

THE IMPACT OF CAPITAL STRUCTURE ON THE FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KOSOVO³

This paper aims to investigate the impact of capital structure on the financial performance of commercial banks in Kosovo over the period 2014-2023. The empirical data are obtained from the quarterly financial statements published by commercial banks. The data from eight banks are organised in the form of panel data and models such as FE, RE and GMM are used. Hence, the paper investigates whether the capital structure measure through total liabilities to total assets, total liabilities to total capital and long-term liabilities to total assets affects the profitability of banks measured by Return on Assets (ROA) and Return on Equity (ROE). Bank size and asset growth are used as control variables.

The results show that the three selected capital structure variables have a significant negative impact on ROE, but none of the selected variables appear to have an impact on ROA. As for the controlling variables such as asset size and asset growth, the results show that asset size has a significant impact on ROE but not on ROA, while asset growth has no impact on any indicator of profitability.

The increase in debts as a financing source reduces the net profits of banks, which means a decrease in financial performance indicators. These findings suggest that capital structure adjustment is important for optimising financial performance.

Keywords: Commercial banks; Capital structure; Financial performance

JEL: G21; G32; L25; C23

1. Introduction

It is very important to constantly study and observe the stability of the banking system and the determining factors of this stability. Among several elements that could affect the financial performance and health of commercial banks is the capital structure. The stability of the financial system largely depends on the profitability of the banking sector, as a key component of this system. Therefore, bank profitability is very important not only at the individual bank level but also at the macroeconomic level.

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The capital structure remains a puzzle among financial decision-makers, including financial managers who aim to maximise the wealth of the shareholders. In financial terms, capital structure refers to the way a firm finances its activities through a combination of equity, debt or hybrid securities (Saad, 2010). According to Niresh (2012), capital structure is the way a firm finances itself by combining debt with equity. This structure is very important for all firms, as it is related to their ability to meet the needs of third parties.

Generally, the capital structure refers to several alternatives that can be adopted by a firm to secure the necessary funds for the realisation of its investment activities in a way that is always consistent with its priorities. Most of the objectives of the financial decision-making process mainly focus on determining the optimal capital structure; where the cost of capital is minimised and the value of firms is maximised (Gebremichael, 2016). Larger amounts of capital improve banks' interest in overseeing their debtors, as shareholders will receive a larger share of asset payments and suffer further in the event of default. An optimal capital structure is critical to the continuation of any business. The right decision about capital structure is necessary not only to maximise the bank's profits, but the good decision increases the organisation's ability to deal with its competitive environment. According to Boshnak (2023), capital structure, including the right combination of debt and equity, is crucial for a business as it affects its long-term performance and sustainability.

The correct determination of the debt-equity ratio is of great importance for bank management. Bank management is constantly searching for an optimal capital structure that maximises its value and reduces the risks faced by banks (Fareed et al. 2014). This illustrates why capital ratios can have a favourable impact on banks' profitability, specifically on profitability indicators that are return on assets (ROA), return on equity (ROE) and net interest margin (NIM). These are indicators that are widely used to measure the profitability of commercial banks, as we use in this study as well. It is very important to aim to identify the relationship that exists between capital structure and these profitability indicators. Many studies have been conducted on this topic in different countries and work is still being done to provide answers to such a very important topic.

Thus, motivated by previous studies and the lack of a similar study for the case of Kosovo, this study aims to determine the role and influence of the capital structure, i.e. financial leverage ratios, in the profitability of commercial banks in Kosovo (measured by ROA and ROE) for a period of 10 years (2014q1 – 2023q4). The sample of the study is exactly the commercial banks that operate in the country and quarterly data are extracted from the financial reports.

2. Literature Review

It even started decades ago when Modigliani and Miller (1958; 1965) provided a revolutionary idea, the capital structure issue nowadays is still debated among scholars in finance. Empirical studies examined the relationship between traditional variables (such as financial performance, growth, tangibility, etc.) and capital structure decisions by offering mixed evidence. Hence, whilst some studies examined non-financial entities, others have focused on the banking sector.

In addition, profit as an indicator of banks' capacity to bear risk or increase capital shows the ability of banks and measures the quality of management. The indicators used to measure profitability are numerous, including widely used ones such as return on assets (ROA), return on equity (ROE), net interest margin (NIM), etc.

However, return on assets (ROA) and return on equity (ROE) have always been mentioned among the main indicators that characterise the performance of banks (Erina & Lace, 2013). On the other hand, the capital structure commonly is measured using ratios such as: Debt ratio, debt-to-capital ratio, short-term debt ratio and long-term debt ratio.

However, empirical studies investigated the effect of the capital structure on the profitability of commercial banks in different countries by providing different results depending on the study sample and related methodological aspects. Hence, the literature about the relationship between firm performance and capital structure provides a mixed result (Al-Taani, 2013) and the issue continue to be debated in finance annals.

For instance, Nwude and Anyalechi (2018) studied the impact of capital structure on the performance of commercial banks in Nigeria. Their study sampled 10 commercial banks out of 23 banks that made up the Nigerian banking system. This study covered a period of 14 years, namely the years 2000-2013. The study used the following ratios as representatives of the capital structure: Debt ratio and debt to capital ratio, while as indicators of bank profitability, it used return on assets and return on equity. The findings of this study showed that the debt ratio has a negative and significant impact on the return on assets, while the debt/capital ratio had a positive and significant impact on the return on equity (ROE).

Another study with the same research topic, but in a different place, was carried out by the author Musah in 2017. This study analysed the effect of capital structure (short-term debt ratio, long-term debt ratio and total debt ratio) on the profitability of commercial banks in Ghana. The sample of this study was 23 commercial banks operating within the country and included the period 2010-2015. From the analysis carried out, the author concluded that the short-term debt ratio and the long-term debt ratio were negatively related to the profitability of commercial banks in Ghana, while the total debt ratio was seen to have a positive impact on their profitability. For banks in Ghana, another study was conducted by the authors Opoku, Adu and Anarfi in 2013. Their study considered all 9 banks listed on the Ghana Stock Exchange during the period 2005-2012. The study used a panel data methodology and according to these authors, the debt-to-equity ratio has a positive and significant relationship with the return on equity, while total liabilities do not have a significant contribution to the return on equity.

Velnampy and Nireesh (2012) conducted a study with 10 commercial banks in Sri Lanka. These authors analysed the relationship between capital structure and the profitability of these banks over the period 2002 – 2009. As profitability indicators, they identified the net profit ratio, return on equity, and net interest margin. According to the results of this study, 89% of the assets of the banks studied were financed by debt. Furthermore, the study showed significant negative relationships of the debt-to-equity ratio with all profitability indicators considered in the study.

In addition to the above studies, Goyal (2013) also investigated the impact of capital structure on the profitability of public sector banks in India listed on the national stock exchange during 2008-2012. Panel data and multiple regression models were used to find the relationship between capital structure characteristics and bank performance in the context of India. The findings of the study proved a strong positive dependence of short-term debt on capital in all profitability indicators. Whereas long-term debt to equity and total debt have a negative relationship with return on assets (ROA), return on equity (ROE) and earnings per share (EPS).

Furthermore, Ibrahim (2019) studied the effect of the capital structure on the performance of 6 private Iraqi banks selected for the period 2005-2015. The variables that were identified as independent and representative of the capital structure are total debt to equity, bank size and asset growth. The results of this study show that none of the selected variables had an impact on return on assets, while total debt to capital had a significant impact on return on equity.

Further, Pham, Hoang and Pham (2022) studied the effect of capital structure on the profitability of Vietnamese commercial banks. These researchers investigated the relationship between capital structure and the profitability of commercial banks over the period 2012 – 2018. The study included 30 commercial banks operating in Vietnam and revealed that customer deposits have a negative effect on bank profitability, while non-deposit liabilities have a positive effect on bank profitability.

The study by Oanh et al. (2023) also found a negative impact of capital structure on the financial performance of commercial banks. This study was conducted in Vietnam and covered the period 2003 – 2020. The study sample consisted of 37 commercial banks and the database included 463 annual observations. According to this study, a higher debt share in the capital structure reduces ROA and ROE, but increases EPS.

Recently, Aimable and Twesige (2024) studied the effect of capital structure on the financial performance of commercial banks in Rwanda. The study covered the period 2016 – 2022 and used annual financial data of 10 commercial banks in Rwanda. The study used panel data regression and found a negative relationship between capital structure, measured by the short-term debt ratio, long-term debt ratio, and total debt ratio and the profitability of the commercial banks selected for the study.

Therefore, there is no universal theory of the debt-equity choice (Myers, 2001), and the capital structure is still an unsolved puzzle (Khan & Rehan, 2021). The fact that studies have consistently yielded contradictory results increases the need for further research in this area of study. This justifies the purpose of our study, which is to further explore this area, and the results of this study will serve as a basis for future new studies.

2.1. Regulatory Framework of Capital in Banks of Kosovo

Kosovo has long begun to implement and enforce the regulatory framework known as the Basel Capital Framework. However, in order to achieve full compliance with the Basel III Standards, further efforts are needed to align with the regulatory framework and

supervisory practices of the European Union. In Kosovo, banks' regulatory capital requirements are determined by the Central Bank of Kosovo through specific regulations. There is a Regulation on Capital Adequacy of Banks. This regulation clearly defines the criteria and standards that banks must follow to ensure sufficient levels of capital to cover various risks.

In Kosovo, the regulatory requirements for capital differ from those stipulated by the international standards set by Basel III. These requirements are higher than those outlined in Basel III, demonstrating a more conservative approach by the Central Bank of Kosovo to ensure the stability and resilience of the banking system in the country. In Kosovo, the minimum total capital ratio is set at 12% of RWA, compared to the Basel III Framework, which sets this level at 8%. Likewise, the CBK Regulation establishes the minimum Tier 1 capital ratio at 8%, whereas the Basel III Framework sets this threshold at 6%. Taking into account that national regulators have the right to adapt rules in accordance with their specific circumstances, the Central Bank of Kosovo has imposed stricter capital requirements, reflecting the specific risks that the country's financial system may face. This can be attributed to several factors. First, the absence of a capital market in Kosovo makes banks the sole source of financing. Without alternative funding options, banks must maintain higher capital levels to ensure financial stability. Additionally, the experience of the 2008 financial crisis has led many developing countries, including Kosovo, to adopt stricter capital adequacy requirements to mitigate potential negative impacts from similar crises in the future.

All these regulations have a positive impact on the capital structure of the banking system in Kosovo, as they enhance financial security and stability, thereby reducing the risk of bank failures. Furthermore, they facilitate banks' access to financing and decrease their dependence on debt.

Regarding the leverage ratio, Kosovo has fully aligned its regulations with Basel III standards by setting a minimum leverage ratio threshold of 3%. This helps safeguard financial stability and reduces excessive reliance on debt for banks. Consequently, banks in Kosovo are required to maintain at least 3% of Tier 1 capital in relation to their total exposures, including both on-balance-sheet and off-balance-sheet assets (Regulation on the Leverage Ratio, CBK 2018).

Regarding liquidity, Kosovo has also taken steps to align with the Basel III framework. According to the liquidity regulation in Kosovo, there are two key liquidity risk indicators: the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR). The CBK has adopted a regulation on the first indicator, aiming to ensure that banks maintain sufficient liquid assets to withstand unexpected cash outflows.

3. Methodology

Currently (2024), in Kosovo operate 11 commercial banks. All these banks present success stories in the history of the banking sector of Kosovo. Those have continuously supported the country's economy through their banking activities with a high-quality service standard.

To study the relationship between the capital structure and the profitability of these commercial banks, the data on a quarterly basis were collected from 8 of these banks, for a period of 10 years, namely the years 2014 – 2023. The financial statements published by these banks are built in accordance with International Standards of Financial Reporting and constitute a reliable database for the realisation of the study. Pasasuraman et al. (2007) state that statistics are only as reliable as the source that produces them.

In addition, the extracted data are organised as panel data. The use of panel data in the study, as a combination of time series and cross-sectional data, provides more data because these data consist of cross-bank and cross-year information, which captures individual variability and information in time series. These panel data are further analysed through models suitable for panel data, such as the Fixed Effects Model (FEM), the Random Effects Model (REM) and the GMM model. Through the tests conducted, the appropriate model was chosen for the interpretation of the results derived from the study.

3.1. Specification of econometric models

Designing the variables or choosing the right variables for the study plays a key role in the realisation of the research. The selection of these variables was made based on the available data on the selected variables, as well as based on the level of importance of these variables. Because we are dealing with panel data (data for eight banks and the study period of 10 years), the general econometric model looks like this:

$$Y_{it} = \alpha + Bx_{it} + \varepsilon_{it}$$

Y = dependent variable for unit i at time t

X = independent variables for unit i at time t

α = intercept (constant term)

β = regression coefficient for variables X_{it}

ε_{it} = random effect

i : Banks (1 – 8)

t : Time period (2014q1 – 2023q4).

To measure bank profitability, indicators of bank profitability, such as return on assets (ROA) and return on equity (ROE), were used, while measuring the capital structure, ratios such as total debt ratio, debt to equity and long-term debt ratio are used. Also, to achieve a complete analysis in the study, two control variables, such as bank size (BS) and asset growth (AG), are used.

Referring to the empirical research cited in the literature section, this study specifies two models that help to understand the impact of capital structure on the financial performance of commercial banks:

Model 1:

$$ROA_{it} = \alpha_0 + \beta_1(TL/TA)_{it} + \beta_2(TL/TE)_{it} + \beta_3(LTL/TA)_{it} + \beta_4(BS)_{it} + \beta_5(AG)_{it} + \varepsilon_{it}$$

Model 2:

$$ROE_{it} = \alpha_0 + \beta_1(TL/TA)_{it} + \beta_2(TL/TE)_{it} + \beta_3(LTL/TA)_{it} + \beta_4(BS)_{it} + \beta_5(AG)_{it} + \varepsilon_{it}$$

where:

ROA is Return on Assets

ROE – Return on Equity

TL/TA – Total liabilities/Total assets

TL/TE – Total liabilities/Total equity

LTL/TA – Long-term liabilities/Total assets

BS – Bank size (Natural logarithm of assets)

AG – Asset growth

3.2. Description of variables:

This study uses variables which are examined in prior studies and are well-known in the financial literature. For instance, a commonly used measure of bank performance is the ROA, which gives a picture of how effective the bank's management is at generating profits with its available assets. Then, return on equity is a measure of financial performance calculated by dividing net income by shareholders' equity. The higher the ROE, the more efficient a company's management is in generating revenue and growth from financing its capital.

Capital structure implies the specific mix of firm debt and equity that a company uses to finance different operations and its growth. Debt consists of borrowed money that must be repaid, often with interest, while equity represents ownership shares in the company. Studies like Siddik et al. (2017), Birru (2016), and Goyal (2013) advocate that capital structure negatively affects the performance of commercial banks due to the fact that banks do not use the competitive advantage of financial leverage to realise profits.

Total debt to assets ratio (TD/ TA): The total debt to assets ratio is used to see the participation of debt in the financing of the bank's assets. It is calculated as total liabilities (short-term and long-term) over total assets. Numerous studies provide a negative relationship between this ratio and the financial performance of commercial banks (Goyal, 2013; Nwude & Anyalechi, 2018; Oanh et al., 2023), but there are also studies that provide a positive relationship (Musah, 2017).

Total debt to equity ratio (TD/ TE): The debt-to-equity ratio measures the share of debt in the capital structure. It shows the relationship between the portion of assets financed by creditors and the portion of assets financed by shareholders. The negative relationship between this ratio and financial performance is justified by the fact that increasing debt means increasing liabilities to creditors and as a result, using the firm's profits to cover them. Many studies have found this relationship to be negative (Velnampy & Niresh, 2012), but there are also studies that show a positive relationship between this ratio and the

profitability of commercial banks (Nwude & Anyalechi, 2018; Opoku et al, 2013). This relationship depends on the study sample and the study period.

Long-term debt to assets ratio (LTL/ TA): The long-term debt ratio measures the participation of long-term debt in financing assets. Usually, this includes loans and obligations of the bank with a maturity of one year. Many previous studies on capital structure provide negative relationships between long-term debt and the profitability of commercial banks (Siddiqui, 2012; Abor, 2005; Hossain & Hossa, 2015).

Usually, to carry out complete studies about the influence of independent variables on the dependent variable, some control variables are also taken, which help to eliminate the influence of other external factors that can affect the relationship between the variables taken in the study. Hence, bank size and asset growth are used as control variables.

Bank size (BS): The logarithm of total assets is used to measure the size of the bank, which is considered a very important factor affecting the profitability of commercial banks. Even studies that explain the relationship between bank size and profitability are divided into two groups: those that find a positive relationship between size and profitability (Flamini et al. 2009; Goddard et al. 2004; Bikker & Hu, 2002) and those that find this relationship to be negative (Becker et al. 2010; Pasiouras & Kosmidou, 2007).

Asset growth (AG): The increase in bank assets as an independent variable means a change in the value of a bank's assets during a fixed period of time and indicates the expansion of the bank's financial activities.

Table 1. Description of variables obtained in the study

Variable	Legend	Measurement
Dependent variables:		
Return on assets	ROA	(Net profit / Total assets) * 100
Return on equity	ROE	(Net profit / Total equity) * 100
Independent variables:		
Total liabilities to Total assets	TL/TA	(Total liabilities/ Total assets) * 100
Total liabilities to Total capital	TL/TC	(Total liabilities / Total capital) * 100
Long-term liabilities to Total assets	LTL/TA	(Long-term liabilities / Total assets) * 100
Controlling variables:		
Bank size	BS	Natural logarithm of total assets
Asset growth	AG	(Actual assets – Assets 12 months ago/ Assets 12 months ago) * 100

Source: Own selection.

Considering that our data is panel data (including 8 banks over a period of 10 years), Fixed effects and Random effects models were initially used to analyse the impact of capital structure on the financial performance of banks. The selection between these two models is made using the Hausman test. However, to address potential endogeneity, the GMM model is applied, which resolves the issue of mutual influence between variables. Comparing these models helps us choose the most suitable model for our data.

In the preliminary analysis, the ratio of total capital over total assets as an independent variable is tested, but due to the high collinearity (see Table 2), has been further removed from the model. Also, no significant result is obtained using this ratio.

Table 2. Table of multicollinearity between independent variables, a) before and b) after removing from the study the variable Total equity/Total assets

	VIF		VIF
Total liabilities/ Total assets	1287.56	Total liabilities/ Total assets	4.40
Total equity/ Total assets	1277.82	Total equity/ Total assets	-
Long-term liabilities/ Total assets	4.41	Long-term liabilities/ Total assets	4.0
Total liabilities/ Total equity	1.99	Total liabilities/ Total equity	1.99
Bank size	1.50	Bank size	1.50
Asset growth	1.12	Asset growth	1.12

Source: Own processing.

4. Analysis and Discussions

4.1. Descriptive statistics

For the realisation of the empirical analysis, eight commercial banks were studied over a 10-year period, specifically the years 2014 – 2023. Through descriptive statistics, the variables included in the econometric models in our study are described. Included within these descriptive statistics are: the minimum and maximum values of the variables, the mean and the standard deviation.

Table 3. Descriptive statistics for the variables taken in the study

Variable	Mean	Min.	Max.	Std. Dev
ROA	1.302531	-1.65	5.97	1.049038
ROE	10.21044	-16.71	33.78	7.532217
Total liabilities/ Total assets	84.05168	11.3	95.48	17.32898
Long-term liabilities/ Total assets	76.00422	10	90.67	20.26149
Total liabilities/ Total equity	782.1956	9.6	2110.3	270.2391
Bank size	19.39919	10.59	40.48	1.768687
Asset growth	3.424759	-13.75	42.91	6.338631

Source: Own processing.

Return on assets (ROA), as a proxy for profitability, for the study period has an average value of 1.30%. The value of this indicator has fluctuated from -1.65 minimum value to 5.97 maximum value. The other dependent variable, return on equity (ROE), has an average value of 10.21%. The minimum value of this indicator during this period was -16.71%, a value achieved by one of the banks studied at the beginning of its activity, while the maximum value reached 33.78%. From this description, it is observed that banks have generally been profitable during the study period, reaching high maximum values, with the exception of some negative fluctuations that have characterised certain periods for some banks at the beginning of their activity.

The ratio of total liabilities to total assets, for the study period, was characterised by an average of 84.05%. The value of this ratio has moved from a minimum value of 11.3% to a maximum value of 95.48%.

The ratio of long-term liabilities to total assets during the study period has marked an average value of 76%, with a movement of 10% minimum value to 90.67% maximum value.

Total liabilities to total assets is characterised by an average value of 782.19%. This value has fluctuated from a minimum value of 9.6% to a maximum value of 2110.3%.

The table also provides descriptions of control variables such as bank size and asset growth. Bank size as a control variable is characterised by an average value of 19.39%. The minimum value of this variable during the study period was 10.59%, while the maximum value was 40.48%. The increase in assets during the study period had an average value of 3.42%. The minimum value during the study period was -13.75%, while the maximum was 42.91%.

4.2. Interpretation of the results of econometric models

To conduct an analysis of the impact of capital structure on the financial performance of commercial banks, the study analyses panel data through methods such as pooled regression, fixed effects method (FEM), random effects method (REM), and GMM model.

The first model, where Return on Assets (ROA) is presented as the dependent variable, is given below:

Model 1:

$$ROA_{it} = \alpha_0 + \beta_1(TL/TA)_{it} + \beta_2(TL/TE)_{it} + \beta_3(LTL/TA)_{it} + \beta_4(BS)_{it} + \beta_5(AG)_{it} + \varepsilon_{it}$$

This model, which attempts to explain the impact of selected capital structure variables on the performance of commercial banks measured by ROA, is further evaluated using the aforementioned methods.

Table 4. Summary of models used for data analysis (for the first model – ROA)

	Pooled regression	Fixed effect (robust)	Random effect (robust)	GMM
Total liabilities/ Total assets	-.0501696 (0.000)	-.0420413 (0.000)	-.0490869 (0.000)	-.0376165 (0.470)
Long-term liabilities/ Total assets	.0291315 (0.000)	.0108691 (0.036)	.0252629 (0.000)	.1437557 (0.063)
Total liabilities/ Total equity	-.0004558 (0.086)	-.0000502 (0.827)	-.0002867 (0.284)	-.0029068 (0.239)
Bank size	.059349 (0.092)	.0015865 (0.902)	.03788052 (0.177)	-.0686913 (0.100)
Asset growth	.0216868 (0.011)	.0204976 (0.073)	.0227907 (0.007)	-.0064579 (0.780)
R ²	0.2671	0.0031	0.2669	.
Prob>chi2 = 0.0393				

Source: Own processing.

Pooled regression is the simplest method performed with panel data. Based on the value of R^2 , which turns out to be low, it can be seen that this method does not clarify the model sufficiently. Important methods for panel data are the fixed-effects method and the random-effects method. As can be seen in Table 4, regarding the connection and importance of the independent variables with the dependent variable, these two methods have given the same connection as the Pooled regression. Based on the results of the Hausman test, which selects between the FEM and REM methods, the preferred method in this case is the FEM. And based on the value of R^2 , the relationship between the independent variables and the dependent variable is very low ($R^2 = 0.0031$).

Although the FEM and REM models provide valuable analysis, they do not fully address the endogeneity problem of capital structure. Since financial performance can also influence banks' debt or capital structure decisions, there is a risk of reverse causality. For this reason, we implemented the GMM model, which uses internal instruments to mitigate this issue. The GMM model is considered the most advanced model in financial models and it fits our study data. The GMM model is designed to handle problems such as autocorrelation and heteroskedasticity. This model is used when there is endogeneity, which is a very common problem in financial models.

The last column of Table 5 gives the results of the GMM model. This model is considered the best-fitting model for our panel data as it passes the model validity tests.

Table 5. Tests for the validity of Model 1

1.	Arellano – Bond Test	2.	Hansen – Sargan Test
	$P > 0.05$		$p > 0.05$
	No autocorrelation		Instruments are valuable

Source: Own processing.

The problem of endogeneity is addressed more effectively by the GMM model compared to the FEM and REM models, as the GMM model uses past values of the variables. For example, past values of the dependent variables used in the ROA and ROE analysis help mitigate the impact of two-way causality. Therefore, in our case, the GMM model is considered the most appropriate, as it is a powerful method for handling heteroscedasticity, autocorrelation, and endogeneity.

The GMM model is designed to handle the problem of autocorrelation and heteroskedasticity. From the results, it can be seen that none of the selected variables has a significant impact on ROA as a representative of the bank's financial performance.

Total liabilities to total assets and the ratio of total liabilities to total capital, according to the data in the table, have a negative relationship with the financial performance of commercial banks, but this relationship turns out to be insignificant. The control variables also showed insignificant negative relationships. While the variable of long-term liabilities to total assets has shown a positive relationship with the financial performance of banks measured by ROE, this relationship also turns out to be insignificant. According to the analysis, the study does not find a significant relationship between the capital structure and ROA – as an indicator of profitability.

The second model, where Return on Equity (ROE) is examined, presents results as follows:

Model 2:

$$ROE_{it} = \alpha_0 + \beta_1(TL/TA)_{it} + \beta_2(TL/TE)_{it} + \beta_3(LTL/TA)_{it} + \beta_4(BS)_{it} + \beta_5(AG)_{it} + \varepsilon_{it}$$

This model aims to explain the impact of the above-mentioned variables on return on equity, as an indicator of the financial performance of commercial banks. And to see the impact of independent variables and the level of importance that these variables have on ROE, as in the previous model, even in this model are used the methods such as pooled regression, FEM, REM and GMM.

Table 6. Summary of models used for data analysis (for the first model – ROE)

	Pooled regression	Fixed effect (robust)	Random effect (robust)	GMM
Total liabilities/ Total assets	-.1773371 (0.000)	-.0914205 (0.070)	-.1773371 (0.000)	-4.183848 (0.008)
Long-term liabilities/ Total assets	.2561226 (0.000)	.0662782 (0.278)	.2561226 (0.000)	-9.387482 (0.019)
Total liabilities/ Total equity	.0015823 (0.420)	.0059037 (0.017)	.0015823 (0.419)	-.297467 (0.008)
Bank size	.4185465 (0.109)	-.0309437 (0.912)	.41856465 (0.108)	-198.1163 (0.005)
Asset growth	.183739=81 (0.004)	.149418 (0.019)	.1837381 (0.003)	-.1665644 (0.351)
R ²	0.2191	0.2715	0.8638	.
		Prob>chi2 = 0.000		

Source: Own processing.

Based on the explanations given for the first model, where ROA was the dependent variable, and in the second case, the dependent variable is ROE, the appropriate model is the GMM model. This model is the most appropriate as it provides more accurate results on the relationship between the independent and dependent variables. Additionally, it explains this impact more precisely by reducing endogeneity issues. Considering that the GMM model also addresses the problems of autocorrelation and heteroskedasticity and also in our case passes the model validity tests, the final results will be interpreted according to this model.

Table 7. Validity tests of model 2

1.	Arellano – Bond Test	2.	Hansan – Sargan Test
	P > 0.05		p>0.05
	No autocorrelation		Instruments are valuable

Source: Own processing.

Based on the estimations of the GMM method, the estimated variables are interpreted as follows: Variables representing capital structure are negatively related to bank profitability measured by ROE, which is consistent with some studies (see e.g., Hasan et al., 2014; Salim and Yadac, 2012). This means that the more debt is included in the capital structure, the lower the ROE and vice versa.

Total liabilities/total assets. The increase in the ratio of total liabilities to total assets has a negative effect on ROE, which means that the increase in liabilities reduces the banks' profits. According to the results of the table, the coefficient value for the given variable is -4.183848 and the significance level value is 0.000, which implies a strong negative relationship between the independent variable and ROE as the dependent variable. With a 1-unit increase in the ratio of total liabilities to total assets, the financial performance of banks measured by ROE will decrease by 4.183848.

As the liabilities increase, the interest expenses for the banks also increase, thus reducing the net profits of the banks and thus reducing the return on capital. Such a situation reduces the flexibility of the bank to achieve its financial objectives. The financial performance of firms can be higher when they decide to avoid debt and focus only on equity (Vatavu, 2015).

Long-term liabilities/ total assets. A negative relationship was also observed in the ratio of long-term liabilities to total assets, which means that the use of long-term financing by banks reduces the benefits of banks; in this case, it reduces ROE. The coefficient of the ratio of long-term liabilities/total assets is -9.387482 and the value of $p = 0.019$. If this ratio increases by 1 unit, ROE will decrease by the value of the coefficient.

This means that the bank's financial resources are tied up in most cases to pay off long-term debts, thus reducing free capital that can be used for investments in expansion or new product development.

Total liabilities/total equity. The ratio of total liabilities to total equity is also negatively related to ROE, which implies that in debt financing situations, banks' profits decrease. The coefficient value for this ratio is -0.297467 and the significance level value is 0.008. An increase of 1 unit in this ratio implies a decrease in ROE of 0.297467.

This can be justified by the fact that the lack of financial markets imposes the use of high-cost debt, which further affects the shrinking of banks' profits. A high level of debt for banks also means a burden for them, thus affecting their ability to generate sustainable returns.

Bank size. According to the data of the analysis, the size of the bank is negatively related to the profitability, which means that an increase in the size of the bank results in a decrease in the profitability in this case of ROE. The coefficient value of this variable is -198.1163 and the significance value is 0.005. This contradicts the detrimental findings reported in the literature (Dietrich & Wanzenried, 2011; Flamini et al., 2009; Goddard et al., 2004; Bikker & Hu, 2002). Theoretically, the largest banks enjoy economies of scale in various forms, such as in the case of the lowest cost of credit compared to other banks or in other forms, whereby minimising costs, they also increase their profitability in the market where they operate.

Asset growth as a controlling variable, no significant relationship is found neither with ROA, nor with ROE. According to the data in the table, a negative relationship is presented here, but a relationship which turns out to be insignificant due to the significance level of $p = 0.351$.

4.3. Robustness Checks Incorporating Capital Adequacy Ratio (CAR)

To assess the robustness of our econometric model's results, we conducted an additional analysis by incorporating the Capital Adequacy Ratio (CAR) as a control variable, alongside Bank Size and Asset Growth. CAR is a very important indicator that measures a bank's ability to withstand losses, thus reflecting the financial stability of banks. The inclusion of CAR in the model aims to analyse whether this indicator, which is essential for assessing the financial health of banks, affects the relationship between capital structure and financial performance.

Below (Table 8), a comparative table is presented showing the results of the initial model (i.e. the results of the FEM, REM and GMM methods) and the one extended with CAR, to see if the inclusion of this variable affects the relationship between the capital structure and the financial performance of the banks studied.

Table 8. Model stability analysis: A comparison of FEM, REM and GMM with the inclusion of variable CAR (Capital Adequacy Ratio)

Variables	FEM (without CAR)	FEM (with CAR)	REM (without CAR)	REM (with CAR)	GMM (without CAR)	GMM (with CAR)
Total liabilities/Total assets	-.0914205 (0.070)	-.0845996 (0.102)	-.1773371 (0.000)	-.1774497 (0.000)	-4.183848 (0.008)	-3.770052 (0.264)
Long-term liabilities/Total assets	.06627 (0.278)	.0582919 (0.351)	.2561226 (0.000)	.253578 (0.000)	-9.387482 (0.019)	-9.359568 (0.015)
Total liabilities/Total equity	.0059037 (0.017)	.0055425 (0.029)	.0015823 (0.419)	.0013027 (0.538)	-.297467 (0.008)	-.2971452 (0.012)
Bank size	-.0309037 (0.912)	-.0420039 (0.882)	.41856465 (0.108)	.4128535 (0.114)	-198.116 (0.005)	-192.1428 (0.032)
Asset growth	.149418 (0.019)	.1645388 (0.016)	.183781 (0.003)	.193552 (0.005)	-.1665644 (0.351)	-.1595417 (0.416)
Capital adequacy ratio (CAR)	-	-.0195945 (0.528)	-	-.0110845 (0.723)	-	-3.770052 (0.882)
R ² (FEM/REM)	0.27150	0.2433	0.8638	0.8651	-	-
Hansen Test (GMM)	-	-	-	-	p>0.05	p>0.05
AR(2) Test (GMM)	-	-	-	-	p>0.05	P>0.05

Source: Own processing.

From the data in the table, it can be seen that the inclusion of CAR in the model, as part of the model stability analysis, has not changed the existing relationships between the capital structure variables and ROE. This means that the relationships and statistical significance of the variables remain unchanged, which means that **the model is stable and the study findings are valid.**

While CAR itself as an independent variable has resulted in insignificant correlations. This means that within the context of the data, CAR does not have a significant impact on the financial performance of the banks studied.

5. Conclusions

Considering that capital structure constitutes one of the most important decisions taken by financial management within companies, determining the optimal capital structure plays a key role in their financial performance. A proper debt-equity ratio is of crucial importance for the continuation of firms' activities, and a proper determination of this ratio directs them towards maximising their value, while at the same time reducing the risks they face. Capital structure is still a mystery and is considered the most important managerial decision that must be made in order to maximise shareholder value and the value of the firm in general.

Based on the data extracted from 8 commercial banks for the period 2014 – 2023, this paper examined the impact of capital structure on the financial performance of commercial banks in Kosovo. Our results show that while the FEM and REM models provide insight into the relationship between capital structure and bank performance, the GMM model helps mitigate endogeneity arising from the mutual influence between variables. This allows us to obtain more reliable and stable results. Through the analysis of these data using the GMM model, the results of this paper reveal the negative impact of the capital structure on the financial performance of commercial banks. The main indicators of the capital structure, which are: debt to total assets ratio, debt to total capital ratio and long-term debt ratio, were found to be negatively related to return on equity (ROE) as an indicator of profitability. The same ratios did not have a significant impact on return on assets (ROA) but did have a significant relationship with ROE. Such a connection means that the greater use of debt in the capital structure negatively affects the profitability of the banks studied.

The increase in debt increases the interest expenses for the banks, thus decreasing profitability. This can be justified by the fact that there are no financial markets in the country, which imposes the use of high-cost debt. A high level of debt means a higher burden for the banks and thus jeopardising the opportunities for higher returns. As for the size of banks, this variable is negatively related to the profitability of commercial banks.

The findings of this study may offer modest solutions regarding the determination of the optimal capital structure for banking. Managers, in determining such a structure, should consider the possibility of reducing debt in the capital structure to reduce interest expenses and increase net profits. An alternative here would be debt restructuring, replacing short-term debt with long-term debt.

Then, to reduce dependence on debt, banks should focus on increasing customer deposits. They can do this by offering attractive products to customers. Offering new products is also a good policy for the bank to attract new customers and increase revenue. If possible, increasing shareholder capital through the retention of retained earnings would enable a reduction in debt dependence and an increase in financial stability for the bank.

It is preferable for bank managers to change the ways of financing banks by using debt only as a last resort for financing. They should target financing from the retained earnings rather than relying on debt and an optimal capital structure should be investigated. Perhaps, a problem for the banking market in Kosovo remains the lack of a financial market, which could increase the financing possibilities.

Although this study provides empirical evidence, the study still needs a further comprehensive and systematic database for the entire banking sector in Kosovo. Including other variables not just from the bank's perspective (characteristics) but also from the macroeconomic environment as well could strengthen policy implications even more. This paper can be further expanded by researchers by exploring the impact of macroeconomic variables, such as bank interest rates, on capital structure. The study can serve as a foundation for future research in this area.

The negative relationship between capital structure and the performance of commercial banks also suggests that state regulations and policies should always be designed in such a way as to assist firms in finding alternative sources of financing, thus reducing their dependence on the use of debt.

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