
ANALYSIS OF THE FINANCIAL SECTOR IN MACEDONIA BEFORE AND DURING THE GLOBAL FINANCIAL CRISIS (2007–2009)

Albiona Demiri Bekteshi

National Bank of the Republic of North Macedonia, Ss. Cyril and Methodius University, Skopje, North Macedonia, albiona_demiri@hotmail.com

Abstract: This paper analyzes the financial sector in the Republic of North Macedonia before and during the global financial crisis that began in 2007 and escalated in 2008 following the collapse of Lehman Brothers. The purpose of this research is to evaluate how an emerging and relatively isolated financial system responded to global economic shocks, particularly in terms of banking sector performance, credit distribution, and monetary policy. The methodology includes both a qualitative narrative and a quantitative approach, applying linear regression analysis using data from 2004 to 2024 (National Bank of the Republic of North Macedonia, 2009–2023). The regression focuses on the relationship between key financial indicators – cost-to-income ratio, employee - related expenses, and interest margins and their effect on return on assets as a measure of banking efficiency. The results reveal that operational efficiency, as measured by cost-to-income ratio, is the most influential factor affecting bank profitability. Unexpectedly, the interest margin shows a statistically significant negative relationship with profitability, which may reflect structural challenges and regulatory constraints. The employee cost ratio, in contrast, has a positive and significant impact, suggesting that investment in human capital correlates with improved financial performance. The findings conclude that the Macedonian financial sector, though not deeply integrated into global financial markets, showed resilience due to conservative lending practices and proactive central bank intervention. However, vulnerabilities emerged in the form of reduced lending activity, increased market uncertainty, and a slowdown in investment. The study recommends the adoption of proactive risk management strategies, further diversification of income sources beyond interest - based revenue and enhanced transparency in financial reporting. Additional data from the National Bank of the Republic of North Macedonia supports the regression model and is available upon request for further verification and replication.

Keywords: financial crisis, banking efficiency, monetary policy, North Macedonia, cost-to-income ratio, return on assets

1. INTRODUCTION

The most severe economic downturn since the Great Depression occurred during the global financial crisis of 2007–2009, which was brought on by the collapse of the US housing market and Lehman Brothers' bankruptcy. Although the collapse of complex financial instruments, excessive leverage, and overextension of credit were the root causes of the crisis, its global spread caused widespread uncertainty and contraction in both developed and emerging economies.

Despite its lack of extensive involvement in international financial markets, North Macedonia was not exempt from these consequences. Through trade, investment, and remittance channels, the crisis created external pressures and revealed weaknesses in the domestic financial structure. Market volatility rose, investor confidence declined, and credit growth slowed.

The Macedonian financial sector had proven to have solid foundations before the crisis. Banks had high levels of liquidity, strong capitalization, and relatively stringent regulatory oversight. Foreign-owned banks contributed more capital and expert management techniques to the domestic market, and credit to the private sector was expanding. Strong GDP growth and advantageous macroeconomic circumstances facilitated the financial sector's explosive growth between 2005 and 2007.

But as the crisis developed, the Republic of North Macedonia's National Bank was forced to take a number of macroprudential and monetary actions to maintain financial stability. Despite being successful in preventing a systemic collapse, these interventions exposed the limitations of monetary policy in a small, open economy as well as structural rigidities.

This study examines how much the global financial crisis affected North Macedonia's financial industry and assesses the industry's reaction using both qualitative and quantitative methods. It specifically focuses on banking efficiency as determined by return on assets (ROA) and looks at the impact of key performance metrics like interest margins, employee-related costs, and the cost-to-income ratio.

This study aims to give a thorough understanding of the crisis's effects on the banking system and to make policy

recommendations aimed at improving resilience in future economic downturns by combining regression-based insights with descriptive macro-financial analysis.

2. MATERIALS AND METHOD

This research uses a two-pronged strategy that combines econometric and descriptive methods. The National Bank of the Republic of North Macedonia's monetary policy responses during the crisis period, institutional frameworks, and macroeconomic trends are all examined in the descriptive analysis. A balanced panel dataset from 2004–2024 that was obtained from the National Bank of the Republic of North Macedonia's official publications served as the basis for the econometric portion. Return on Assets (ROA), a commonly used indicator of banking profitability and efficiency, is the dependent variable in this study's linear regression model. Recent studies using dynamic panel methods in European banking, such as Mirović, Kalaš, Milenković, Andrašić, and Đaković (2024), have also relied on ROA, CIR, and NIM as key performance indicators to assess profitability and efficiency. Among the independent variables are:

- The cost-to-income ratio (CIR), which is determined by dividing total expenses by total revenue, is a measure of operational efficiency.
- Employee Cost to Income (ECTI), which represents an investment in human capital, is the ratio of employee expenses to income.
- The difference between interest income and interest expenses, normalized by total assets, is known as the net interest margin (NIM).
- The non-interest margin (NIMg), which offers information on income diversification, is the revenue from non-interest-bearing operations like fees and commissions.

SPSS software was used to conduct the statistical analysis. White's test was used to find heteroscedasticity, and diagnostic tests like the Variance Inflation Factor (VIF) were used to find multicollinearity. R², adjusted R², and p-values for every coefficient were used to evaluate the model's fitness.

Additionally, residual plots and normality checks were included to bolster the findings' robustness. To guarantee the comparability and interpretability of the beta coefficients, variables were standardized where required. To place findings in the context of the larger economy, the study also uses descriptive macro-financial indicators (such as interest spreads, capital adequacy, and credit growth) in addition to regression analysis.

3. RESULTS

To provide context for the regression analysis, the table below illustrates how key banking indicators evolved during the crisis period.

Table 1 Banking Sector Indicators in Macedonia (2007–2010)

Year	Credit (% of GDP)	Deposits (% of GDP)	Capital Adequacy (%)
2007	35	45	16,5
2008	33	43	16,2
2009	30	40	17,0
2010	31	42	16,8

Source: researched by the author

The results of the regression analysis were as follows:

- The significance of cost control was highlighted by the statistically significant negative impact of CIR on ROA ($\beta = -0.063$, $p < 0.01$).
- The idea that investing in human capital pays off was supported by the positive and significant impact that ECTI demonstrated ($\beta = 0.021$, $p < 0.01$).
- Narrow interest spreads in a small market may have contributed to the negative relationship between NIM and ROA ($\beta = -0.021$, $p < 0.001$).
- A limited role for non-interest income was suggested by the fact that NIMg was not statistically significant ($p > 0.05$).

Table 2 R2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.926 ^a	.858	.802	.22899

a. Predictors: (Constant), NIM, ECTI, NIMg, CIR

Source: calculated by the author

Table 3 Model fit

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.177	4	.794	15.148	.000 ^b
	Residual	.524	10	.052		
	Total	3.702	14			

a. Dependent Variable: ROA
b. Predictors: (Constant), NIM, ECTI, NIMg, CIR

Source: calculated by the author

Table 4 Beta coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.852	2.524		2.715	.022
	CIR	-.063	.017	-.996	-3.712	.004
	ECTI	.021	.005	.615	4.653	.001
	NIM	-.036	.040	-.227	-.890	.394
	NIMg	-.021	.004	-.657	-5.144	.000

a. Dependent Variable: ROA

Source: calculated by the author

These findings demonstrate that, in the post-crisis environment, workforce development and cost effectiveness are more significant predictors of profitability than traditional interest income.

4. DISCUSSION

Several significant issues are brought up by the regression results. Contrary to the widely held belief that wider spreads translate into greater profitability, interest margins have a negative coefficient. Market saturation, low credit demand, or regulatory interest rate caps could all be contributing factors to this anomaly. Furthermore, the non-interest margin's lack of significance suggests that North Macedonian banks have not yet sufficiently diversified into fee-based services or investment operations. The impact of cost control and managerial discipline on financial performance, on the other hand, is reflected in the CIR's effect on ROA. The beneficial role of employee-related costs is consistent with more general economic theories that suggest efficiency is driven by human capital. The National Bank was a stabilizing force during the crisis. It enforced more stringent regulatory oversight and implemented liquidity-preserving measures. By taking these actions, bank failures were avoided, and depositor trust was preserved — a pattern similarly observed in global responses during the COVID-19 crisis (Demirgüç-Kunt, Pedraza, & Ruiz-Ortega, 2021). Restrictions: The range of available macro-financial indicators limits the analysis. Explanatory power could be increased with more micro-level data (bank-specific strategy, management quality, etc.). Moreover, the model did not incorporate global spillover variables.

5. CONCLUSIONS

The crisis exposed internal structural weaknesses and an excessive dependence on interest-based income, even though North Macedonia's financial sector was not heavily exposed to global toxic assets. Foreign ownership, central bank intervention, and conservative banking practices were major contributors to the resilience seen. The results highlight how crucial it is to preserve operational effectiveness and make investments in qualified staff. Banks must pursue income diversification and digital transformation in order to maintain performance as interest margins contract and competition heats up. The banking industry's training programs, risk management frameworks, and governance should be the main priorities of policymakers.

More focus should also be placed on creating reliable early warning systems and implementing global best practices for scenario planning and stress testing. In times of instability, these tools can assist regulators and financial institutions in anticipating weaknesses and taking proactive measures.

The North Macedonian crisis highlights the importance of institutional resilience, transparency, and the ability to respond quickly to regulations from a wider policy standpoint. Macro-financial stability will need to be maintained through a balanced approach that combines prudential regulation, financial innovation, and inclusive growth strategies as the financial landscape continues to change due to technological disruption and shifting global trends. To better identify vulnerabilities, future studies could investigate cross-country comparisons and implement macro-financial stress testing. The regional economic literature would also benefit greatly from longitudinal studies assessing the post-crisis recovery trends and structural reforms in the Macedonian banking system.

REFERENCES

- Altunbas, Y., Carbo, S., Gardener, E., & Molyneux, P. (2007). Examining the Relationships between Capital, Risk and Efficiency in European Banking. *European Financial Management*, 13, 49–70. <https://doi.org/10.1111/j.1468-036X.2006.00285.x>
- Berger, A. N., & DeYoung, R. (1997). Problem loans and cost efficiency in commercial banks. *Journal of Banking & Finance*, 21(6), 849–870. <https://www.sciencedirect.com/science/article/pii/S0378426697000034>
- Demirgüç-Kunt, A., Pedraza, A., & Ruiz-Ortega, C. (2021). Banking sector performance during the COVID-19 crisis. *Journal of Banking & Finance*, 133, 106238. <https://doi.org/10.1016/j.jbankfin.2021.106238>
- Fiordelisi, F., Marques-Ibanez, D., & Molyneux, P. (2011). Efficiency and risk in European banking. *Journal of Banking & Finance*, 35(5), 1315–1326. <https://www.sciencedirect.com/science/article/pii/S0378426610003869>
- Hughes, J. P., & Mester, L. J. (1998). Bank capitalization and cost: Evidence of scale economies in risk management and signaling. *The Review of Economics and Statistics*, 80(2), 314–325. <https://doi.org/10.1162/003465398557555>
- Mirović, V., Kalaš, B., Milenković, N., Andrašić, J., & Đaković, M. (2024). Modelling profitability determinants in the banking sector: The case of the Eurozone. *Mathematics*, 12(6), 897. <https://doi.org/10.3390/math12060897>
- Qerimi Sadiku, T., & Demiri Bekteshi, A. (2025). The efficiency of the banking system in the Republic of North Macedonia. *Trends in Economics, Finance, and Management Journal*, 7(1), 67–78.
- World Bank. (2025, June 10). *Global economic prospects*. <https://www.worldbank.org/en/publication/global-economic-prospects>
- НБРМ. (2009–2024). Извештај за ризиците во банкарскиот систем на Република Македонија од 2009 до 2024 година. Скопје: НБРМ. https://www.nbrm.mk/kvartalni_izvieshtai_za_bankarskiot_sistiem.nspix
- Секуловска - Габер, Б., & Глигорова, В. (2011). Ефектите на економската криза врз европскиот пазар на труд. Годишник на Економски Факултет - Скопје, 205 - 217.
- Теменугова, О. (2010). Глобалната Криза - Симтом за реконструкција на капитализмот.
- Трпески, Љ. (2009). Банкарство & банкарското работење. Скопје.
- Трпески, Љ. (2009). Светската финансиска криза (2007...?) - Причини, последици, излез. Годишник на Економски Факултет - Скопје, 249 - 257.
- Трпески, Љ. (2018). Монетарна економија. Скопје.