DETERMINANTS OF BANKS PROFITABILITY IN THE REPUBLIC OF NORTH MACEDONIA

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Abstract: Having into consideration the importance of the profitability of the commercial banks and their role on the economy of the developing countries, this study tries to investigate empirically the bank's profitability and the main determinants that effect the profitability of the banks operating in the Republic of North Macedonia for the last two decades. Thus, in addition, this paper tries to underline the main determinants that influence the profitability of banks operating in the Republic of North Macedonia.
In this regard, the study by utilizing secondary quarterly data for the time period 2004q1 – 2022q4 and employing VECM technique, it investigates the short-run and long-run relationship of the determinants of the profitability of the banks of the Republic of North Macedonia. From the VECM results, it can be noted that from the internal factors, deposit growth and level of non-performing loans have a strong positive long-run effect on profitability, while loan growth has a negative impact on the ROA of the Macedonian banking sector. Furthermore, from the external factors, only inflation seems to have a significant long-run effect on the profitability of the banks in the Republic of North Macedonia for the time frame 2005q1 – 2022q4.
Further recommendations are given with regard to internal and external determinants of the profitability of the banks in the Republic of North Macedonia, in the scope of improving and strengthening the bank profitability, resilience and enhancing sustainable growth.
Keywords: banks, profitability, ROA, VECM

1. INTRODUCTION

There exist many research papers where scholars have been dealing with the analysis and investigation of the profitability of the commercial banks, although there is still an enormous gap in the determination of the consensus regarding the determinants of the bank's profitability in the developing economies. In this regard, the aim of this research is to analyze the external and internal factors that determine the bank profitability in a developing economy such as that of the Republic of North Macedonia.
Profitability is a significant indicator and top performance that enables the bank to achieve its fundamental goal: maximum level of profit.
Profitability is a crucial principle in banking operations. The profitability indicator of banks (ROA) is set as a function of the following factors: the size of the bank; the capitalization rate; the structure of assets; quality of assets; level of liquidity; sources of funding; operational costs; degree of diversification of banking activities; market share; annual growth rate of real GDP, the annual inflation rate, and the average interest rate *(Petrevski, 2019*).
As one of the main factors in the bank's business operations, bank profitability is measured by numerous financial indicators that reflect various aspects of the bank's profitability and risk. In analyzing the banks' profitability, the following have a crucial place: (Mihajloski, 2014).

- return on equity (ROE) and
- return on assets (ROA)

The rate of return on equity shows the return that shareholders have earned on the invested capital in the bank. This indicator is related to the bank's ultimate goal and shows how successful management is in maximizing shareholder wealth. The rate of return on assets reflects the management's ability to use financial and material resources to ensure the highest possible earnings. The value of this indicator depends on the management's decisions and the bank's policy, but also on other economic and state regulation factors.
The structure of this paper is organized as follows: the first part deals with the background and significance of the topic as well as the main objectives, the second part reviews the relevant literature that discusses the analysis of the profitability of the banks, the third part reveals the research methodology followed to address this analysis, the fourth part discusses and interprets the empirical findings and the last part deals with the main conclusions and recommendations of the study.

2. LITERATURE REVIEW OF THE DETERMINANTS OF THE BANKS PROFITABILITY

There is no doubt regarding the crucial importance that banks play on the developing economies and their impact can be easily seen during the financial crises where it was demonstrated the role of the stability of these financial intermediations as well as lately in time of the pandemic of Covid–19. On the other hand, the factors that determine the profitability are critical for understanding the financial performance, resilience and stability of the banks.

Several studies have been identifying the determinants of the profitability of the banks, in the developed and developing economies as well as have been trying to investigate the factors that have affected the bank profitability, usually grouping them into internal and external factors. In many of these studies, as a proxy for measuring the bank profitability has been used two main indicators: return on assets (ROA) and return on equity (ROE).

Initially, the first authors that have been dealing with the identification of the determinants of the bank profitability are Short (1979) and Bourke (1989). They have divided the literature on bank profitability into two main groups: studies examining cross-country banking systems and those focusing on individual banking systems within specific countries. The first group includes works by Molyneux and Thornton (1992), Demirguc-Kunt and Huizinga (1998), Abreu and Mendes (2001), Staikouras and Wood (2004), Goddard et al. (2004), Athanasoglou et al. (2006), and Pasiouras and Kosmidou (2007), Mwang (2015), Alemu (2015), all of which utilized panel data to analyze trends across multiple nations. In contrast, the second group investigates single-country banking systems, as seen in studies by Kosmidou (2004), Athanasoglou et al. (2008), García-Herrero et al. (2009), Dietrich and Wanzenried (2011), Birhanu (2012), Abata (2014), Alemu (2015), Eyup et al. (2017), Andreevska et al. (2021), and Imeri and Daleva. (2022).

The variation in findings across these studies is attributable to differences in the countries analyzed, datasets used, and time periods covered. Early research by Bourke (1989) and Molyneux and Thornton (1992) pioneered the analysis of bank profitability across multiple countries. Bourke (1989) examined 12 countries, identifying a positive relationship between bank concentration and profitability, while Molyneux and Thornton (1992), who studied 18 European nations, confirmed similar patterns. However, their findings diverged on ownership effects: Bourke (1989) observed a negative relationship between government ownership and return on assets, whereas Molyneux and Thornton (1992) found state-owned banks to be more profitable than private banks due to higher returns on capital. Both studies highlighted the positive impact of efficient expense management on profitability.

Subsequent studies explored specific dimensions of bank performance. Claessens et al. (2001) examined foreign bank entry and its effects, noting that foreign banks were more profitable in developing countries, while domestic banks outperformed in developed nations. Abreu and Mendes (2001) analyzed European banks, finding that equity-to-assets and loan-to-assets ratios positively influenced profitability, whereas macroeconomic factors like unemployment negatively affected it. Similarly, Kosmidou et al. (2004) compared domestic and foreign banks in the UK, concluding that domestic banks outperformed their foreign counterparts.

Pasiouras and Kosmidou (2007) extended this analysis to 15 EU countries, finding that equity-to-assets ratios enhanced profitability, while cost-to-income ratios and bank size had negative effects. Goddard et al. (2010) studied European banks from 1992 to 2007, identifying persistent excess profits before the euro's introduction but noting that cost-to-income ratios hindered profitability. During the financial crisis, Dietrich and Wanzenried (2011) observed shifts in key determinants of profitability in Swiss banks, with capital ratios turning negative and state-owned banks performing better.

Individual country studies also provide valuable insights. For instance, Birhanu (2012) linked bank size and expense management to profitability in Ethiopia, while Alemu (2015) identified operational efficiency and liquidity risk as negative factors. In Turkey, Eyup et al. (2017) found that non-performing loans significantly reduced bank profitability, a trend echoed in earlier studies by Kosmidou (2007) and Abata (2014).

Collectively, this body of research highlights the complex interplay of internal and external factors influencing bank profitability, with variations depending on geographic, economic, and temporal contexts.

3. RESEARCH METHODOLOGY

To examine the empirical impact of factors influencing the profitability of commercial banks in the Republic of North Macedonia, a Vector Error Correction Model (VECM) was employed. This approach allows for the analysis of both long-term effects and short-term relationships between the independent variables and the dependent variable.

To begin, the variables included in the analysis of banking sector profitability for the period 2005Q1 to 2022Q4 are specified. The first table outlines the variables' names, their acronyms, and the data sources from which they were obtained.

Table 2.Variables, acronyms and their source.

Name of the VARIABLE	ACRONYMS	SOURCES
Growth of loans	Loan	National Bank of North Macedonia
Growth of deposits	deposit	National Bank of North Macedonia
Non-performing loans	NPL	National Bank of North Macedonia
Rate of Gdp growth	GDP	National Bank of North Macedonia
Inflation rate	inf	National Bank of North Macedonia
Return on assets	ROA	National Bank of North Macedonia

Source: authors research.

Furthermore, the following table represents the descriptive statistics of the variables that are included in this model, giving information about the number of observations, their mean value, the value of the standard deviation, as well as their minimum and maximum value, as expressed in the following table below.

Table 3. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	70	1.121935	0.71928	-0.28	3.1
Deposit	70	2.675806	2.988132	-3.27	11.01
Loan	70	2.995806	2.88197	-1.66	10.11
NPL	70	9.324839	2.915882	4.7	16.12
GDP	69	2.645902	2.161448	-1.8	7.9
Inf	69	1.836885	2.447428	-1.68	10.17

Source: authors calculations.

In this point, the Vector Error Correction Model has been employed in order to check the short term and long run effects of the determinants of the profitability of the banks in the Republic of North Macedonia. At this point, the Vector Error Correction model has been employed to check the short-term and long-term effects of the determinants of the profitability of banks in the Republic of North Macedonia. This analysis will better understand the current economic landscape and its impact on the banking sector. This model evaluates how changes in the independent variables influence the dependent variable. It also helps to identify any potential long-term relationships between the variables and any short-term fluctuations in the data. We will use a Vector Error Correction Model (VECM) to accomplish this. This powerful econometric tool allows us to examine the relationships between multiple variables over time. Using a VECM, we can identify any potential lags and leads between the variables and any long-term relationships that may exist.

4. EMPIRICAL FINDINGS

In addition, the following table represents the determination of the lag structure of the model, by using the following four criteria: the FPE, AIC, SBIC and HQIC. As we can see from the results indicated in the following table, the lag number based on the Akaike Information criteria (AIC) is set to be four.

Table 4. Lag structure

LAG	FPE	AIC	HQIC	SBIC
0	12229.3	29.2767	29.3742	29.5276
1	2.19711*	20.6392	21.4193*	22.6464*
2	3.2213	20.9462	22.4088	24.7097
3	6.3315	21.4155	23.5607	26.9353
4	3.91988	20.499*	23.3268	27.7751

Source: authors calculations.

The next step is to check the evidence for co-integration among these variables, in order to check whether there exist a strong long run relationship between these variables for the case of the Republic of North Macedonia, therefore the Johansen Juselius test for co-integration have been used. Moreover, the following table shows the results of the co-integration test of the determinants of the profitability of the banking sector in the Republic of North Macedonia, where the results imply the existence of a strong long run co-integration between these variables, thus claiming the evidence of a long – run relationship between them.

Table 5. Co-integration test

Johansen-Juselius co-integration test results.		
Null hypothesis	**λ_{trace}**	**5% critical value**
r = 0	154.9405	124.24
r ≤ 1	66.2535*	68.52

Source: authors calculations.

The following table represent the empirical findings of the Vector Error Correction model, where are analyzed the short run dynamics of the relationship as well as the long run relationship between the determinants of the profitability and the ROA for the case of the Republic of North Macedonia, for the time spin 2005q1 – 2022q4.

Table 6. Vector Error Correction Model

beta	Coef.	Std. Err.	z	P>z
d_ROA	1			
d_deposit	0.913	0.106	8.59	0
d_loan	-0.587	0.133	-4.41	0
d_NPL	0.369	0.120	3.07	0.002
d_GDP	-0.029	0.090	-0.32	0.746
d_inf	0.485	0.080	6.03	0

Source: authors calculations.

In addition, the results claim that there exist a strong positive long run relationship between deposit growth and ROA, where by increasing one point of deposit growth, the ROA will increase by 0.9 point. On the other hand, the results suggest a strong negative long run relationship between loan growth and ROA, where by increasing one point of loan growth, profitability will decrease 0.5 point. Non - performing loans also have strong and positive impact on the profitability of the banks in the Republic of North Macedonia, as well as from the external factor, only inflation seems to be an important factor that has a long run effect on the profitability of the banking sector of the Republic of North Macedonia.

5. CONCLUSIONS

This paper tries to investigate the effects of the factors that determine the profitability of the banks in the Republic of North Macedonia for the period 2005q1 – 2022q4, where firstly the co-integration rank of the model was determined, suggesting there is at least one co-integrating vector showing the existence of a long-run relationship between the variables. In the end, the Vector Error Correction model has been employed to determine the short-run

and long-run dynamics of the determinants and their effect on the profitability of banks in the Republic of North Macedonia. Finally, the results claim that from internal factors, deposit growth and non-performing loans have a strong positive long-run effect on profitability. In contrast, the loan has a negative effect on the ROA of the Macedonian banking sector. Furthermore, from the external factors, only inflation seems to have a significant long-run effect on the profitability of the Republic of North Macedonia banks for the time frame 2005q1 – 2022q4.

In North Macedonia, co-integration indicates that bank profitability is influenced by several interrelated variables in the long run, which means that changes in one variable will affect others. Increasing deposits leads to an increase in profitability, which means that as deposits grow, profitability also increases. In contrast, loan growth has a negative effect on profitability, implying that as loan growth increases, profitability decreases. Bank profitability was positively impacted by non-performing loans, meaning that banks with more non-performing loans tend to be more profitable. It was also found that inflation in North Macedonia significantly impacted the banking sector's profitability. In general, the VECM analysis provides valuable insights into the short-term and long-term dynamics of the determinants of bank profitability in North Macedonia, and the model was stable, suggesting that the results are reliable.

Thus, having such results into consideration, in order to strengthen and sustain bank profitability, it is very essential to focus on main internal and external factors that can impact the profitability of the banks in the Republic of North Macedonia. In doing so, banks can increase the opportunity to strengthen their profitability, to improve the resilience as well as to enhance sustainable growth in the country.

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