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ANALYSIS OF FACTORS AFFECTING THE PERFORMANCE OF BANKING SYSTEMS IN POST-COMMUNIST EU STATES

ALINA MARIA BENGHEA
"1 Decembrie 1918" University from Alba Iulia
Alba Iulia, Romania
alinabenghea@yahoo.com

IULIA CRISTINA IUGA
"1 Decembrie 1918" University fromAlba Iulia
Alba Iulia, Romania
Iuga_iulia@uab.ro

Abstract.
This study investigates the impact of specific banking factors and macroeconomic factors on banking performance indicators (ROA and ROE) in post-communist EU member states for the period 2000 – 2020. To determine the significant impact, an econometric panel data regression model was used. The study's results indicate that specific banking factors (Bank Size and Overhead Cost) have a negative impact on profitability indicators ROA and ROE, while other specific banking factors (Net Interest Margin and Non-Interest Banking Income) have a positive impact on the dependent variables. There is a positive impact of macroeconomic indicators on profitability indicators ROA and ROE, except for inflation, which has a negative impact on both ROA and ROE.

Keywords: *banking performance; OLS; specific banking factors; macroeconomic factors.*
JEL Classification: G21

1. INTRODUCTION

A significant number of studies have focused on the factors influencing the performance of the banking system or the determinants of banking profitability. These studies specify the return on assets (ROA) and return on equity (ROE) as key indicators of banking performance. For example, in 2018, Mirie Mwangi conducted a case study analyzing the influence of bank size (Size) on the dependent variables ROA and ROE. Using an econometric model, Mirie Mwangi demonstrated that the Size variable has a positive influence on the profitability indicators ROA and ROE, describing the banking performance in Kenya.

In 2014, Imad Z. Ramadan, Qais A. Kilani, and Thair A. Kaddumi demonstrated that management cost has a negative impact on the ROA indicator, while it has no significant effect on ROE. They found that inflation and GDP

have an insignificantly positive impact on the return on assets and the ROE indicator.

The net interest margin (NIM) is positively related to profitability; as the income from interest earned on loans increases, so does the profit. Demirguc-Kunt and Huizinga (1999) showed that differences in interest margins and bank profitability reflect a variety of determining factors: bank characteristics, macroeconomic conditions, explicit and implicit bank taxation, deposit insurance regulation, overall financial structure, and legal and institutional indicators.

Many studies on the growth of non-interest income (NII) have measured the effect of this type of income on banking performance. Williams and Prather (2010) stated that non-interest bank income (NII) increases bank risk, but some types of non-interest income (NII) reduce risk when considering bank specialization and size effects. While Sanya and Wolfe (2011) tested the effect of non-interest income sources on performance and insolvency risk, they concluded that net and non-interest income sources reduce a bank's insolvency risk.

Kumar et al. (2016) reported that the diversification of non-interest income (NII) sources can positively impact overall profitability and risk-adjusted performance, along with improving banking system stability. Minh and Canh (2020) argued that declared non-interest income has a positive impact on the performance (ROA, ROE) of Vietnamese commercial banks. A brief review of the literature can be found in Table 1.

Table 1. Taxonomy of Bank Profitability in Research Studies

Author and Year	**Subject**	**Variables**	**Results Obtained**
Mirie Mwangi, 2018	The effect of size on the financial performance of commercial banks in Kenya.	Dependent variables: ROA and ROE. Independent variables: Size Bank.	The study showed that the Size variable has a positive effect on banking performance in Kenya.
Imad Z. Ramadan, Qais A. Kilani, Thair A. Kaddumi, 2011	Determinants of bank profitability: Evidence from Jordan.	Dependent variables: ROA, ROE Bank-specific variables: In (Overhead cost), Capital adequacy, Asset composition, Credit risk, Size Industry-specific variables: Market concentration, Banking sector size. Macroeconomic variables: Inflation, GDP	Management cost has a negative impact on ROA profitability in models 1 and 2, while it has no statistically significant effect on ROE in any of the models. Inflation and GDP showed an insignificant positive impact on asset profitability and the ROE indicator.

Zouari-Ghorbel (2014)	Macroeconomic and bank-specific determinants of household non-performing loans in Tunisia: Dynamic panel data.	"Return on equity, solvency ratio, non-performing loans, GDP, inflation, interest rates, and inefficiency size."	The results indicate the extent to which household non-performing loans in the Tunisian banking system can be explained not only by macroeconomic variables (GDP, inflation, interest rates) but also by poor management quality.
Chowdhury and Rasid (2017)	eterminants of Islamic bank performance in GCC countries: Dynamic GMM approach.	"Return on assets, credit risk: the ratio of loan loss provisions to total loans, equity to total assets, operational efficiency, liquidity management, bank size, annual GDP growth rate, inflation rate, money supply as a percentage of GDP, stock market capitalization as a percentage of GDP."	The empirical findings show that specific factors of Islamic banks, such as equity financing and bank size, are statistically positive and significant for the profitability of Islamic banks. The operational efficiency ratio is significantly negative and statistically significant for asset profitability.
Marijana et al. (2012)	Determinants of Macedonian banking sector profitability in a changing environment.	"Return on assets, bank size, solvency risk, liquidity risk, credit risk, fee income, operating expense management, concentration, EBRD index, and economic growth."	According to the obtained results, among the internal factors of bank profitability, the most important is operating expense management. Additionally, profitability is influenced by solvency risk and liquidity risk. Regarding external variables, economic growth, reform, and banking system concentration show a significant effect on the profitability of banks in the Republic of Macedonia.
Yahya, Akhtar, &Tabash(2017)	The impact of macroeconomic and bank-specific factors on the profitability of Islamic banks: Empirical evidence.	"Return on assets, return on equity, bank size, liquidity, asset management, deposits, operational efficiency, financial risk, GDP, inflation rate, and political factors."	The study results indicate that operational efficiency and financial risk have negative and significant relationships with ROA and ROE. Moreover, the study reveals that asset size (LogA), asset management, liquidity, and deposits have a significant and positive impact on bank profitability.

Source: Own Processing

2. METHODOLOGY

2.1 Description of Variables

For the collection of analysis indicators of the banking system in European Union states with former communist regimes (Bulgaria, Croatia, Czech Republic, Romania, Hungary, Estonia, Latvia, Lithuania, Slovakia, Poland, Slovenia) during the period 2000 – 2020, data was sourced from the official website www.theglobaleconomy.com. By utilizing the dataset related to profitability indicators (ROA and ROE) and influence indicators (GDP, Inflation, Size Bank, Overhead_Cost, NIM, and NII), it was possible to implement statistical tests using Eviews software, where the following information is represented (Table 2).

Table 2: Description of Variables

	Symbol	Characteristics
Dependent Variables		
Profitability Indicators	ROA	Economic profitability (Net Profit/Total Assets)
	ROE	Financial profitability (Net Profit/Equity)
Independent Variables		
Bank-specific factors (internal)	Size	Total assets
	NIM	Net interest margin
	Overhead_Cost	Management cost
	NII	Non-interest income
Macroeconomic factors	GDP	GDP (%)
	Inflation	Inflation (%)

Source: Own Processing

To determine the correlation between the independent variables and the dependent variables, it is necessary to perform an individual graphical analysis of the dependent indicators for each country for the period 2000 – 2020.

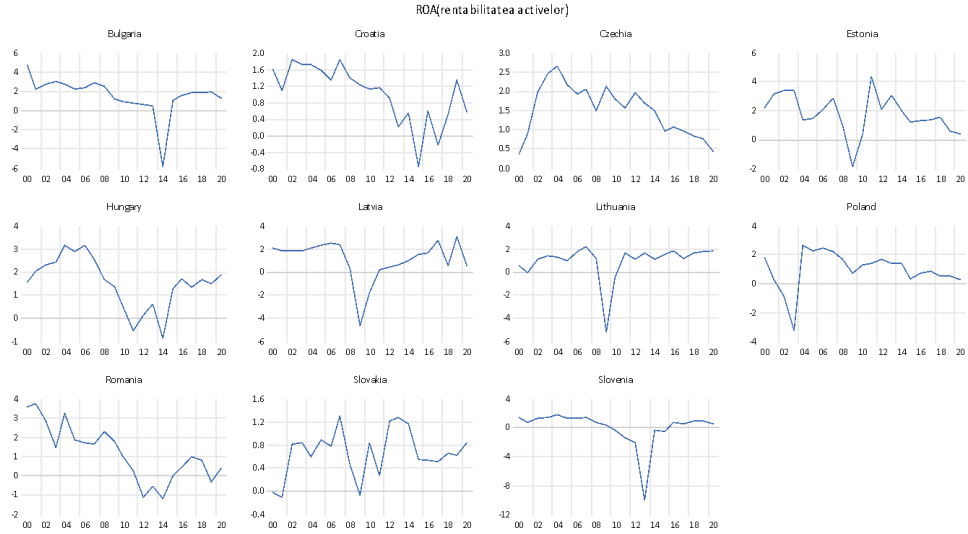

Figure 1: Evolution of the dependent variable ROA of the banking system in EU countries with former communist regimes, for the period 2000-2020
Source: Own Processing in Eviews

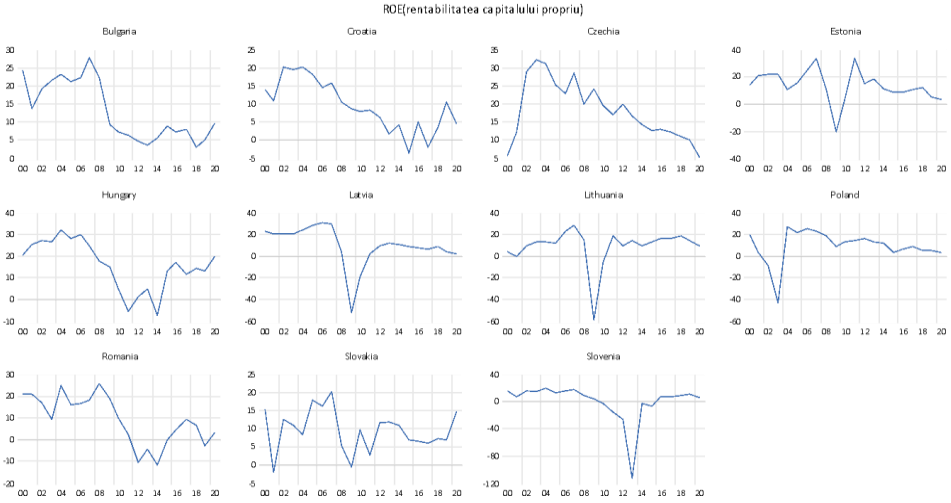

Figure 2: Evolution of the dependent variable ROE of the banking system in EU countries with former communist regimes, for the period 2000-2020
Source: Own Processing in Eviews

From the figures above (Figure 1 and Figure 2), we can observe that the evolution of the dependent indicators ROA and ROE varies according to the country analyzed and the period considered. For example, ROA achieved the highest value of 4.79% in the year 2000 in Bulgaria, and the lowest value of -9.98% in Slovenia in 2013. Regarding the dependent indicator ROE, it reached the highest value of 33.64% in Estonia in 2007, while the lowest value was -112.19% in Slovenia in 2013.

2.2 Model

Panel regression signifies a combination of cross-sectional data series and time series, allowing the simultaneous use of a set of independent indicators, in our case (Size Bank, Overhead_Cost, Inflation, GDP, NIM, and NII), to make the most accurate predictions on the dependent indicators (ROA and ROE). By employing panel regression, we can present a broader and more complex resolution of the relationship between variables. The most complex method of regression estimation is the use of a common regression, which involves forming a single equation for all the data collectively, individually reflecting the dependents ROA and ROE.

The general equation for panel data regression is:

$$Yit = \beta0 + \beta1X1it + \beta2X2it + \beta3X3it + \beta4X4it + \beta5X5it + \beta5X6it + \varepsilon it \quad (1)$$

Where:

Yit – represents economic profitability (ROA) and financial profitability (ROE) for the banking system i in period t;
εit – represents the error term;
β0 – is the constant term;
β1, ..., β6 – are the slope parameters;
X1it – represents total assets (Size Bank) of the banking system i in period t;
X2it – represents non-interest income (NII) of the banking system i in period t;
X3it – represents management cost (Overhead_Cost) of the banking system i in period t;
X4it – represents inflation (Inflation) in country i in period t;
X5it – represents annual GDP growth (GDP) in country i in period t;
X6it – represents net interest margin (NIM) of the banking system i in period t;
i – represents the analyzed countries (Bulgaria, Czech Republic, Croatia, Romania, Estonia, Lithuania, Latvia, Hungary, Slovakia, Poland, and Slovenia);
t – represents the analyzed period (2000 – 2020).

The empirical model realized (to verify the impact of influence indicators on the profitability of the banking system of post-communist EU

states) considers both time series elements, using the "t" index, and cross-sectional elements, captured using the "i" index.
The tested model is as follows:

$$ROA_{it} = \beta 0 + \beta 1 Size_{it} + \beta 2 NII_{it} + \beta 3 Overhead\_Cost_{it} + \beta 4 INF_{it} + \beta 5 GDP_{it} + \beta 6 NIM_{it} + \varepsilon_{it}; \quad (2)$$

$$ROE_{it} = \beta 0 + \beta 1 Size_{it} + \beta 2 NII_{it} + \beta 3 Overhead\_Cost_{it} + \beta 4 INF_{it} + \beta 5 GDP_{it} + \beta 6 NIM_{it} + \varepsilon_{it}; \quad (3)$$

To determine the econometric model that describes the relationship between the dependent indicators (ROA and ROE) and the influence indicators (Size Bank, NII, NIM, Overhead_Cost, Inflation, and GDP) and to estimate the parameters of the panel data regression model, we used the least squares method. After obtaining the synthesis presented in the tables below, analyzing the results, and interpreting the resulting parameters, we can formulate conclusions regarding the probability of the model.

Table 3: Results of the panel data regression model, dependent variable ROA

Dependent Variable: ROA Method: Panel Least Squares Sample: 2000 - 2020 Total panel (balanced) observations: 231				
Variable	***Cofficient***	***Std. Error***	***t-Statistic***	***Prob.***
GDP	0.133494	0.22330	5.978181	0.0000
INFLATION	-0.024961	0.021581	1.156616	0.2487
SIZE_BANK	-0.006283	0.005799	-1.083326	0.2798
OVERHEAD_COSTS	-0.173231	0.090932	-1.905054	0.0581
NIM	0.419596	0.109446	3.833824	0.0002
NII	0.012807	0.010638	1.203806	0.2299
C	-0.400440	0.731878	-0.547141	0.5848
R-squared	0.332085	Mean dependent var		1.128745
Adjusted R-squared	0.314194	S.D. dependent var		1.501454
S.E. of regression	1.243405	Akaike info criterion		3.303419
Sum squared resid	346.3165	Schawarz criterion		3.407734
Log likelihood	-374.5448	Hannan-Quinn criter		3.345493
Prob(F-statistic)	0.000000	Durbin-Waston-stat		1.283464

Source: Processed in Eviews

Table 4: Results of the Panel Data Regression Model, Dependent Variable ROE

Dependent Variable: ROE Method: Panel Least Squares Sample: 2000 - 2020 Total panel (balanced) observations: 231				
Variable	***Cofficient***	***Std. Error***	***t-Statistic***	***Prob.***
GDP	10581890	0.222965	7.094808	0.0000
INFLATION	-0.148941	0.0215483	0.691196	0.4902
SIZE_BANK	-0.033849	0.057905	-0.584565	0.5594
OVERHEAD_COSTS	-1.091670	0.907950	-1.202346	0.2305
NIM	2.646501	1.092806	2.421747	0.0162
NII	0.027381	0.106224	0.257763	0.7968
C	0.539057	7.307727	0.073765	0.9413
R-squared	0.298903	Mean dependent var		10.73797
Adjusted R-squared	0.280123	S.D. dependent var		14.63278
S.E. of regression	12.41527	Akaike info criterion		7.905565
Sum squared resid	34527.10	Schawarz criterion		8.009881
Log likelihood	-906.0928	Hannan-Quinn criter		7.947639
Prob(F-statistic)	0.000000	Durbin-Waston-stat		1.192514

Source: Processed in Eviews

The estimation results from the two tables (Table 3 and Table 4) suggest that the independent variable Size Bank (the size of the banking system) has a negative impact on both the dependent variable ROA and the dependent variable ROE. This negative impact implies that the banking system does not have sufficient capacity to take advantage of a greater diversification of products and loans and to cope with inefficiencies. Larger banks may have a higher concentration of loans and deposits, which can make them more vulnerable to sectoral or regional risks. Alternatively, larger banks may become too rigid and inefficient as their internal processes become more complex and harder to manage. Often, larger banks are considered too big to fail, which can make them overly bold and lead to higher risk-taking.

The variable "management cost" (OVERHEAD_COSTS) refers to the expenses a bank incurs to manage its operations and achieve its business objectives. These expenses include employee salaries, marketing costs, development costs for IT systems, audit costs, and other administrative expenses. The independent variable Overhead Cost (management cost) also has a significant negative impact on profitability indicators, which means that the banking system is unable to manage costs effectively, leading to decreased profitability. Management cost negatively affects banking performance when these expenses are too high relative to the bank's income. For example, if a bank spends much more on operating expenses than it can afford, this can lead to decreased profits. Furthermore, management cost can negatively impact the

bank's efficiency and flexibility. A bank with high administrative costs may be less able to respond to market changes or adjust strategies quickly according to economic developments.

For the independent variable GDP, we observe a positive impact on profitability indicators ROA and ROE, indicating that economic growth increases the profitability of the banking system in post-communist EU states. Several explanations for this include:

1. Increase in consumption: GDP growth can lead to an increase in incomes and, consequently, an increase in consumption. This can result in higher demand for loans and other banking products, thereby increasing bank revenues.
2. Increase in loan demand: GDP growth can lead to increased consumer and business confidence in the economy. This can drive higher demand for loans, generating additional revenue for banks.
3. Increase in economic activity: GDP growth can indicate an overall increase in economic activity, positively impacting bank revenues. More companies may expand their businesses, start new projects, or make new investments, generating more revenue for banks through loans.
4. Increase in interest rates: In a growing economy, interest rates may rise, which can increase bank revenues from interest and other fees.

The influence indicator Inflation has a negative impact on both the dependent variable ROA and the dependent variable ROE. Inflation refers to the general increase in prices of goods and services in the economy. When inflation is high, the costs of goods and services rise, and the value of money diminishes. This can negatively impact banking profitability for several reasons:

1. Decrease in real interest rate: Inflation can lead to a decrease in the real interest rate, meaning that in a high inflation environment, the interest paid on loans may not cover banking costs or generate sufficient profit.
2. Decrease in loan value: In a high inflation environment, money is less valuable than in a low inflation environment; this can lead to a decrease in the value of loans granted by banks, reducing their revenues and profitability.
3. Increase in operating costs: During inflation, bank operating costs, such as salaries, rents, and utility costs, can rise significantly; these additional costs can affect bank profitability.
4. Decrease in loan demand: In a high inflation environment, consumers may be less willing to take out loans as they would be more costly; this can lead to a decrease in loan demand, affecting bank revenues.

The influence indicator NII (non-interest income) has a positive impact on the dependent indicators ROA and ROE, meaning that if NII has a positive trend on the profitability of the banking system, we can say that the banking system relies equally on non-interest income to maintain profit margins. Non-interest

income can contribute to the diversification of bank revenues. Possible explanations include: a) Non-interest income does not depend on the level of lending and does not involve the credit risk associated with bank loans. This can reduce risk for the bank and contribute to increased profitability. b) Many non-interest banking services are automated, which can reduce costs and increase the bank's operational efficiency.

The final influence indicator NIM (net interest margin) also has a positive impact on the dependent variables, suggesting that a positive net interest margin indicates that the profitability of the analyzed banking system operates profitably. A high net interest margin can lead to additional revenues, increased profitability and stock value, increased customer confidence, and, consequently, an improvement in banking profitability. The net interest margin is the difference between the interest a bank charges on loans and the interest paid on deposits attracted from clients or other banks. This can have a positive impact on banking profitability for several reasons:

1. Increase in stock value: A high net interest margin can indicate that the bank is well-managed and can generate sustainable profits. This can lead to an increase in the bank's stock value, benefiting investors.
2. Additional revenues: A high net interest margin can indicate that the bank can collect a larger amount of money from interest than the interest paid for attracting funds - thus, it can generate additional revenues for the bank, improving its profitability.
3. Increase in customer confidence: A high net interest margin can indicate that the bank offers loans with competitive interest rates and can attract new clients; this can lead to increased customer confidence in the bank and increased volume of deposits and loans, enhancing bank revenues and profitability.
4. Increase in profitability: A high net interest margin can lead to increased profitability, as interest income can cover the bank's operating costs, such as personnel expenses, administrative costs, and technology costs.

To estimate the evolution of the dependent indicator, we use one of the most important parameters that indicate whether the regression model is correct: the R-squared parameter (R^2). R-squared is the magnitude of influence or the ability of predictor variables to simultaneously describe the response variable. If the value is greater than 0.5, then the predictor variable's ability is strong in explaining the response variable. Conversely, if the value is less than 0.5, then the predictor variable's ability is not strong in explaining the response variable.

In our panel data regression model, the R-squared value is 0.332085 for the dependent ROA and 0.298903 for the dependent ROE, indicating that the predictor variables are not strong in explaining the analyzed dependent variables ROA and ROE. The low R^2 values are due to fluctuations in the indicators that differ from state to state; for some states, we obtained an R^2 above 0.5, while

in other states, it was below 0.5, showing that in some states, the predictor variables' ability is strong in explaining the dependent variable, but in others, it shows the opposite, explaining the obtained results in the above tables.

In our analyzed model, in both cases, Adjusted R-squared presents values lower than 0.5, thus confirming the independent variables' inability to explain the dependent variables ROA and ROE. This result is due to the differences in influence belonging to each state.

The nullity of the prob (F-statistic) test or proximity to zero value in the econometric model represents the validity of the estimated model; in our case, the prob (F-statistic) is null, resulting in the model's validity. As for the Durbin-Watson statistic, we can state that the value indicating the model's viability should be below 2. In this situation, the Durbin-Watson statistic values in both cases are below 2.

We will represent the regression models for the profitability indicators ROA and ROE in formula. In both cases, the model's calculation formula will be represented by the influence indicators (Size Bank, Overhead_Cost, GDP, Inflation, NIM, and NII).

The obtained regression models are formulated as follows:

ROA = -0,400440 – 0.006283*Size Bank + 0.419596*NIM – 0.173231*Overhead_Cost + 0.133494*GDP - 0.024961*Inflation + 0.012807*NII + εit;

ROE = 0.539057 – 0.033849*Size Bank + 2.646501*NIM – 1.091670*Overhead_Cost + 1.581890*GDP - 0.148941*Inflation + 0.027381*NII + εit;

Based on the formulated models, we can state that a 1% decrease in the size of the banking system will lead to a 0.6% decrease in return on assets (ROA) and a 3.4% decrease in return on equity (ROE); a 1% increase in the net interest margin (NIM) will result in a 42% increase in ROA and a 265% increase in ROE; a 1% decrease in management costs will lead to a 17% decrease in ROA and a 109% decrease in ROE; a 1% increase in GDP will result in a 13% increase in ROA and a 158% increase in ROE. According to the above formula, a 1% increase in inflation will lead to a 2% decrease in ROA and a 15% decrease in ROE; a 1% increase in non-interest income will result in a 1% increase in ROA and a 2% increase in ROE.

CONCLUSIONS

The case study conducted investigates the impact of independent variables (Size, NIM, NII, Overhead Cost, GDP, and Inflation) on the dependent variables ROA and ROE, which describe the profitability of the banking systems in former communist states of the European Union for the period 2000 – 2020. Independent banking characteristics are considered determinants of banking

profitability. To determine the significant impact, the panel data regression econometric model was used.

The results of the study suggest that specific banking factors (Size Bank and Overhead Cost) have a negative impact on the profitability indicators ROA and ROE, while specific banking factors (NIM and NII) have a positive impact on the dependent variables. There is a positive impact of macroeconomic indicators on the profitability indicators ROA and ROE; only Inflation has a negative impact on both ROA and ROE.

Following the analysis, we can accurately confirm that the indicator with the greatest influence on the profitability indicators ROA and ROE, which measure the performance of the banking systems in post-communist EU states, is the specific banking indicator net interest margin (NIM). The independent variable (NIM), according to the panel data regression model, obtained a value of 0.419596 on the dependent variable ROA and a value of 2.646501 on the dependent variable ROE.

In our opinion, for future research, this study can be extended to cover longer development periods. Balanced panel data can be used to incorporate newly established banks, and other econometric techniques can be applied to verify the relationship between the analyzed indicators. In a broader context, the econometric model can influence the development and expansion decisions of the banking systems in former communist states of the European Union.

References

1. Antoun Roger, Coskun Ali, Georgievski Bojan. (2018). Determinants of financial performance of banks in Central and Eastern Europe, published inBEH - *Business and Economic Horizons*, Volume 14, ISSN: 1804-5006, p. 514 – 515, doi: 10.15208/beh.2018.37
2. Ahlswede Sophie, Schildbach Jan. (2012). Poised for a comeback: Bank deposits, *Deutsche Bank DB Research*, Current Issues Global financial markets, p.2.
3. Chowdhury, M.A.F. and Rasid, M.E.S.M. (2016). *Determinants of Performance of Islamic Banks in GCC Countries: Dynamic GMM Approach*, Emerald Group Publishing Limited, Bingley, p. 49-80, http://dx.doi.org/10.1108/978-1-78635-899-820161005
4. Daniëls Tijmen and Kamalodin Shahin. (2016). The Return of Equity of Large Dutch Banks, *De Nederlandsche Bank N.V.*, Vol.14 – 5, p. 10.
5. Demirguc-Kunt Asli and Huizinga Harry. (1999). Determinants of Commercial Bank Interest Margins and Profitability: Some International Evidence, *The World Bank Economic Review*, vol. 13, issue 2, 379-408, http://dx.doi.org/10.1093/wber/13.2.379
6. Houben A., Schbrijvers I., Willems T. (2008). The Supervision of Banks in Europe: The Case for a Tailor-made Set-up, De Nederlandsche Bank, *Eurosystem*, Vol. 6/No.4, p. 7.

7. Eddy Wymeersch. **(**2015). Banking Union: Aspects of the Single Supervisory Mechanism and the Single Resolution Mechanism Compared**,** p. 7. [online] Available at: https://www.ecgi.global/sites/default/files/working_papers/documents/SSRN-id2599502.pdf [Accessed 18.04.2024]
8. Klippert Elizaveta. (2014). Perfecționarea Indicatorilor De Performanță Financiară Și Comercială Ai Instituției Bancare Prin Ajustarea Capacității Funcției De Audit Intern Și A Sistemelor De Control Intern, Revista / ASEM Journal „*ECONOMICA*" nr. 1 (87), p. 82.
9. Kumar, M., V. Charles, and C.S. Mishra. (2016). Evaluating the performance of Indian banking sector using DEA during post-reform and global financial crisis. *Journal of Business Economics and Management* 17 (1): 156–172, https://doi.org/10.3846/16111699.2013.809785
10. Levine, R. (1996). Foreign banks, financial development, and economic growth, in Claude E. Barfied, ed. *International Financial Markets*, Washington, D.C. AEI Press, p. 56.
11. Moussu Christophe, Petit-Romec Arthur. (2017) ROE in banks: Performance or risk measure? Evidence from financial crises, In *Finance*, Volume 38, Issue 2, p.95, https://doi.org/10.3917/fina.382.0095
12. Mwangi Mirie, (2018). The Effect of Size on Financial Performance of Commercial Banks in Kenya, *European Scientific Journal* Vol.14, No.7 ISSN: 1857 – 7881, http://dx.doi.org/10.19044/esj.2018.v14n7p373
13. Marijana, Ć., Poposki, K., & Pepur, S. (2012). Profitability determinants of the macedonian banking sector in changing environment. *Procedia - Social and Behavioral Sciences*, 44, p. 406–416, DOI: 10.1016/j.sbspro.2012.05.045
14. Minh, H. T. H., & Canh, N. T. (2015). Income diversification and factors affecting the profitability of Vietnamese commercial banks. *Banking Technology Review*, 106 + 107, 13-23
15. Owoputi, J. A. (2014). Bank Specific, Industry Specific and Macroeconomic Determinants of Bank Profitability In Nigeria, *European Scientific Journal* vol.10, No.25 ISSN: 1857 – 7881, p.14.
16. Ramadan Imad Z., Kilani Qais A., Kaddumi Thair A. (2011). Determinants Of Bank Profitability: Evidance from Jordan, *International Journal of Academic Research* Vol. 3. No. 4. July, I Part, p. 12.
17. Sabel Bradley K., LLP Shearman & Sterling. (2013). *Basel III Framework: US/EU Comparison*, Basel III Framework: US/EU Comparison, p. 1/6 – 3/6.
18. Sanya Sarah, Wolfe Simon. (2011). Can Banks in Emerging Economies Benefit from Revenue Diversification? *Journal of Financial Services Research* 40(1):79-101. DOI: 10.1007/s10693-010-0098-z.
19. Schildbach Jan. (2017). Large or small? How to measure bank size, *Deutsche Bank Research*, EU Monitor Global financial Markets, p. 10.
20. Shiang Liu. (2013). Determinants Of the Profitability of The U.S. Banking Industry During the Financial Crisis, All thesis, 1706, p. 11.
21. Sonia Zouari-Ghorbel. (2014). Macroeconomic and Bank-specific Determinants of Household's Non-performing Loans in Tunisia: A Dynamic Panel Data, *Procedia Economics and Finance* Volume 13, p. 58-68.

22. Umar Mohammed, Maijama'a Danjuma, Adamu Mohammad (2014). Conceptual exposition of the effect of inflation on bank performance, *Journal of World Economic Research*, ISSN: 2328-7748, p. 55-57.
23. Williams Barry, Prather Laurie. (2010). Bank risk and return: The impact of bank non-interest income, International *Journal of Managerial Finance*, Volume 6, Issue number 3, 220-244, DOI: https://doi.org/10.1108/17439131011056233
24. Yahya Ali T., Akhtar Asif and Mosab I. Tabash. (2017). The impact of political instability, macroeconomic and bank-specific factors on the profitability of Islamic banks: an empirical evidence. *Investment Management and Financial Innovations*, 14(4), p. 30-39, DOI: http://dx.doi.org/10.21511/imfi.14(4).2017.04
25. World Bank. Types of Banking, [online] Available at: https://www.worldbank.org.ro/about-banks-types-of-banking, [Accessed 06.03.2024].