Milivoje Davidovic[1], Ivan Milenkovic[2], Srdjan Furtula[3]

CURRENCY SUBSTITUTION AND BANK PROFITABILITY: PANEL EVIDENCE FROM SERBIA

The paper analyzes the impact of three groups of determinants (macroeconomic, industry-specific and bank-specific) on the financial performances of 10 biggest banks in Serbia. Balanced panel model with quarterly data from 2005–2011 was applied. The results show that inflation, ownership structure, market concentration and financial system structure are not the predominant determinants of bank profitability. Significant negative impact refers to currency substitution, liquidity, ratio of operational expenses, and risks. Significant positive impact on Serbian banks has been revealed with reference to asset size, interest rates, capital adequacy, economic development, leverage, net-interest margin ratio, market participation, and increase of off-balance sheet operation (only in Model 1).

Keywords: *currency substitution, bank profitability performance, Serbia.*
JEL Code: G2, G21.

Мілівоє Давідовіц, Іван Міленковіч, Срджан Фуртула

ВАЛЮТНІ ЗАМІНИ І ПРИБУТКОВІСТЬ БАНКУ: ПАНЕЛЬНІ ДАНІ ПО СЕРБІЇ

У статті проаналізовано вплив 3 груп чинників (макроекономічних, галузевих, конкретного банку) на фінансові показники 10 найбільших банків Сербії. Застосовано збалансовану панельну модель за квартальними даними 2005–2011 років. Результати виявили, що інфляція, структура власності, ринкова концентрація і структура фінансової системи не є переважними факторами впливу на прибутковість банку. На сербські банки негативно впливають валютне заміщення, ліквідність, співвідношення операційних витрат і ризики. Позитивно впливають розмір активів, відсоткові ставки, достатність капіталу, економічний розвиток, левериджс, чистий відсотковий дохід, активність на ринку і збільшення частки позабалансових операцій.

Ключові слова: *валютне заміщення, прибутковість банку, Сербія.*
Рис. 2. Форм. 3. Табл. 5. Літ. 28.

Миливое Давидовиц, Иван Миленкович, Срджан Фуртула

ВАЛЮТНЫЕ ЗАМЕНЫ И ПРИБЫЛЬНОСТЬ БАНКА: ПАНЕЛЬНЫЕ ДАННЫЕ ПО СЕРБИИ

В статье проанализировано влияние 3 групп факторов (макроэкономических, отраслевых, конкретного банка) на финансовые показатели 10 крупнейших банков Сербии. Применена сбалансированная панельная модель по квартальным данным за 2005–2011 годы. Результаты показывают, что инфляция, структура собственности, рыночная концентрация и структура финансовой системы не являются преобладающими факторами влияния на прибыльность банка. На сербские банки отрицательно влияют валютное замещение, ликвидность, соотношение операционных расходов и риски. Положительно влияют размер активов, процентные ставки, достаточность капитала, экономическое развитие, левериджс, чистый процентный доход, активность на рынке и увеличение доли внебалансовых операций.

Ключевые слова: *валютное замещение, прибыльность банка, Сербия.*

[1] Teaching Assistant, University of Novi Sad, Serbia.
[2] PhD, Associate Professor, University of Pristina, Assistant Professor, University of Novi Sad, Serbia.
[3] PhD, Assistant Professor, University of Kragujevac, Kosovo, Serbia.

Introduction

Profitability is a bank's ultimate financial performance that originates in internal operational quality as a factor that refers to with competition on the market. Determinants that predominately define the degree of profitability of the Serbian banking sector can be observed as internal and external. One of the major problems of the Serbian financial sector that also jeopardizes the performances of Serbian banks is an extremely high level of currency substitution. Currency substitution is a wide-spread practice of foreign currency application (in the case of Serbia – euro). This practice has multiple negative impacts on bank operations in addition to monetary policy restrictions in the sense of its limitation to achieve monetary policy aims. Major negative impact of currency substitution to the banking industry is visible in the decreasing quality of its lending cpacity due to indexation in debts of firms and individuals in euro. The long-term trend of Serbian national currency (Serbian dinar – RSD) depreciation increases the nominal debts of a bank's debtors. As a consequence more and more debtors are lagging behind in repayment of their loans, which altogether leads to a decreasing quality of a bank's assets i.e. increases ratios of non-performing loans in comparison to overall assets. Negative trends of the foreign-exchange market influences bank assets and profitability due to the fact that foreign exchange risk is being transformed over currency indexing into the default risk.

According to EBRD data, at the beginning of the aforementioned process the index of Serbian banking reform and interest rate liberalization was at its lowest point (mark 1). Structural reforms resulted in marketization of the Serbian banking sector, which pushed EBRD mark to a satisfied level at the end of 2008 (mark 3), which is the same level as 8 observed Southeastern Europe economies, but slightly less than the average of sixteen economies in transition of Central and Eastern Europe[4].

This paper consists of 4 parts. In the first part we present a literature review. The second part analyzes in detail how currency substitution in Serbia is delivered, including corrective actions by the National Bank of Serbia. The third part focuses on the econometric model of profitability of the ten biggest Serbian banks, measured by overall assets. And finally, in the fourth part we present the results of econometric research.

1. Literature review

Exploring influences that predominantly determine bank profitability is a complex task, that has been extensively analyzed in the recent years. Research papers can be divided into two groups: (1) studies focused on bank profitability in selected countries; and (2) studies focused on bank profitability in groups of countries. Among the first group, the most important are the following studies: Brazil (Afanasieff et al., 2002), Malaysia (Guru, Staunton and Balashanmugam, 2002), Greece (Mamatzakis and Remoundos, 2003; Kosmidou, 2006), Tunisia (Naceur, 2003), India (Badola and Verma, 2006), United Kingdom (Kosmidou, Tanna, Pasiouras, 2007), China (Heffernan and Fu, 2008), Taiwan (Ramlall, 2009), Switzerland (Dietrich and Wanzenried, 2009), Japan (Lui and Wilson, 2010), USA (Hoffman, 2011), Nigeria

[4] According to EBRD methodology, 8 Southeastern Europe transition economies are: Bulgaria, Romania, Croatia, Bosnia-Herzegovina, Montenegro, Albania, FYR Macedonia and Serbia, while transition economies of Central and Eatern Europe are: Czech Republic, Estonia, Latvia, Lithuania, Poland, Hungary, Slovakia and Slovenia.

(Abiodun, 2012). The following studies are important among the second group: 80 developed and developing countries (Demirguc – Kunt and Huizinga, 1999), EU (Staikouras and Wood, 2003), Southeastern European Region (Athanasouglou, Delis, Staikouras, 2006), Sub-Saharan Africa (Flamini, McDonald, Schumacher, 2009).

"Bank profitability, by measured by return on assets (ROA), is defined as a profit after taxation divided with total assets. Return on equity (ROE) is defined as return after taxation divided with total capital. ROA is used to asses a bank's ability to generate profit on account of assets, while ROE reflects income of shareholders in comparison to their capital" (Ramadan, Kilani and Kaddumi, 2011). "Regulators are using ROA and ROE to assess bank performances and to forecast market structure trends" (Gilbert, Wheelock, 2007).

Profitability determinants are polyvalent: there are microeconomic determinants with a function of operation quality of banks as well as macroeconomic determinants of profitability. Therefore bank profitability is a function of joint influences of internal and external factors. "Bank profitability is a function of internal and external determinants. Internal determinates can be seen as factors that are affected by the decisions of bank management. The quality of decision can be examined in terms of the operating performance. Variables that track the most attention in the literature to assess the operating performance are: capital adequacy, income source, credit risk, efficient management, and bank size. On the other hand, the external determinants are the factors that reflect the legal and economic environment in which the bank operates, and affect the bank's performance. The main components of these factors are the industry-specific and macroeconomic factors; these factors are inflation, industry size, ownership status, competition and concentration" (Ramadan, Kilani and Kaddumi, 2011).

Goddard, Molyneux and Wilson (2004) also analyzed bank profitability in 6 European countries during the period 1992–1998, using dynamic panel models. "Despite intensifying competition there is significant persistence of abnormal profit from year to year. The evidence for any consistent or systematic size-profitability relationship is relatively weak. The relationship between the importance of off-balance sheet business in a bank's portfolio and profitability is positive for the UK, but either neutral or negative elsewhere. The relationship between the capital-assets ratio and profitability is positive (Goddard, Molyneux and Wilson, 2004). A more general conclusion of the empirical analysis is that the increasing integration of European banking markets notwithstanding, national factors still seems to play an important role among the determinants of bank performance. (Goddard, Molyneux, Wilson and 2004).

Kosmidou, Tanna and Pasiouras (2007) analyzed internal and external determinants of bank profitability of commercial banks in the United Kingdom during the period 1995–2002. They used a non-balanced panel of 224 observations, and return on average assets and net interest margin as dependent variables. "The results show that capital strength, represented by the equity to assets ratio, is the main determinant of UK bank profits providing support to the argument that well capitalized banks face lower costs of external financing, which reduces their costs and enhances profits" (Kosmidou, Tanna and Pasiouras). Also, macroeconomic determinants as a group of

factors "do not have explanatory power" (Kosmidou, Tanna and Pasiouras), but economic growth, inflation, market concentration and market development are statistically significant determinants of profitability.

Ben Naceur and Goaided (2008) analyzed the influence of internal and external factors on a bank profitability in Tunisia during the period 1980–2000. The aforementioned study tried to answer the following questions: Why are some commercial banks more successful than others and is that discrepancy caused by internal factors that are under control of management? Are external factors important for bank performances? The conclusions of this study is as follows: "High net interest margin and profitability tend to be associated with banks that hold a relatively high amount of capital, and with large overheads. Bank loans have a positive and significant impact on the capacity of Tunisian banks to generate interest margins. The size has mostly negative and significant coefficients on bank profitability. This latter result may simply reflect scale inefficiencies. " (Ben Naceur and Goaided, 2008).

Ahmad and Noor (2011) analyzed the profitability of islamic banks in 25 countries during the period of 1992–2009. Research results suggest that "profit efficiency is positive and statistically significant related with operating expenses against asset, equity, high income countries and non-performing loans against total loans. We also find a positive correlation between bank profitability and technical efficiency levels indicating that the more efficient banks tend to be more profitable with strong result at Asian Islamic banks" (Ahmad and Nood, 2011).

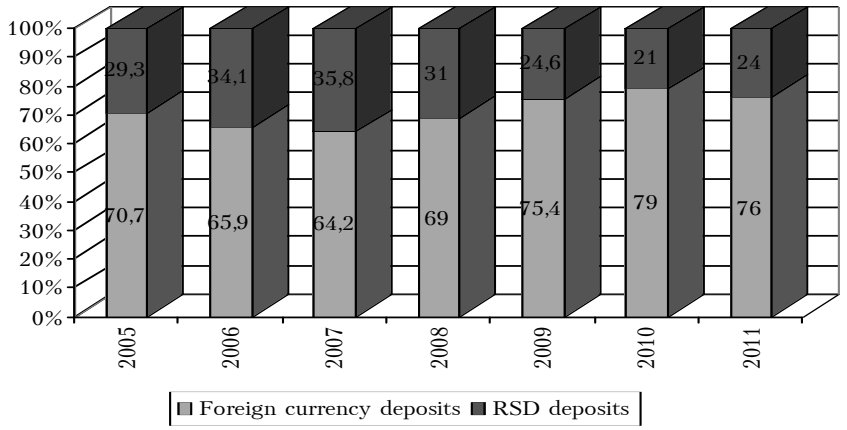
Hoffman (2011) combined internal and external determinants during the period of 1995–2007 in order to assess their influence on the USA banking industry profitability. "Specifically, for the US banking industry the efficiency-risk and the franchise-value hypotheses are the most important elements which explain the relationship between profitability and capital. The efficiency-risk hypothesis claims that the most efficient banks (those with higher rates of return) will choose low levels of capital ratios; while with the franchise-value hypothesis the most efficient banks will look for high capital ratios" (Hoffman, 2011). Also, his research suggests that the USA banks operate with a high degree risk-aversion. Therefore the USA bank operations are characterized with diseconomy of scale.

2. Determinants of currency substitution in Serbia

Serbia is a typical transition economy where periods of financial instability and high inflation are almost permanent conditions. This has triggered the psychology of a lack of confidence in the monetary authorities and the national currency, which is the first step in currency substitution. Intensive foreign trade with the EU has influenced the trust in their national currencies, so that the non-bank sector (firms and households) gradually conducted a "silent substitution", mainly in German mark which served as measure of value. Following the introduction of the single currency in the EMU, informal accounting transactions are in euro. However, due to the extreme volatility of the Serbian dinar exchange rate, use of the euro instead of the national currency became formal, since the bank implemented a mandatory foreign currency clause, especially for its long-term lending.

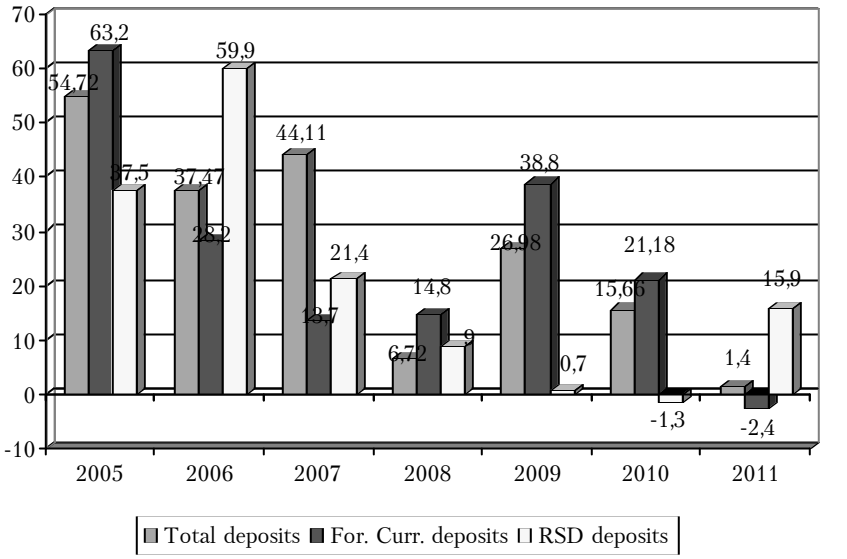
Dynamics of currency substitution in Serbian bank deposits (2005–2011, %) is shown in Figure 1. Currency substitution was high in the beginning of the observed period due to aforementioned reasons. The situation at the end of the observed peri-

od is that more than 3/4 of Serbian bank deposits were in foreign currencies (more than 90% of it in euro). This is the reason why currency substitution (together with an exchange rate) is one of the most influential variables of profitability of Serbian banks[5]. We see a similar situation with assets: according to the National Bank of Serbia's data, in 2010 66% of bank assets were in foreign currencies (or with foreign currency clause), while only 34% were in domestic currency. There was a similar situation in 2011, when currency substitution increased to 69%.



Source: Authors calculations, based on the National Bank of Serbia data.

Figure 1. **Currency structure of deposits in Serbian banking industry (2005–2011, %)**



Source: Authors calculations, based on the National Bank of Serbia data.

Figure 2. **Deposit rate increase in Serbian banking industry (2005–2011, %)**

[5] Top ten Serbian banks has 70.54%, which is less than average.

Figure 2 shows the deposit rate increase in the Serbian banking industry and is important to the understanding of deposit currency structure dynamics. Currency substitution is additionally more dynamized by a more intensive growth of foreign currency deposits in comparison to Serbian dinar deposits. It is encouraging that in 2011 a reversible trend is present.

3. Data, methodology and model specification

The database we used for research of the currency substitution situation of bank profitabiliy of the top 10 Serbian banks is consisted of three types of variables. Bank-specific determinants are calculated on the basis of a bank's balances that are taken from official reports of the National Bank of Serbia. Industry-specific determinants are taken from the same source. Macroeconomic variables are taken from the Serbian Statistical Office and Ministry of Finance of the Republic of Serbia. Based on aforementioned data sources, these formed a balanced panel of quarterly data for the period 2005–2011. Research is conducted by Two-Stage Least Squares methodology that is standard regression analysis for dynamic panel data. The Robustness test is done based on results of the D-W test.

The basic framework for the panel data is defined according to the following regression model (Brooks, 2008):

$$y_{it} = \alpha + \beta x_{it} + u_{it}, \quad (1)$$

where y_{it} is the dependent variable, α is the intercept term, β is a kx1 vector of parameters to be estimated on the explanatory variables, and x_{it} is a 1 x k vector of observations on the explanatory variables, $t=1,\ldots,T$; $i=1,\ldots,N$.

A list of the top 10 Serbian banks is given in the Table 1 (See Appendix). Variables included in model specification are listed in Table 2 (See Apendix).

It is possible to specify two profitability models of the top 10 Serbian banks: the first one, where ROA is a dependent variable; and the second one, where RNIM is a dependent variable.

MODEL 1

$$ROA_{it} = \alpha_o + \delta_1 CA_t + \delta_2 CS_t + \delta_3 RNIM_t + \delta_4 LOGA_t + \delta_5 RNIM_t + \delta_6 LI_t + \delta_7 VA_{TA_t} + \delta_8 EQ_{TL_t} + \delta_9 O\_TA_t + \delta_{10} RISKS_t + \delta_{11} HHI_t + \delta_{12} MS_t + \delta_{13} WNSTR_t + \delta_{14} A_{G_t} + \delta_{15} BLB_t + \delta_{16} FIN\_STR + \delta_{17} GDP\_GR_t + \delta_{18} INF_t + \varepsilon_{it} \quad (2)$$

MODEL 2

$$RNIM_{it} = \alpha_o + \delta_1 CA_t + \delta_2 + CS_t + \delta_3 LOGA_t + \delta_4 PNIM_t + \delta_5 L_t + \delta_6 VA_{TA_t} + \delta_7 EQ_{TL_t} + \delta_8 O\_TA_t + \delta_9 RISKS_t + \delta_{10} HHI_t + \delta_{11} MS_t + \delta_{12} OWNSTR_t + \delta_{34} A_{G_t} + \delta_{14} BLB_t + \delta_{15} FIN\_STR_t + \delta_{17} INF_t + \varepsilon_{it} \quad (3)$$

4. Research results

Based on the results presented in Table 4 and Table 5 (See Appendix) it is possible to determine the influence of certain macroeconomic, market and microeconomic factors on a bank profitability, measured by return on overall assets and by net interest margin (NIM) ratio.

Based on the regression analysis results we can conclude that inflation, ownership structure, market competition (measured by HHI) and financial system struc-

ture are not significant determinants of the top 10 Serbian banks, if profitability is measured by return on overall assets. Significant negative influence on return of overall assets has currency substitution, liquidity, operational expenses ratio, and risks. Finally, significant positive influence on the top 10 Serbian banks have been revealed with reference to an increase of banking industry assets (as an indicator of an increase of growth of the banking market), interest rate, capital adequacy, economic growth, leverage, net interest margin ration, increase of bank assets, market participation share and an increase of off-balance sheet bank operations[6].

In comparison with the previous model, almost all parameters have the same influence on profitability of the top ten Serbian banks, measured by net interest margin ratio. The only exception is that the increase of off-balance sheet bank operations has no significant influence to net interest margin ratio.

5. Concluding Remarks

Profitability in the top 10 Serbian banks is determined by bank-specific, industry-specific and macroeconomic variables. The ownership structure is not a significant determinant of bank profitability due to the fact that in the observed period no major transformation of bank behavior took place. Therefore banks that are partially state-owned adopted market methods that resulted in a satisfied level of profitability. In addition, non-state co-owners are mainly foreign strategic investors that dominate in risk management. The degree of competition in the Serbian banking industry (measured by HHI) is not a significant profitability determinant due to the fact that the Serbian banking market is established as olygopolic structure.

Inflation has not had a significant impact on bank profitability, which implies that the maturity mismatch effect is balanced with faster adjustment to inflation of lending rates relative to deposit rate. Financial system structure has no statistical significance due to the situation that Serbia financial system is remarkably bank-centric. Therefore capital market does not have the potential for large-scale transfer of financial resources to deficit economic units. Risks have traditionally had a negative impact on the bank's profitability of banks, which imposes implementation of sophisticated scoring models.

Liquidity ratio measured by ratio of cash (and cash equivalents)/total assets, has a significant negative impact on bank profitability (there is a trade-off between liquidity and profitability). Operating cost ratio has a significant adverse effect on bank profitability, which implies that the more effective management of operational expenditures is important to a bank's profit abilities.

The potential impact of currency substitution is twofold. On the one hand, the currency substitution in lending operates as a buffer that protects the loan portfolio of losses in real value. On the other hand, where exchange rate is unstable, foreign exchange risk turns into the default risk. The latter effect was dominant in the top ten Serbian banks case. Currency substitution has a significant negative effect to both total banking assets and net interest margin ratio. The results also show that the banking market growth rate, as an indicator of the potential of the banking sector development, has a positive and significant effect on profitability. While a positive and sig-

[6] Significance is observed only in Model 1, where ROA is depended variable. In the Model 2, where NIM rate is depended variable, net interest margin ratio has no significant influence on profitability of top ten Serbian banks.

nificant impact of bank assets growth, taken individually, implies that banks realize the benefits of economies of scale. In addition, interest rates have a positive effect on profitability, as the recalculation of investments and lending rates are based precisely on the circulation of interest rates in the interbank money market. Given the high correlation coefficient between BELIBOR the benchmark interest rate by NBS (0.956), it is expected that the benchmark rate has a proportionally positive impact on bank profitability. The results also indicate that the strengthening bank capital base is economically justified, as the size of capital and leverage have a positive and significant impact on profits. This result is not in accordance with Modigliani-Miller's hypothesis of structure financing neutrality, which implies that it is justified for banks to strengthen their own sources of funding.

Strengthening their own sources of funding might seem uneconomical, since using their own capital is expensive, but banks in Serbia are efficient in prevailing rising costs to final users. One of the significant determinants of bank profitability is also economic growth that increases the demand for loans, but also reduces the potential default risk. The results of significance of net non-interest margin and off-balance sheet operations are compatible and suggest that banks should focus on non-interest income sources. Positive effects on profitability arise from an adequate risk management in off-balance sheet operations, as well as from significant commissions and fees charged for various services.

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Appendix

Table 1. **Top ten Serbian commercial banks, measured by market participation (2nd quater of 2012)**

Bank Name	Market Share (%)	Period
Banca Intesa	14,5	2005-2011 (Quarterly Data)
Commercial Bank Belgrade	10,7	2005-2011 (Quarterly Data)
Unicredit Bank	7,6	2005-2011 (Quarterly Data)
Raiffeisen Bank	6,9	2005-2011 (Quarterly Data)
Societe Generale Serbia Bank	6,9	2005-2011 (Quarterly Data)
Eurobank EFG	6,2	2005-2011 (Quarterly Data)
Hipo-Alpe Adria Bank	5,8	2005-2011 (Quarterly Data)
AIK Bank Nis	5,4	2005-2011 (Quarterly Data)
Vojvodjanska Bank (NBG Group)	3,5	2005-2011 (Quarterly Data)
Volks Bank	3,0	2005-2011 (Quarterly Data)
Total	70,5	-

Source: National Bank of Serbia, 2012Q2, p. 8.

Serbian banking sector is subject to permanent structural transformation since the major political changes in Serbia in 2000. Transition is a process that was comprehensive in its scope, unique and specific to the respective country's point of view, from the perspective of the dynamics of intense change, economic, and social.

The ultimate goal of transition of the Serbian banking industry is to increase the efficiency of the allocation of scarce economic resources, achieving superior financial performance through the inauguration of the private property market concept of economy and "hard" budget constraints as well as the assumption of financial discipline. A massive wave of restructuring and privatization of Serbian banks started soon after political changes in 2000: insolvent banks were liquidated; solvent banks were sold to foreign strategic partners, some foreign banks established their branches. Capital liberalization encouraged foreign capital inflow, which contributed enormously to the dynamic liberalization of the Serbian banking industry, although motive for such investments are mainly to enter the market.

Table 2. **Depended and non-dependent variables - methodology review**

Variable	Calculation	Notation	Expected impact
Return on asset	Profit after tax/Total Assets	ROA	------
Ratio of Net-Interest Margin	Ratio of Net Interest Margin = Net Interest Income/Total Assets	RNIM	------
Asset Growth	Rate of total banking industry growth	A_G	Positive
Interest rate	BELIBOR (Belgrade Stock Exchage Market Index)	BLB	Positive
Capital Adequacy	Equity/Total Assets	CA	Positive
Currency substitution	Deposits in foreign currency/Total deposits	CS	Negative/Positive
Financial system structure	Banking industry assets /GDP	FIN_STR	Positive
Economic growth	Growth of real GDP	GDP_GR	Positive
Competition	Herfihndal-Hirshmano Index	HHI	Positive
Asset size	Natural Logarithm of Total Assets	LogA	Positive
Ratio of Non-Interest Income	Ratio of Non-Interest Income = Non-Interest Income/Total Assets	RNNIM	Positive
Market share	Share of banking assets in total assets	MS	Positive
Liquidity	Liquid Assets/Total Assets	L1	Negative
Non-balance operations	Non-balance assets/Total assets	VA_TA	Positive
Leverage	Equty /Total Liabilities	EQ_TL	Positive/Negative
Efficiency	Operational expenditures/Total assets	OE_TA	Negative
Risks	Net expenditures corrections of disposal value/Total assets	RISKS	Negative
Inflation	Inflation rate	INF	Negative
Ownership Structure	Share of banking industry assets in state ownership/Total assets	OWN_STR	Positive

Source: Authors' calculations.

Table 3. **Depended and non-dependent variables - methodology review**

Variable	Calculation	Notation	Expected impact
Return on asset	Profit after tax/Total Assets	ROA	------
Ratio of Net-Interest Margin	Ratio of Net Interest Margin = Net Interest Income/Total Assets	RNIM	Positive
Asset Growth	Rate of total banking industry growth	A_G	Positive
Interest rate	BELIBOR (Belgrade Stock Exchange Market Index)	BLB	Positive

Continuation of Table 3

Capital Adequacy	Equity/Total Assets	CA	Positive
Currency substitution	Deposits in foreign currency/Total deposits	CS	Negative/Positive
Financial system structure	Banking industry assets /GDP	FIN_STR	Positive
Economic growth	Growth of real GDP	GDP_GR	Positive
Competition	Herfihndal-Hirshmano Index	HHI	Positive
Asset size	Natural Logarithm of Total Assets	LogA	Positive
Ratio of Non-Interest Income	Ratio of Non-Interest Income = Non-Interest Income/Total Assets	RNNIM	Positive
Market share	Share of banking assets in total assets	MS	Positive
Liquidity	Liquid Assets/Total Assets	L1	Negative
Non-balance operations	Non-balance assets/Total assets	VA_TA	Positive
Leverage	Equity /Total Liabilities	EQ_TL	Positive/Negative
Efficiency	Operational expenditures/Total assets	OE_TA	Negative
Risks	Net expenditures corrections of disposal value/Total assets	RISKS	Negative
Inflation	Inflation rate	INF	Negative
Ownership Structure	Share of banking industry assets in state ownership/Total assets	OWN_STR	Positive

Source: Authors' calculations.

Table 4. **Panel regression results (ROA is depended variable)**

Variable	Coefficient	Std. Error	t-Statistic	Probability
C	-0.52121	0.850841	-0.612582	0.5435
A_G	0.439395	0.180836	2.429804	0.0191
BLB	0.110966	0.032843	3.378643	0.0015
CA	1.034478	0.339453	3.047482	0.004
CS	-0.004495	0.001717	-2.618169	0.012
FIN_STR	36.3629	82.51422	0.440686	0.6617
GDP_GR	1.034464	0.335498	3.083364	0.0036
HHI	0.000679	0.001134	0.598895	0.5525
LOGA	5.33E-01	0.174051	3.063612	0.0037
RNNIM	1.034478	0.339453	3.047482	0.004
MS	0.11035	0.033116	3.332182	0.0017
L1	-0.373748	0.131402	-2.844309	0.0068
VA_TA	0.518283	0.172246	3.008971	0.0043
EQ_TL	0.110966	0.032843	3.378643	0.0015
OE_TA	-0.374308	0.133256	-2.808945	0.0075
RISKS	-0.374308	0.133256	-2.808945	0.0075
INF	0.139501	0.087431	1.595564	0.1173
OWN_STR	0.000789	0.000556	1.419514	0.1623
R-squared	0.653814	Mean dependent var		0.020785
Adjusted R-squared	0.583164	S.D. dependent var		0.016008
S.E. of regression	0.010285	Akaike info criterion		-6.267477
Sum squared resid	0.005183	Schwarz criterion		-5.668865
Log likelihood	195.5652	Hannan-Quinn criter.		-6.033803
F-statistic	9.254251	Durbin-Watson stat		2.386413
Prob (F-statistic)	0			

Source: Authors' calculations.

Table 5. **Panel regression results (NIM rate is a dependent variable)**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.041283	0.016304	2.532092	0.0143
A_G	0.049983	0.017668	2.828977	0.0067
BLB	0.047203	0.01793	2.63262	0.0111
CA	0.110075	0.019644	5.60337	0
CS	-0.024591	0.011186	-2.198316	0.0323
FIN_STR	0.01683	0.020594	0.817257	0.4179
GDP_GR	0.198063	0.082582	2.398389	0.0205
HHI	-0.065822	0.212719	-0.3094 3	0.7584
RNIM	0.522046	0.250087	2.087458	0.0423
LOGA	4.15E-02	0.017176	2.41579	0.0191
RNNIM	-0.039339	0.016952	-2.320622	0.0244
MS	0.043323	0.017077	2.537012	0.0143
L1	-0.039445	0.013855	2.846984	0.0062
VA_TA	-21.1861	26.78027	-0.791108	0.4323
K_L	0.041527	0.018443	2.251567	0.0286
OE_TA	-0.206001	0.100031	-2.05937	0.045
RISKS	-1.53581	16.96019	-2.15421	0.0356
INF	0.076003	0.054077	1.405451	0.1665
OWN_STR	-0.000605	0.000879	-0.687836	0.4949
R-squared	0.530171	Mean dependent var		0.044593
Adjusted R-squared	0.505002	S.D. dependent var		0.012869
S.E. of regression	0.009054	Akaike info criterion		-6.506832
Sum squared resid	0.004591	Schwarz criterion		-6.367209
Log likelihood	199.205	Hannan-Quinn criter.		-6.452218
F-statistic	21.06411	Durbin-Watson stat		2.254126
Prob (F-statistic)	0			

Source: Authors' calculations.

Стаття надійшла до редакції 05.05.2013.