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MEĐUSOBNA USLOVLJENOST PERFORMANSI BANKARSKOG I REALNOG SEKTORA REPUBLIKE SRBIJE

Prevod obezbedio autor

Rezime

U ovom radu se analizira kauzalnost između dostignutog stepena razvoja bankarskog sektora Republike Srbije i njenog ekonomskog razvoja, kroz analizu određenih parametara finansijskog zdravlja, zatim ekonomski rast koji se putem makroekonomskih parametara dovodi u vezu sa parametrima razvoja bankarskog sektora. Glavni cilj u ovom radu je da se utvrdi putem modela višestruke regresione analize da li postoji obostrana kauzalnost i uslovljenost performansi realnog i bankarskog sektora, odnosno da li performanse bankarskog sektora imaju uticaja na kvalitet performansi ekonomskog razvoja. Vremenski interval koji pokriva data analiza je period od Q4 2008. do Q1 2014. godine.

Ključne reči: bankarski sektor, ekonomski razvoj, regresiona analiza

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MUTUAL DEPENDENCE OF BANKING AND REAL SECTOR PERFORMANCE IN THE REPUBLIC OF SERBIA

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Summary

This paper analyzes the causalities between the achieved level of development of the banking sector of the Republic of Serbia through the analysis of certain parameters of financial health, as well as economic growth which is associated with parameters of the banking sector through macroeconomic parameters. The main objective of this paper is to use the multiple regression analysis and determine whether there is a mutual causality and conditionality of the performance of the real and banking sectors, or whether the performance of the banking sector has an impact on the quality of performance of the economic development. The time interval covered by the analysis is from Q4 2008 to Q1 2014.

Keywords: Banking sector, Economic growth, Regression Analysis

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Uvodna razmatranja

Ekonomije zemalja u nastajanju su u poslednjih nekoliko godina imale određenih koristi od povoljnih spoljnih uslova finansiranja te jakog kreditnog rasta, ali se ova tendencija u poslednjim godinama već reducira. Takođe, određeni broj zemalja tržišta u nastajanju suočava se sa problemom monetarne politike u pogledu makroekonomskih rebalansa, te očuvanja finansijske stabilnosti. Izazovi koji će pratiti u narednom periodu ekonomije u nastajanju se pre svega odnose na prilagođavanje strožijim uslovima vanjskog finansiranja te moguće veće domaće ranjivosti.

Finansijski sektor Republike Srbije je uglavnom bankocentričan, gde se učešće banaka u njegovoj ukupnoj aktivi kreće oko 90%. U cilju očuvanja finansijske stabilnosti te pospešivanja domaćeg ekonomskog rasta bankarski sektor Republike Srbije vrši svoju osnovnu funkciju finansijskog posredovanja. Banke u nekoliko poslednjih godina vrše promenu modela ponašanja u kontekstu oslanjanja na domaće stabilne izvore finansiranja što je svakako pozitivan impuls u jačanju poverenja i povećanju štednje stanovništva.

Predmet koji je dobio veliku pažnju većeg broja autora u poslednjih par godina jesu performanse bankarskog sektora, tako da postoji veći broj radova, odnosno literature na temu kvaliteta menadžmenta i uticaja na performanse bankarskog sektora. Dakle, postoji opšta saglasnost da je glavni faktor koji doprinosi kvalitetu bankarskih performansi svakako dobro upravljanje bankarskim resursima, o čemu svedoče i mnoge studije urađene za bankarski sektor u SAD - u. Bankarski sektor igra značajnu ekonomsku ulogu u pogledu pružanja usluga finansijskog posredovanja, te ubrzanja procesa pretvaranja depozita u produktivne investicije. Imajući u vidu odnos između koristi bankarskog sektora na sam rast privrede, može se slobodno reći da je bankarski sektor od kapitalnog značaja za opšte stanje privrede.

Ben Naceur i Goaied (2008) su ispitivali uticaj bankarskih karakteristika, finansijske strukture te makroekonomskih uslova na neto kamatne margine i profitabilnost banaka u Tunisu za period od 1980. do 2000. Oni su došli do rezultata da veći iznos kapitala i veći troškovi doprinose povećanju tendencije neto kamatne marže i profitabilnosti, dok je veličina u negativnoj korelaciji sa profitabilnošću banaka. Tokom perioda istraživanja, isto tako došli su do zaključka da razvoj tržišta akcija ima pozitivan uticaj na profitabilnost banaka. Empirijski rezultati su ukazali da privatne banke su relativno profitabilnije od državnih banaka. Na kraju rezultati istraživanja su pokazali da makroekonomski uslovi nemaju signifikantan značaj na profitabilnost banaka u Tunisu. Ako napravimo paralelu sa tržištem kapitala u Republici Srbiji, tačnije sa tržištem akcija koje nije u dovoljnoj meri razvijeno, odnosno koje je nelikvidno, onda se postavlja pitanje da li tržište akcije u Republici Srbiji ima značajan uticaj na performanse bankarskog sektora. Neto kamatne margine u Republici Srbiji su u 2012. godini iznosile oko 10%, dok se u Evropskoj uniji kreću od 1 do 2%. Razlozi ovako visokih neto kamatnih margina se nalaze prije svega u visokim rizicima likvidnosti u Republici Srbiji, karakteristikama dospelosti depozita, loše naplate kredita, kao i visokog obima toksičnih kredita, znatnih inflacionih očekivanja, problema regulacije, itd (Božović, 2013, p. 468).

Ovo istraživanje je koncipirano i prezentovano kroz tri dela ovog rada. U prvom delu se kroz analizu relevantnih pokazatelja zdravlja bankarskog sektora R. Srbije ukazuje na značaj istog u funkciji ekonomskog razvoja. U drugom delu se opisuju teorijske postavke regresionog modela te definisanje značajnih nezavisnih varijabli koje utiču na samu ekonomsku aktivnost. U poslednjem, trećem delu rada, razmatraju se rezultati vlastitog istraživanja na osnovu primene regresionog modela. U tom kontekstu se navodi koja od posmatranih nezavisnih varijabli ima najsignifikantniji uticaj na rast/pad ekonomske aktivnosti merene kroz bruto domaći proizvod privrede Republike Srbije.

Pregled relevantne literature

U zadnjih nekoliko godina glavna tema rasprave mnogih autora je povezanost između finansijskog i ekonomskog razvoja. King i Levine (1993) su istraživali povezanost između finansijskog razvoja i dugoročnog ekonomskog rasta. Oni su proveli prekograničnu analizu za

Introduction

Emerging economies in the last few years had some benefit from favorable external financing conditions and strong credit growth, but this trend in recent years has already declined. Also, a number of emerging market countries are faced with the problem of monetary policy in terms of macroeconomic rebalancing and safeguarding of financial stability. The challenges that emerging economies will face in the forthcoming period are primarily related to the adjustment of tighter external financing conditions and possible higher domestic vulnerabilities.

The financial sector of the Republic of Serbia is mainly bank-centric, with participation of banks in its total assets amounting to around 90%. In order to preserve financial stability and to foster domestic economic growth, the banking sector of the Republic of Serbia performs its basic function of financial intermediation. In recent years banks performed the change of behavior models in the context of reliance on domestic sources of stable funding which is certainly a positive impulse to strengthen confidence and increase household savings.

The subject which has received much attention of a number of authors in the last few years is the performance of the banking sector, with a number of papers dealing with quality management and the impact on the performance of the banking sector. Thus, there is general agreement that the main factor contributing to the quality of banking performance certainly is good management of bank resources, as evidenced by the many studies done for the banking sector in the USA. The banking sector plays an important economic role in providing services of financial intermediation and accelerates the process of converting deposits into productive investments. Bearing in mind the relationship between the benefits of the banking sector on economic growth alone, it can be said that the banking sector is of utmost importance for the general state of the economy.

Ben Naceur and Goaied (2008) examined the impact of bank characteristics, financial structure, and macroeconomic conditions on net interest margins and profitability in Tunisia for the period from 1980 to 2000. They came to the result that a greater amount of capital and higher costs contribute to increasing tendencies to net interest margins and profitability while the size is negatively correlated with the profitability of banks. During the study period, they also came to the conclusion that the development of the stock market has a positive impact on banks' profitability. The empirical results indicated that private banks are relatively more profitable than state banks. At the end of the study the results have shown that macroeconomic conditions have a significant importance on the profitability of banks in Tunisia. If we make a parallel with the capital market in the Republic of Serbia, namely the market for stocks that are not sufficiently developed, or which is insolvent, then the question is whether the market shares in the Republic of Serbia have a significant impact on the performance of the banking sector? Net interest margin in the Republic of Serbia in 2012 amounted to about 10% while in the EU it ranges from 1 to 2%. The reasons for such a high net interest margin are primarily in high liquidity risks in the Republic of Serbia, the characteristics of deposit maturity, poor loan repayment, as well as high volume of toxic loans, significant inflationary expectations, problems of regulation, etc. (Bozovic, 2013, p. 468).

This research paper is designed and presented in three different parts. In the first part, the analysis of relevant health indicators of the banking sector of the Republic of Serbia indicates its importance in the economic development. The second part describes the theoretical assumptions of the regression model and the definition of significant independent variables that affect the economic activity. At last, the third part of this paper discusses the results of their own research based on the application of regression models. In this context, it is stated that the observed independent variables have the most significant impact on the growth/decline in economic activity as measured by the gross domestic product of the economy of Republic of Serbia.

Review of relevant literature

In recent years, the main topic of discussion for many authors is the correlation between financial and economic development. King and Levine (1993) investigated the correlation between financial development and long-term

80 razvijenih i 80 nerazvijenih zemalja koristeći podatke za period 1960. - 1989. Osim toga, za detaljniju analizu razvoja finansijskog sektora koristili su sledeće varijable: racio likvidnih obaveza finansijskog sistema prema GDP -u, racio novčanih depozita banaka domaće aktive plus depozite centralne banke, racio potraživanja nefinansijskog privatnog sektora u odnosu na ukupne domaće kredite, racio potraživanja nefinansijskog privatnog sektora prema GDP - u. Autori su pretpostavili da između finansijskog razvoja i ekonomskog rasta postoji povezanost uz ispitivanje dva izvora rasta. Oni su ispitivali stopu akumulacije fizičnog kapitala, mereno kao procena stope fizičkog kapitala po glavi stanovnika i odnosu investicija prema GDP-u. Oni su istraživali kako se može povećati efikasnost kroz adekvatno alociranje kapitala. Takođe, došli su do zaključka da rast GDP per capita, zatim rast stope akumulacije te poboljšanje ekonomske efikasnosti vodi povećanju ekonomskog rasta i mnogi makroekonomskih indikatora.

Prema mnogim autorima kao što su: Menyah et al. (2014), Pradhan, Arvin, Norman i Nishigaki (2014), Bojanic (2012), Naceur i Ghazouani (2007), Al -Yousif (2002), Thakor (1996), McKinnon (1973), Shaw (1973), njihova istraživanja su pokazala da je prisutna indirektna uzročnost u razvoju bankarskog sektora prema ekonomskom rastu. Dakle, prema njihovom gledištu razvoj bankarskog sektora doprinosi ekonomskom rastu kroz dva glavna kanala: kao prvo povećanjem efikasnosti akumulacije kapitala, tj. marginalne produktivnosti kapitala, i kao drugo povećanje stope štednje i na taj način investicijske stope.

Određeni broj studija autora Blackburn i Hung (1998), Beck i Levine (2004), Beck et. al. (2000), Dritsakis i Adamopoulos (2004), Fung (2009), Pradhan (2013), Herwartz i Walle (2014), Law i Singh (2014) odnosio se na uticaj finansijskog razvoja i ekonomskog razvoja pomoću brojnih ekonometrijskih modela kao što su vremenske serije, razni paneli i druge tehnike. Empirijski dokazi su pokazali da postoji pozitivna povezanost pokazatelja finansijskog razvoja i ekonomskog rasta. Generalno, svi radovi ukazuju na to da dobro razvijen finansijski sistem je uslov za poboljšanje, te time se i u skladu sa predlogom da *„više finansija vodi većem rastu"*. Tabela u nastavku ilustuje neke od navedenih studija u pogledu područja istraživanja, metodologije i vrste studije.

Tabela 1: Pregled studija istraživanja koje ukazuju na kauzalnost između razvoja tržišta akcija i ekonomskog razvoja

Studija	Područje istraživanja	Metod istraživanja
Grupa 1. Studije koje smatraju da finansijski razvoj utiče na ekonomski rast, tzv. supply-leading hipoteze		
Agbetsiafa (2003)	Subsaharska Afrika	Trovarijantna Grendžerova kauzalnost - TVGC
Boulila i Trabelsi (2004)	Tunis	Dvovarijantna Grendžerova kauzalnost - BVGC
Jalil et al. (2010)	Kina	Trovarijantna Grendžerova kauzalnost - TVGC
Bojanic (2012)	Bolivija	Multivarijantna Grendžerova kauzalnost
Hsueh et al. (2013)	10 Azijskih zemalja	Dvovarijantna Grendžerova kauzalnost - BVGC
Menyah et al. (2014)	21 Afričkih zemalja	Trovarijantna Grendžerova kauzalnost - TVGC
Grupa 2. Studije koje smatraju da ekonomski rast utiče na finansijski razvoj, tzv. demand-following hipoteze		
Ang i McKibbin (2007)	Malezija	Multivarijantna Grendžerova kauzalnost
Odhiambo (2008)	Kenija	Trovarijantna Grendžerova kauzalnost - TVGC
Panopoulou (2009)	5 zemalja	Multivarijantna Grendžerova kauzalnost
Odhiambo (2010)	Južna Afrika	Multivarijantna Grendžerova kauzalnost
Grupa 3. Studije koje smatraju podržavaju feedback hipoteze		
Masih i Masih (1999)	8 zemalja	Multivarijantna Grendžerova kauzalnost
Huang et al. (2000)	SAD, Japan i Kina	Trovarijantna Grendžerova kauzalnost - TVGC
Caporale et. al. (2004)	7 zemalja	Dvovarijantna Grendžerova kauzalnost - BVGC
Darrat et al. (2006)	Tržišta u razvoju - EMs	Trovarijantna Grendžerova kauzalnost - TVGC
Hou i Cheng (2010)	Tajvan	Multivarijantna Grendžerova kauzalnost

Izvor: Pradhan, et al. 2014

economic growth. They conducted a cross-border analysis of 80 developed and 80 underdeveloped countries using data for the period 1960-1989. In addition, for a more detailed analysis of the financial sector development they used the following variables: the ratio of liquid liabilities of the financial system to GDP, the ratio of cash deposits of domestic banks' assets plus deposits of the central bank, the ratio of claims of non-financial private sector in relation to total domestic loans, receivables ratio of non-financial private sector to GDP. The authors hypothesized that between financial development and economic growth there is a connection with the examination of two sources of growth.

They examined the rate of accumulation involving physical capital, measured as estimated rate of physical capital per capita in relation to investment to GDP. They explored how to increase efficiency through optimal allocation of capital. Also, they came to the conclusion that the growth of GDP per capita, then the growth rate of accumulation and improved economic efficiency lead to increasing economic growth and many macroeconomic indicators.

According to many authors, such as: Menzel et al. (2014), Pradhan, Arvin, Norman and Nishigaki (2014), Bojanic (2012), Naceur and Ghazouani (2007), Al -Yousif (2002), Thakor (1996), McKinnon (1973), Shaw (1973), the research has shown that there is indirect causality in the banking sector development to economic growth. Thus, in their view the development of the banking sector contributes to economic growth through two main channels: first, by increasing the efficiency of capital accumulation, i.e. marginal productivity of capital, and secondly an increase in the savings rate and thus the investment rate.

A number of studies by authors Blackburn and Hung (1998), Beck and Levine (2004), Beck et. al. (2000), Dritsakis and Adamopoulos (2004), Fung (2009), Pradhan (2013), and Herwartz Walle (2014), Law and Singh (2014) referred to the impact of financial development and economic growth through a number of econometric models such as time series, various panels and other techniques. Empirical evidence has shown that there is a positive correlation between indicators of financial development and economic growth. Generally, all the papers indicate that a well-developed financial system is a precondition for improvement, and thus in accordance with the proposal that "more finance leads to higher growth." The table below illustrates some of these studies in terms of areas of research, methodologies and types of studies.

Table 1: Review of research studies that indicate causality between the development of stock markets and economic development

Study	Study area	Method of research
Group 1. Studies find that financial development affects economic growth, the so-called supply-leading hypothesis		
Agbetsiafa (2003)	Sub-Saharan Africa	Trivariate Granger Causality -TVGC
Boulila and Trabelsi (2004)	Tunisia	Bivariate Granger Causality - BVGC
Jalil et al. (2010)	China	Trivariate Granger Causality -TVGC
Bojanic (2012)	Bolivia	Multivariate Granger Causality
Hsueh et al. (2013)	Ten Asian Countries	Bivariate Granger Causality - BVGC
Menyah et al. (2014)	21 African Countries	Trivariate Granger Causality -TVGC
Group 2. Studies find that economic growth affects financial development - demand-following hypothesis		
Ang and McKibbin (2007)	Malaysia	Multivariate Granger Causality
Odhiambo (2008)	Kenya	Trivariate Granger Causality -TVGC
Panopoulou (2009)	5 countries	Multivariate Granger Causality
Odhiambo (2010)	South Africa	Multivariate Granger Causality
Group 3. Studies that support the hypothesis feedback		
Masih and Masih (1999)	8 countries	Multivariate Granger Causality
Huang et al. (2000)	USA, Japan and China	Trivariate Granger Causality -TVGC
Caporale et. al. (2004)	7 countries	Bivariate Granger Causality - BVGC
Darrat et al. (2006)	Emerging markets - EMs	Trivariate Granger Causality -TVGC
Hou & Cheng (2010)	Taiwan	Multivariate Granger Causality

Source: Pradhan, et al. 2014

Banke drže likvidna sredstva iz različitih razloga i motiva, kao što je motiv „predostrožnosti", zatim zbog osiguranja od neizvesnih potreba deponenata za likvidnim sredstvima. Strateški motiv držanja likvidnih sredstava proističe iz mogućnosti iskorišćavanja eventualnih profitabilnih opcija koje mogu nastati. Prema Staikouras i Wood (2003) inflacija može imati direktne efekte, odnosno može uticati na povećanje cijene rada, i indirektne efekte, tj. može uticati na promjenu kamatnih stopa kao i na profitabilnost banaka. Prema Perry (1992) efekat inflacije na banke pre svega zavisi da li se inflacija očekuje ili ne. U slučaju da se inflacija očekuje tj. da je anticipirana, kamatne stope se mogu korigovati u zavisnosti da li je tendencija rasta prihoda veća od troškova poslovanja. I suprotno, u slučaju nepredviđene inflacije banke mogu biti spore u prilagođavanju svojih kamatnih stopa, što dovodi do bržeg povećanja troškova od prihoda banaka i s tim u vezi dolazi do negativnog efekta na profitabilnost banaka.

Analiza ključnih indikatora finansijskog zdravlja bankarskog sektora Republike Srbije

Profitabilnost u vidu zadržane zarade predstavlja jedan od značajnijih izvora stvaranja kapitala, iz prostog razloga što se zdrav bankarski sistem zasniva na profitabilnim i adekvatno kapitaliziranim bankama. Bitno je napomenuti da je profitabilnost od kapitalnog značaja za konkurentsku poziciju na bankarskom tržištu, kao i za merenje kvaliteta uprave banke. Za razliku od preduzeća gde je cena akcije najbolji tržišni pokazatelj uspešnosti poslovanja jer se kroz cenu akcije vrednuju sve poslovne aktivnosti preduzeća, u bankarskom sektoru ovaj pokazatelj u većini slučajeva nije pouzdan. Na primer, za banke čije se akcije ne kotiraju na berzama što je uglavnom slučaj za tržišta kapitala u nastajanju, onda korišćenje parametara profitabilnosti predstavlja jedini način merenja. U međunarodnoj praksi prilikom izračunavanja prinosa banke, odnosno njene profitabilnosti obično se koristi šest ključnih pokzatelja profitabilnosti kao što su:

1. Prinos na akcijski kapital (engl. *return on equity - ROE);*
2. Prinos na aktivu (engl. *return on assets - ROA);*
3. Kamatna marža;
4. Nekamatna marža;
5. Operativni profit; i
6. Prihod po običnoj akciji (engl. *Earning per share - EPS).*

U nastavku će biti analizirana prva četiri indikatora profitabilnosti bankarskog sektora Republike Srbije. *ROE* je indikator od kapitalne važnosti za akcionare banke jer pokazuje koliki prinos mogu očekivati u odnosu na knjigovodstvenu vrednost investiranog kapitala u posmatranu banku, tj. koliki profit mogu ostvariti na osnovu najbolje kombinacije prinos-rizik. Cilj menadžmenta banke je da ostvari adekvatnu stopu povrata na akcionarski kapital. Ozbiljno upozorenje za banke javlja se u trenutku kada indikator *ROE* dostigne vrednost iznad 20 - 25%, gdje se daje signal da je nužno hitno i značajno smanjenje ekstremne zaduženosti na finansijskom tržištu. *ROA* meri efikasnost menadžmenta i zaposlenih u banci pri upravljanju ukupnom aktivom banke u pogledu ostvarivanja neto profita posle oporezivanja. Ako je vrednost indikatora *ROA* manja od 0,5% smatra se da je profitabilnost banke loša, ako se kreće između 0,5% i 1% onda se može reći da je reč o prosečnoj profitabilnosti, zatim ako se vrijednost *ROA* pokazatelja kreće između 1% i 2% onda je svakako reč o vrlo profitabilnim finansijskim institucijama. Neto kamatna marža predstavlja sposobnost menadžmenta banke da osigura maksimum prihoda po osnovu kamata na različite plasmane na način da koristi najjeftinije izvore finansiranja kamatonosne aktive. Dakle, veličina spread-a svakako predstavlja stepen konkurencije na analiziranom tržištu bankarskih usluga, tako što je spread veći uz ostale nepromenjene uslove stepen konkurencije je manji i obrnuto. Takođe, bitno je napomenuti da na tržištima na kojima je visok stepen konkurencije te kamatni spread mali pritisak na menadžment banke je veći u pogledu da pronađe alternativne mogućnosti za sticanje prihoda kao na primer na tržištu hartija od vrednosti.

Promena stabilnosti i strukture bankarske dobiti nekada je praćena zakonskim kapitalnim propisima te merama monetarne politike, kao što je na primer obavezna rezerva. U cilju održavanja poverenja u bankarski sektor banke su u obavezi održavati minimalne kapitalne standarde.

Banks hold liquid assets for different reasons and motives, such as the "precautionary" motive, then for the purpose of getting insured against the uncertain needs of depositors for liquid funds. The strategic motive of holding liquid assets arises from the possibility to exploit any profitable option that may appear. According to Staikouras and Wood (2003), inflation can have direct effects, and may increase labor costs, and indirect effects, i.e. it can influence the change in interest rates as well as the profitability of banks. According to Perry (1992) the effect of inflation on the Bank depends primarily on whether inflation is expected or not. In the event that inflation is expected i.e. it is anticipated, interest rates may be adjusted depending on whether the tendency of revenues growth exceeds operating costs. And otherwise, in the event of unforeseen inflation banks can be slow in adjusting their interest rates, which leads to faster increase in the cost of bank income and in this regard there is a negative effect on profitability of banks.

Analysis of key financial health indicators of the banking sector of the Republic of Serbia

Profitability in the form of retained earnings is one of the major sources of capital formation, for the simple reason that a healthy banking system is based on profitable and adequately capitalized banks. It is important to note that profitability is of utmost importance for the competitive position in the banking market, as well as for measuring the quality of bank management. Unlike for companies where the price at the stock market is the best indicator of operating performance because the stock price reflects the value of all business activities of the concerned enterprise, in the banking sector this indicator is not reliable in most cases. For instance, for banks whose shares are not listed on stock exchanges, which is generally the case in emerging capital markets, the parameters of profitability are the only way of measurement. In international practice when calculating the yield of the bank or its profitability, commonly used are the six key indicators of profitability such as:

1. Return on equity - ROE;
2. Return on assets - ROA;
3. Interest-bearing margin;
4. Non-interest margin;
5. Operating profit; and
6. Earning per share - EPS.

Below we will analyze the first four indicators of the banking sector profitability of the Republic of Serbia. ROE is an indicator of utmost importance for the banks' shareholders because it shows how much profit can be expected compared to the book value of the invested capital in the bank observed, i.e. how much profit can be realized based on the best combination of yield-risk. The aim of the banks management is to achieve an adequate rate of return on equity. Serious warning to the bank occurs at the moment when the indicator ROE reaches above 20 - 25%, where it gives a signal that it is necessary to urgently and substantially reduce extreme indebtedness in the financial market. ROA measures the efficiency of management and employees of the bank in managing total assets of banks in terms of achieving a net profit after tax. If the value of the indicator ROA is less than 0.5%, the bank's profitability is considered to be bad. If it is between 0.5% and 1%, then we can say it is about average profitability, and if the value of the ROA indicator ranges between 1 % and 2%, we can certainly talk about very profitable financial institutions. Net interest margin is the ability of the bank's management to ensure maximum revenue from interest on various loans in a way that benefits the cheapest sources of funding interest-earning assets. Therefore, the size of the spread certainly reflects the degree of competition in the analyzed market of banking services, i.e. the bigger the spread, with other conditions unchanged, the lower the level of competition and vice versa. It is also important to note that in markets with a high level of competition and consequently low interest rate spread, the pressure on the bank's management is higher, in terms of finding alternative opportunities for income generation such as the securities market.

Changing the structure and stability of the banking profit is sometimes followed by legislative capital regulations and monetary policy measures, such as, for example, required reserve. In order to maintain confidence in the banking sector, banks are required to maintain

Restriktivna politika kapitalnih zahteva može imati uticaja na promenu poslovne politike banke. Preterani iznosi obavezne rezerve te drugih zakonskih propisa o likvidnosti mogu negativno uticati na dobit jer uglavnom bilansi stanja banaka u mnogim zemljama u razvoju sadrže velike udele fiksne imovine koje svakako nisu pozitivnog dejstva. Takođe, oporezivanje je važan faktor koji utiče na profitabilnost banaka te na izbor poslovne politike i u krajnjoj instanci na tržišnu konkurentnost. Možemo naglasiti da valjano analiziranje izvora dobiti te promene u profitnoj strukturi na nivo pojedinačnih banaka i celog bankarskog sistema predstavlja suštinu upravljanja rizicima i važan faktor ekonomskog razvoja. Tabela u nastavku teksta ilustruje odabrane pokazatelje zdravlja bankarskog sektora u Republici Srbiji za period: 2008. - Q1 2014.

Tabela 2: Odabrani makroprudencijalni pokazatelji finansijskog zdravlja bankarskog sektora R. Srbije za period: 2008. - Q1 2014. (u %)

R. br.	Pokazatelji	2008.	2009.	2010.	2011.	2012.	2013.	Q1 2014.
1.	Adekvatnost kapitala							
1. 1.	Regulatorni kapital u odnosu na rizičnu aktivu	21,9	21,4	19,9	19,1	19,9	20,9	21,2
1. 2.	Osnovni kapital u odnosu na rizičnu aktivu	17,9	16,5	15,9	18,1	19,0	19,3	18,4
1. 3.	Neto problematični krediti u odnosu na kapital	13,4	22,1	29,0	30,8	31,0	32,7	32,4
2.	Profitabilnost							
2. 1.	Prinos na aktivu - ROA	2,1	1,0	1,1	0,0	0,4	-0,1	1,2
2. 2.	Prinos na kapital - ROE	9,3	4,6	5,3	0,2	2,0	-0,4	5,4
2. 3.	Kamatna marža u odnosu na bruto dobitak	61,9	63,9	65,7	69,0	65,6	69,2	68,8
2. 4.	Nekamatonosni rashodi u odnosu na bruto dobitak	62,8	66,3	67,1	65,9	69,8	69,4	63,8

Izvor: http://www.nbs.rs/internet/cirilica/80/index.html

Gore predstavljeni statistički pokazatelji ukazuju na oscilacije određenih pokazatelja bankarskog sektora Republike Srbije. Kao što se da primjetiti bankarski sektor je kontinuirano adekvatno kapitaliziran. Najveću vrednost pokazatelj regulatorni kapital u odnosu na rizičnu aktivu ostvario je u 2008. godini (21,9%), najmanja vrednost zabeležena je u 2011. godini (19,1%), te srednja vrednost od 20,61% što je iznad regulatornog minimuma od 12%. Neznatno smanjenje pokazatelja adekvatnosti kapitala za period: 2011. - 2012. može se objasniti kao posledica usklađivanja bankarskog sektora sa standardima Bazela II, odnosno uključivanja dela regulatornih rezervi u odbitne stavke osnovnog kapitala. Odlukom o adekvatnosti kapitala banke su bile u obavezi da, do kraja 2012. godine, uključe najmanje 25% iznosa potrebne rezerve za procenjene gubitke u odbitke stavke od osnovnog kapitala umesto da budu tretirane kao odbitke stavke kod ukupnog regulatornog kapitala. Kako iznos dopunskog kapitala ne može preći 50% iznosa osnovnog kapitala, na način da umanjuje osnovni kapital, rezerve smanjuju nivo subordiniranog duga i ostalih elemenata dopunskog kapitala koje je moguće bilo uključiti u regulatorni kapital.

Kreditni rizik predstavlja najizraženiji rizik u bankarskom sektoru Republike Srbije kako zbog valutne kompozicije kreditnog portfolija, tako i zbog odnosa u kretanju deviznog kursa dinara prema evru. Od samog početka 2008. godine bankarski sektor Republike Srbije karakteriše tendencija rasta nekvalitetnih kredita u ukupnim kreditima i kapitalu. Maksimalna vrednost neto problematičnih kredita u odnosu na kapital zabeležena je u 2013. godini (32,7%), minimalna vrednost u 2008. godini (13,4%) te srednja vrednost od 27,34%. Najveće učešće u kapitalnim zahtjevima imaju kapitalni zahtjevi za kreditni rizik (86%), zatim kapitalni zahtjevi za operativni rizik (12%), te najmanji udio kapitalni zahtjevi za tržišne rizike (2%). Na kraju 2013. godine, bruto *NPL* činili su oko 21,4% ukupno odobrenih kredita. Kada je reč o sektorskoj strukturi značajno veći iznos se odnosi na privredu (24,5), nego na stanovništvo (10,8%). Grafik u nastavku teksta prikazuje tendenciju

minimum capital standards. Restrictive policies' capital requirements may have an impact on changing the bank's policies. Excessive amounts of required reserves and other regulations on liquidity may adversely affect the profits mainly because the balance sheets of banks in many developing countries contain a high proportion of fixed assets that certainly have no positive effects. Also, taxation is an important factor affecting the profitability of banks, and business policy, and ultimately the market competitiveness. We emphasize that proper analysis of the sources of profit and changes in the structure of the profit on the level of individual banks and the entire banking system is essential for risk management and an important factor in economic development. The table below illustrates the selected health indicators of the banking sector in the Republic of Serbia for the period: 2008 - Q1 2014.

Table 2: Chosen macroprudential indicators of the financial health of the banking sector of the Republic of Serbia for the period: 2008 - Q1 2014 in (%)

No	Indicators	2008	2009	2010	2011	2012	2013	Q1 2014
1.	Capital adequacy							
1. 1.	Regulatory capital to risk-weighted assets	21.9	21.4	19.9	19.1	19.9	20.9	21.2
1. 2.	The share capital in relation to risk assets	17.9	16.5	15.9	18.1	19.0	19.3	18.4
1. 3.	Net performing loans in relation to capital	13.4	22.1	29.0	30.8	31.0	32.7	32.4
2.	Profitability							
2. 1.	Return on assets	2.1	1.0	1.1	0.0	0.4	-0.1	1.2
2. 2.	Return on equity	9.3	4.6	5.3	0.2	2.0	-0.4	5.4
2. 3.	The interest margin compared to gross profit	61.9	63.9	65.7	69.0	65.6	69.2	68.8
2. 4.	Non-interest expenses compared to gross profit	62.8	66.3	67.1	65.9	69.8	69.4	63.8

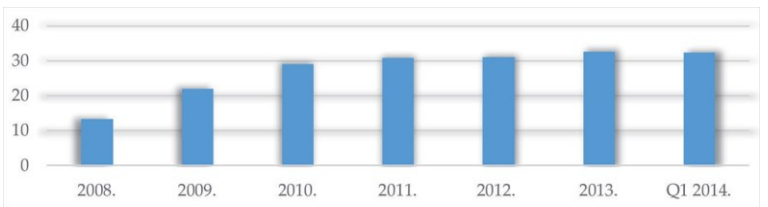
Source: http://www.nbs.rs/internet/cirilica/80/index.html

Above presented statistical indicators show the fluctuations of certain indicators of the banking sector of the Republic of Serbia. As may be observed, the banking sector is adequately capitalized continuously. The highest value of the indicator regulatory capital to risk-weighted assets was achieved in 2008 (21.9%), the lowest value was recorded in 2011 (19.1%) and the mean value of 20.61% which is above the regulatory minimum of 12%. A slight decrease in capital adequacy ratios for the period 2011-2012 came as a result of the banking sector's harmonization with Basel II standards, i.e. the inclusion of regulatory reserves in the deducted core capital. Pursuant to the Decision on Capital Adequacy, banks were obliged by the end of 2012, to involve at least 25% of the amount of required reserves for estimated losses as a deduction from the core capital instead of being treated as a deduction from the total regulatory capital. As the amount of additional capital may not exceed 50% of core capital in a way that reduces the share capital, the reserves reduce the level of subordinated debt and other elements of additional capital that can be included in regulatory capital.

Credit risk is the most prominent risk in the banking sector of the Republic of Serbia due to the currency composition of the loan portfolio, and because of the movements of the exchange rate of the dinar against the euro. From the beginning of 2008, the banking sector of the Republic of Serbia was characterized by a tendency of growth of non-performing loans to total loans and equity. The maximum value of net performing loans to capital was recorded in 2013 (32.7%), the minimum value in 2008 (13.4%) and the mean value of 27.34%. The largest share of capital requirements is accounted for by capital requirements for credit risk (86%), followed by capital requirements for operational risk (12%) and the lowest share of capital requirements is accounted for by market risk (2%). At the end of 2013, the gross NPL accounted for about 21.4% of total loans. As regards the sectoral structure, the amount was significantly higher when it comes to the economy (24.5) than the population (10.8%). The graph below shows the upward

kretanja nekvalitetnih kredita bankovnog sektora Republike Srbije za period: 2008. - Q1 2014.

Grafik 1: Tendencija kretanja neto problematičnih kredita u odnosu na kapital za period: 2008. - Q1 2014.



Izvor: Proračun autora

Pokazatelji finansijskog zdravlja ukazuju na činjenicu da je bankarski sektor Republike Srbije u komparaciji u odnosu na prosek regiona u boljem položaju, s stim da su izražene dve relativne slabosti pad profitabilnosti i povećano učešće nekvalitetnih kredita.

Tabela 3: Pokriće bruto problematičnih kredita rezervama za procenjene gubitke i učešće problematičnih kredita za zemlje regiona i pojedine zemlje EU zaključno sa 31.12.2012. (u %)

Posmatrane zemlje	Bruto problematični krediti u odnosu na ukupne bruto kredite	Pokriće bruto problematičnih kredita rezervama za procenjene gubitke	Index pokrića
1	2	3	4 (3/2)
Albanija	22,7	51,8	2,28
Bosna i Hercegovina	13,5	65,4	4,84
Bugarska	16,9	68,7	4,06
Letonija	9,6	50,2	5,23
Litvanija	18,6	32,7	1,75
Mađarska	15,8	49,1	3,11
Makedonija	10,6	100,9	9,52
Poljska	8,9	68,3	7,67
Rumunija	18,2	86,4	4,74
Srbija	18,6	126,5	6,80
Turska	2,7	75,2	27,85
Hrvatska	13,6	43,7	3,21
Crna Gora	18,5	32,8	1,77

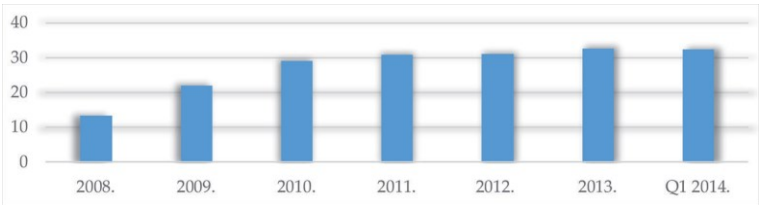
Izvor: http://www.nbs.rs/internet/cirilica/90/fs.html (Prilagođeno)

Kao što se da primetiti iz prethodne tabele nivo ukupnih rezervi za pokriće potencijalnih gubitaka bankarskog sektora Republike Srbije po osnovu *NPL* je iznad proseka regiona (6,80 puta), izuzev Turske koja očigledno ima najbolju pokrivenost (27,85 puta) jer ima i najmanje bruto problematičnih kredita u ukupnim bruto kreditima, kao i Makedonija (9,52 puta) i Poljska (7,67 puta). U cilju očuvanja finansijske stabilnosti te zaštite interesa deponenata i ostalih poverioca NBS, pored propisanih MSFI zahteva i formiranje regulatornih rezervi koje su krajem 2013. godine činile oko 50,9% *NPL*, gde je obračunata rezerva za pokriće bilansnih i vanbilansnih gubitaka iznosila oko 117,9% vrednosti ovih kredita.

Kada je reč o pokazateljima profitabilnosti bankarskog sektora Republike Srbije, odnosno prvom pokazatelju - *ROA* onda se može primetiti da je u posmatranom analiziranom periodu od 2008 do Q1 2014. ostvario maksimalnu vrednost u 2008. (2,1%), minimalnu vrednost u 2013., (-0,1%) te srednju vrednost od 0,81% što se može zaključiti da se radi o prosečnoj profitabilnosti bankarskog sistema. Na smanjenje profitabilnosti u 2013. godini je pre svega uticao visok iznos otpisa nenaplativih potraživanja na teret rezultata poslovanja kod pojedinih banaka, te negativnih stopa kreditnog rasta koje su evidentne u kreditiranju privrede. Takođe, promenjena je i struktura prihoda od kamata u korist većeg učešća manjih rizičnih plasmana koji svakako imaju i niže kamate. Drugi pokazatelj profitabilnosti bankarskog sistema, tj. povrat na kapital - *ROE* je u analiziranom periodu beležio tendenciju blagog pada, gde je maksimalna vrednost ostvarena u 2008. godini (9,3%), minimalna vrednost u 2013. godini (-0,4%) i srednja vrednost od 3,7%. Ako sada posmatramo troškovnu stranu onda vidimo povećanu tendenciju nekamatonosnih rashoda u odnosu na bruto dobitak, koja se kretala od najmanjeg udela u 2008. godini (62,8%) do najvećeg udela u ukupnom bruto dobitku u 2012. godini (69,8%). Srednja vrednost ovog pokazatelja za posmatrani period iznosila je oko 66,4 % učešća troškova u ukupnom bruto dobitku što predstavlja opterećenje ukupnih prihoda nekamatonosnim troškovima koji se pre svega odnose na troškove rezervisanja za kreditni rizik (tabela 2).

trend of non-performing loans in the banking sector of the Republic of Serbia for the period: 2008 - Q1 2014.

Graph1: The tendency of net performing loans to capital for the period: 2008 - Q1 2014



Source: Calculation by author

Indicators of financial health point to the fact that the banking sector of the Republic of Serbia, compared to the average of the region, is in a better position, yet, on the other hand, there are two weakness: decline in profitability and increased share of non-performing loans.

Table 3: Coverage of gross NPLs reserves for estimated losses and the share of non-performing loans in the countries in the region and some EU countries as of 31.12.2012. (in %)

Country	NPL ratio	Total reserves to NPL	Index
1	2	3	4 (3/2)
Albania	22.7	51.8	2.28
Bosnia and Herzegovina	13.5	65.4	4.84
Bulgaria	16.9	68.7	4.06
Latvia	9.6	50.2	5.23
Lithuania	18.6	32.7	1.75
Hungary	15.8	49.1	3.11
Macedonia	10.6	100.9	9.52
Poland	8.9	68.3	7.67
Romania	18.2	86.4	4.74
Serbia	18.6	126.5	6.80
Turkey	2.7	75.2	27.85
Croatia	13.6	43.7	3.21
Montenegro	18.5	32.8	1.77

Source: http://www.nbs.rs/internet/cirilica/90/fs.html (Adjusted by author)

As can be noted from the table above, the level of total reserves to cover potential losses of the banking sector on the basis of the Republic of Serbia is above the regional average (6.80 times), with the exception of Turkey, which apparently has the best coverage (27.85 times) because it has minimum gross NPLs to total gross loans, Macedonia (9.52 times) and Poland (7.67 times). In order to preserve financial stability and protect the interests of depositors and other creditor the National Bank of Serbia - NBS, in addition to the prescribed IFRS requires the establishment of regulatory reserves by the end of 2013 accounted for about 50.9% of NPL, where the loan loss reserve to cover the balance sheet and off-balance sheet losses amounted to around 117, 9% of the value of these loans.

When it comes to the indicators of profitability of the banking sector of the Republic of Serbia, it may be noticed that in the observed period from 2008 to Q1 2014 the first indicator - ROA achieved a maximum value in 2008 (2.1%), the minimum value in 2013 (-0.1%) and the mean value of 0.81%, which leads to the conclusion that the profitability of the banking system was average. The decrease in profitability in 2013 was primarily influenced by a high amount of write-offs of bad debts charged to results of operations of some banks, and negative credit growth identified in the lending industry. It also changed the structure of interest income in favor of greater participation of smaller risk assets which certainly have lower interest rates. Another indicator of the profitability of the banking system, i.e. return on equity - ROE in the analyzed period recorded a declining tendency, the maximum value being achieved in 2008 (9.3%), the minimum value in 2013 (-0.4%) and the mean value of 3.7 %. If we look at the cost side, we see an increased tendency of non-interest expense compared to the gross profit, which ranged from the smallest share in 2008 (62.8%) to the largest share in the total gross profit in 2012 (69.8%). The mean value of this indicator for the given period was approximately 66.4% share of costs in the gross profit which represents a burden to total revenues in the form of non-interest expenses, primarily related to the cost of provisions for credit risk (Table 2).

Tabela 4: Glavni indikatori likvidnosti bankarskog sektora Srbije za period: 2008. - Q1 2014. (u %)

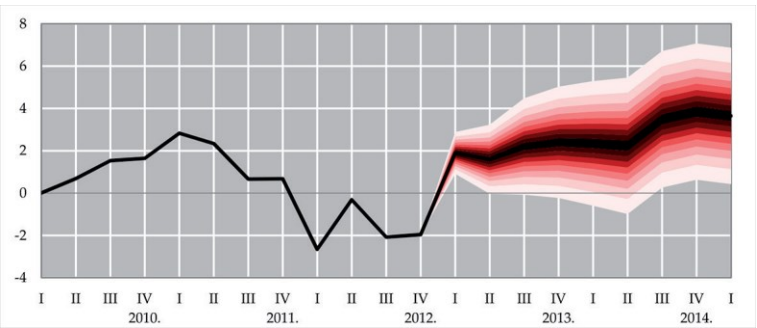
Pokazatelji likvidnosti	2008.	2009.	2010.	2011.	2012.	2013.	Q1 2014.
Likvidna sredstva u odnosu na kratkoročne obaveze	85,8	74,4	58,4	60,4	57,2	63,2	65,4
Likvidna sredstva u odnosu na ukupnu aktivu	35,7	34,1	27,2	25,4	23,9	26,1	26,4
Stabilni depoziti u odnosu na kredite nemonetarnih sektora	88,3	95,7	86,7	91,8	93,2	103,4	105,1
Učešće deviznih i devizno indeksiranih kredita u ukupnim kreditima	73,9	75,8	76,8	69,8	74,1	71,6	72,7
Prosečni mesečni pokazatelj likvidnosti	1,8	1,9	2,0	2,2	2,1	2,4	2,7
Prosečni mesečni uži pokazatelj likvidnosti	1,2	1,2	1,3	1,5	1,6	1,8	2,0

Izvor: http://www.nbs.rs/internet/cirilica/80/index.html (Pristupljeno: 05.08.2014.)

Iz prethodne tabele se sasvim jasno vidi da je bankarski sistem Republike Srbije likvidan u pogledu prosečnog mesečnog pokazatelja likvidnosti čija je najviša vrednost dosegla nivo od 2,7 u prvom kvartalu 2014. godine, a najniža vrednost je zabeležena u 2008. godini od 1,8 i srednja vrednost za posmatrani period je iznosila 2,16. Dakle, prosečni mesečni pokazatelj likvidnosti je za posmatrani period bio znatno iznad propisanog minimuma (1,0) što se može smatrati dobrom mesečnom likvidnošću sistema. I drugi uži mesečni pokazatelj likvidnosti za period od 2008 do Q1 2014. pokazuje dobre rezultate, gde se vidi da je maksimalna vrednost zabeležena takođe u prvom kvartalu 2014. godine (2,0), minimalna prosečna mesečna vrednost u 2008. i 2009. (1,2), te srednja vrednost od 1,5, što je opet mnogo iznad propisanog minimuma od 1,0. Ako uporedimo racio između ukupnih likvidnih sredstava i kratkoročnih obaveza za analizirani period onda je vidljiva tendencija blagog pada likvidnih sredstava sa 86% (2008.) na minimalnih 58% (2010.) te ponovo tendencija blagog rasta i pada. Takođe i pokazatelj likvidnih sredstava prema ukupnoj aktivi beleži isto kretanje, gde se da primetiti da je maksimalni nivo likvidnih sredstava u odnosu na ukupnu aktivu ostvaren u 2008. godini (36%), minimalni nivo u 2012. (24%), te srednja vrednost od 28%.

Bruto domaći proizvod (GDP) ima pozitivan (značajan) uticaj na samu profitabilnost banaka jer povoljni ekonomski uslovi u pogledu rastuće ekonomske aktivnosti svakako utiču na povećanje štednje domaćinstva u bankama te povećanjem tražnje za finansiranjem. U nastavku je grafik koji prikazuje tendenciju kretanja GDP - a za period: 2010. - 2014.

Grafik 2: Projekcija kretanja realnog bruto domaćeg proizvoda Republike Srbije



Izvor: http://www.nbs.rs/internet/cirilica/90/fs.html

Kompozitna mera kreditne aktivnosti koja pored domaćih kredita obuhvata i prekogranične kredite privrede, za period 2006. - 2008. realno je rasla po prosečnoj marginalnoj stopi od oko 45,1%. U periodu od 2009. do 2012. godine, prosečna marginalna stopa kompozitnog kreditnog rasta iznosila je 7,3%, da bi na kraju 2012. godine pala za oko 1,5%. Na dato usporavanje kreditne aktivnosti uticali su faktori kako na strani ponude tako i na strani tražnje. Smanjena kvalitetna domaća tražnja za kreditima za posmatrani period, posledica je usporavanja privrednog rasta. Prosečna stopa rasta bruto domaćeg proizvoda - GDP, Republike Srbije je pala sa 5,5% koliko je iznosila u periodu 2002. - 2008. na -0,7% u periodu krize od 2009 do 2012., što je delovalo destimulativno na samu tražnju za kreditima i negativno uticalo na kvalitet same tražnje.

Table 4: Main indicators of liquidity of the banking sector in Serbia for the period: 2008 - Q1 2014 (in %)

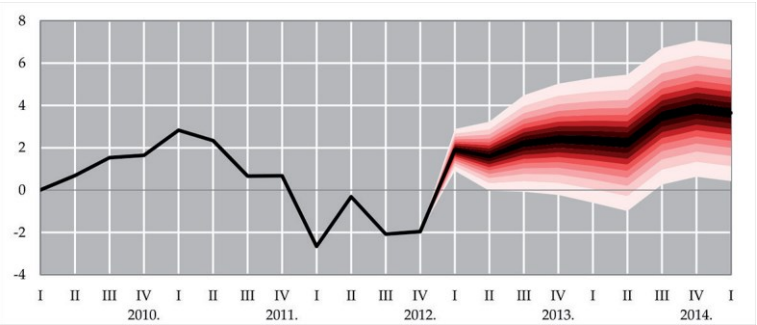
Liquidity indicators	2008	2009	2010	2011	2012	2013	Q1 2014
Liquid assets to short term liabilities	85.8	74.4	58.4	60.4	57.2	63.2	65.4
Liquid assets to total assets	35.7	34.1	27.2	25.4	23.9	26.1	26.4
Stable deposits in relation to loans to non-monetary sector	88.3	95.7	86.7	91.8	93.2	103.4	105.1
The share of foreign currency and foreign currency indexed loans to total loans	73.9	75.8	76.8	69.8	74.1	71.6	72.7
Average monthly liquidity ratio	1.8	1.9	2.0	2.2	2.1	2.4	2.7
Average monthly narrow liquidity ratio	1.2	1.2	1.3	1.5	1.6	1.8	2.0

Source: http://www.nbs.rs/internet/cirilica/80/index.html (Accessed on 05.08.2014.)

From the table above it can be clearly seen that the banking system of the Republic of Serbia is liquid in terms of average monthly liquidity indicator whose highest value reached a level of 2.7 in the first quarter of 2014, while the lowest value of 1.8 was recorded in 2008 and the mean value for the observed period amounted to 2.16. Therefore, the average monthly liquidity ratio for the observed period was significantly above the statutory minimum (1.0) which can be considered a good monthly liquidity of the system. Other monthly liquidity ratio for the period from 2008 to Q1 2014 also shows good results, its maximum value being recorded in the first quarter of 2014 (2.0), the minimum average monthly value in 2008 and 2009 (1.2) and the mean value of 1.5, which is again well above the statutory minimum of 1.0. If we compare the ratio between total liquid assets and current liabilities for the analyzed period, there is a trend of slight decrease of liquid funds from 86% (2008) to the minimum of 58% (2010) and again a slight tendency of growth and decline. Also, an indicator of liquid assets to total assets recorded the same movement, where it is noted that the maximum level of liquid assets to total assets was achieved in 2008 (36%), the minimum level in 2012 (24%) and the mean value of 28%.

Gross domestic product (GDP) has a positive (significant) effect on the profitability of banks as favorable economic conditions in view of the growing economic activity certainly affect the increase in household savings in banks and increasing demand for funding. Below is a graph that shows the upward trend GDP - for the period: 2010-2014.

Graph 2: Projections of real gross domestic product of the Republic of Serbia

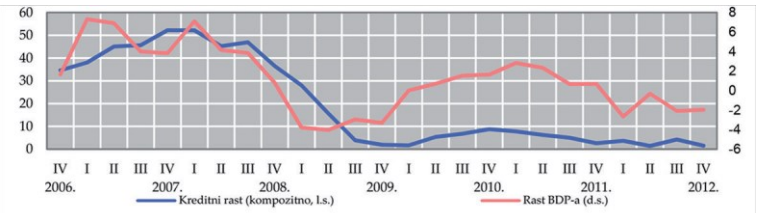


Source: http://www.nbs.rs/internet/cirilica/90/fs.html

A composite measure of the credit activity that in addition to domestic and cross-border loans includes loans to the economy, for the period 2006 - 2008 in real terms grew at an average marginal rate of about 45.1%. In the period from 2009 to 2012, the average marginal rate of the composite credit growth stood at 7.3%, and at the end of 2012 fell by about 1.5%. The given slowdown in credit activity was affected by factors on both the supply and the demand side. Reduced quality of domestic demand for loans in the reference period was the result of the slowing economic growth. The average growth rate of gross domestic product of the Republic of Serbia has fallen from 5.5% recorded in the period 2002 - 2008 (-0.7%) in the period of crisis from 2009 to 2012, which was a disincentive for the demand for loans, negatively affecting the quality of the demand. Graph 3 illustrated the upward trend in real

Grafik 3 ilustrije tendenciju kretanja realnog kreditnog i ekonomskog rasta Republike Srbije za period: 2006-2012.

Grafik 3: Realni kreditni i ekonomski rast u R. Srbiji za period: 2006. - 2012.



Izvor: http://www.nbs.rs/internet/cirilica/90/fs.html

Kompozitna mera kreditne aktivnosti koja pored domaćih kredita obuhvata i prekogranične kredite privrede, za period 2006. - 2008. realno je rasla po prosečnoj marginalnoj stopi od oko 45,1%. U periodu od 2009. do 2012. godine, prosečna marginalna stopa kompozitnog kreditnog rasta iznosila je 7,3%, da bi na kraju 2012. godine pala za oko 1,5%. Na dato usporavanje kreditne aktivnosti uticali su faktori kako na strani ponude tako i na strani tražnje. Smanjena kvalitetna domaća tražnja za kreditima za posmatrani period, posledica je usporavanja privrednog rasta. Prosečna stopa rasta bruto domaćeg proizvoda - GDP, R. Srbije je pala sa 5,5% koliko je iznosila u periodu 2002. - 2008. na -0,7% u periodu krize od 2009 do 2012., što je delovalo destimulativno na samu tražnju za kreditima i negativno uticalo na kvalitet same tražnje.

Domaći krediti privatnom sektoru od strane banaka odnose se na finansijska sredstva koja su usmerena prema privatnom sektoru od strane ostalih depozitnih institucija. Tabela u nastavku ilustruje pregled kretanja odobrenih domaćih kredita privatnom sektoru od strane banaka za zemlje regiona i pojedine zemlje EU za period: 2009-2012.

Tabela 5: Tendencija kretanja domaćih kredita privatnom sektoru od strane banaka za period: 2009-2012.

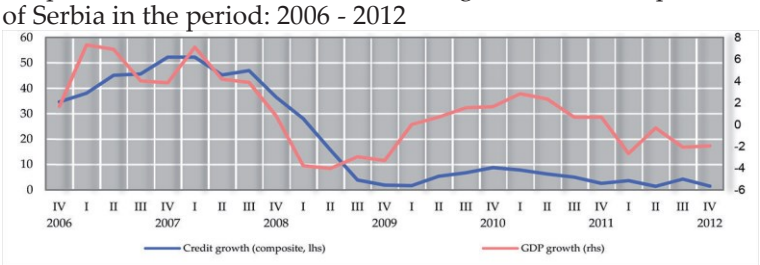
(u % od GDP-a)

Pojedine zemlje regiona i zemlje EU	2009.	2010.	2011.	2012.	Index (2012/2009)
Latvija	104,6	99,3	82,0	67,6	64,63%
Mađarska	69,5	69,3	66,2	56,7	81,58%
Rumunija	39,2	39,5	39,5	38,0	96,94%
Grna Gora	76,4	66,8	55,7	55,5	72,64%
Albanija	36,8	37,4	39,3	38,8	105,43%
Makedonija	43,5	44,2	45,3	47,7	109,65%
Bosna i Hercegovina	54,4	54,0	54,3	55,9	102,76%
Srbija	45,0	53,1	50,4	52,9	117,55%
Bugarska	75,4	74,0	71,9	71,3	94,56%
Hrvatska	67,2	69,3	71,1	68,3	101,64%
Litvanija	70,1	63,9	53,5	51,0	72,75%
Poljska	50,4	51,9	54,8	53,7	106,55%
Turska	36,5	44,2	50,0	54,4	149,04%

Izvor: http://data.worldbank.org/indicator/FD.AST.PRVT.GD.ZS (Prilagođeno)

credit and economic growth of the Republic of Serbia in the period: 2006-2012.

Graph 3: The real credit and economic growth in the Republic of Serbia in the period: 2006 - 2012



Source: http://www.nbs.rs/internet/cirilica/90/fs.html

A composite measure of credit activity in addition to domestic and cross-border loans includes loans to the economy, for the period: 2006 - 2008 in real terms grew at an average marginal rate of approximately 45.1%. In the period from 2009 to 2012, the average marginal rate of the composite loan growth was 7.3%, and at the end of 2012 dropped by 1.5%. At given the slowdown in credit activity was influenced by factors both on the supply side and the demand side. Reduced quality of domestic demand for loans for the period in consequence of the economic slowdown. The average growth rate of gross domestic product of Republic of Serbia has fallen from 5.5% recorded in the period: 2002 - 2008(-0.7%) in the crisis period from 2009 to 2012, which was quite discouraging the very demand for loans and the negative impact on the quality of the demand.

Domestic credit to the private sector by banks refers to funds that are directed towards the private sector by other depository institutions. The table below illustrates an overview of changes approved domestic credit to the private sector by banks for the countries of the region and some EU countries in the period: 2009-2012.

Table 5: The tendency of domestic bank loans to the private sector in the period: 2009 - 2012

(in % of GDP)

Some countries of the region and countries of the European Union	2009	2010	2011	2012	Index (2012/2009)
Latvia	104.6	99.3	82.0	67.6	64.63%
Hungary	69.5	69.3	66.2	56.7	81.58%
Romania	39.2	39.5	39.5	38.0	96.94%
Montenegro	76.4	66.8	55.7	55.5	72.64%
Albania	36.8	37.4	39.3	38.8	105.43%
Macedonia	43.5	44.2	45.3	47.7	109.65%
Bosnia and Herzegovina	54.4	54.0	54.3	55.9	102.76%
Serbia	45.0	53.1	50.4	52.9	117.55%
Bulgaria	75.4	74.0	71.9	71.3	94.56%
Croatia	67.2	69.3	71.1	68.3	101.64%
Lithuania	70.1	63.9	53.5	51.0	72.75%
Poland	50.4	51.9	54.8	53.7	106.55%
Turkey	36.5	44.2	50.0	54.4	149.04%

Source: http://data.worldbank.org/indicator/FD.AST.PRVT.GD.ZS (Adjusted by author)

Iz prethodne tabele se može jasno primetiti da je najizraženija volatilnost, odnosno promenljivost za posmatrani period očigledna kod Latvije gde je došlo do pada finansiranja privatnog sektora za oko 36% u odnosu na 2009. godinu, na drugom mestu je Crna Gora gde je došlo do pada za oko 27% u odnosu na 2009. godinu. Posmatrano sa druge strane najizraženija tendencija povećanja kreditiranja za posmatrani period je kod Turskog privatnog sektora gde je kreditiranje povećano za oko 49% u odnosu na 2009. godinu. Od posmatranih zemalja u bližem okruženju Srbija je zabeležila povećanje finansiranja privatnog sektora domaćim kreditima za oko 17% u odnosu na 2009. godinu, što se reflektovalo na blagi rast privredne aktivnosti. S obzirom da su nebankarske finansijske institucije u finansijskom sistemu u Republici Srbiji u nedovoljnoj meri razvijene sektor domaćinstva dominantno štedi novčana sredstva u bankama. Takođe, i tržište kapitala nije dovoljno razvijeno zbog niske likvidnosti, te su bankarski krediti jedini izvor kreditiranja preduzeća. Naime, u svakom slučaju rast privredne aktivnosti povećava tražnju za bankarskim uslugama, gde se na kraju vidi efekat na povećanje profitabilnosti banaka.

Metodologija i podaci za analizu

Regresioni model predstavlja jednačinu s konačnim brojem parametara i varijabli. U zavisnosti od toga da li se neki model sastoji samo od jedne ili više varijabli, razlikuje se model jednostavne i višestruke linearne regresije. Pored zavisne i jedne ili više nezavisnih varijabli, svaki regresioni model sadrži i jednu slučajnu varijablu. Model jednostavne linearne regresije izražava vezu između dva parametra na sledeći način:

$$Y_i = \alpha + \beta X_i + \varepsilon_i \quad i = 1, 2, \ldots \ldots n, \quad (1)$$

gde su:

Y - zavisna varijabla,

α i β nepoznati parametri koje je potrebno oceniti, i

ε_i - stohastička varijabla (greška relacije).

Za razliku od modela jednostavne regresije, model višestruke linearne regresije razlikuje se po tome što sadrži dve ili više nezavisnih varijabli.

$$Y_i = \alpha + \beta_1 X_{i,1} + \beta_2 X_{i,2} + \ + \beta_i X_{i,j} + \ + \beta_k X_{i,k} + \varepsilon_i \quad (2)$$
$$i = 1, 2, \ldots n.$$

Naime, ovaj model se sastoji od jedne zavisne varijable Y i K nezavisnih varijabli, koje se označavaju kao: $X_{i,j} = 1, 2, \ldots, K.$

Ovo empirijsko istraživanje se odnosi na ukupnu kreditnu aktivnost bankarskog sektora Republike Srbije za period Q4 2008 do Q1 2014. godine. Podaci korišteni za ovo istraživanje su zvanični podaci (statističke analize) Narodne banke R. Srbije. U ovom istraživanju je korišten model višestruke linearne regresije kojim se procenjuju priroda i snaga veze između jedne zavisne varijable, i K nezavisnih varijabli koje se označavaju sa $X_{i,j} = 1, 2, \ldots, K.$ Dakle, u ovom radu kao zavisna varijabla uzet je bruto domaći proizvod - koji je u daljem tekstu predstavljen oznakom - gdp, a kao nezavisne varijable: ukupni krediti privatnom sektoru - koji su u daljem tekstu predstavljeni oznakom - kp, referentna kamatna stopa - koja je u daljem tekstu predstavljena oznakom - r. k. s, štednja stanovništva - koja je u daljem tekstu predstavljena oznakom - ss, inflacija - koja je u daljem tekstu predstavljena oznakom - inf, izvoz roba i usluga - koji je u daljem tekstu predstavljen oznakom - exp i uvoz roba i usluga - koji je u daljem tekstu predstavljen oznakom - imp

Regresioni model u ovom istraživanju predstavljen je na sledeći način:

$$GDP = \alpha + \beta_1 * (kp) + \beta_2 * (r.k.s.) + \beta_3 * (ss) + \beta_4 * (inf) + \beta_5 * (exp) + \beta_6 * (imp) + \varepsilon_i \quad (3)$$

Reprezentativnost modela ispitaćemo proračunom koeficijenta korelacije (r) koeficijenta determinacije (R^2) i korigovanog koeficijenta determinacije $(\bar{R}^2)$. Takođe, biće provedena i analiza varijanse (ANOVA), gde će se testirati značajnost posmatranih varijabli u modelu, gde nulta hipoteza predstavlja činjenicu da nezavisne varijable značajno ne utiču na zavisnu.

(1) $H_0 \ldots \beta_1 = 0$

(2) $H_1 \ldots \beta_1 \neq 0$

Tabela u nastavku teksta ilustruje deskriptivnu statistiku eksplanatornih varijabli realnog i finansijskog sistema Republike Srbije za period: Q4 2008. - Q1 2014.

From the above table it can be clearly observed that the most pronounced volatility or variability in the analyzed period was in Latvia, where the decline of private sector financing amounted to approximately 36% compared to 2009, followed by Montenegro, where the decline was about 27% compared to 2009. On the other hand, the most pronounced tendency to increase lending in the reporting period was recorded in the Turkish private sector where lending increased by about 49% compared to 2009. Among the observed countries in its neighborhood, Serbia recorded an increase in private sector financing when it comes to domestic loans by about 17% compared to 2009, which reflected a slight increase in economic activity. Due to the fact that non-bank financial institutions in the financial system of the Republic of Serbia are insufficiently developed, the household sector dominantly saves its cash in banks. Also, the capital market is underdeveloped due to low liquidity, hence bank loans are the sole source of lending to companies. Specifically, in each case, the growth of economic activity increases the demand for banking services, where we eventually see the effect on increasing the profitability of banks.

Methodologies and Data for Analysis

The regression model is an equation with a finite number of parameters and variables. Depending on whether a model comprises only one or more variables, there are simple and multiple linear regression models respectively. In addition to a dependent variable and one or more independent variables, each regression model contains a random variable. A simple linear regression model expresses a relationship between the two parameters as follows:

$$Y_i = \alpha + \beta X_i + \varepsilon_i \quad i = 1, 2, \ldots \ldots n, \quad (1)$$

where:

Y - dependent variable,

α and β - unknown parameters that need an estimate, and

ε_i - stochastic variable (error distances)

Unlike the simple regression, the multiple linear regression model is different in that it comprises two or more independent variables.

$$Y_i = \alpha + \beta_1 X_{i,1} + \beta_2 X_{i,2} + \quad + \beta_i X_{i,j} + \quad + \beta_k X_{i,k} + \varepsilon_i \quad (2)$$
$$i = 1, 2, \ldots n.$$

Specifically, this model consists of one dependent variable Y, and K independent variables, which are referred to as: $X_{i,j} = 1, 2, \ldots, K$.

This empirical study refers to the total banking lending sector of the Republic of Serbia for the period: Q4 2008 to Q1 2014. The data used for this study are the official data (statistical analysis) of the National Bank of Serbia. This study used a multiple linear regression model which assesses the nature and strength of the bond between a dependent variable, and K independent variables that are marked with $X_{i,j} = 1, 2, \ldots, K$. Therefore, in this study the gross domestic product (GDP) is used as dependent variable, and the following ones as independent variables: total loans to the private sector - which are hereinafter marked with - (kp), the reference interest rate - which is hereinafter marked with - (rks), savings - which is hereinafter marked with - (ss), inflation - which is hereinafter marked with - (inf), exports of goods and services - which is hereinafter marked by the notation - (exp) and import of goods and services - which is hereinafter marked by the notation - (imp).

The regression model in this study is presented as follows:

$$GDP = \alpha + \beta_1 * (kp) + \beta_2 * (r.k.s.) + \beta_3 * (ss) + \beta_4 * (inf) + \beta_5 * (exp) + \beta_6 * (imp) + \varepsilon_i \quad (3)$$

The representativeness of the model will be examined by the calculation of the correlation coefficient (r), the determination coefficient (R^2) and the adjusted coefficient of determination ($\bar{R}^2$). There is also an analysis of variance (ANOVA), which will test the significance of observed financial variables in the model, where the zero hypothesis is the reason why the independent variables do not significantly affect the dependent one:

(1) $H_0 \ldots \beta_1 = 0$

(2) $H_1 \ldots \beta_1 \neq 0$

The table below illustrates the descriptive statistics of explanatory variables of the real and financial system of the Republic of Serbia in the period: Q4 2008 - Q1 2014.

Tabela 6: Deskriptivna statistika između sledećih parametara: gdp, rks, ss, inf, exp i imp finansijskog i realnog sektora R. Srbije za period: Q4 2008. - Q1 2014.

Pokazatelji	Srednja vrijednost	Standardna devijacija	N
gdp	7,885E5	97,91	22
kp	9,39E5	153,44	22
r. k. s.	11,16	2,31	22
ss	7,54E5	181,29	22
inf	7,48	3,66	22
Exp	998,09	177,50	22
imp	-1. 417,00	177,91	22

Izvor: Proračun autora (SPSS 16.0)

Kao što se da i primetiti naizraženija volatilnost zabeležena je kod ukupne štednje stanovništva i ukupnog uvoza sa standardnom devijacijom od 181 29% i 177,91%. U toku 2013. godine devizna štednja stanovništva je povećana sa 144 miliona evra na 8,4 mlrd evra. Kao rezultat ovog povećanja treba svakako tražiti u pozitivnim efektima smanjene inflacije, odnosno stabilnog kursa dinara, te povoljne kamatne stope i poreskog tretmana dinarske štednje.

uticaj na zavisnu varijablu. Darbin-Votson statistika pokazuje srednju korelaciju s obzirom da su vrednosti nešto iznad 2.

Tabela 7: Regresiona analiza između između sledećih parametara: gdp, rks, ss, inf, exp i imp finansijskog i realnog sektora R. Srbije za period: Q4 2008. - Q1 2014.

Regresiona statistika	
Koeficijent korelacije	0,911
Koeficijent determinacije	0,830
Prilagođen koeficijent determinacije	0,761
Standardna greška procjene	47.830,77
Durbin -Watson statistika	2,123

Tabela 8: Analiza varijanse između sledećih parametara: gdp, rks, ss, inf, exp i imp finansijskog i realnog sektora R. Srbije za period: Q4 2008. - Q1 2014.

Anova test	df	Suma najmanjih kvadrata	Srednja vrednost najmanjih kvadrata	F	Signifikantno F
Regresija	6	1,670E11	2,783E10	12,165	0,001
Rezidualna vrednost	15	3,432E10	2,288E9	-	-
Ukupno	21	2,013E11	-	-	-

Izvor: Proračun autora (SPSS 16.0)

Rezultati istraživanja

Rezultati dobijeni regresionom analizom ukazuju da koeficijent korelacije iznosi r = 0,911 što ukazuje da postoji potpuna korelacija između zavisne varijable, tj. bruto domaćeg proizvoda Republike Srbije i nezavisnih varijabli: ukupnih kredita privatnom sektoru, referentne kamatne stope, štednje stanovništva, inflacije, izvoza roba i usluga i uvoza roba i usluga. Koeficijent determinacije iznosi R^2 = 83%, te prilagođeni koeficijent determinacije iznosi $\bar{R}^2 =$ 0,76 što dalje pokazuje da je ovim modelom opisano 76 % odstupanja nezavisnih varijabli što čini model relativno reprezentativnim. Testiranjem nulte hipoteze o značajnosti dobijeni su statistički značajni pokazatelji koji ukazuju da postoji značajan uticaj određenih nezavisnih varijabli pri nivou signifikantnosti od α = 1%, odnosno da empirijski F - odnos iznosi 12, 16. Kako je u ovom istraživanju vrednost empirijskog F - odnosa (12,16) veća od vrednosti teorijskog F - odnosa (4,32), za 6 - stepena slobode u brojiocu i 15 u imeniocu, onda dolazimo do zaključka za odbacivanjem nulte hipoteze da nezavisne varijable nemaju značajan

Koeficijent korelacije može poprimiti vrijednosti od -1 do +1. Naime, dobijeni koeficijent pokazuje jačinu veze između dvije posmatrane varijable. Vrijednost nula pokazuje da ne postoji povezanost, vrijednost 1,0 pokazuje da je korelacija potpuna i povezana, dok vrijednost -1,0 pokazuje da je korelacija potpuna i negativna. Apsolutna vrijednost koeficijenata korelacije ukuzuje na jačinu povezanosti između varijabli. Što je ρ bliže nuli povezanost je slabija, a što je bliža jedinici povezanost je jača. U analizi rizika se kao mjera povezanosti između dvije varijable X i Y koristi *Pearsonov koeficijent linearne korelacije*. Označava se sa r i dobija se iz slijedeće jednačine:

$$r = \frac{\sum_{i=1}^{N} X_i Y_i - N \cdot \overline{X} \cdot \overline{Y}}{\sqrt{\left(\sum_{i=1}^{N} X_i^2 - N\overline{X^2}\right)\left(\sum_{i=1}^{N} y_i^2 - N\overline{Y^2}\right)}} \quad (4)$$

Table 6: Descriptive statistics between the following parameters: gdp, rks, zs, inf, exp and imp of the financial and real sector of the Republic of Serbia in the period: Q4 2008 - Q1 2014.

Indices	Mean	Std. Deviation	N
gdp	7.885E5	97.91	22
kp	9.39E5	153.44	22
r.k.s.	11.16	2.31	22
ss	7.54E5	181.29	22
inf	7.48	3.66	22
Exp	998.09	177.50	22
imp	-1.417.00	177.91	22

Source: Calculation by author (SPSS 16.0)

As can be noted, the most pronounced volatility was observed in total household savings and total imports with a standard deviation of 181.29% and 177.91%. During 2013, foreign currency savings increased from 144 million to 8.4 billion euros. This increase is certainly due to the positive effects of reduced inflation and a stable exchange rate, along with interest rates and favorable tax treatment of dinar savings.

The Research Results

Results obtained by regression analysis indicated that the coefficient of correlation is r=0.911, indicating that there is a strong correlation between the dependent variable, i.e. the gross domestic product of the Republic of Serbia and independent variables: total loans to the private sector, benchmark interest rate, savings, inflation, exports of goods and services and import of goods and services.

The coefficient of determination is R^2 =83%, and the adjusted coefficient of determination is $\bar{R}^2$=0.76. The fact that this model described 76% of variations to independent variables makes this model relatively representative. The significance test also indicates that there is a significant influence of certain independent variables on the dependent variable. The testing of the zero hypothesis obtained statistically significant data indicating that there is the significant influence of certain independent variables at a significance level of α=1% and that the empirical F-ratio is 12.16. As for this study, the value of the empirical F-ratio (12.16) is greater than the theoretical value of F-ratio (4.32) for the 6-degree of freedom in the numerator and 15 in the denominator, bringing us to the conclusion to reject the zero hypothesis that the independent variables have a significant impact on the dependent variable. Durbin-Watson statistics shows high correlation with respect to the value of approximately 2.

Table 7: Regression analysis between the following parameters: gdp, rks, zs, inf, exp and imp of the financial and real sector of the Republic of Serbia in the period: Q4 2008 - Q1 2014.

Regression Statistics	
Multiple R	0.911
R Square	0.830
Adjusted R Square	0.761
Std. Error of the Estimate	47.830,77
Durbin -Watson	2.123

Table 8: Analysis of variance between the following parameters: gdp, rks, zs, inf, exp and imp of the financial and real sector of the Republic of Serbia in the period: Q4 2008 - Q1 2014

Anova	df	SS	MS	F	Significance F
Regression	6	1.670E11	2.783E10	12.165	0.001
Residual	15	3.432E10	2.288E9	-	-
Total	21	2.013E11	-	-	-

Source: Calculation by author (SPSS 16.0)

The correlation coefficient can take values from -1 to +1. Thus, the resulting ratio shows the strength of the two observed parameters. A value of zero indicates that there is no correlation, the value of 1.0 indicates a correlation between complete and correlated, while the value of -1.0 indicates a correlation between complete and negative. The absolute value of the correlation coefficient indicates the strength of correlation between variables. The closer ϱ is to zero, the weaker the correlation; the closer it is to 1.0, the stronger the correlation. In the analysis of risk as a measure of association between two variables, X and Y used Pearson's linear correlation coefficient. It will be denoted by r and obtained from the following equatio

$$r = \frac{\sum_{i=1}^{N} X_i Y_i - N \cdot \overline{X} \cdot \overline{Y}}{\sqrt{\left(\sum_{i=1}^{N} X_i^2 - N\overline{X^2}\right)\left(\sum_{i=1}^{N} y_i^2 - N\overline{Y^2}\right)}} \quad (4)$$

Tabela 9: Jačina povezanosti između varijabli u zavisnosti o apsolutnoj vrijednosti koeficijenata korelacije

Apsolutna vrijednost koeficijenata korelacije	Jačina povezanosti između varijabli
= 1	Potpuna korelacija
0,8≤ ρ <1	Jaka korelacija
0,5≤ ρ <0,8	Srednje jaka korelacija
0,2≤ ρ <0,5	Relativno slaba korelacija
0< ρ <0,2	Neznatna korelacija
ρ=0	Potpuna odsutnost korelacije

Izvor: Vukićević, M., Gregurek, M., Odobašić, S., Grgić, J. str. 294.

Tabela 10: Pearsonov koeficijenata korelacije između sledećih parametara: gdp, rks, ss, inf, exp i imp finansijskog i realnog sektora R. Srbije za period: Q4 2008. - Q1 2014.

	gdp	kp	r. k. s	ss	inf	exp	imp
gdp	1,000	0,761	-0,294	0,851	-0,517	0,849	-0,415
kp	0,761	1,000	-0,493	0,935	-0,283	0,658	-0,298
r. k. s	-0,294	-0,493	1,000	-0,527	-0,072	-0,185	-0,200
ss	0,851	0,935	-0,527	1,000	-0,426	0,824	-0,368
inf	-0,517	-0,283	-0,072	-0,426	1,000	-0,550	0,217
exp	0,849	0,658	-0,185	0,824	-0,550	1,000	-0,694
imp	-0,415	-0,298	-0,200	-0,368	0,217	-0,694	1,000

Izvor: Proračun autora

Iz prethodne tabele se sasvim jasno vidi da je skoro pa polovina eksplanatornih varijabli međusobno blago pozitivno korelisana, a druga polovina međusobno blago negativno korelisana. S obzirom da je predmet analize uticaj nezavisnih varijabli na zavisnu varijablu, odnosno na ekonomski rast meren kroz bruto domaći proizvod Republike Srbije, može se primetiti da je najjača pozitivna korelacija zabeležena između GDP i ukupne štednje stanovništva (0,851). Ovaj rezultat je sasvim opravdan i razumljiv jer sa porastom štednje tj. sa povećavanjem depozita od strane sektora stanovništva u bankarski sistem dolazi i do povećanja kreditne aktivnosti po logici stvari i na kraju do pozitivnih efekata na ekonomski rast te i na meru GDP. Na drugom mestu po jačini pozitivne veze se nalazi kauzalnost između bruto domaćeg proizvoda i ukupnog izvoza (0,849).

Posmatrano s druge strane, najjača negativna korelacija zabeležena je između bruto domaćeg proizvoda i stope inflacije (-0,517), jer sa povećanjem inflacije imamo negativne efekte po sami privredni rast i izvoz. Bitno je napomenuti da se inflacija u Republici Srbiji od jula 2012. godine nalazila iznad gornje granice cilja, gde je u decembru dosegla stopu od 12,2%. Na sam rast inflacije uticali su šokovi ne samo na strani ponude kao što su: rast cena hrane, regulisanih cena, te rast poreza na potrošnju, već i faktori na strani ponude kao što su: fiskalna ekspanzija i snažna deprecijacija. Na drugom mestu po visini negativne koreliranosti se nalazi relacija između GDP -a i ukupnog uvoza (-0,415) što je sasvim i logična tendencija u kretanju.

Tabela 11: Regresiona analiza koeficijenata između sledećih parametara: gdp, rks, ss, inf, exp i imp finansijskog i realnog sektora R. Srbije za period: Q4 2008. - Q1 2014.

Model		Nestandardni koeficijenti		Standardni koeficijenti	t	Značajnost	95% Interval pouzdanosti za B		Korelacija		
		B	Standardna greška	Beta			Mix	Max	Nultog reda	Parcijalna	Delimično parcijalna
1	(konstanta)	308.047,70	142.002,88	-	2,169	0,047	5.375,74	610.719,67	-	-	-
	kp	0,328	0,287	0,513	1,141	0,272	-0,284	0,939	0,761	0,283	0,122
	r. k. s.	1.411,25	7.259,24	0,033	0,194	0,848	-14.061,45	16.883,96	-0,294	0,050	0,021
	ss	0,169	0,392	0,313	-0,432	0,672	-1,004	0,667	0,851	-0,111	-0,046
	inf	-981,63	3.914,53	-0,037	-0,251	0,805	-9.325,25	7.361,99	-0,517	-0,065	-0,027
	exp	536,37	240,38	0,972	2,231	0,041	24,010	1.048,72	0,849	0,499	0,238
	imp	171,87	114,31	0,312	1,504	0,153	-71,77	415,51	-0,415	0,362	0,160

Izvor: Proračun autora (SPSS 16.0)

Table 9: The strength of association between variables depending on the absolute values of correlation coefficients

The absolute value of correlation coefficients	The strength of association between variables
= 1	Complete correlation
0,8≤ ρ <1	Strong correlation
0,5≤ ρ <0,8	Medium correlation
0,2≤ ρ <0,5	Relatively week correlation
0< ρ <0,2	Insignificant correlation
ρ=0	Complete absence of correlation

Source: Vukićević, M., Gregurek, M., Odobašić, S., Grgić, J. p. 294.

Table 10: Pearson correlation coefficients between the following parameters: gdp, rks, ss, inf, exp and imp of the financial and real sector of the Republic of Serbia in the period: Q4 2008 - Q1 2014

	gdp	kp	r.k.s	ss	inf	exp	imp
gdp	1.000	0.761	-0.294	0.851	-0.517	0.849	-0.415
kp	0.761	1.000	-0.493	0.935	-0.283	0.658	-0.298
r.k.s	-0.294	-0.493	1.000	-0.527	-0.072	-0.185	-0.200
ss	0.851	0.935	-0.527	1.000	-0.426	0.824	-0.368
inf	-0.517	-0.283	-0.072	-0.426	1.000	-0.550	0.217
exp	0.849	0.658	-0.185	0.824	-0.550	1.000	-0.694
imp	-0.415	-0.298	-0.200	-0.368	0.217	-0.694	1.000

Source: Calculation by author (SPSS 16.0)

The table above quite clearly suggests that almost half of the explanatory variables are slightly positively correlated, and that the other half is slightly negatively correlated. Given that the subject of analysis is the influence of independent variables on the dependent variable, i.e. economic growth as measured by gross domestic product of the Republic of Serbia, it can be noted that the strongest positive correlation was observed between GDP and total household savings (0.851). This result is quite justified and understandable, given that an increase in savings, i.e. an increase in deposits by the household sector in the banking system, causes an increase in credit activity according to the logic of things and eventually yields positive effects on economic growth and to the measure of GDP. The second place according to the strength of positive correlation is taken by the causality between GDP and total exports (0.849).

On the other hand, the largest negative correlation was observed between the gross domestic product and inflation rate (-0.517), because the increase in inflation has negative effects on economic growth and exports. It is important to note that inflation in the Republic of Serbia since July 2012 was above the upper limit of the target, which in December reached a rate of 12.2%. The growth of inflation shocks are influenced not only by factors on the supply side such as increasing food prices, regulated prices and increase taxes on consumption, but also by the supply-side factors such as fiscal expansion and devaluation. The second highest negative correlation is a correlation between GDP and total imports (-0.415), which is quite a logical trend.

Table 11: Regression analysis coefficients between the following parameters: gdp, rks, ss, inf, exp and imp of the financial and real sector of the Republic of Serbia in the period: Q4 2008 - Q1 2014.

Model		Non-standardized coefficients		Standardized coefficients	t	Sig.	95% Confidence Interval for B		Correlations		
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero order	Partial	Part
1	(Constant)	308.047,70	142.002,88	-	2.169	0.047	5.375,74	610.719,67	-	-	-
	kp	0.328	0.287	0.513	1.141	0.272	-0.284	0.939	0.761	0.283	0.122
	r.k.s.	1.411,25	7.259,24	0.033	0.194	0.848	-14.061,45	16.883,96	-0.294	0.050	0.021
	ss	0.169	0.392	0.313	-0.432	0.672	-1.004	0.667	0.851	-0.111	-0.046
	inf	-981.63	3.914,53	-0.037	-0.251	0.805	-9.325,25	7.361,99	-0.517	-0.065	-0.027
	exp	536.37	240.38	0.972	2.231	0.041	24.010	1.048,72	0.849	0.499	0.238
	imp	171.87	114.31	0.312	1.504	0.153	-71.77	415.51	-0.415	0.362	0.160

Source: Calculation by author (SPSS 16.0)

Iz prethodne tabele se vidi da analiza varijanse (ANOVA analiza) pokazuje da bruto domaći proizvod (GDP) ima najjaču pozitivnu vezu sa ukupnim izvozom - exp (0,972), zatim sa varijablom ukupni krediti dati privatnom sektoru - kp (0,513), te sa štednjom stanovništva - ss (0,313). Posmatrano sa druge strane najslabija kauzalnost je zabeležena između bruto domaćeg proizvoda i inflacije (-0,037), referentne kamatne stope (0,033) i ukupnog uvoza (0,312). Naime, snažna makroekonomska kretanja tokom 2013 i u toku prvog kvartala 2014. godine bila su znatno povoljnija u odnosu na prethodne godine. Povećani izvoz je uticao na smanjenje spoljne neravnoteže, tj. deficita tekućeg računa koji je iznosio 5% GDP -a što je za dvostruko niže u odnosu na 2012. godinu. U svakom slučaju logično je da krediti dati privredi utiču na rast ekonomske aktivnosti, te posledično tome i na rast bruto domaćeg proizvoda. U periodu od 2008. do Q1 2014. godine najveći iznos kredita datih privrednom sektoru bio je u 2012. godini 58,2% ukupnih kredita, da bi u prvom kvartalu 2014. godine dostigao nivo od 52,9%, što je rezultat pre svega povećanja kreditnog rizika te povećanja učešća nekvalitetnih kredita i blagog usporavanja kreditne aktivnosti. Od ukupnih kredita datih privrednom sektoru najveće učešće zauzima industrijski sektor od minimalnih 17,2% u 2011. do maksimalnih 18,4% u 2008. i 2013. godini.

Inflacija u svakom slučaju utiče negativno na rast privredne aktivnosti. Tokom 2012. godine Narodna banka Srbije je povećala restriktivnost monetarne politike, na način podizanja kamatne stope i intervencije na deviznom tržištu. Kao rezultat povećane restriktivne monetarne politike sami efekti pada inflacije su već bili vidljivi na početku 2013. godine. Marginalna inflacija je u 2013. godini ostvarila značajni pad sa 12,8% u januaru na 2,2% u decembru. Dakle, prosečna mesečna stopa inflacije u 2013. godini iznosila je oko 0,2%. Osim mera monetarne politike na obaranje inflacije su uticali i sledeći faktori: dobra poljoprivredna sezona, niska agregatna tražnja, relativna stabilnost kursa dinara te pad inflacionih očekivanja.

U zatvorenoj privredi promene referentne kamatne stope centralne banke posledično dovode do promene kamatnih stopa na međubankarskom tržištu koje zatim lančano uzrokuju promene kratkoročnih i dugoročnih kamatnih stopa poslovnih banaka. Kako promene kamatnih stopa direktno utiču na troškove zaduživanja, ekonomski subjekti donose odluke o investicijama i štednji u skladu sa datim promenama, tako da investiciona aktivnost utiče na nivo celokupne ekonomske aktivnosti, te indirektno i na inflaciju. Dakle, porast referentne kamatne stope utiče na porast kamatnih stopa banaka, povećanja troškova zaduživanja te smanjenja ekonomske i investicione aktivnosti, što se očigledno vidi iz dobijenih rezultata istraživanja da je kauzalnost između bruto domaćeg proizvoda i referentne kamatne stope slabije povezanosti. Na početku 2013. godine NBS je nastavila sa povećanjem stepena restriktivnosti monetarne politike, gde je referentna kamatna stopa povećana u januaru i februaru za 25 b. p. na 11,75% u cilju vraćanja inflacije u granice dozvoljenog odstupanja od cilja. Kako je u narednom periodu došlo do postepenog smirivanja inflatornih pritisaka NBS, je od maja nastavila aktivnosti suprotnog smera, tj. smanjivanja referentne kamatne stope za 225 b. p., odnosno sa 11,75% na 9,5%.

Zaključna razmatranja

U ovom radu su analizirane određene performanse bankarskog i realnog sektora Republike Srbije za period od Q4 2008 do Q1 2014. godine korišćenjem modela višestruke linearne regresije. U kvantitativnoj analizi, uzeto je da je bruto domaći proizvod (GDP) reprezent zavisne varijable a kao nezavisne varijable su tretirane: ukupni krediti privatnom sektoru, referentna kamatna stopa, štednja stanovništva, inflacija, izvoz roba i usluga i uvoz roba i usluga. Nulta hipoteza u radu je odbačena jer nije pokazano da nezavisne varijable ne utiču na zavisnu varijablu.

Između zavisne i nezavisnih varijabli uzetih u proračunu, uglavnom je utvrđena pozitivna korelacija osim u slučaju inflacije, kao i delimično slaba korelacija referentne kamatne stope sa bruto domaćim proizvodom. Sasvim je opravdano da inflacija deluje negativno na sami ekonomski rast. Dakle, NBS je uspela da merama monetarne politike pre svega putem referentne kamatne stope utiče na reduciranje inflacije i stvaranje povoljne makroekonomske

The table above shows that the analysis of variance (ANOVA analysis) indicates that gross domestic product (GDP) has the strongest positive linear relationship to total exports (0.972), followed by a variable of total loans given to the private sector (0.513) and household sector (0.313). On the other hand, the weakest causality was observed between GDP and inflation (-0.037), the reference interest rate (0,033) and total imports (0.312). The strong macroeconomic developments during 2013 and during the first quarter of 2014 were much more favorable than in the previous year. Increased exports have contributed to a reduction of external imbalances, i.e. the current account deficit, which amounted to 5% of GDP which is twice lower than in the year 2012. In any case, it is logical that corporate loans affect the growth of economic activity, and consequently the growth of the gross domestic product. In the period from 2008 to Q1 2014 the largest amount of credits given economic sector was in 2012 58.2% of total loans, and in the first quarter of 2014 reached a level of 52.9%, which is primarily the result of an increase in credit risk and increasing the participation of non-performing loans and a slight slowdown in credit activity. Of the total loans given, the economic sector occupies the largest share of the industrial sector ranging from the minimum of 17.2% in 2011 to the maximum of 18.4% in 2008 and 2013.

Inflation in any case adversely affects the growth of economic activity. During 2012, the National Bank of Serbia increased restrictiveness of monetary policy in a way of raising interest rates and intervening at the foreign exchange market. As a result of increased restrictive monetary policy alone, the effects of falling inflation were already visible at the beginning of 2013. The marginal inflation in 2013 made a significant decrease from 12.8% in January to 2.2% in December. Therefore, the average monthly inflation rate in 2013 was about 0.2%. In addition to monetary policy, the measures aimed at reducing inflation are influenced by the following factors: good agricultural season, low aggregate demand, relative stability of the currency and a drop in inflation expectations.

In a closed economy, changes in the benchmark interest rate of the central bank consequently lead to changes in interest rates on the interbank market, which then cause changes in short-term and long-term interest rates of commercial banks. Since changes in interest rates directly affect borrowing costs, economic agents make decisions on investments and savings in accordance with the specified changes, so that investment activity affects the level of overall economic activity, and indirectly on inflation. Therefore, the increase in the benchmark interest rate affects the increase in interest rates, an increase in borrowing costs and reducing economic and investment activities, as is obvious from the results obtained, i.e. that the causality between gross domestic product and the benchmark interest rate is less correlated. At the beginning of 2013, the NBS continued to increase the degree of restrictiveness of its monetary policy, with the benchmark interest rate increasing in January and February by 25 basis points to 11.75% with a view to returning inflation within the boundaries of the target tolerance. Given that in the forthcoming period there was a gradual calming of inflationary pressures, starting from May the NBS continued its activity in the opposite direction, i.e. reducing the benchmark interest rate by 225 basis points, from 11.75% to 9.5%.

Conclusion

This paper analyzes the performance of the banking and real sector of the Republic of Serbia in the period from Q4 2008 to Q1 2014, using multiple linear regression models. In the quantitative analysis, we assume the gross domestic product is used as a dependent variable, and the following ones as independent variables: total loans to the private sector, benchmark interest rate, savings, inflation, exports of goods and services and import of goods and services. The zero hypothesis was rejected because it was not shown that the independent variables affect the dependent variable.

Between the observed dependent and independent variables, positive correlation was mostly established, except in the case of inflation and partly weak correlation between the benchmark rate and the gross domestic product. It is certainly logical that inflation has a negative effect on economic growth alone. Therefore, the NBS managed to achieve

klime. Takođe i pad inflatornih očekivanja i niske agregatne tražnje je imao svog uticaja na inflaciju. Domaća makroekonomska kretanja tokom prethodne godine bila su u znatnoj meri povoljnija u odnosu na prethodne godine. Rast bruto domaćeg proizvoda od 2,5% je pre svega rezultat blagog oporavka industrije i poljoprivrede, rasta neto izvoza te postepenog efekta fiskalne konsolidacije. Može se takođe zaključiti da je razvoj bankarskog sektora kao dominantnog sektora finansijskog sistema R. Srbije imao pozitivne implikacije na sami kvalitet određenih makroekonomskih varijabli. Takođe, dobijeni rezultati ukazuju da je prisutna uglavnom pozitivna kauzalnost između varijabli finansijskog i realnog sektora. Pitanje koje bi možda bilo interesantno za nova istraživanja je sledeće: U kojoj meri je razvoj bankarskog sektora zaista uticao na poboljšanje makroekonomskih faktora i da li je uopšte bilo uticaja?

Za brži napredak privredne aktivnosti u Republici Srbiji, te za poboljšanje plasiranja dugoročnih kredita neophodno je brže provođenje strukturalnih reformi, privlačenje stranog kapitala i oporavak domaće potražnje. Kako održivi rast zahteva zdrav i otporan bankarski sistem jer utiče na racionalnu alokaciju raspoloživih resursa može se konstatovati da je NBS nastavila trend jačanja kauzalnosti između bankarskog i realnog sektora što se moglo i primetiti kroz analizu parametara finansijskog i realnog sektora. Buduća istraživanja na ovu temu se mogu proširiti u zavisnosti od same dostupnosti baze podataka, tako da se korišćenjem više adekvatnih eksplanatornih varijabli za duži vremenski period može dobiti još kvalitetnija analiza.

by means of its monetary policy measures, primarily the benchmark interest rate, the reduction of inflation and creation of a favorable macroeconomic climate. Also, the decline in inflation expectations and low aggregate demand had its impact on inflation. Domestic macroeconomic developments during the previous year were significantly more favorable than in the past period. The growth of the gross domestic product by 2.5% is primarily the result of a slight recovery of industry and agriculture, the growth of net exports and the gradual effect of fiscal consolidation. It can also be concluded that the development of the banking sector as the dominant sector of the financial system of the Republic of Serbia had positive implications for the quality of certain macroeconomic variables. Also, the results indicate that there is generally a positive causality between the variables of the financial and real sector. The question that might be interesting for a new research is the following: To what extent does the development of the banking sector really affect the improvement of macroeconomic factors and whether there was any impact at all?

For a quicker progress in economic activity in the Republic of Serbia, and the improved placement of long-term loans, it is necessary to achieve a faster implementation of structural reforms, attract foreign capital and recover the domestic demand. Given that sustainable growth requires a healthy and resilient banking system because it affects the rational allocation of resources, it can be said that the NBS continued its trend of strengthening the causality between the banking and real sector as could be seen through the analysis of the parameters of the financial and real sectors. Future research on this topic can be expanded depending on the availability of the database, so that the usage of more appropriate explanatory variables for a longer period of time can lead to even better analyses.

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