and salaried female workers to male workers	
8.12 Labour tax rate	

Source: Authors' presentation based on the World Economic Forum, reports.weforum.org (28.1.2020.)

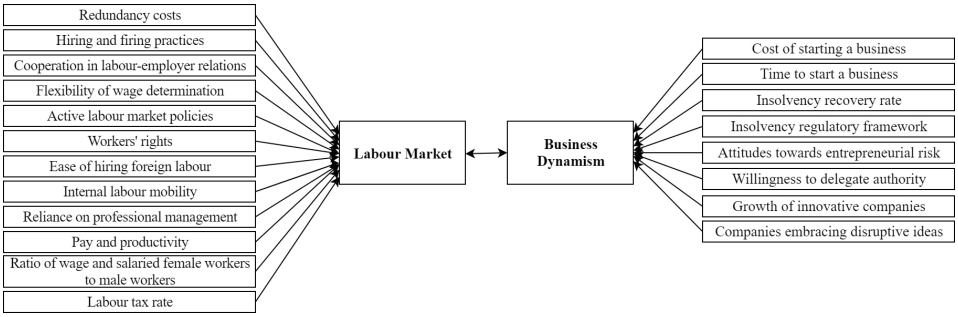
"Competitiveness and business excellence are interconnected phenomena" (Bešić et al., 2014, p. 648). BD, as 11th pillar of GCI, is measuring through its eight sub-indexes (Table 1) "the capacity of private sector's to generate and adopt new technologies and

new ways to organize work, through a culture that embraces change, risk, new business models, and administrative rules that allow firms to enter and exit the market easily" raised (Schwab, 2018, p. 42). In its structure, BD incorporates two components: administrative requirements and entrepreneurial culture. Moreover, BD is one of the triggers that foster economic growth through improving efficiency, productivity, and profitability in the market (Dima et al., 2018).

The literature, based on researches in the field of GCI pillars, is numerous. Most of the researches are dealing with the relationships between different pillars. Vesal et al. (2013) have researched the relationship between Labour market efficiency (LME) and Business Sophistication (BS) which were measured until introducing new methodology in 2018. They have found a statistically significant relationship between these two variables. Especially, 64.01% of changes in BS are predictable by changes in LME, and vice versa, 25.89% of changes in LME are predictable by changes in BS. Similar research by Rastegar et al. (2012) has revealed that more than 25.88% of changes in LME due to changes in Technological readiness. Also, their model showed that more than 57.21% of changes in Technological readiness is explained by changes in LME. Bazargan et al. (2017) have revealed that 77.85% of changes in BS are predicted by the changes in Higher education and training. Furthermore, more than 66.70% of changes in Higher education and training could be predicted by changes in BS.

Based on previously mentioned, this paper investigates the relationship between LM and BD pillars. The proposed model is presented in the following picture.

Figure 1: Research model



Source: Authors

Research methodology and Hypothesis

By selecting information from GCI 2019 report, data regarding scores of LM and BD of 34 countries (28 EU member states and 6 candidate countries) was collected. The analysis includes data for one year, respectively data for the year 2019. The collected data were analyzed using the program IBM SPSS, version 23.

This research is an exploratory model aimed to enlighten the relationship between LM and BD sub-indexes. Therefore the Bivariate (Pearson) and Canonical Correlation Coefficients were calculated.

Firstly, the Pearson correlation coefficients were calculated. According to Cohen (1992), Pearson correlation coefficient values of ± .10 represent a small practical effect, ± .30 is a medium practical effect and ± .50 is a large practical effect.

Secondly, by applying the Canonical Correlation Analysis (CCA) relationship between LM and BD sub-indexes was examined. CCA deals with the association between the composites of sets of multiple dependent and independent variables. This analysis develops a number of canonical functions that maximize the correlation between linear composites (Jha, 2011). The criterion of .30 was used as a cut-off score for the structure correlation coefficients to interpret the association between two variable sets (Levine, 1977).

Before conducting all analysis, normality tests were applied. Due to small sample size, these tests showed not normally distributed data for LM sub-indexes Flexibility of wage determination, Workers' rights, Internal labour mobility and Ratio of wage and salaried female workers to male workers and these variables were excluded from the research. Furthermore, Cost of starting a business, Time to start a business, Insolvency recovery rate, Insolvency regulatory framework and Willingness to delegate authority were excluded from the analysis of BD sub-indexes.

Meaningful level for all interpretations of the data was $p<.05$.

The research hypothesis derived from the previous research model is stated as follows:

H1. There will be a statistically significant relationship between LM and BD.

Research Results and Discussion

Before testing the first hypothesis, Pearson correlation coefficients between LM and BD should be calculated and these results are presented in Table 2.

Table 2: Correlation coefficients between sub-indexes of LM and BD

	BD5	**BD7**	**BD8**
LM1	-.002	-.062	.051
LM2	.567**	.539**	.584**
LM3	.665**	.838**	.747**
LM5	.570**	.838**	.774**
LM7	.219	.171	.123
LM9	.659**	.914**	.848**
LM10	.636**	.845**	.783**
LM12	.106	-.117	-.044

Note: LM sub-indexes: LM1 - Redundancy costs (weeks of salary); LM2 - Hiring and firing practices; LM3 - Cooperation in labour-employer relations; LM5 - Active labour market policies; LM7 - Ease of hiring foreign labour; LM9 - Reliance on professional management; LM10 - Pay and productivity; LM12 - Labour tax rate. BD sub-indexes: BD5 - Attitudes towards entrepreneurial risk; BD7 - Growth of innovative companies; BD8 - Companies embracing disruptive ideas.

** p<.01, *p<.05

Source: Authors' calculations

According to Table 2, there are statistically significant correlations between the majority of sub-indexes of LM and BD. In example, the statistically significant and positive correlations were identified among Hiring and firing practices as LM sub-index and Attitudes towards entrepreneurial risk (r=.567, p<.01, large practical effect), Growth of innovative companies (r=.539, p<.01, large practical effect) and Companies embracing disruptive ideas (r=.584, p<.01, large practical effect) as BD sub-index. Moreover, among LM sub-indexes Cooperation in labour-employer relations, Active labour market policies, Reliance on professional management and Pay and productivity and all three sub-indexes od BD statistically significant and positive correlations were found. Only between Redundancy costs, Ease of hiring foreign labour and Labour tax rate and BD sub-indexes no significant correlations were identified.

In this part, the existence of a statistically significant canonical correlation between sub-indexes of LM as the independent variable and sub-indexes of BD as a dependent variable was examined using CCA. The findings are shown in Table 3.

Table 3: Canonical Correlations

	Correlation	Canonical R^2	Eigenvalue	Wilks Statistic	F	Num D.F	Denom D.F.	Sig.
1	**.937**	**.878**	7.222	.064	4.430	24.000	67.308	**.000**
2	.606	.367	.581	.527	1.296	14.000	48.000	.245
3	.409	.168	.201	.832	.839	6.000	25.000	.552

Source: Authors' calculations

CCA presented that out of three canonical functions, one was statistically significant. Multivariate test of significance for canonical functions has revealed that only the first canonical function makes a statistically significant contribution to the model. Furthermore, the canonical correlation between LM set and BD set of sub-indexes is r=.937 in the first function (Wilks's lambda = .064, F(24)=4.430, p<0.05). The shared variance between the group of variable Labour market and Business dynamism is 87.8%. This relationship is positive and when LM grows, BD grows, also.

Regarding the dependent and independent variables, the standardized canonical coefficients (which are represented by the canonical weights of the first canonical function), canonical loadings and cross-loading are presented in Table 4.

Table 4: Standardized Canonical Correlation Coefficients, canonical loadings and cross-loadings for set 1 and set 2

Set	Function 1		
BD	Standardized Canonical R	Canonical loadings	Cross-Loadings
BD5	.167	**-.726**	-.680
BD7	-.995	**-.995**	-.933
BD8	-.139	**-.939**	-.880
LM			
LM1	-.053	.058	.054
LM2	-.097	**-.558**	-.523

LM3	.100	**-.882**	-.827
LM5	-.222	**-.903**	-.847
LM7	-.003	-.161	-.151
LM9	-.692	**-.979**	-.918
LM10	-.173	**-.900**	-.844
LM12	.016	.149	.140

Note: LM sub-indexes: LM1 - Redundancy costs (weeks of salary); LM2 - Hiring and firing practices; LM3 - Cooperation in labour-employer relations; LM5 - Active labour market policies; LM7 - Ease of hiring foreign labour; LM9 - Reliance on professional management; LM10 - Pay and productivity; LM12 - Labour tax rate. BD sub-indexes: BD5 - Attitudes towards entrepreneurial risk; BD7 - Growth of innovative companies; BD8 - Companies embracing disruptive ideas.

Source: Authors' calculations

In the previous table, loadings are displaying correlations between original data and root scores. We can see that absolute values greater than 0.3 given in bold are interpreting how important variables are for computing the score (Levine, 1977). This means that standardized canonical correlation coefficients will be significant if the value of canonical loading is higher than 0.3. Hence, canonical weights in Table 4 show both negative and positive signs, indicating in the same time inverse and direct relationship between each variable and the group of canonical variables to which it belongs, similar to the standardized coefficients obtained in a regression analysis.

As Table 3 showed, the correlation between the first pair of canonical function was very strong (r = .937). The function 1 revealed that canonical loadings for all BD sub-indexes were over the cut-off point. Growth of innovative companies and Companies embracing disruptive ideas made primary contributions to the synthetic criterion variable, while Attitudes towards entrepreneurial risk had secondary importance to the same variable. These sub-indexes have larger canonical function coefficients. Additionally, all sub-indexes had a negative sign, indicating that they were inversely related to the other BD sub-indexes. Among these BD sub-indexes, Growth of innovative companies tended to have larger standardized canonical function coefficient, while Companies embracing disruptive ideas and Attitudes towards entrepreneurial risk had modest function coefficients but large structure coefficients.

Predictor variable set in the first function is presenting Reliance on professional management, Active labour market policies, Pay and productivity and Cooperation in labour-employer relations as primary contributors to the predictor synthetic variable, with a secondary contribution of Hiring and firing practices. All structure coefficients for LM sub-indexes are negative, indicating positive relation to all sub-indexes of BD. These results are supporting our relationship between the labour market and business dynamism which would be enhanced if the labour market is flexible and righteous.

Table 5 presents the average shared variance between the dependent variables and independent variables, making it possible to measure the redundancy index of such variables in the first canonical function.

Table 5: Calculation of redundancy index

Set of variables	Average shared variance	Square Corr.	Redundancy index
Function 1			
Dependent	.800	.878	.702
Independent	.466		.409

Source: Authors' calculations

The data obtained by the canonical correlation point out that the set of independent variables (LM) makes up a significant group in the adopted canonical correlation model, adequately explaining 70.2% of the variance of the set of dependent variables. Therefore, it is related to the group of the dependent variable (BD) and should be contemplated in economics politics as an important factor that affects entrepreneurial culture. Calculation of redundancy index has also reviled 40.9% of the variance in LM explained by BD (Table 5). Lastly, sub-indexes of BD which were included in the analysis are measuring entrepreneurial culture as a part of business dynamism and their variability was explained by the set of LM sub-indexes. Therefore, our hypothesis was partially confirmed.

The results derived from the CCA have shown a positive relationship between the set of LM and the set of BD components. Although the hypothesis was partially confirmed, these results were generally supportive of the theoretically expected relationship between LM and BD. Similarly to the results of Vesal et al. (2013) who have found that 64.01% of changes in BS are predictable by changes in LME, our research results have revealed that 70.2% of the variance in BD is due to LM. Furthermore, our results indicate that 40.9% of the variance in LM is explained by changes in BD. In line with our findings are, also, findings of Vesal et al. (2013) whose model showed 25.89% of the variance of LME is predictable by changes in BS. Lastly, in the research of Rastegar et al. (2012), changes in LME explain a significant proportion of variance in Technological readiness, as in our research for the case of BD.

Conclusion

In this paper, the relationship between two pillars of GCI, Labour Market and Business Dynamism, was explored. The research is based on the data for these indicators of 34 European countries from GCI report 2019. We have calculated the Pearson correlation coefficients and conducted CCA to test the proposed hypothesis. Pearson correlation coefficients have shown a statistically significant correlation between the majority of sub-indexes of LM and BD. Additionally, CCA has identified a statistically significant and positive relationship between LM and BD sets of sub-indexes. It is important to outline that in our research model 70.2% of the variance in BD was due to LM and 40.9% of the variance in LM was explained by changes in BD.

Generally, the results of the study have presented the relationship between the labour market and entrepreneurial culture as part of business dynamism. What is more, that relationship is positive, and an increase in labour market score and optimal allocation of skills (labour market functioning) would lead to an increase in business dynamism. Additionally, a significant per cent of the variance in business dynamism is explained by

changes in the labour market. Altogether results indicate that creators of economic policies in European countries should analyse the best practices in labour market policies and define measures of convergence to them because these practices would enhance business dynamism of that country.

It can be said that the development of one of these two pillars causes progress of other pillars, and consequently all this causes an improvement in competitiveness ranking position of one country.

The research has its limitations. Firstly, the analysis was based on data for only one period of time. Furthermore, the size of the sample was rather on the borderline of normality and these limitations should be exceeded in future research.

References

Bazargan, A., Ghasemi, R., Eftekhar Ardebili, M., & Zarei, M. (2017). The Relationship Between 'Higher Education and Training' and 'Business Sophistication'. *Iranian Economic Review, 21*(2), 319-341. https://dx.doi.org/10.22059/ier.2017.62106

Bešić, C., Ćoćkalo, D., Đorđević, D., & Bogetić, S. (2014). The analysis of aspects of food industry competitiveness in Serbia. *Economics of Agriculture (Ekonomika poljoprivrede)*, *61*(3), 647-659. https://doi.org/10.5937/ekoPolj1403647B

Cohen, J. (1992). Quantitative methods in psychology: A power primer. *Psychological Bulletin, 112*(1), 153-159. https://psycnet.apa.org/doi/10.1037/0033-2909.112.1.155

Costanza, R., Hart, M., Posner, S., & Talberth, J. (2009). Beyond GDP: The Need for New Measures of Progress. *THE PARDEE PAPERS*, *4*, 1-37.

Dima, A. M., Begu, L., Vasilescu, M. D., & Maassen, M. A. (2018). The relationship between the knowledge economy and global competitiveness in the European Union. *Sustainability*, *10*(6), 1706. https://doi.org/10.3390/su10061706

Đurić, D., Mitrović, V., Đurić, D., & Ristić, J. (2018). Strengthening international competitiveness and investment growth as the basis for a new model of Serbian economy development. *Economics of Agriculture (Ekonomika poljoprivrede)*, *65*(2), 731-744. https://doi.org/10.5937/ekoPolj1802731D

Günseli, B. (2018). *ILO future of work research paper series: Toward more inclusive measures of economic well-being: Debates and practices.* Geneva: International Labour Office.

Jha, S. (2011). Influence of psychological empowerment on affective, normative and continuance commitment: A study in the Indian IT industry. *Journal of Indian Business Research, 3*(4), 263-282. https://doi.org/10.1108/17554191111180582

Kirikkaleli, D., & Ozun, A. (2019). Innovation Capacity, Business Sophistication and Macroeconomic Stability: Empirical Evidence from Oecd Countries. *Journal of Business Economics and Management, 20*(2)*,* 351-367. https://doi.org/10.3846/jbem.2019.9602

Levine, M. S. (1977). *Canonical analysis and factor comparison* (Quantitative Applications in the Social Sciences Series, No. 6). Thousand Oaks, CA: Sage.

Mohaghar, A., Mahbanooei, B., Behnam, M., & Khavari, Z. (2018). Analyzing OECD's Labor Market Efficiency in 2018. *Economic and Social Development Economic - 34th International Scientific Conference on Economic and Social Development – XVIII International Social Congress (ISC-2018)*, pp. 341-353. Varazdin Development and Entrepreneurship Agency, Moscow.

Nešković, S., Jovanović, Ž., & Čavlin, M. (2016). Economic intelligence and intellectual capital in agriculture competitiveness-case study. *Economics of Agriculture (Ekonomika poljoprivrede)*, *63*(2), 445-459. https://doi.org/10.5937/ekoPolj1602445N

Ostoj, I. (2015). Labour market efficiency as one of the pillars of the global competitiveness of an economy – conclusions for the labour market regimes of the EU countries. *Journal of Economics and Management*, *20*(2), 80-92.

Popescu, G., Sima, V., Nica, E., & Gheorghe, I. (2017). Measuring Sustainable Competitiveness in Contemporary Economies - Insights from European Economy. *Sustainability*, *9*(7), 1230. https://doi.org/10.3390/su9071230

Porter, M., Sachs, J., Cornelius, P.K, McArthur, J.W., & Schwab, K. (eds.), (2002). *The global competitiveness report 2001–2002*, New York: Oxford University Press.

Rastegar, A. A., Mahbanooei, B., & Ghasemi, R. (2012). Canonical correlation analysis between technological readiness and labor market efficiency: A secondary analysis of countries global competitiveness in 2011–2012. In *13th International Conference on Econometrics, Operations Research and Statistics (ICEOS-2012)*, pp. 24-26. Turkish Republic of Northern Cyprus.

Schwab, K. (Ed.). (2018). *The Global Competitiveness Report 2018.* Geneva: World Economic Forum. Retrieved September 20, 2019, from http://www3.weforum.org/docs/GCR2018/05FullReport/TheGlobalCompetitivenessReport2018.pdf

Schwab, K. (Ed.). (2019). *The Global Competitiveness Report 2019.* Geneva: World Economic Forum. Retrieved January 28, 2020, from http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

Stanković, L., & Popović, A. (2016). Veličina tržišta kao determninanta nacionalne konkuretnosti Republike Srbije. *Marketing*, *47*(3), 191-204. https://doi.org/10.5937/markt1603191S

Vesal, S. M., Nazari, M., Hosseinzadeh, M., Shamsaddini, R., & Nawaser, K. (2013). The Relationship between "Labor Market Efficiency" and "Business Sophistication" in Global Competitiveness. *International Journal of Business and Management, 8*(13), 83-92. doi:10.5539/ijbm.v8n13p83

World Economic Forum (2019), Retrieved September 19, 2019, from reports.weforum.org

ЕКОНОМИКА
ISSN 0350-137X, EISSN 2334-9190, UDK 338 (497,1)
Vol. 66, april-june 2020, № 2
P. 103-111

Jelena Peković[1]
Goran Pavlović[2]
Stefan Zdravković[3]
Ekonomski fakultet, Univerzitet u Kragujevcu

SCIENTIFIC REVIEW ARTICLE
doi: 10.5937/ekonomika2002103P
Received: February, 13. 2020.
Accepted: April, 14. 2020.

THE INFLUENCE OF INTELLECTUAL CAPITAL ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN THE REPUBLIC OF SERBIA[4]

Abstract

Successful banks are those that are constantly innovating, relying on new technologies and focusing on the skills of their employees. Intellectual capital, as a form of intangible assets, is a key success factor for commercial banks. Therefore, the subject of this research is the impact of intellectual capital components on the financial performance of commercial banks in the Republic of Serbia. The results showed a positive statistically significant impact of intellectual capital on the ROA. Additionally, the components of intellectual capital related to human and relational capital had a statistically significant impact on the ROE, while structural capital did not.

Key words: *intellectual capital, commercial banks, financial performance, VAIC, ROA, ROE*

JEL classification: *O34*

УТИЦАЈ ИНТЕЛЕКТУАЛНОГ КАПИТАЛА НА ФИНАНСИЈСКЕ ПЕРФОРМАНСЕ КОМЕРЦИЈАЛНИХ БАНАКА У РЕПУБЛИЦИ СРБИЈИ

Апстракт

Успешне банке су оне које непрестано врше иновације, ослањају се на нове технологије и акценат стављају на вештине и знања својих запослених. Другим речима, интелектуални капитал, као облик нематеријалне имовине, представља кључни фактор успеха комерцијалних банака. Стога, предмет истраживања рада представља утицај компоненти интелектуалног капитала на финансијске перформансе комерцијалних банака у Републици Србији. Резултати анализе показали су позитиван статистички значајан утицај интелектуалног капитала на стопу приноса на укупно уложену имовину. С друге стране, компоненте интелектуалног капитала које се односе на људски и релациони капитал

[1] jelenapekipekovic@gmail.com, ORCID ID 0000-0002-7528-8286

[2] pavlovic.g90@gmail.com, ORCID ID 0000-0002-5557-9262

[3] szdravkovic034@yahoo.com, ORCID ID 0000-0002-0047-3356

[4] This work is part of the Basic Research Project (No. 179062), funded by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

су остварили статистички значајан утицај,на стопу приноса на укупно уложени капитал, док структурни капитал није.

Кључне речи: интелектуални капитал, комерцијалне банке, финансијске перфомансе, ВАИЦ, РОА, РОЕ

Introduction

The most challenging dimension in knowledge management is the recognition of knowledge as another (or most important) performance factor. This is without a doubt a opposition of the generally accepted materialistic opinion that favors exclusively modern technics and technology. Intellectual potential (knowledge) can be regarded as a tacit and explicit phenomenon (Mavridis, 2005). As such, intellectual capital is particularly characteristic of the banking sector. Namely, in the banking sector there is reliable data in the form of published financial reports, the business nature of the banking sector is "intellectually intensive" and all staff are more intellectually homogeneous than in other sectors of the economy (Kubo & Saka, 2002). Therefore, the aim of the paper is to determine whether intellectual capital, measured by the VAIC coefficient, has a positive impact on financial performance in the Serbian banking sector, as measured by indicators - return on total invested capital of banks (ROE) and rates of return on total invested assets (ROA). The applied qualitative methodology in the paper first highlighted the key theoretical aspects of intellectual capital in the banking sector, and then the impact of intellectual capital on the financial performance of banks in the Republic of Serbia was examined with the appropriate quantitative methodology.

Literature review

The term intellectual capital is differently defined by different researchers. Generally, the term intellectual capital is used to refer to the intangible assets of a company that have significant impact on business, performance and overall business success (Aruppala et al., 2015). Synonym for intellectual capital is often "invisible" or "intangible" assets, and therefore can be understood as a set of knowledge and skills of employees, patents, processes, technology, organizational culture, brand, consumer relations, business partners and other stakeholders (Janosevic et al., 2013). Thus, intellectual capital represents all those factors that can enable a company to gain competitive advantage. In order to fully understand the nature of intellectual capital, its constituent elements must be identified. The most commonly used classification divides intellectual capital into three categories: human, structural and relational capital (Bontis, 1998). Intellectual capital in the banking sector is very important, as banks rely heavily on human and relational capital in their work. Therefore, the banking sector can be characterized as an industry based on knowledge and skills and customer relationships (Muhammad & Ismail, 2009). In conducting business operations, banks rely on the knowledge and expertise of employees, creating good customer relationships and using information and

communication technology. Although the physical, that is material capital of the bank is very important in this case, intangible assets, ie intellectual capital, play a crucial role in creating quality service, and thus in creating good business and financial results (Lipunga, 2015). This is confirmed by some of the results of numerous studies conducted worldwide, which are presented in this paper. When it comes to similar research in the Republic of Serbia, to the authors' knowledge, there are few papers examining the relationship between intellectual capital and financial performance of commercial banks, which is the main motive for writing this paper. A study conducted by Radić (2018) on the example of Serbian banks shows that when ROA is selected as a measure of profitability, the level of bank indebtedness determines the degree of influence of intellectual capital on the stated rate of return on assets, so that at higher level of indebtedness, the impact of intellectual capital on bank profitability is negative. In addition, the study showed the negative impact of intellectual capital on the rate of return on bank invested capital (ROE). Bontis et al (2013) found that different components of intellectual capital affects different financial performance. Thus, the authors concluded that human capital affects employee productivity, structural affects ROE, and relational capital affects ROE.

As a central component of intellectual capital, *human capital* (HCE) contains the knowledge, skills, experience, and capabilities of members of an organization (Slavkovic & Simic, 2019; Roslender & Fincham, 2004). Individual knowledge, expertise and skills of the employees are most important resources and a source of sustainable competitive advantage (Collins & Clark, 2003; Lado & Wilson, 1994). Knowledge in the banking industry is a more significant component of business than in most other sectors, as banking operations are highly regulated, diversified, sensitive and risky for the economy and society (Mention, 2013). In the banking sector, much of the added value is created in direct interaction between the client and the bank's employees, and the quality of the value depends on the emotional intelligence, creativity and knowledge of the employee. The results of various studies have shown a significant impact of human capital on banks' financial performance (Saengchan, 2007; Bontis, 1998; Carbita & Bontis 2008). Based on the above, the following research hypotheses can be formulated:

H1: Banks with higher HCE achieve higher ROA.
H2: Banks with higher HCE achieve higher ROE.

Unlike human capital, *structural capital* (SCE) is company-owned and comprises information systems and databases, routines, procedures, processes that reflect business, as well as creativity and innovation and corporate culture. Because services require a significant amount of human activity, they rarely adhere to systematic and standardized processes. The above suggests that parts of structural capital, such as procedures, are less relevant to services than they are in the manufacturing process (Kianto et al., 2010). The opposite is true for information and communication technologies, especially in the banking sector, where business operations are highly dependent on the same. As such, structural capital is a component of intellectual capital that positively affects banks' financial performance (Bontis et al., 2013; Carbita & Bontis, 2008). Based on the above, the following research hypotheses can be formulated:

H3: Banks with higher SCE score higher ROA.
H4: Banks with higher SCE score higher ROE.

Relational capital (CEE) refers to the ability of a company to interact with external stakeholders such as customers, suppliers, competitors, trade and industry associations, as well as the knowledge embedded in these relationships (Edvinsson & Malone 1997; Bontis, 1998). In the banking industry, professional associations play a prominent role, acting as a provider of information, a catalyst for networking activities, and a lobbyist for national entities. Reputation, which reflects the image of a company, is also an integral component of relational capital. Those companies that have a better reputation are able to attract more consumers, achieve higher levels of sales, build consumer loyalty and commitment, and so on (Mention, 2013). Building good customer relationships is crucial for the banking sector, as a satisfied customer regularly uses the services of the bank, demonstrates loyalty and communicates their satisfaction to others. In this case, there is a positive effect of relational capital on the financial performance of banks (Cabrita & Vaz, 2006). Based on the above, the following research hypotheses can be formulated:

H5: Banks with higher CEE score higher ROA.
H6: Banks with higher CEE score higher ROE

Research methodology

The data collected for this research comes from the official reports of commercial banks operating in Serbia in the period 2015-2017. The sample consists of a total of 89 banks, of which 29 represent banks operating in the Republic of Serbia during 2017 and 30 banks each operating in 2016 and 2015, which is the total number of banks in the territory of the Republic of Serbia in given years. The main source of information was the Serbian Business Registers Agenncy.

Intellectual capital is this research is measured by VAIC coefficient (Value Added Intellectual Coefficient). The guiding principle of this model is to determine the contribution of all company resources (human, structural and physical) to value creation (VA), which is obtained as follows (Pulić, 2004):

$$VA = OUT - IN$$

Output (OUT) represent the total sales realized in the market, and the inputs (IN) cover all the costs of managing a bank, with the exception of human resource related costs, which are seen as an investment, not an expense (Janosevic et al., 2013). The next step is to calculate Human Capital Efficiency (HCE), which is obtained as follows:

$$HCE = VA/HC$$

HC in the given formula refers to the amount of earnings of employees during one fiscal year. The next component of intellectual capital is structural capital. Structural Capital Efficiency (SCE) is calculated as follows:

$$SCE = SC/VA$$

Intelectual Capital Efficiency (ICE) is obtained as the sum of HCE and SCE:

$$ICE = HCE+SCE$$

Finnaly, Capital Employed Efficiency (CEE), is derived from the relationship between value added and net assets of the company:

$$CEE = VA/CE$$

Capital Employed (CE) is already invested capital in the business and it represents the net assets of the company. In order to ensure the comparability of the overall value creation of the banks, the two indicators mentioned above must be combined:

$$VAIC = ICE+CEE$$

The data collected were processed in the statistical package SPSS V23. Descriptive statistical analysis, normal distribution test for non-parametric data, correlation and multiple regression analysis were used from statistical methods.

Research results

When presenting the characteristic values in the descriptive statistical analysis, the starting point is the data for all 89 commercial banks that operated in the period from 2015 to 2017 in the Republic of Serbia. Table 1 shows the results of descriptive statistical analysis for two dependent variables: ROA and ROE and for four independent variables: HCE, SCE, CEE and VAIC.

Table 1: Results of descriptive statistical analysis

	Min	Max	Mean	Standard deviation
ROA	-0,08	0,1205	0,0208	0,0383
ROE	-0,176	0,9923	0,1057	0,2323
HCE	-0,9975	11,93	2,62	3,11
SCE	-6,02	2,060	0,074	1,84
CEE	-0,29	0,059	0,1683	0,0187
VAIC	-5,86	13,1	2,86	4,10

Sorce: Authors

By looking at the results of descriptive statistics, it can be seen that the highest value, and also the highest arithmetic mean, is achieved by human capital efficiency (HCE), which leads to the conclusion that human capital is the whitest component of the intellectual capital of the banking sector in the Republic of Serbia. In order to determine whether a normal data distribution was represented in a given sample, a test of normal data distribution was conducted. Given that the sample is less than or equal to 30 when viewed individually each year, Kolmogorov-Smirnov and Shapiro-Wilk tests of normal data distribution were applied. The tests were performed individually for each year, and Table 2 shows the summary data for all 89 banks in the sample.

Table 2: Test results of normal data distribution

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	df	sig.	Statistics	df	sig.
ROA	0,207	89	0,000	0,881	89	0,000
ROE	0,161	89	0,000	0,853	89	0,000
HCE	0,214	89	0,000	0,767	89	0,000
SCE	0,343	89	0,000	0,57	89	0,000
CEE	0,144	89	0,161	0,945	89	0,163
VAIC	0,193	89	0,000	0,875	89	0,000

Source: Authors

Results in the previous table shows that the only variable with a normal distribution is the one related to the efficiency of relational capital. Since there is only one variable (CEE) with normal data distribution, Spearman correlation analysis should be applied as a next step.

Table 3: Results of correlation analysis

		HCE	SCE	CEE
ROA	Correlation coefficient	0,699**	0,522**	0,860**
	sig.	0,001	0,003	0,000
ROE	Correlation coefficient	0,689**	0,203	0,751**
	sig.	0,002	0,310	0,000

Source: Authors

*Note: **- The correlation coefficients are significant at the level 0,01*

By looking at the results of the correlation analysis in Table 3, it can be concluded that the values of the Spirman coefficient are statistically significant at the 0.01 level for the HCE, SCE and CEE components, while on the other hand only the SCE component does not have a statistically significant correlation with the ROE. The highest degree of correlation was observed in the case of ROA and CEE (0.860). In order to test the research hypotheses, ie to examine the impact of intellectual capital components on ROA, a multiple regression analysis was applied and the results of which are presented in the Table 4.

Table 4: Results of multiple regression analysis (dependent variable: ROA)

	B	sig.	VIF
HCE	0.385**	0,008	1,442
SCE	0.188*	0,041	1,073
CEE	0.689**	0,000	1,387

Source: Authors

*Note: Level of significance of coefficients: **0,01; *0,05; R^2=0,856*

The coefficient of determination (R^2) is 0,856, which means that 85,6% of the variability of the rate of return on the total invested assets (ROA) is explained by the

given regression model. Results shows that all three components of VAIC-a: HCE, SCE and CEE have a statistically significant effect on ROA. The biggest impact is the CEE component where the beta coefficient (β) is 0.689. A variance inflation factor (VIF) is used as a test to examine multicollinearity problems. According to Field (2000), the VIF value must be below 5 for the statistical model to be relevant. In this case, the coefficient values for all three components are less than 5, indicating the absence of multicollinearity in the model. Based on the results of the regression analysis, it can be concluded that the H1, H3 and H5 hypotheses were confirmed. Table 5 presents the results of a multiple regression analysis, which measures the impact of intellectual capital components on the rate of return on the total invested capital of a bank (ROE).

Table 5: Results of multiple regression analysis (dependent variable: ROE)

	B	sig.	VIF
HCE	0.364**	0,009	1,442
SCE	0,006	0,959	1,073
CEE	0,536**	0,001	1,387

Source: Authors

*Note: Level of significance of coefficients: **0,01; R^2=0,683*

The coefficient of determination (R^2) is 0,683, which means that 68,3% of the the variability of the rate of return on total invested capital (ROE) is explained by the given regression model. The results show that VAIC components: HCE and CEE have a statistically significant effect on ROE. The CEE component has a greater impact where the beta coefficient (β) is 0.536. The SCE component does not have a statistically significant effect on the ROE, and in addition a very low beta coefficient value was achieved in this case. When it comes to the problem of multicollinearity, the VIF factor is less than 5, as in the previous case, indicating the absence of the problem of multicollinearity. Based on the results of the regression analysis, it can be concluded that the H2 and H6 hypotheses were confirmed, while the H4 hypothesis was not confirmed.

Conclusion

The results of the in this paper showed a high degree of correlation between the HCE and CEE components and in the case of ROA and ROE, while the SCE component correlated only with ROA. Multiple regression analysis that included two models was used to test the hypotheses. The first model aimed to analyze the impact of HCE, SCE, and CEE on ROA and the second on ROE. The first regression model showed a statistically significant influence of all three components of VAIC on ROA, with the first, third and fifth hypotheses of this study being confirmed, which is consistent with the results of previous research (Radić, 2018). The second regression model showed statistically significant influence of HCE and CEE on ROE, while the influence of SCE was not significant. This confirmed the second and sixth hypotheses, while the fourth hypothesis was not confirmed. In a previous study (Bontis et al., 2013) in the case of the impact of HCE, SCE and CEE on ROE, human capital was the only component with no

significant effect on this measure, whereas SCE and CEE had impacts. In doing so, this study confirmed previous research in the case of CEE and refuted the results in the case of HCE and SCE.

The theoretical contribution of the paper is reflected in the expansion of scientific knowledge about the impact of intellectual capital on the financial performance of commercial banks. According to the authors, such research is limited in the territory of the Republic of Serbia, thus creating an adequate basis for further research. *The managerial contribution* of the work is reflected in the presentation of the obtained results to experts, especially human resource managers in banks, who can achieve good financial performance by building a unique intellectual capital. Despite its contribution, the research conducted for the purposes of this paper has a significant number of *limitations*, which at the same time provides *directions for future research*. First of all, the first limitation is the sample. A period of three years may not be relevant for reaching the appropriate conclusions. Namely, analyzing a longer period of time would lead to the problem of inconsistent financial statements, so additional efforts would have to be made to make the information comparable. Easily accessible data can define the choice of methodology used in empirical research as well as the choice of regressors included in the research model. Also, as mentioned in the paper, most of the research on this topic used the VAIC method for calculating intellectual capital, despite its limitations, so that for further research it is necessary to define a more precise methodology for measuring intellectual capital and its impact on the financial performance. It is desirable in future research to compare the results obtained from the impact of intellectual capital on the financial performance of banks operating in the Republic of Serbia with banks operating in other countries that have similar economic conditions.

References

Aruppala, D., Wickramasinghe, V., & Mahakalanda, I. (2015). Intellectual capital and financial performance in Sri Lankan Banks. In *6th International Conference on Business & Information (ICBI – 2015)* (pp. 37-49). Sri Lanka: University of Kelaniya.

Bontis, N. (1998). Intellectual capital: an exploratory study that develops measures and models. Management Decision, 36(2), 63-76.

Bontis, N., Janošević., S., & Dženopoljac, V. (2013). Intellectual capital and corporate performance of Serbian banks. Actual Problems of Economics, 142(4), 287-299.

Cabrita, M. & Vaz, I. (2006). Intellectual capital and value creation: evidence from the Portuguese banking industry. Journal of Knowledge Management, 4(1), 11-20.

Cabrita, M., & Bontis, N. (2008). Intellectual capital and business performance in the Portuguese banking industry. *International Journal of Technology Management*, 43(1-3), 212-237.

Collins, C.J., & Clark, K.D. (2003). Strategic human resource practices, top management team social networks, and firm performance: the role of human resource in creating organizational competitive advantage. Academy of Management Journal, 46(6), 740-751.

Field, A. (2000). Discovering statistics using SPSS for Windows. Thousand Oaks, Sage Publication.

Janošević, S., Dženopoljac, V., & Bontis, N. (2013). Intellectual capital and financial performance in Serbia. Knowledge and Process Management, 20(1), 1-11.

Kianto, A., Hurmelinna-Laukkanen, P., & Ritala, P. (2010). Intellectual capital in service and product-oriented companies. Journal of Intellectual Capital, 11(3), 305-325.

Kubo, I., & Saka, A. (2002). An inquiry into the motivations of knowledge workers in the Japanese financial industry. Journal of Knowledge Management, 6(3), 262-271.

Lado, A.A., & Wilson, M.C. (1994). Human resource systems and sustained competitive advantage: a competency-based perspective. Academy of Management Review, 19(4), 699-727.

Lipunga, A.M. (2015). Intellectual capital performance of the commercial banking sector of Malawi. International Journal of Business and Management, 10(1), 210-222.

Mavridis, D.G. (2005). Intellectual capital performance determinants and globalization status of Greek listed firms. Journal of Intellectual Capital, 6(1), 127-140.

Mention, A.M. (2013). Intellectual capital and performance within the banking sector of Luxembourg and Belgium. Journal of Intellectual capital, 14(2), 286-309.

Muhammad, N.M.N., & Ismail, M.K.A. (2009). Intellectual capital efficiency and firm's performance: study on Malaysian financial sectors. International Journal of Economics and Finance, 1(2), 206–212.

Pulić, A. (2004). Intellectual capital–does it create or destroy value? Measuring Business Excellence, 8(1), 62-68.

Radić, S. (2018). The impact of intellectual capital on the profitability of commercial banks in Serbia. Economic Annals, 63(216), 85-109.

Roslender, R., & Fincham, R. (2004). Intellectual capital accounting in the UK: a field study perspective. Accounting, Auditing and Accountability Journal, 17(2), 178-209.

Saengchan, S. (2007). The role of intellectual capital in creating value in banking industry. Journal of Knowledge Management, 3(2), 15-25.

Slavković, M., & Simić, M. (2019). Impact of human capital on organizational performance. An empirical study of startup firms in Republic of Serbia. *Sustainable Development and Innovation*, 147-159.

ШАБЛОН / ТЕМПЛАТЕ ЗА ПИСАЊЕ РАДОВА

Име аутора (Font size 10 Normal) Times New Roman (SR-Cyrilic)
Факултет или институција и Град (Font size 10 Italic)

НАСЛОВ СРПСКИ (Font size 11 Bold)

Апстракт

Текст апстракта на српском ...

Кључне речи:

NASLOV ENGLESKI ili neki drugi jezik (Font size 11 Bold)

Abstract

Tekst apstrakta na engleskom ili na nekom drugom jeziku…

Key words:

НАСЛОВ (Font size 11 Bold)

Текст (Font size 10)……...

Литература

1. Списиак литературе

Veličina strane 170mm x 240mm
Margine: Top 30mm Bottom 20mm
Left 22mm Right 22mm

CIP – Каталогизација у публикацији
Народна библиотека Србије, Београд

33+657
ЕКОНОМИКА : међународни часопис за економску теорију и праксу и друштвена питања = international journal for economic theory and practice and social issues / главни и одговорни уредник Зоран Симоновић. - Год. 20, бр. 1/2 (1973)- . - Ниш : Друштво економиста"Економика", 1973- (Ниш : Medivest). - 24 cm
Тромесечно. - Текст на енгл. језику. - Је наставак: Наука и пракса = ISSN 0558-3063. - Друго издање на другом медијуму: Економика (Online) = ISSN 2334-9190
ISSN 0350-137X = Економика (Ниш)
COBISS.SR-ID 26903