THE IMPACT OF ECONOMIC TRENDS ON BANK PROFITABILITY – THE CASE OF SERBIA AND CROATIA

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Abstract

This paper analyses the direction and intensity of the impact of economic trends on the profitability of banks in Serbia and Croatia in the period between the years 2006 and 2021. This paper aims to determine which indicators of economic trends have the most substantial impact on the profitability of banks in the selected countries. As key indicators of economic trends, GDP per capita, the GDP growth rate, inflation rate, real interest rate, broad money growth, general government final consumption expenditure, current account balance, gross savings, trade, and unemployment are selected as independent variables. At the same time, bank profitability was measured with bank return on equity, in percentages (ROE), and bank return on assets, in percentages (ROA) – two indicators which represent the dependent variables selected for this research. Descriptive analysis, mean difference, correlation, and univariate and multivariate regression were used in the research. Research results show that changes in real interest rates and unemployment have a significant impact on the profitability of banks in both of the selected countries, while changes in GDP per capita growth have a statistically significant effect only in Serbia, and general government final consumption expenditure has a statistically significant impact only in Croatia. The influence of other indicators of economic trends is not statistically significant.

Key words: bank profitability, economic trends' indicators, Serbia, Croatia, regression analysis.

УТИЦАЈ ПРИВРЕДНИХ КРЕТАЊА НА ПРОФИТАБИЛНОСТ БАНАКА – СЛУЧАЈ СРБИЈЕ И ХРВАТСКЕ

Апстракт

У овом раду анализирани су смер и интензитет утицаја привредних кретања на профитабилност банака у Србији и Хрватској у периоду између 2006. и 2021. године. Циљ рада је да се утврди који индикатори привредних кретања имају нај-

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снажнији утицај на профитабилност банака у одабраним земљама. Као кључни индикатори привредних кретања одабрани су стопа раста БДП-а, БДП per capita, стопа инфлације, реална каматна стопа, стопа раста новчане масе, државни издаци за крајњу потрошњу, биланс текућег рачуна, бруто штедња, обим трговине и стопа незапослености, као независне варијабле. Профитабилност банака мерена је показатељима ROE и ROA, који представљају зависне варијабле. У истраживању су коришћене методе дескриптивне анализе, тестирања хипотеза о разлици аритметичких средина, корелација, и униваријантна и мултиваријантна линеарна регресиона анализа. Резултати истраживања показују да значајан утицај на профитабилност банака у обе одабране земље има промена реалне каматне стопе и стопе незапослености, док промена стопе раста БДП-а има статистички значајан ефекат само у Србији, а државни издаци имају статистички значајан ефекат само у Хрватској. Утицај осталих индикатора привредних кретања није статистички значајан.

Кључне речи: банкарска профитабилност, индикатори привредних кретања,
                    Србија, Хрватска, регресиона анализа

INTRODUCTION

The profitability of banks is one of the key indicators of their business success. Achieving adequate profitability allows banks to maintain their capital at the required level, to protect and improve their market position, and to expand the range of their services. Only profitable banks can play the role of the core of the financial system, as is generally the case, especially in developing countries. Successful banks can make a significant contribution to positive economic trends at the national and global levels, but at the same time, they themselves are not immune to the impact of macroeconomic developments.

Starting from the interdependence of banks' business success and economic trends, the subject of this research is the impact of economic trends on the profitability of banks in Serbia and Croatia. The aim of the research is to determine which indicators of economic trends have the strongest impact on banks' profitability in the selected countries. The research is motivated by the importance of understanding the external factors that affect the profitability of banks and, consequently, the financial stability of the banking sector in Serbia and Croatia. The research covers the 2006-2021 period. The changes in GDP growth rate, GDP per capita, inflation rate, real interest rate, broad money growth, government spending, fiscal health index, monetary freedom index, and financial freedom index were used as indicators of economic trends. On the other hand, the ROE and ROA indicators were used as measures of bank profitability.

Our two research hypotheses are defined as follows: H1) movements of macroeconomic indicators, presented through changes in return on equity, do not have a significant impact on changes in the profitability of banks in Serbia and Croatia; and H2) movements of macroeconomic indicators, presented through changes in return on assets, do not have a

significant impact on changes in the profitability of banks in Serbia and Croatia.

This study is structured as follows: section one provides a brief overview of the literature concerning the determinants of bank profitability; section two contains a description of the data and variables on which the analysis is based; in section three, there is a brief review of the econometric method used, and an analysis of the estimation results; and section four summarises the results, and draws a number of relevant conclusions for future actions.

LITERATURE REVIEW

The banking sector has a very strong influence on economic trends both nationally and globally, but at the same time, economic trends significantly determine the success of banking operations (Choudhry, 2018, p. 6). A favourable economic environment creates exceptional opportunities for the successful business of economic entities, whose main financiers are mainly banks, resulting in an increase in the volume and profitability of banking operations (Gardener, Molyneux & Williams, 2003, p. 146). On the other hand, economic instability, caused by wrong fiscal and monetary policies, and/or political conflicts prevents normal business operations and diminishes the role of the market (Hermes, Lensink & Murinde, 2003, p. 525). In such circumstances, the efficiency and sustainability of banking operations are endangered due to the decline in asset quality, the growth of loans losses, and, finally, a significant decline in profitability (Albertazzi & Gambacorta, 2009, p. 393).

On the other hand, banks encourage economic activities by performing the function of a financial intermediary by investing money collected from depositors in the business ventures of borrowers (Sufian & Habibullah, 2009, p. 207). Efficient financial intermediation of banks leads to the growth of the volume of mobilised and invested financial resources, improved quality of banking services, and the growth of their profitability (Saona Hoffmann, 2011, p. 255). It seems that the public becomes aware of the importance of banks for the normal functioning of the economy only after the emergence of banking crises, which quickly spill over into the real sector and paralyse economic life (Sayilgan & Yildirim, 2009, p. 207).

One of the most important indicators of banking success is profitability. Profitability enables banks to meet the financial requirements of shareholders and employees, and the requirements of clients for better services (Pond, 2017, p. 73). Also, profitability leads to the strengthening of the stability and the resilience of banking operations to disturbances in the financial and economic system, due to the growth of available internal sources of financing and the improvement of capital structure (Sayilgan

& Yildirim, 2009, p. 207). For these reasons, profitability is taken as a key indicator of banking performance in situations where it is not possible to use the market price of bank shares for this purpose, as in the case of small banks whose shares are not actively traded (Rose & Hudgins, 2010, p. 171), or banks operating in underdeveloped financial markets. There are numerous indicators of banks' profitability, of which return on assets (ROA), as a measure of bank management efficiency, and return on equity (ROE), which shows the return achieved by the bank's shareholders, stand out in terms of importance and representation (Rose & Hudgins, 2010, p. 172).

The impact of economic trends on bank profitability has been addressed by numerous authors, who based their analysis on the research of the mentioned phenomenon in individual countries or groups of countries. Dealing with the issue of the dynamics of profitability of American banks, Chronopoulos et al. (2015) found that GDP growth has a positive effect on bank profitability. Anbar and Alper (2011) showed that the impact of the real GDP growth rate and inflation rate on the profitability of Turkish banks is negligible. On the other hand, Sayilgan and Yildirim (2009) concluded that the reduction in the inflation rate stimulates the growth of the profitability of Turkish banks, while the growth of the real sector, according to Acaravci and Calim (2013), stimulates the Turkish banks' growth. According to Saeed (2014), GDP and inflation negatively affect the profitability of British banks, while the interest rate impact is positive. Alexiou and Sofoklis (2009) concluded that the impact of GDP on the profitability of Greek banks is insignificant, while the impact of inflation is positive, but insignificant in degree. Athanasoglou, Brissimis and Delis (2008), on the other hand, concluded that inflation and cyclical output have a pronounced impact on the profitability of Greek banks. Osuagwu (2014) indicates a negligible impact of the inflation rate and exchange rate on the profitability of Nigerian banks. Tan (2016) states that inflation and GDP have a positive and pronounced impact on the profitability of Chinese banks, emphasising that inflation primarily affects return on assets, net interest margin, and profit before tax on assets, while GDP has an impact on the net interest margin and profit before tax on assets. García-Herrero, Gavilá and Santabárbara (2009) indicate that the profitability of Chinese banks is driven by the growth of real interest rates on loans and inflation, but that interest rate volatility threatens it. Liu and Wilson (2010) found that GDP growth has a negative impact on the profitability of Japanese banks. According to Trujillo-Ponce (2013), the profitability of banks in Spain is significantly influenced by the economic cycle, inflation rate, and interest rate. Sufian and Habibullah (2009) concluded that inflation negatively affects banks' profitability in Bangladesh, while the impact of other indicators of economic trends is insignificant. The profitability of banks in the Philippines is negatively affected by the inflation rate, but it is not conditioned by economic growth and money supply growth (Sufian & Chong, 2008). Knezevic

and Dobromirov (2016) found that macroeconomic factors do not affect the profitability of banks in Serbia. When it comes to banks in Croatia, their profitability is positively affected by GDP growth, while the impact of inflation is negative (Pervan, Pelivan & Arnerić, 2015).

Numerous authors have conducted a cross-country analysis of the impact of economic trends on bank profitability. Based on the analysis of the profitability of banks operating in 23 selected countries, divided into developed and developing countries, Le and Ngo (2020) found that the factors that had a pronounced impact on bank profitability include economic growth and the global financial crisis. Djalilov and Piesse (2016) addressed this phenomenon in transition countries, dividing them into early-transition and late-transition countries. They found that GDP and inflation have no impact on bank profitability, that government spending has a strong negative impact on bank profitability in late-transition countries, that fiscal freedom only significantly affects bank profitability in late-transition countries, and that the impact of monetary freedom is strong and negative in the case of the profitability of banks operating in late-transition countries. Athanasoglou, Delis and Staikouras (2006) focused their research on the countries of Southeast Europe. They conclude that inflation has a strong positive impact on banks' profitability in these countries, while the impact of GDP is negligible. Kalaš et al. (2020) state that GDP and inflation have a significant impact on banking profitability in Central and Southeast Europe countries, in contrast to the real interest rate, whose impact is negligible. In their study, Petria, Capraru and Ihnatov (2015) took into account the 27 member states of the European Union, and found that GDP growth had a positive effect on banking profitability in these countries, while inflation was unaffected. Staikouras and Wood (2004), on the other hand, surveyed a sample of 13 EU member states, and concluded that interest rates had a positive effect on bank profitability in the observed countries, while GDP growth and interest rate volatility had a negative impact.

METHODOLOGICAL FRAMEWORK

The main goal of this research is to determine if there is a correlation between economic trends and bank profitability in Serbia and Croatia for the 2006-2021 period[1]. This study focuses on analysing the influence of economic trends on bank profitability in Serbia and Croatia via the use of annual time series internal and external data for the period between 2006 and 2021. The authors selected the following indicators of economic trends as independent variables[2]:

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[1] For most of the selected variables, data is available for this period.

[2] The variables used in the analysis were primarily selected as the most important economic trend indicators that provide insight into the level of economic development of those two countries;

- Gross domestic product (GDP) per capita, PPP (current international $) ($x_1$, The World Bank Group);
- GDP per capita growth (annual %) (x_2, The World Bank Group);
- Inflation, consumer prices (annual %) (x_3, The World Bank Group);
- Real interest rate (%) (x_4, The World Bank Group);
- Broad money growth (annual %) (x_5, The World Bank Group)[3];
- General government final consumption expenditure (x_6, The World Bank Group)[4];
- Current account balance (% of GDP) (x_7, The World Bank Data Group)[5];
- Gross savings (% of GDP) (x_8, The World Bank Data Group)[6];
- Trade (% of GDP) (x_9, The World Bank Data)[7]; and
- Unemployment, total (% of total labour force) (national estimate) (x_{10}, The World Bank Data).

The authors selected the following indicators of bank profitability as dependent variables:

- *Bank return on equity*, in percentages – pre-tax income to yearly average equity (ROE, The Global Economy); and
- *Bank return on assets*, in percentages – pre-tax income to yearly average total assets (ROA, The Global Economy).

Given the above-mentioned variables, two models were developed. The first model serves to examine the impact of economic trends on ROE, and the second model serves to identify the link between economic trends and ROA:

Model 1:
$$ROE = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + \varepsilon_i \quad (1)$$

Model 2:
$$ROA = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + \varepsilon_i \quad (2)$$

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[3] "Broad money is the sum of currency outside banks; demand deposits other than those of the central government; the time, savings, and foreign currency deposits of resident sectors other than the central government; bank and traveller's checks; and other securities such as certificates of deposit and commercial paper". (The World Bank Group);

[4] "General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defence and security, but excludes government military expenditures that are part of government capital formation" (The World Bank);

[5] "Current account balance is the sum of net exports of goods and services, net primary income, and net secondary income" (The World Bank);

[6] "Gross savings are calculated as gross national income less total consumption, plus net transfers" (The World Bank Data);

[7] "Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product" (The World Bank Data).

DATA AND ANALYSIS

The essence of the analysis is to identify those variables that prove to be the most important factors of bank performance presented through the level of ROE and ROA for each country separately, and then to compare the chosen indicators of economic trends between Serbia and Croatia. First, the trends of chosen variables in the selected period will be presented. The results are shown below, in Figure 1.
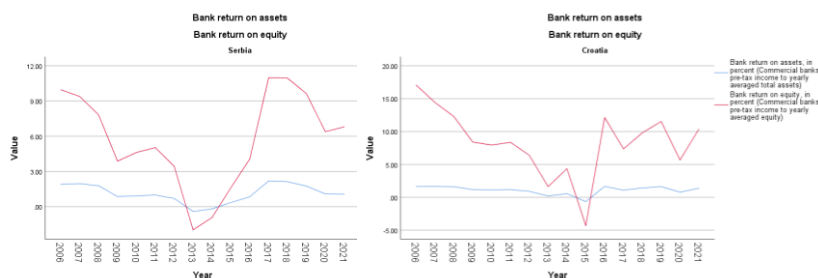

Figure 1. *Bank return on assets and Bank return on equity,*
in percentages, in Serbia and Croatia during the 2006-2021 period

Considering the profitability level of the banking sector, indicators were above average in Serbia for ROA, with a mean value of 1.1188 and a standard deviation of 0.78849. For ROE, the mean value was 5.7281, with a standard deviation of 4.01007. In Croatia, the mean value of ROA was 1.0756, with a standard deviation of 0.63102, and the mean value for ROE was 8.3388, with a standard deviation of 5.11652. According to the values for standard deviation, significantly higher volatility is observed for ROE in both countries during the observed period. Notably, the values for ROE in Croatia were much higher than in Serbia during the observed time. On the other hand, the mean values for ROA were similar in both countries.
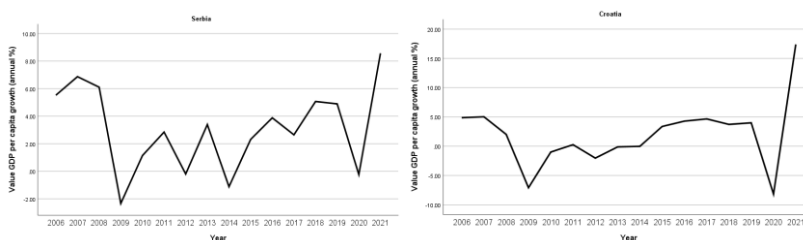

Figure 2. GDP per capita growth (annual %) in Serbia and Croatia
during the 2006-2021 period

Figure 2 analyses the economic trends of GDP growth rate, and shows much greater oscillations in Serbia after the global financial crisis

in 2008 (both countries experienced a drastic decline in GDP growth rate in 2020 as well, as a consequence of the COVID pandemic). In Serbia, the values of this indicator were in the range of 10.91 (from *max* 8.57 to *min* -2.34). In Croatia, the *max* value of the GDP growth rate was 17.38, and the *min* value was -8.18 (the range was 25.56).
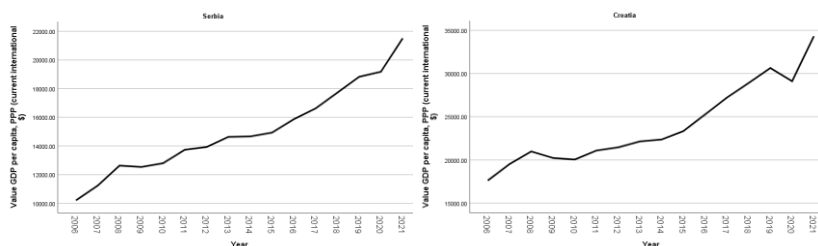

*Figure 3. GDP per capita, PPP, in Serbia and Croatia
during the 2006-2021 period*

Figure 3 reflects the trends in GDP per capita PPP (current international $), which were similar in both countries. But, when concrete values are considered, a big difference is noticeable. The mean value of this indicator in Serbia was 15061.7389, with a standard deviation of 3072.57195. In Croatia, the mean value was 24013.2946, with a standard deviation of 4717.43314 (the mean value in Serbia is around 63% of the Croatian GDP per capita mean value).
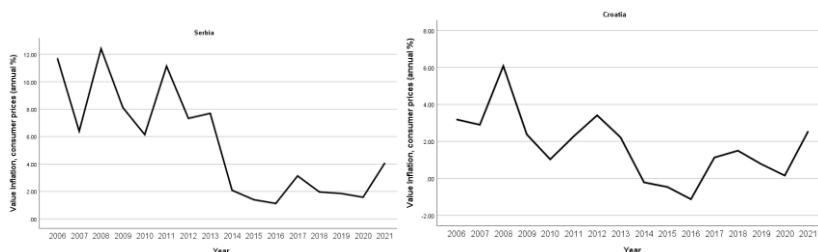

*Figure 4. Inflation, consumer price (annual %) in Serbia and Croatia
during the 2006-2021 period*

Figure 4 analyses the inflation rate in both countries. There were much greater oscillations of value in Serbia during the period. The mean value of the inflation rate in Serbia was 5.5091, with a standard deviation of 3.92508, and the mean value in Croatia was 1.7364, with a standard deviation of 1.78713. The previous indicator shows a greater economic and monetary stability in Croatia.
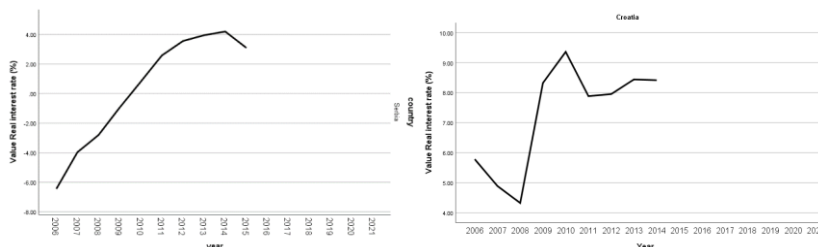
Figure 5. *Real interest rate (%) in Serbia and Croatia during the 2006-2015 period*[8]

Figure 5 reflects the trends in real interest rates between the years 2006 and 2015. In Serbia, a constant growth is noticeable until 2014 (the mean value was 0.4066, with a standard deviation of 3.76008), with the most outstanding value of 4.20 recorded in 2014. In Croatia, the mean value of the real interest rate was 7.2686, and the standard deviation was 1.78521, with the most outstanding value of 9.37 in 2010.
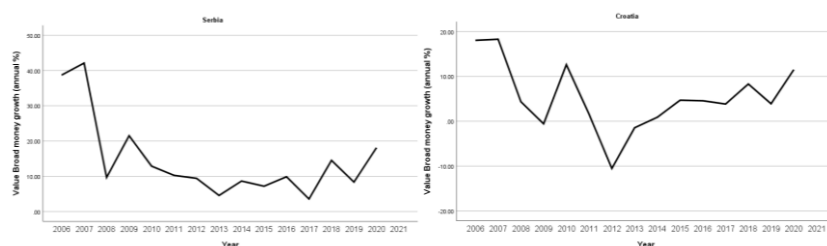

Figure 6. Broad money growth (annual %) in Serbia and Croatia during the 2006-2020 period

Figure 6 shows the trends in broad money growth in both countries. The mean value in Serbia was much higher than in Croatia – 14.6250 (with a standard deviation of 11.47627) relative to 5.3340 (with a standard deviation of 7.57580). Besides the difference in mean value, there was a significant deviation of this indicator in both countries. A higher value of broad money growth in Serbia was related to the higher value of the inflation rate, which was realised in the observed period.

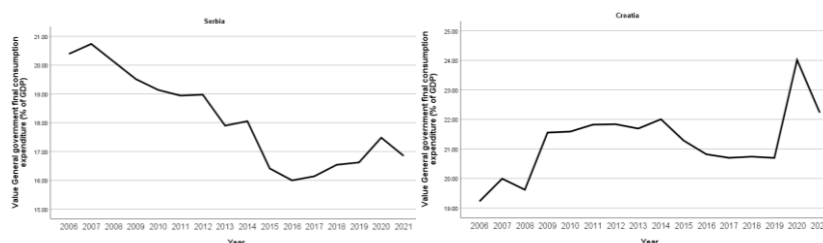[8] Data is available only for this period on World Bank Data.

Figure 7. General government final consumption expenditure
(% of GDP) in Serbia and Croatia during the 2009-2021 period

Figure 7 represents the markedly different trends in general govern-ment final consumption expenditure (% of GDP) in Serbia and Croatia dur-ing the observed period. The mean value for Serbia was 18.1132, with a standard deviation of 1.60333, and the mean value for Croatia was 21.2367, with a standard deviation of 1.14580. Those values do not suggest a big dif-ference in government spending, but the graphs show the different dynamics during the time.
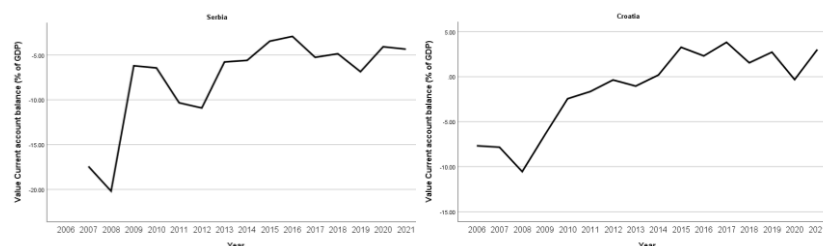
Figure 8. Current account balance (% of GDP) in Serbia and Croatia
during the 2007-2021 period

Keeping in mind the mean values, the current account balance (% of GDP) was not similar in these two countries during the observed period. The mean value of the current account balance in Serbia was -7.6434 (with a standard deviation of 5.06883), and -1.3406 (with a standard deviation of 4.50341) in Croatia. After 2014, values were positive in Croatia (in 2020, the value is negative (-0.32)), while the values of the current account balance were negative in Serbia throughout the selected period.
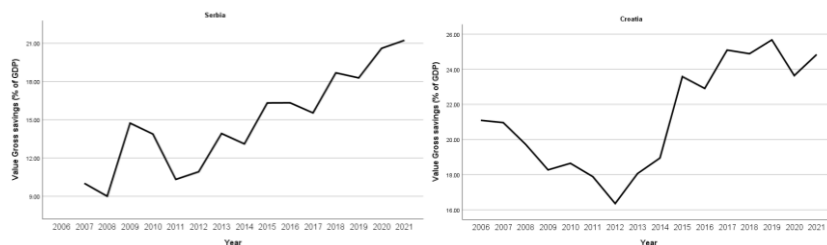
*Figure 9. Gross savings (% of GDP) for Serbia and Croatia
during the 2006-2021 period*

When we analysed gross savings (% of GDP), both countries' results showed similar values. The mean value of gross savings in Serbia was 14.8590 (with a standard deviation of 3.81100), and the mean value of this indicator in Croatia was 21.2843 (with a standard deviation of 3.08829).
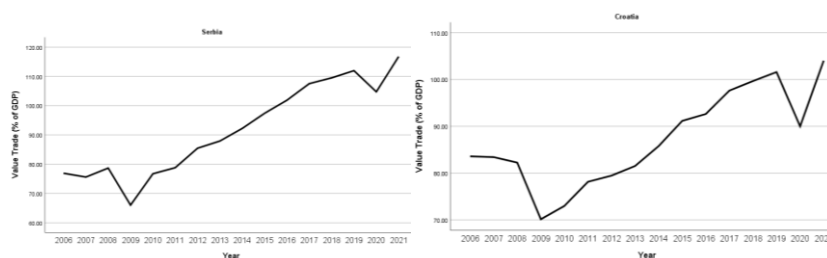
*Figure 10. Trade (% of GDP) in Serbia and Croatia
during the 2006-2021 period*

When analysing the available set of data for trade (% of GDP), it can be noticed that the values for both countries are quite similar. The mean value in Serbia was 91.7557, with a standard deviation of 15.62270. In Croatia, the mean value was 87.1214, with a standard deviation of 10.09777.

*Figure 11. Unemployment in Serbia and Croatia
during the 2006-2021 period*

Trends in unemployment are similar in both countries; the values were lower in Croatia throughout the selected period, but an intensive

decrease in Serbia started two years earlier than in Croatia (in 2012). The mean value for unemployment in Serbia during the selected period was 16.5562, with a standard deviation of 4.72742, and the mean value in Croatia was 11.5750, with a standard deviation of 3.61941.

EMPIRICAL RESULTS
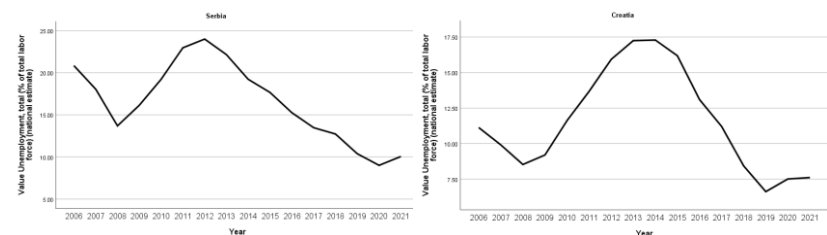
This paper uses descriptive analysis, mean differences between selected variables, and univariate and multivariate regression analysis to show which indicator of economic trends has the greatest impact on bank profitability in both of the observed countries respectively. All analyses were performed using the SPSS program (version 26). At first, it was necessary to test the normality of the distribution of the selected variables. Since the chosen period spans 16 years, the p-value was obtained via the Shapiro-Wilk test of normality basis. The results are presented in Table 1.

Table 1. Descriptive statistics and test of normality for Serbia and Croatia

Variable	Serbia				Croatia			
	mean	SD	range	p	mean	SD	range	p
ROE	5.7281	4.01007	12.96	0.417	8.3387	5.11652	21.38	0.689
ROA	1.1188	0.78849	2.60	0.272	1.0756	0.63102	2.32	0.011
x_1	15061.74	3072.572	11294.17	0.832	24013.29	4717.43	16699.50	0.156
x_2	3.0837	3.06684	10.91	0.977	1.9453	5.76431	25.57	0.050
x_3	5.5091	3.92508	11.29	0.051	1.7364	1.78713	7.20	0.666
x_4	0.4066	3.76008	10.65	0.171	7.2643	1.78887	5.04	0.088
x_5	14.6250	11.47627	38.54	0.002	5.3340	7.57580	28.84	0.507
x_6	18.1132	1.60333	4.74	0.207	21.2367	1.14580	4.80	0.479
x_7	-7.6434	5.06883	17.26	0.002	-1.3406	4.50341	14.37	0.062
x_8	14.8590	3.81100	12.22	0.720	21.2843	3.08829	9.32	0.150
x_9	91.7557	15.62270	50.74	0.359	87.1214	10.09777	33.90	0.775
x_{10}	16.5562	4.72742	14.99	0.676	11.5750	3.61941	10.67	0.176

Source: Authors' calculations

Due to the p-value for ROA, broad money growth, and current account balance, the Mann Whitney U test was used to test the mean difference between Serbia and Croatia. The Independent Sample t-test was used for all other variables. Statistical analysis shows that the differences in the mean values of GDP per capita PPP, inflation, real interest rate, broad money growth, general government final consumption expenditure, current account balance, gross savings, and unemployment between Serbia and Croatia are statistically significant (Table 2).

Table 2. Differences of mean values for selected indicators between Serbia and Croatia

Variables	ROE	ROA	x_1	x_2	x_3	x_5	x_5	x_6	x_7	x_8	x_9	x_{10}
p-value	0.119	0.880	0.000	0.491	0.001	0.000	0.010	0.000	0.003	0.000	0.328	0.002

Source: Authors' calculations

After presenting descriptive statistic data for the chosen variables, univariate and multivariate regression analyses were used. Regression analysis is used to determine the intensity of the changes in the dependent variable (in our case, bank return on equity and bank return on assets) associated with changes in the independent variable. It is possible to quantify the relationship or association between the dependent and independent variables using the regression model in such a way that it can determine to what extent the change of the dependent variable is caused by the change of the independent variable (Marinković, Šabotić, & Banković, 2018). Before using regression analysis, a homoscedasticity test between the dependent and independent variables was conducted, and it showed that there was no problem with homoscedasticity because the p-value was greater than 0.05 (0.645 for Serbia and 0.668 for Croatia).

First, we will present the results for the dependent variable **ROE** in Serbia and Croatia respectively, as obtained through univariate and multivariate regression analysis. After that, we will present results obtained using a general linear model for both countries as fixed factors. Covariates are all the independent variables that we used in the analysis to confirm previous results.

Univariate linear regression for Serbia showed that bank performance presented through **ROE** is statistically significantly related to GDP per capita growth (p=0.037). The coefficient B is 0.685, which means that any increase in GDP per capita growth by one percent increases ROE by 0.685. As F equals 5.298 (p=0.037), this linear model significantly predicts the values of the dependent variable ROE. R^2 is 0.275, which means that the model explains 27.5% of the ROE variance. The model for ROE is:

$$ROE = 3.615 + 0.685x_2 \tag{3}$$

Similarly, Table 3 interprets the relationship of the variable ROE and real interest rate.

Table 3. Univariate linear regression analysis for Serbia,
when the dependent variable is ROE

	R^2	F	p	Const	B	Model
Real interest rate	0.803	32.606	0.000	4.674	-0.960	ROE = 4.674 - 0.960x_4
Unemployment	0.247	4.597	0.050[9]	12.711	-0.422	ROE = 12.711 - 0.422x_{10}

Source: Authors' calculations

After the univariate regression analysis, a **multivariate regression analysis** was conducted. Using the stepwise method, the multivariate regression analysis showed that only the real interest rate was entered into the model ($p<0.0005$). The coefficient B is -0.960, meaning that any increase in the real interest rate decreases ROE by 0.960. As F equals 32.606 ($p<0.0005$), this linear model significantly predicts the values of the dependent variable ROE. R^2 is 0.803, which means that the model explains 80.3% of the ROE variance. The model for ROE is:

$$ROE = 4.674 – 0.960x_4 \qquad (4)$$

Univariate linear regression for Croatia also confirmed that bank performance presented through ROE is statistically significantly related to the real interest rate ($p=0.016$). The coefficient B is -2.092, which means that any increase in the real interest rate by one percent decreases ROE by 2.072. As F equals 10.076 ($p =0.016$), this linear model significantly predicts the values of the dependent variable ROE. R^2 is 0.590, which means that the model explains 59% of the ROE variance. The model for ROE is:

$$ROE = 24.180 - 2.092x_4 \qquad (5)$$

There is a statistically significant impact of change in general government final consumption expenditure (% of GDP) and unemployment. Table 4 interprets the relationship of the variable ROE with these variables.

Table 4. *Univariate linear regression analysis for Croatia,*
when the dependent variable is ROE

	R^2	F	p	Const	B	Model
General government final consumption expenditure	0.558	6.110	0.027	60.610	-2.461	ROE = 60.610 - 2.461x_6
Unemployment	0.354	7.675	0.015	18.076	-0.841	ROE = 18.076 - 0.841x_{10}

Source: Authors' calculations

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[9] P-value is at the limit level but shows that unemployment may have a statistically significant impact on the ROE of banks in Serbia.

Regardless of the existence of only three variables that significantly affect the dependent variable, according to univariate regression analysis, a **multivariate regression analysis** was conducted. Using the stepwise method, the multivariate regression analysis showed that only general government final consumption expenditure was entered into the model (p=0.002). The coefficient B is -3.933, which means that any increase in general government final consumption expenditure decreases ROE by 3.933. As F equals 25.169 (p =0.002), this linear model significantly predicts the values of the dependent variable ROE. R^2 is 0.782, which means that the model explains 78.2% of the ROE variance. The model for ROE is:

$$ROE = 91.722 - 3.933x_6 \tag{6}$$

Using the two countries as the fixed effect model, and all independent variables as covariates, the results of the general linear model showed that variances are homogenous, according to Levene's test of equality of error variances (p=0.186). In the Tests table of between-subjects effects, only real interest rate has a statistically significant effect on the dependent variable ROE (p=0.003). Also, the Parameter table estimates show that the values for the dependent variable are statistically significantly higher in Croatia than in Serbia (p=0.015, B=1.161).

We will now present the results for another dependent variable, **ROA**, in Serbia and Croatia respectively, obtained through univariate and multivariate regression analyses. After that, the results of a general linear model for both countries as fixed factors will be presented. Covariates are all the independent variables that we used in the analysis to confirm previous results.

Univariate linear regression for Serbia confirmed that bank performance presented through ROA is statistically significantly related to GDP per capita growth (annual %), and the real interest rate. The results are shown in Table 5.

Table 5. Univariate linear regression analysis for Serbia,
when the dependent variable is ROA

	R^2	F	p	Const	B	Model
GDP per capita, growth (annual %)	0.251	4.682	0.048	0.722	0.129	$ROA = 0.722 + 0.129x_2$
Real interest rate	0.795	30.948	0.001	0.966	-0.196	$ROA = 0.966 - 0.196x_4$

Source: Authors' calculations

Multivariate regression analysis for the dependent variable ROA yielded the same results as the multivariate regression analysis for ROE: only the real interest rate was entered in the model (p<0.0005). The coefficient B is -0.196, which means that any increase in government spending decreases ROA by 0.196. As F equals 30.948 (p<0.0005), this linear

model significantly predicts the values of the dependent variable ROA. R^2 is 0.795, which means that the model explains 79.5% of the ROA variance. The model for ROA is:

$$ROA = 0.966 - 0.196x_4 \tag{7}$$

When the **univariate regression analysis for Croatia** for the dependent variable ROA was conducted, the statistically significant impact of change in the real interest rate was confirmed. Still, there was a statistically significant impact of change in unemployment on the change in the dependent variable (Table 6).

Table 6. Univariate linear regression analysis for Croatia,
when the dependent variable is ROA

	R^2	F	p	Const	B	Model
Real interest rate	0.547	8.439	0.023	2.624	-0.209	ROA=2.624-0.209x_4
Unemployment	0.428	10.474	0.006	2.396	-0.114	ROA=2.396-0.114x_{10}

Source: Authors' calculations

Using the stepwise method, the **multivariate regression analysis** showed that only unemployment was entered into the model (p=0.003). The coefficient B is -0.127, meaning that any increase in unemployment decreases ROA by 0.127. As F equals 20.880 (p =0.003), this linear model significantly predicts the values of the dependent variable ROA. R^2 is 0.749, which means that the model explains 74.9% of the ROA variance. The model for ROA is:

$$ROA = 2.728 - 0.127x_{10} \tag{8}$$

Using the two countries as the fixed effect model, and all independent variables as covariates, the results of the general linear model showed that variances are homogenous, according to Levene's test of equality of error variances (p=0.229). In the Test table of between-subjects effects, only GDP per capita PPP, has a statistically significant effect on the dependent variable ROA (p=0.007). Also, the Parameter table estimates show that values for the dependent variable are statistically significantly higher in Croatia than in Serbia (p=0.003, B=61.620).

By analysing the impact of the chosen indicators of economic trends on bank performance, represented by bank return equity for Serbia and Croatia during a period of 16 years, a statistically significant difference in some indicators of economic trends (GDP per capita PPP, inflation, real interest rate, broad money growth, general government final consumption expenditure, current account balance, gross savings, and unemployment) was noticed between Serbia and Croatia.

The subsequently conducted univariate analysis indicated that bank return to equity and bank return to assets were significantly affected in

both countries by changes in real interest rates and unemployment. For Serbia, multivariate regression analysis showed that changes in real interest rates had a statistically significant impact on changes in both dependent variables. But results of the multivariate regression analysis for Croatia are quite different. The general government's final consumption expenditure has a statistically significant impact on changes in ROE, and unemployment has a statistically significant impact on changes in ROA.

CONCLUSION

The effective financial intermediation of banks provides a key impetus to economic development. At the same time, an important precondition for the efficiency of bank operations is a favourable economic environment, with many attractive investment opportunities and low participation of non-performing loans. The research conducted in this paper aimed to examine the impact of economic trends on the profitability of banks in Serbia and Croatia in the period between 2006 and 2021. In the observed period, Croatian banks achieved a higher level of profitability measured by the ROE indicator, while the value of ROA was uniform.

When it comes to indicators of economic trends, the following results were recorded: in Serbia, the GDP growth rate fluctuated far more than in Croatia; GDP per capita followed a similar trend in both of the observed countries, but the Croatian GDP was significantly higher; the inflation rate fluctuated significantly in Serbia as compared to Croatia; higher real interest rate amounts were recorded in Croatia; higher broad money growth was achieved in Serbia; a similar level of general government final consumption expenditure was observed in both countries, with different dynamics; current account balance had negative values in Serbia throughout the observed period, while positive values in Croatia were recorded after 2014; and gross savings and trade had similar values in both countries. Trends in unemployment are similar in both countries: the values were lower in Croatia throughout the observed period, but an intensive decrease in Serbia started two years earlier than in Croatia (in 2012).

The results of this research show that changes in real interest rates and unemployment had a significant impact on bank profitability in both of the observed countries. In contrast, changes in general government final consumption expenditure impacted the profitability of banks in Croatia, while changes in GDP per capita growth impacted the profitability of banks in Serbia. The influence of other indicators of economic trends was not statistically significant.

The results show noticeable differences in the economic development of the two observed countries, which caused the different effects of

the selected indicators on the return on capital and the return on the bank's assets.

The results of this research can be an important guideline for economic and monetary policymakers in the observed countries, especially in the process of creating government spending and interest rate policies. For the analysis of the bank profitability factors to be complete, it is necessary to further this research by observing a greater number of countries and profitability factors. Accordingly, the recommendation for future research is to extend the coverage of the observed countries to the countries of the Western Balkans, and to consider internal factors of bank profitability, which can be a significant factor in banks' resilience to macroeconomic fluctuations.

REFERENCES

Acaravci, S. K., & Calim, A. E. (2013). Turkish banking sector's profitability factors. *International Journal of Economics and Financial Issues*, *3*(1), 27-41.

Albertazzi, U., & Gambacorta, L. (2009). Bank profitability and the business cycle. *Journal of Financial Stability*, *5*(4), 393-409. doi: 10.1016/j.jfs.2008.10.002

Anbar, A., & Alper, D. (2011). Bank specific and macroeconomic determinants of commercial bank profitability: Empirical evidence from Turkey. *Business and economics research journal*, *2*(2), 139-152.

Alexiou, C., & Sofoklis, V. (2009). Determinants of bank profitability: Evidence from the Greek banking sector. *Economic annals*, *54*(182), 93-118. doi: 10.2298/eka0982093a

Athanasoglou, P., Delis, M., & Staikouras, C. (2006). Determinants of bank profitability in the South Eastern European region. *MPRA Paper No. 10274*. Retrieved from https://mpra.ub.uni-muenchen.de/10274/

Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of international financial Markets, Institutions and Money*, *18*(2), 121-136. doi: 10.1016/j.intfin.2006.07.001

Choudhry, M. (2018). *Past, Present, and Future Principles of Banking and Finance*. John Wiley & Sons Singapore Pte. Ltd.

Chronopoulos, D. K., Liu, H., McMillan, F. J., & Wilson, J. O. (2015). The dynamics of US bank profitability. *The European Journal of Finance*, *21*(5), 426-443.

Djalilov, K., & Piesse, J. (2016). Determinants of bank profitability in transition countries: What matters most?. *Research in International Business and Finance*, *38*, 69-82. doi: 10.1016/j.ribaf.2016.03.015

García-Herrero, A., Gavilá, S., & Santabárbara, D. (2009). What explains the low profitability of Chinese banks?. *Journal of Banking & Finance*, *33*(11), 2080-2092. doi: 10.1016/j.jbankfin.2009.05.005

Gardener, E. P., Molyneux, P., & Williams, J. (2003). Competitive banking in the EU and Euroland. In: Mullineux, A. W., & Murinde, V. (Eds.): *Handbook of international banking* (130-155). Northampton: Edward Elgar Publishing, Inc.

Hermes, N., Lensink, R., & Murinde, V. (2003). Capital flight: the key issues. In: Mullineux, A. W., & Murinde, V. (Eds.): *Handbook of international banking* (516-545). Northampton: Edward Elgar Publishing, Inc.

Kalaš, B. M., Mirović, V., Milenković, N., & Andrašić, J. (2020). The impact of macroeconomic determinants on commercial bank profitability in Central and Southeastern European countries. *Teme*, *44* (4), 1391-1409. doi: 10.22190/TEME190515082K

Knezevic, A., & Dobromirov, D. (2016). The determinants of Serbian banking industry profitability. *Economic research – Ekonomska istraživanja*, *29*(1), 459-474. doi: 10.1080/1331677X.2016.1174390

Le, T. D., & Ngo, T. (2020). The determinants of bank profitability: A cross-country analysis. *Central Bank Review*, *20*(2), 65-73. doi: 10.1016/j.cbrev.2020.04.001

Liu, H., & Wilson, J. O. (2010). The profitability of banks in Japan. *Applied Financial Economics*, *20*(24), 1851-1866. doi: 10.1080/09603107.2010.526577

Marinković, S., Šabotić, Z., & Banković, D. (2018). EU enlargement: Does economics of regional integration matter?. *Zbornik radova Ekonomskog fakulteta u Rijeci: časopis za ekonomsku teoriju i praksu*, *36*(2), 881-904. doi: 10.18045/zbefri.2018.2.881

Osuagwu, E. (2014). Determinants of bank profitability in Nigeria. *International Journal of Economics and Finance*, *6*(12), 46-63. doi: 10.5539/ijef.v6n12p46

Pervan, M., Pelivan, I., & Arnerić, J. (2015). Profit persistence and determinants of bank profitability in Croatia. *Economic research-Ekonomska istraživanja*, *28*(1), 284-298. doi: 10.1080/1331677X.2015.1041778

Petria, N., Capraru, B., & Ihnatov, I. (2015). Determinants of banks' profitability: evidence from EU 27 banking systems. *Procedia economics and finance*, *20*, 518-524. doi: 10.1016/S2212-5671(15)00104-5

Pond, K. (2017). *Retail banking*. Reading, UK: Gosbrook Professional Publishing Ltd.

Rose, P. S., & Hudgins, S. C. (2010). *Bank management and financial services*. McGraw-Hill Irwin.

Saeed, M. S. (2014). Bank-related, industry-related and macroeconomic factors affecting bank profitability: A case of the United Kingdom. *Research journal of finance and accounting*, *5*(2), 42-50.

Saona Hoffmann, P. R. (2011). Determinants of the Profitability of the US Banking Industry. *International Journal of Business and Social Science*, *2*(22), 255-269.

Sayilgan, G., & Yildirim, O. (2009). Determinants of profitability in Turkish banking sector: 2002-2007. *International Research Journal of Finance and Economics*, *28*, 207-214.

Staikouras, C. K., & Wood, G. E. (2004). The determinants of European bank profitability. *International Business & Economics Research Journal (IBER)*, *3*(6), 57-68.

Sufian, F., & Chong, R. R. (2008). Determinants of Bank Profitability in a Developing Economy: Empirical Evidence from the Philippines. *Asian Academy of Management Journal of Accounting & Finance*, *4*(2), 91-112.

Sufian, F., & Habibullah, M. S. (2009). Determinants of bank profitability in a developing economy: Empirical evidence from Bangladesh. *Journal of business economics and management*, *10*(3), 207-217. doi: 10.3846/1611-1699.2009.10.207-217

Tan, Y. (2016). The impacts of risk and competition on bank profitability in China. *Journal of International Financial Markets, Institutions and Money*, *40*, 85-110. doi: 10.1016/j.intfin.2015.09.003

The Global Economy. (2021). Business and Economic Data for 200 Countries. Retrieved from https://www.theglobaleconomy.com/

The Heritage Foundation. (2019). Index of Economic Freedom Methodology. Retrieved from https://www.heritage.org/index/pdf/2019/book/methodology.pdf

The World Bank Group. (2021). *Data Bank, World Development Indicators*. Retrieved from https://databank.worldbank.org/source/world-development-indicators

Trujillo-Ponce, A. (2013). What determines the profitability of banks? Evidence from Spain. *Accounting & Finance*, *53*(2), 561-586. doi: 10.1111/j.1467-629X.2011.00466.x

УТИЦАЈ ПРИВРЕДНИХ КРЕТАЊА НА ПРОФИТАБИЛНОСТ БАНАКА – СЛУЧАЈ СРБИЈЕ И ХРВАТСКЕ

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Резиме

Ефикасно финансијско посредовање банака даје кључни замах привредном развоју. Истовремено, важан предуслов ефикасности банкарског пословања је повољно привредно окружење, са великим бројем атрактивних инвестиционих могућности и малим учешћем неперформансних кредита. У овом раду анализирани су смер и интензитет утицаја привредних кретања на профитабилност банака у Србији и Хрватској у периоду између 2006. и 2021. године. Циљ рада је да се утврди који индикатори привредних кретања имају најснажнији утицај на профитабилност банака у одабраним земљама. Као кључни индикатори привредних кретања одабрани су стопа раста БДП-а, БДП per capita, стопа инфлације, реална каматна стопа, стопа раста новчане масе, државна потрошња, државни издаци за крајњу потрошњу, биланс текућег рачуна, бруто штедња, обим трговине и стопа незапослености као независне варијабле. Профитабилност банака је мерена показатељима ROE и ROA, који представљају зависне варијабле. У истраживању су коришћени дескриптивна анализа, тестирање разлике просечних вредности, корелације, и униваријантна и мултиваријантна регресија. Истраживање је показало да је стопа раста БДП-а далеко више флуктуирала у Србији него у Хрватској, да је тренд промене БДП-а per capita био сличан у посматраним земљама, али да је његова апсолутна вредност била значајно већа у Хрватској, да је стопа инфлације значајније флуктуирала у Србији, да је реална каматна стопа била већа у Хрватској, да је у Србији остварен већи раст новчане масе, да је државна потрошња у обе земље била на сличном нивоу мада се кретала различитом динамиком, да је биланс текућег рачуна у току целог периода имао негативне вредности док су у Хрватској након 2014. године забележене његове позитивне вредности, и да су бруто штедња и обим трговине били на сличном нивоу у обе земље. Стопа незапослености је била нижа у Хрватској, али је у Србији раније, почев од 2012. године, забележен значајнији пад. Резултати истраживања показују да значајан утицај на профитабилност банака у обе одабране земље има промена реалне каматне стопе и стопе незапослености. Промена стопе раста БДП-а има статистички значајан ефекат само у Србији, а државни издаци имају статистички значајан ефекат само у Хрватској. Утицај осталих индикатора привредних кретања није статистички значајан. Резултати показују да постоје приметне разлике у привредном развоју посматраних земаља, што је условило и другачије ефекте одабраних индикатора на принос на капитал и принос на имовину банке.