

## Analyzing the influence of industry-specific metrics on financial performance and the significance of sustainable banking in the Republic of Kosovo

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**Abstract. Objective:** The Republic of Kosovo's banking sector has seen notable expansion and stability in recent times, yet challenges to profitability persist among commercial banks. Against this backdrop, this study advocates for a quantitative examination of sector-specific metrics to identify the primary drivers of commercial banks' profitability. Using multiple regression analysis, the research examines the internal factors affecting profitability in the banking sector. The study seeks to furnish valuable insights and recommendations for bolstering sector performance by pinpointing profitability catalysts. The findings are significant for policymakers, banking executives, and investors focused on improving Kosovo's banking sector performance. The delineation of profitability's pivotal drivers is crucial for ensuring sustained commercial bank profitability within the nation. Furthermore, this research contributes to the extant literature on banking sector profitability, with implications for analogous economies. Overall, this study highlights the importance of sector-specific indicators in strengthening commercial bank profitability in Kosovo. Moreover, this study acknowledges the imperative of sustainable banking practices in augmenting the banking sector's profitability. It examines sustainable banking's role as a profitability enabler. By incorporating sustainable banking practices into the analysis, the study strives to yield a more holistic understanding of profitability determinants within Kosovo's banking sector. The research outcomes are poised to be invaluable to stakeholders keen on fostering sustainable banking practices and aligning them with financial performance objectives in the banking realm. The study's recommendations could aid the Central Bank of Kosovo in devising a policy framework conducive to sustainable banking practices, thereby positioning Kosovo's banking sector as a beacon for analogous developing nations. **Method:** The study employs a quantitative approach to analyze the determinants of profitability within the commercial banking sector of the Republic of Kosovo. Multiple regression analysis is conducted on sector-specific metrics to unveil the internal factors influencing profitability. Additionally, sustainable banking practices are integrated into the analysis to ascertain their impact on financial performance within the banking sector. **Results:** The primary findings of the study underscore the significance of understanding sector-specific indicators in enhancing commercial bank profitability within the Republic of Kosovo. Furthermore, the research elucidates the vital role of sustainable banking practices in augmenting profitability within the banking sector. **Originality:** The study's focus on the Republic of Kosovo, a developing economy with its unique banking landscape, shows the originality, by offering tailored recommendations that can be extrapolated to similar economies facing analogous challenges and opportunities.

**Keywords:** commercial banks, profitability, sustainable banking

**JEL classification:** G21, L25, Q56

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## **1. Introduction**

The Republic of Kosovo has witnessed remarkable growth and stability in its banking sector in recent years. However, commercial banks in the country continue to face profitability challenges. To tackle this concern, the current study investigates sector-specific factors influencing the financial performance of Kosovo's commercial banking institutions. Additionally, it examines how sustainable banking initiatives may contribute to profitability.

The primary objective of this study is to conduct a quantitative analysis of sector-specific indicators and identify the key determinants of commercial banks' profitability. By utilizing multiple regression analysis, the research aims to investigate the internal factors that influence profitability within the banking sector. This research offers findings and recommendations to enhance the performance of commercial banks in Kosovo. Policymakers, banking executives, and investors can benefit from this research by gaining a deeper understanding of the factors that contribute to profitability in the banking sector.

Furthermore, this study recognizes the significance of sustainable banking practices in enhancing the profitability of the banking sector. As such, it incorporates sustainable banking as a contributing factor in the analysis. By doing so, it aims to provide a more holistic understanding of the determinants of profitability in the banking sector of Kosovo. The research findings will be particularly valuable to stakeholders interested in promoting sustainable banking practices and aligning them with financial performance objectives. The study's recommendations can help the Central Bank of Kosovo develop policies that promote sustainable banking, setting an example for other developing nations.

This research also contributes to the existing literature on banking sector profitability, with potential implications for other developing countries. By identifying the key drivers of profitability, this study emphasizes the importance of understanding sector-specific indicators to enhance the commercial bank profitability in the Republic of Kosovo.

This study investigates what drives profitability in Kosovo's banking industry. It aims to deliver meaningful insights into sector-specific metrics and the influence of sustainable banking. By presenting recommendations to enhance profitability, the research contributes to strengthening the financial performance and resilience of Kosovo's commercial banks, while offering relevant takeaways for comparable international settings.

## **2. Literature review**

### **2.1. Overview of existing studies on commercial bank profitability**

Commercial bank profitability has been a subject of extensive research globally, with numerous studies investigating the determinants and factors influencing bank profitability. This literature review provides a comprehensive overview of existing studies relevant to the research topic, focusing on commercial bank profitability in the Republic of Kosovo.

Numerous studies have examined internal factors affecting bank profitability. Among them, bank size is frequently analyzed, with evidence indicating a favorable link between size and profitability, attributed to operational efficiencies and scale advantages. Athanasoglou et al. (2005) reported that larger banks generally exhibit stronger profitability metrics. (Athanasoglou, Brissimis, & Delis, 2005).

Capital adequacy and asset quality are essential internal factors influencing bank profitability. Studies by Berger and Bouwman (2013) emphasize the importance of capital adequacy in determining bank profitability. Higher levels of capital can provide a buffer against potential losses, thereby enhancing profitability. Additionally, asset quality plays a crucial role. Non-performing loans and credit risk can negatively affect profitability (Berger & Bouwman, 2013)

Efficiency and liquidity are other internal factors commonly examined in relation to bank profitability. Efficiency refers to how effectively a bank utilizes its resources to generate profits. Studies by Altunbas et al. (2011) find that more efficient banks tend to have higher profitability. Moreover, liquidity management is crucial, as excessive liquidity can reduce profitability, while insufficient liquidity can

increase risk. The optimal balance between liquidity and profitability is a subject of ongoing research (Altunbas, Manganello, & Marques-Ibanez, 2011).

Durguti et al. (2020) conducted an empirical study titled *Assessing the Performance of Factors Affecting the Profitability of the Banking System: Evidence from Kosovo*, using regression analysis. Their findings indicated that variables such as the natural logarithm of assets, capital-to-asset ratio, non-performing loans, and efficiency had a significant impact based on results from the OLS regression model (Durguti, Krasniqi, & Krasniqi, 2020).

The key findings of the research "Bank Profitability Determinants: Evidence from Kosovo and Albania" by Qehaja-Keka et al. shows that the study has identified four significant determinants of bank profitability in Kosovo and Albania which are: the number of workers, the interest rate on loans, the percentage of loans in default (non-performing loans) and the total quantity of loans. Among these factors, the number of loans, the percentage of non-performing loans, and the interest rate on loans were found to be statistically significant in their impact on bank profitability. The findings emphasize how essential it is for banks in these countries to manage and reduce the proportion of non-performing loans. The study also revealed that Kosovo's banking institutions outperformed those in Albania during the observed period, reflecting contrasts in how each country handles banking operations and managerial efficiency (Qehaja-Keka, Ahmeti, & Aliu, 2023).

In the context of profitability, research on sustainable banking is steadily expanding. Sustainable banking involves incorporating environmental, social, and governance (ESG) principles into financial institutions' operations with the goal of achieving both economic and societal value.

Commercial banks are increasingly acknowledging the value of sustainable finance, using it not only as a tool for risk mitigation but also as a way to generate positive outcomes for society and the natural environment. As research continues to evolve in this field, the role of commercial banks in promoting sustainability is expected to expand, driven by regulatory changes, stakeholder expectations, and innovative technologies. Nevertheless, addressing the challenges and ensuring genuine commitment to sustainable finance remain key imperatives for the banking sector.

## ***2.2. Exploring sector-specific indicators impacting profitability***

The profitability of commercial banks is a critical aspect of their overall performance and sustainability. Numerous studies have been conducted to examine the sector-specific indicators that impact profitability in the banking industry. This review of the literature seeks to summarize current studies related to sector-specific factors that influence commercial bank profitability.

**Bank Size:** Larger banks have long been recognized to gain advantages from economies of scale and scope, boosting profitability. Recent studies, such as those by Maina et al. (2019), reiterate the positive correlation between bank size and profitability. These findings underscore that firm size is a key predictor of financial performance (Maina, Kiragu, & Kamau, 2019).

**Capital Adequacy:** The relationship between capital adequacy and profitability remains a focal point of inquiry. Many researches affirm the positive link between capital adequacy and bank profitability. Higher capital ratios enable banks to better absorb losses, ensuring financial stability and, subsequently, improved profitability. The research by Adelopo et al. (2021) indicates the effects of asset quality, bank capital, and liquidity are identified as vital factors supporting the profitability of EU banks. These factors are interlinked with both bank-specific and industry-specific dynamics, as well as macroeconomic factors, influencing profitability. As a result, EU banks are encouraged to prioritize the reinforcement of capital levels and the preservation of strong asset quality to support long-term profitability and stability (Adelopo, Vichou, & Yip Cheung, 2021). Nevertheless, certain studies report contrasting results regarding the effect of capital adequacy on bank profitability. For instance, Nuhiu et al. (2017) found that both the capital adequacy ratio and liquidity had a detrimental effect on the financial performance of Kosovo's commercial banks (Nuhiu, Hoti, & Bektashi, 2017).

**Asset Quality:** Asset quality remains a pivotal factor influencing bank profitability. The study by Kadioglu et al. (2017) investigated how asset quality, represented by non-performing loans (NPLs), relates

to bank profitability in the Turkish banking sector. Using return on assets (ROA) and return on equity (ROE) as performance indicators, and employing a fixed effects panel regression model, the results showed a strong negative correlation between NPL ratios and profitability. Specifically, the analysis found that higher levels of non-performing loans reduce bank profitability, while improved asset quality—reflected in fewer NPLs—correlates with increased profitability. These results underline the vital role of NPL management in supporting bank performance in Turkey (Kadioglu, Telceken, & Ocal, 2017).

**Efficiency:** Efficiency continues to be a critical sector-specific indicator affecting bank profitability. Neves et al. (2020) conducted a study that emphasized the notable link between bank size and efficiency, showing that smaller institutions often demonstrate greater efficiency owing to their relatively lower operational costs. This finding highlights the advantages of nimbleness and cost control that smaller institutions can enjoy. Additionally, the study shed light on a concerning trend within Iberian banks, which appeared to struggle with managing their expenses and operational costs efficiently. This inefficiency negatively impacted the overall efficiency of these institutions and contributed to a decline in profitability. In essence, the study emphasizes the critical role of cost management and operational policies in determining a bank's efficiency and, ultimately, its financial health. Smaller banks may have an inherent advantage in this regard, but larger institutions can benefit significantly from optimizing their cost structures and operational strategies to improve their efficiency and profitability. Enhanced efficiency translates to improved returns on assets and equity (Neves, Proença, & Dias, 2020).

Bernardelli et al. (2024) conclude that the profitability of banking sectors in the European Union is driven by a combination of sector-specific, macroeconomic, and regulatory factors. Their study, using a machine learning approach with the random forest method and SHapley additive explanations (SHAP), identifies cost efficiency and default risk as the most influential variables across all EU banking sectors (Bernardelli, Korzeb, & Niedziółka, 2024).

**Liquidity Management:** Achieving an optimal balance between liquidity and profitability remains a priority for banks.

The research, which analysed how liquidity management correlates with bank profitability in Malaysia, discovered that the current ratio (CR) has a positive association with return on assets (ROA). The study also highlighted that excessive liquidity retention could erode profits, emphasizing the need for an optimal liquidity balance. While other liquidity indicators, such as the loan-to-deposit ratio (LTD) and cash deposit ratio (CDR), did not show a significant impact on profitability (Zaharum, Latif, Isa, & Hanafi, 2022).

Sector-specific indicators continue to be pivotal in shaping commercial bank profitability. Bank size, capital adequacy, asset quality, efficiency, and liquidity management collectively play a substantial role in determining the financial health of banks. While Kosovo-specific research remains limited, the lessons drawn from global studies remain pertinent for understanding the dynamics of commercial bank profitability within the country.

### ***2.3. Exploring How Sustainable Banking Practices Influence Financial Performance***

Recently, sustainable banking initiatives have attracted notable attention, as financial institutions increasingly acknowledge the value of incorporating environmental, social, and governance (ESG) considerations into their operational frameworks. This literature review seeks to summarize current research concerning how sustainable banking practices contribute to improved profitability.

Several studies have examined the relationship between sustainable banking practices and profitability. Rabea' Hadi, et al. (2023) conducted a study which underscores the numerous advantages that can be gained by financial institutions when they implement Green Banking (GB) practices. These benefits encompass not only the reduction of carbon emissions and cost-saving measures but also the reinforcement of customer loyalty and trust, along with the exploration of new markets and business opportunities. These varied advantages emphasize the important role that Green Banking (GB) can play in advancing sustainable development and combating climate change. It is therefore essential for banks to integrate sustainability into their core operations and lending frameworks to realize the full potential of GB. Through the adoption

of environmentally sound practices, banks can not only support global initiatives in addressing environmental issues but also enhance their own financial strength and long-term resilience. Furthermore, as regulatory agencies and public awareness increasingly prioritize environmental responsibility, financial institutions that implement GB strategies are more likely to remain adaptable and competitive. Ultimately, the advantages of GB span reductions in environmental harm, stronger customer loyalty, and access to new business opportunities. To secure long-term growth and sustainability, it is imperative for banks to embed GB principles into their strategic and operational models (Rabea' Hadi, Hasan, Flayyih, & Hussein, 2023).

Torre Olmo et al. (2021) carried out a quantitative investigation involving data from 1,236 banking institutions in 48 different countries over the span of 2015 to 2019. The findings from this comprehensive analysis reveal a compelling conclusion: sustainable banking practices are associated with increased profitability. This signifies that financial institutions that incorporate sustainability principles into their operations tend to perform better financially. These findings highlight the significance of embedding sustainability measures within banking operations, aiming not just to support environmental and social goals, but also to strengthen the financial outcomes of these institutions. Ultimately, our study provides empirical evidence that aligning banking practices with sustainability objectives can be a profitable strategy for financial institutions worldwide (Torre Olmo, Cantero Saiz, & Sanfilippo Azofra, 2021).

Scholtens (2006) explores how financial institutions contribute to fostering corporate social responsibility (CSR) and advancing sustainable economic growth. The study highlights that banks influence sustainability not only through investment and shareholder activism but also via credit allocation, project finance, and risk assessment. Incorporating ESG (environmental, social, and governance) considerations into their credit allocation processes allows banks to reduce long-term exposure to risks, improve their reputation, and align financial outcomes with sustainability objectives. While sustainable banking practices may contribute to profitability by reducing regulatory and reputational risks, Scholtens cautions that empirical evidence linking financial returns to CSR initiatives remains mixed. Nevertheless, the research underscores that financial intermediaries have a broader role in shaping responsible corporate behavior, positioning sustainable banking as a strategic approach to balancing profitability with social and environmental responsibility (Scholtens, 2006).

Based on the study by Gutiérrez-Ponce & Wibowo (2023) on the impact of sustainability practices on financial performance of banks in developing countries, the literature suggests that ESG elements significantly influence the financial performance and outcomes of banking institutions. The study found that ESG practices, while increasingly integrated into banking strategies, exhibit a complex relationship with financial performance. In particular, ESG practices negatively affect financial performance indicators, and Tobin's Q (TQ), indicating that short-term costs associated with sustainable initiatives may outweigh immediate financial gains. However, when analyzed separately, environmental initiatives were found to positively impact ROA, suggesting that sustainable finance products and green investments can generate positive returns. Conversely, social and governance factors exhibited mixed results, with governance negatively impacting ROE and TQ, implying that overinvestment in governance structures may dilute profitability. The findings align with stakeholder theory, emphasizing that banks need to balance sustainability commitments with financial objectives to ensure long-term viability (Gutiérrez-Ponce & Wibowo, 2023).

Incorporating ESG considerations into risk management has demonstrated positive effects on profitability. Banks that effectively identify and manage environmental and social risks can mitigate potential losses and reduce their exposure to reputational risks.

Moreover, implementing sustainable banking approaches may reduce costs and enhance operational efficiency, thereby supporting profitability.

Regulatory frameworks and evolving market conditions are crucial in influencing how profitable sustainable banking practices can be. Policies and regulations that incentivize sustainable practices, such as green finance initiatives and disclosure requirements, can enhance the business case for sustainable banking and create a competitive advantage.

Although previous studies have offered meaningful perspectives on how sustainable banking contributes to profitability, variations in implementation and outcomes can be observed depending on the banking environment and regional context. Additional studies are required to explore the precise channels through which sustainable banking initiatives influence profitability and to evaluate their effectiveness across varying market environments.

Sustainable banking practices have the potential to positively influence profitability in several ways, including improved risk management, enhanced customer loyalty, cost savings, and regulatory advantages. As the focus on sustainability continues to grow, it is crucial for banks to consider the long-term value creation and financial benefits associated with sustainable practices.

### **3. Methodology and data**

The study employs a quantitative methodology to investigate sector-level factors that influence profitability within Kosovo's commercial banking industry. The research methodology encompasses data collection, sample selection, and quantitative analysis using the statistical software STATA.

The dataset used in this study was retrieved from the Central Bank of Kosovo's official site, spanning the timeframe between January 2014 and March 2024. The data, sourced from various reports and publications available on the Central Bank's website, are compiled and organized into a dataset by the author for further analysis.

This study's sample comprises all commercial banks functioning in Kosovo, aiming to capture a comprehensive view of the sector's profitability.

The relationship between profitability and sector-specific variables is examined through multiple regression analysis, implemented via STATA software. Profitability serves as the dependent variable, assessed using measures like ROAA and ROAE. Independent variables reflect sector-level indicators, namely bank size, adequacy of capital, quality of assets, operational efficiency, and liquidity practices.

Multiple regression is employed to analyze how several independent variables jointly influence profitability. It assesses both the magnitude and nature of the associations between independent variables and profitability.

The application of STATA as the statistical software package ensures the rigorous analysis of the collected data. STATA provides a comprehensive set of statistical tools and functions for regression analysis, enabling the researcher to perform robust statistical tests, assess model fit, and derive meaningful insights from the data.

The findings of the quantitative analysis will show the key determinants of commercial bank profitability in the Republic of Kosovo. The study's findings aim to enrich the academic discourse on bank profitability and provide practical recommendations for policymakers, financial managers, and investors striving to improve sectoral performance.

#### **4.1. Justification of variables**

The selection of variables is based on empirical research and theoretical frameworks from the banking and financial literature. The chosen variables are widely acknowledged as critical determinants of bank profitability, ensuring the robustness and relevance of the study's findings.

##### **4.1.1. Dependent Variables:**

Return on Average Assets (ROAA) – Measures profitability relative to total assets, commonly used in financial performance assessments.

Return on Average Equity (ROAE) – Assesses profitability in relation to shareholders' equity, capturing the return generated on owners' investments.

#### 4.1.2. *Independent Variables:*

Bank Size (LOGA) – Larger banks may benefit from economies of scale, improving profitability (Athanasoglou, Brissimis, & Delis, 2005). This variable accounts for size-related advantages or inefficiencies in the banking sector.

Non-Performing Loans (NPL) – High NPL levels can reduce profitability by increasing credit risk (Kadioglu, Telceken, & Ocal, 2017). This variable reflects asset quality and risk exposure.

Capital Growth Rate (CGR) – Strong capital growth supports financial stability and profitability (Adelopo, Vichou, & Yip Cheung, 2021). Banks with higher capital levels can better absorb shocks and maintain consistent earnings.

Cost-Income Ratio (CIR) – Higher efficiency in managing operational costs improves profitability (Altunbas, Manganelli, & Marques-Ibanez, 2011). This ratio reflects operational effectiveness and expense management.

Deposit Growth Rate (DGR) – Deposit expansion influences liquidity and lending potential, affecting profitability (Qehaja-Keka, Ahmeti, & Aliu, 2023). This variable captures the role of deposit growth in banking stability and expansion.

Management Efficiency (MGE) – Stronger managerial performance enhances financial outcomes (Neves, Proença, & Dias, 2020). This variable assesses the impact of strategic decision-making and operational efficiency.

#### 4.2. *Justification of methods*

Multiple regression analysis is appropriate for assessing how various independent factors jointly influence a single outcome variable. This method is widely applied in banking profitability research due to its robustness in evaluating financial performance drivers. Additionally, the following considerations support the selection of this methodology:

- Identification of Key Profitability Drivers: Multiple regression allows us to isolate the individual effects of each sector-specific indicator, ensuring a clear understanding of how each variable influences profitability.
- Control for Confounding Effects: By incorporating multiple explanatory variables, this method accounts for interactions and potential correlations between determinants, reducing biases in estimations.
- Statistical Rigor: Regression analysis provides empirical evidence of relationships among variables, enhancing the validity of research conclusions.

#### 4.3. *Justification of data sources*

This study utilizes data sourced from the Central Bank of Kosovo (CBK), spanning the timeframe between January 2014 and March 2024. The choice of this data source is justified based on the following factors:

- Reliability and Accuracy: CBK provides official banking sector reports, ensuring data integrity and consistency.
- Comprehensive Coverage: The dataset includes all commercial banks operating in Kosovo, ensuring full industry representation and generalizability.
- Regulatory Relevance: Since CBK supervises Kosovo's banking sector, its reports align with regulatory standards, offering information applicable to financial policymakers and industry stakeholders.

### 4. Research results and comments

This study's empirical outcomes are consistent with prior research on bank profitability and the influence of sector-specific variables. Findings indicate an inverse relationship between bank size and profitability, challenging the traditional belief that bigger banks gain from economies of scale (Maina,

Kiragu, & Kamau, 2019). This outcome suggests that operational inefficiencies and higher overhead costs in Kosovo's banking sector may offset the expected benefits of increased size. The positive relationship between capital growth and profitability supports findings by (Berger & Bouwman, 2013), emphasizing that well-capitalized banks maintain financial stability and enhance performance. Additionally, the study's findings on non-performing loans (NPLs) present an intriguing anomaly, contrary to expectations. Similar observations have been made in contexts where banks charge higher interest rates on riskier loans, counterbalancing credit losses (Qehaja-Keka, Ahmeti, & Aliu, 2023).

Furthermore, cost-income ratio (CIR) and management efficiency (MGE) exhibit a strong negative impact on profitability, aligning with previous research that highlights the significance of cost control and operational efficiency in driving bank performance (Altunbas, Manganelli, & Marques-Ibanez, 2011). The positive effect of deposit growth rate (DGR) on profitability is consistent with studies that emphasize the role of deposit expansion in enhancing liquidity and lending capacity (Durguti, Krasniqi, & Krasniqi, 2020). These findings collectively reinforce the notion that internal financial management, risk mitigation strategies, and capital structure play a crucial role in shaping bank profitability in Kosovo. While some results align with global trends, certain anomalies, such as the positive impact of NPLs, indicate the need for further investigation into region-specific banking dynamics.

This study primarily aims to investigate sector-specific variables to clarify the elements affecting the profitability of commercial banks over the timeframe from January 2014 to March 2024.

Collected data was subjected to an in-depth evaluation, which included descriptive metrics, correlation assessment, and the application of multiple regression techniques. In order to capture the general trends of the examined variables, the analysis utilized measures such as the mean and standard deviation. A correlation matrix was also used to evaluate the relationships between dependent and independent variables, as well as to identify any signs of multicollinearity.

This research utilizes two distinct models to evaluate bank profitability through the application of multiple regression analysis. The regression model serves to ascertain the relative significance and influence of individual independent variables on bank profitability. To assess the hypotheses at a 5% significance level, we examine the p-values of the explanatory variables. The subsequent equations outline the multiple regression frameworks used to model the profitability indicators, namely Return on Average Assets (ROAA) and Return on Average Equity (ROAE):

Model 1:

$$ROAA = \beta_0 + \beta_1 \cdot loga + \beta_2 \cdot npl + \beta_3 \cdot cgr + \beta_4 \cdot cir + \beta_5 \cdot dgr + \beta_6 \cdot mge + \epsilon \quad (1)$$

Model 2:

$$ROAE = \beta_0 + \beta_1 \cdot loga + \beta_2 \cdot npl + \beta_3 \cdot cgr + \beta_4 \cdot cir + \beta_5 \cdot dgr + \beta_6 \cdot mge + \epsilon \quad (2)$$

ROAA (Return on Average Assets) and ROAE (Return on Average Equity) serve as the dependent variables in this analysis.

Independent variables:

- loga (logarithm of assets);
- npl (non-performing loans);
- cgr (capital growth rate);
- cir (cost-income ratio);
- dgr (deposit growth rate);
- mge (management efficiency)
- The model coefficients ( $\beta_0, \beta_1, \beta_2, \dots, \beta_6$ ) quantify the relationship between each independent variable and the dependent variable.
- $\epsilon$  represents the error term, accounting for the variability in ROAA/ROAE that is not explained by the independent variables.

Variables were calculated as follows:

$$ROAA = \frac{\text{Net Income}}{\text{Average Total Assets}} \quad (3)$$

$$ROAE = \frac{\text{Net Income}}{\text{Average Shareholders' Equity}} \quad (4)$$

$$\log_a = \log(\text{Total Assets}) \quad (5)$$

$$npl = \frac{\text{Non – Performing Loans}}{\text{Total Loans}} \quad (6)$$

$$cgr = \frac{\text{Current Period Capital} – \text{Previous Period Capital}}{\text{Previous Period Capital}} \quad (7)$$

$$cir = \frac{\text{Operating Expenses}}{\text{Operating Income}} \quad (8)$$

$$dgr = \frac{\text{Current Period Deposits} – \text{Previous Period Deposits}}{\text{Previous Period Deposits}} \quad (9)$$

$$mge = \frac{\text{Operating Income} – \text{Operating Expense}}{\text{Operating Income}} \quad (10)$$

### 5.1. The analysis of sector-specific indicators affecting the profitability of commercial banking sector in The Republic of Kosovo

This research explores industry-specific variables that influence the financial performance of commercial banks. In particular, it evaluates two core profitability metrics—Return on Average Assets (ROAA) and Return on Average Equity (ROAE)—over the timeframe from January 2014 to March 2024.

**Table 1. Key Financial Performance Metrics (in %), covering the period from January 2014 to March 2024**

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024m3
Return on average assets (ROAA)	2.0	2.9	2.2	2.6	2.5	2.2	1.6	2.3	2.5	2.5	2.5
Return on average equity (ROAE)	20.3	26.4	18.5	21.3	20.2	18.9	14.0	19.5	20.6	19.7	19.2

Source: Central Bank of Kosovo (CBK), Monthly Information Report of the Financial System.

The commercial banking sector in Kosovo experienced notable disruptions in 2020, primarily driven by the economic repercussions of the COVID-19 pandemic. However, in the subsequent years, it displayed signs of resilience and recovery. The rebound in profitability during this period suggests that the sector successfully adjusted to the unique economic conditions brought about by the pandemic, ultimately leading to an improvement in its financial performance. The notable increase in both ROAA and ROAE in 2022 and 2023 signals a positive trend, indicating a potential return to stability and growth. Still, it is essential to consider the broader economic and financial environment when evaluating the overall strength and sustainability of Kosovo's banking sector.

## 5.2. Descriptive statistics of variables

This section provides a summary of the statistical characteristics of both independent and dependent variables, reflecting how commercial banks performed throughout the analysis time frame. The summary in Table below offers insights into the characteristics of these study variables from January 2014 to March 2024, shedding light on their key attributes:

**Table 2. Summary statistics of the study variables**

Variable	Obs	Mean	Std. Dev.	Min	Max
roaa	123	.0230	.0039	.0110	.0320
roae	123	.1978	.0313	.1140	.2720
loga	123	8.4017	.2762	8.0191	8.9282
npl	123	3.8117	2.3901	.0190	8.8000
cgr	123	.1017	.0401	.0160	.1860
cir	123	.0709	.0141	.0560	.1180
dgr	123	.0956	.0379	.0290	.1710
mge	123	.6454	.0921	.3388	.8638

Source: own computation.

**ROAA (Return on Average Assets):** Measures the profitability of a financial institution in relation to its average total assets. The mean value of 0.0230 suggests that, on average, these institutions generate a return of 2.30% on their assets. The relatively low standard deviation of 0.0039 indicates that ROAA values are closely clustered around the mean, implying less variability in asset returns among the observed institutions.

**ROAE (Return on Average Equity):** Indicates the profitability of a financial institution relative to its average equity. The mean value of 0.1978 suggests that these institutions achieve a 19.78% return on their equity. The standard deviation of 0.0313 shows moderate variability in ROAE values among the institutions.

**LOGA (Log of Total Assets):** Represents the natural logarithm of the total assets of the institutions. The mean value of 8.4017 indicates the average size of the institutions in the sample. The standard deviation of 0.2762 suggests moderate variability in the size of the institutions.

**NPL (Non-Performing Loans):** Measures the percentage of loans in default or close to being in default. The mean value of 3.8117 indicates that, on average, 3.81% of loans are non-performing. The standard deviation of 2.3901 indicates a high variability in the quality of loan portfolios among the institutions.

**CGR (Capital Growth Rate):** Indicates the growth rate of the institutions' capital. The mean value of 0.1017 suggests an average capital growth rate of 10.17%. The standard deviation of 0.0401 indicates moderate variability in capital growth rates among the institutions.

**CIR (Cost-to-Income Ratio):** Measures the efficiency of the institutions, with lower values indicating higher efficiency. The mean value of 0.0709 suggests that, on average, the institutions have a cost-to-income ratio of 7.09%, indicating high efficiency. The standard deviation of 0.0141 indicates relatively low variability in efficiency among the institutions.

**DGR (Deposit Growth Rate):** Measures the growth rate of the institutions' deposits. The mean value of 0.0956 suggests an average deposit growth rate of 9.56%. The standard deviation of 0.0379 indicates moderate variability in deposit growth rates among the institutions.

**MGE (Management Efficiency):** Likely represents the efficiency of management in using resources to generate profits. The mean value of 0.6454 suggests that, on average, the institutions have a management efficiency of 64.54%. The standard deviation of 0.0921 indicates considerable variability in management efficiency among the institutions.

### 5.3. Correlation analysis of variables

In the context of the commercial banking sector in Kosovo, we conducted a correlation analysis among various financial metrics to uncover patterns and associations. The correlation coefficients are presented in the table below, indicating the strength and direction of the relationships between pairs of variables.

**Table 3. Correlation matrix between variables**

	roaa	roae	loga	npl	cgr	cir	dgr	mge
roaa	1.0000							
roae	.8960	1.0000						
loga	.2810	.0122	1.0000					
npl	-.2653	.1173	-.8516	1.0000				
cgr	.5335	.2122	.7516	-.7773	1.0000			
cir	-.4293	-.0754	-.6960	.8855	-.7527	1.0000		
dgr	.0623	-.0784	.6870	-.5855	.4052	-.4780	1.0000	
mge	-.6792	-.4513	-.6613	.6246	-.6132	.5326	-.2202	1.0000

Source: own computation.

ROAA and ROAE - As ROAA increases, ROAE tends to increase, indicating that companies with higher returns on assets also tend to have higher returns on equity.

ROAA and NPL - As ROAA increases, the proportion of NPL tends to decrease, suggesting that more profitable companies may have better loan quality or risk management.

ROAA and CGR - As ROAA increases, the Capital Growth Rate tends to increase, indicating that profitable companies may experience faster capital growth.

ROAA and CIR - As ROAA increases, the Cost-Income Ratio tends to decrease, implying that more profitable companies may have lower costs relative to their income.

ROAA and MGE - As ROAA increases, Management Efficiency tends to improve, suggesting that more profitable companies may have more efficient management practices.

After conducting the Variance Inflation Factor (VIF) analysis, it was observed that multicollinearity exists among the variables of NPL, loga, and cir. The mean VIF across all variables was found to be 4.94, indicating moderate multicollinearity.

**Table 4. Collinearity statistics of independent variables**

Variable	VIF	1/VIF
npl	9.3	.1075
loga	6.93	.1443
cir	5.45	.1835
cgr	3.26	.3066
dgr	2.44	.4100
mge	2.27	.4412
Mean VIF	4.94	

Source: own computation.

#### 5.4. The results of regression analysis

This study aims to identify the key factors impacting the profitability of Kosovo's commercial banking sector. The subsequent findings from a multiple regression analysis illustrate how various determinant factors impact the profitability of these banks in Kosovo, as assessed through the metrics ROAA and ROAE. This comparison is based on two distinct models:

**Table 5. Regression analysis results**

		Model 1	Model 2
		ROAA	ROAE
Constant		.0975	.6035
loga	R	-.0060	-.0269
npl	R	.0019	.0226
cgr	R	.0519	.3397
cir	R	-.2080	-1.7481
dgr	R	.0276	.2809
mge	R	-.0381	-.3148
R-squared		.8138	.7436
Adj R-squared		.8042	.7303
Number of obs .		123	123

Source: own computation.

##### **Model 1: ROAA (Return on Average Assets):**

Log of Assets (loga): An increase in the log of assets is associated with a statistically significant decrease in ROAA, indicating a negative relationship.

Non-Performing Loans (NPL): Interestingly, in this context, a higher level of NPLs corresponds with a positive impact on ROAA. This anomaly may stem from elevated interest rates on riskier loans or effective recovery efforts within the Kosovo banking sector.

Capital Growth Rate (CGR): The capital growth rate demonstrates a statistically significant positive effect on ROAA. As banks increase their capital base, profitability tends to improve.

Cost-Income Ratio (CIR): Higher cost-income ratios are linked with a statistically significant decline in ROAA, underscoring that increased operational costs reduce profitability.

Deposit Growth Rate (DGR): An upward trend in deposit growth rate significantly boosts ROAA, suggesting that a growing deposit base enhances financial performance.

Management Efficiency (MGE): is significantly and negatively related to ROAA. Improved management efficiency contributes positively to bank profitability.

##### **Model 2: ROAE (Return on Average Equity):**

Log of Assets (loga): The log of assets has a statistically significant negative impact on ROAE. As the log of assets increases, ROAE tends to decrease.

Non-Performing Loans (NPL): The regression analysis indicates that, in this particular context, non-performing loans positively impact the return on average equity for commercial banks in Kosovo. This unexpected outcome can be explained by factors such as higher interest rates on riskier loans, effective recovery practices, and unique conditions within the Kosovo banking sector. To fully understand this effect, it is essential to examine the banking practices, regulatory environment, and economic conditions in Kosovo in more detail.

**Capital Growth Rate (CGR):** An increase in the capital growth rate is significantly associated with a positive effect on ROAE, suggesting that well-capitalized banks tend to achieve better returns for shareholders.

**Cost-Income Ratio (CIR):** The cost-income ratio shows a statistically significant negative correlation with ROAE, indicating that higher operational costs tend to erode equity returns.

**Deposit Growth Rate (DGR):** A rising deposit growth rate exerts a positive and statistically significant impact on ROAE, implying that greater deposit inflows support stronger profitability performance.

**Management Efficiency (MGE):** Management efficiency is inversely related to ROAE in a statistically significant manner. This means that improvements in operational efficiency (lower cost relative to income) enhance returns on equity.

These findings underscore the importance of strategic management decisions, efficient cost management, and capital growth strategies in driving financial performance. Companies that prioritize these factors may be better positioned to achieve higher returns on both assets and equity, ultimately enhancing shareholder value and overall organizational success.

## 5. Conclusion

This study conducted an in-depth analysis of sector-specific factors affecting the profitability of commercial banks in the Republic of Kosovo. The dataset, covering the period from January 2014 to March 2024, was subjected to comprehensive analytical procedures, including descriptive statistics, correlation testing, and multiple regression techniques.

The findings reveal that the commercial banking sector in Kosovo faced challenges in 2020 due to the disruptive impact of the COVID-19 pandemic. However, in subsequent years, it displayed signs of resilience and recovery, with an apparent improvement in its financial performance, as evidenced by the notable increase in both ROAA and ROAE in 2022 and 2023. These positive trends indicate a potential return to stability and growth, underscoring the sector's adaptability and resilience in the face of unique economic conditions.

Descriptive statistics shed light on the typical trends and fluctuations in key financial performance indicators, providing valuable insights for analysts and stakeholders in evaluating the financial health and stability of the observed institutions.

The multiple regression analysis results further our understanding of the factors influencing bank profitability. In Model 1, Capital Growth Rate (CGR), Cost-Income Ratio (CIR), Deposit Growth Rate (DGR), and Management Efficiency (MGE) all play significant roles in determining the profitability of commercial banks in terms of Return on Average Assets (ROAA). In Model 2, CGR, CIR, DGR, and MGE also significantly influence Return on Average Equity (ROAE).

Effective management of these factors could enhance overall bank performance. Model 1 appears to have a slightly better fit than Model 2, indicating that the variables included in Model 1 may have a stronger influence on ROAA compared to those in Model 2 on ROAE.

This research contributes to a better understanding of the commercial banking sector in Kosovo and offers valuable information for stakeholders, regulators, and industry professionals, providing a foundation for further research and evidence-based decision-making in this crucial economic sector.

While this study provides valuable information on commercial bank profitability in Kosovo, several limitations should be acknowledged. The study primarily focuses on internal banking factors, which, although crucial, do not account for broader macroeconomic influences such as GDP growth, inflation rates, and exchange rate fluctuations. These external factors can have significant implications for bank profitability and should be considered in future research. Additionally, the study is confined to Kosovo's banking sector, meaning that its findings may not be directly applicable to other economies with different regulatory frameworks and banking structures. Furthermore, data availability constraints may have

influenced the selection of variables, potentially omitting other relevant indicators that could impact bank profitability. Recognizing these limitations underscores the importance of further research to refine and expand upon the current findings, integrating a more comprehensive set of variables and exploring cross-country comparisons to enhance the generalizability of the results.

Sustainable banking has emerged as a crucial component in modern financial systems, aligning profitability with environmental, social, and governance (ESG) principles. In the context of Kosovo, the adoption of sustainable banking practices remains in its early stages. While integrating sustainability into banking operations can enhance financial performance by reducing long-term risks and fostering stakeholder trust, challenges such as regulatory frameworks, market readiness, and awareness among banking institutions persist. The role of sustainable banking in enhancing bank profitability in Kosovo requires further exploration, particularly in understanding how green finance, ethical investing, and ESG-driven risk management influence financial stability and competitiveness.

It is recommended that future research investigates the impact of macroeconomic conditions on bank profitability in Kosovo, integrating factors such as GDP growth, inflation, and unemployment rates to provide a more comprehensive analysis. Additionally, a comparative study between Kosovo and other regional banking markets could offer valuable insights into the effectiveness of different banking strategies and regulatory frameworks. Expanding the research to incorporate sustainable banking practices and ESG-driven financial models could help assess how environmental and social responsibility influences profitability. Furthermore, a longitudinal analysis examining how capital buffer requirements and policy changes affect banking performance over time would enhance the understanding of regulatory impacts. By addressing these aspects, future research can contribute to a more holistic understanding of the key determinants shaping banking profitability and financial stability in Kosovo and beyond.

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