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Leveraging the Capital Structure for the Financial Performance of the Banking Industry in Bangladesh

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Abstract
This study examines the impact of capital structure on the profitability of commercial banks in Bangladesh, analyzing the role of various financial metrics such as leverage, liquidity, capital adequacy, and firm size. Using data from a sample of 30 banks, we assess key indicators including the debt-to-equity ratio (DE), total debt to total assets (TDTA), current assets to current liabilities (CACL), and capital adequacy ratio (CAR), exploring their influence on return on equity (ROE) and earnings per share (EPS). Statistical tools, namely correlation analysis and regression analysis have been employed to analyze the data. The findings reveal that Bangladeshi banks rely heavily on debt financing, with high TDTA and DE ratios, indicating that leverage is a critical factor in enhancing profitability. However, the analysis also suggests a trade-off, as excessive debt may elevate financial risks. Liquidity management emerges as a vital aspect, with high liquidity associated with lower returns on equity, possibly due to underutilized assets. Firm size positively correlates with profitability, suggesting that economies of scale may contribute to higher earnings. The study provides actionable recommendations, emphasizing a balanced approach to leverage, efficient liquidity deployment, and strategic scaling, while also recommending further refinement of financial models to better capture the complexity of profitability drivers. Overall, this research contributes to a deeper understanding of the financial structure-profitability relationship in Bangladeshi commercial banks, offering insights for more effective financial management and sustainable growth in a developing economy.

Keywords: Capital Structure, Financial Performance, Banking Industry, Bangladesh.

1. Introduction

The financial structure of commercial banks is a fundamental determinant of their profitability, particularly in emerging economies like Bangladesh. As the financial landscape evolves, influenced by regulatory reforms and dynamic economic conditions, understanding the intricate relationship between financial structure components and profitability becomes increasingly vital for stakeholders, including policymakers, bank executives, and investors.

In Bangladesh, the banking sector has experienced significant transformation, driven by the country's rapid economic growth and concerted efforts towards financial inclusion. Commercial banks serve as the backbone of this development, facilitating capital mobilization and investment in various sectors. However, they face numerous challenges, such as a high incidence of non-performing loans, regulatory

pressures, and stiff competition from both domestic and international players. These factors underscore the need for a thorough analysis of how financial structure affects profitability in this unique context.

The profitability of commercial banks in Bangladesh is influenced by a complex interplay of factors related to their financial structure, yet several critical issues persist that hinder optimal performance. First, the relationship between key components such as capital adequacy, asset composition, and liquidity management and their impact on profitability remains inadequately explored within the Bangladeshi context. High levels of non-performing loans (NPLs) present a significant challenge, eroding earnings and increasing the cost of risk management, thereby necessitating a deeper understanding of how these assets affect overall financial health.

This study aims to examine key aspects of financial structure, including capital adequacy, asset composition, and liquidity management, and their impact on the profitability of commercial banks in Bangladesh. Capital adequacy, for instance, reflects a bank's ability to absorb losses and maintain operational stability, while asset composition relates to the quality and diversity of a bank's investments. Liquidity management, on the other hand, is crucial for ensuring that banks can meet their short-term obligations while optimizing their returns.

By analyzing these elements, the research seeks to provide valuable insights into the strategies that can enhance bank performance and profitability. The findings will not only contribute to the academic literature on banking but also offer practical recommendations for improving financial management practices within the sector.

This study consists of seven sections, following the introduction which provided an overview of the study, and articulating the objective of the current research. An examination of existing literature is presented in the second section. The subsequent five sections produce: (a) a description of the methods that have been employed in this research, (b) the empirical findings of this work, (c) a discussion of these findings, (d) recommendations, and (e) a conclusion, which also outlines the implications and the limitations of this study, respectively.

2. Literature Review

The impact of financial structure on the profitability of firms has been a topic of debate between researchers and scholars for a very long time. Many studies have been conducted to explore the impact of financial structure, and they used different techniques and methodologies. Several studies are also conducted on the impact of financial structure on banks' profitability in both developed and developing countries. Financial structure in the banking sector is so far unique compared to other business firms because of its nature of operation. There have been different opinions about the results. A lot of studies have shown a positive relation between financial structure and firms' profitability, whereas some other studies have shown a negative relation between financial structure and firms' profitability and there are also some studies that have found no relation between financial structure and firms' profitability.

2.1 Global Evidence on Financial Structure and Profitability

Globally, numerous studies have explored the link between financial structure and bank profitability. Musundi (2008) conducted a study to establish the relationship between size and profitability of Kenyan commercial banks between the year 1998 and 2007. The findings indicated that some variables such as number of ATMs, number of employees, net liquid assets, shareholders' funds, customers' deposits and bank loans have a positive relationship with profitability whereas number of branches, total assets and number of customer accounts have a negative relationship to profitability. The study recommended that

banks should emphasize positive variables to maximize profits. In addition, Adelopo, Vichou and Cheung (2022) explores the relationship between bank capital and profitability within the context of European banks. Key findings of the study indicate that higher capital levels can have a positive impact on profitability, suggesting that well-capitalized banks are better positioned to manage risks and absorb potential losses.

Moreover, Gaul, Wang, and Gosh (2011) analyze how various factors, including capital structure, asset quality, liquidity, and operational efficiency, contribute to the financial performance of banks. One of the key findings of the study is that a bank's capital structure, specifically the mix of debt and equity, significantly influences its profitability. The authors emphasize that banks with a higher equity base tend to exhibit better risk management and financial stability, which in turn leads to improved profitability. Focusing on the sub-Saharan African region, Fosu (2013) investigates the relationship between various financial structure components and the profitability of banks. The findings reveal that a well-structured financial foundation, characterized by an optimal mix of equity and debt, enhances bank profitability.

Highlighting the context of developing countries, Sufian (2009) conducted a comprehensive study on the determinants of profitability in the banking sector. The paper analyzed how internal factors, such as a bank's financial structure, and external macroeconomic factors influence bank profitability. The study found that banks with better capital adequacy ratios and lower levels of non-performing loans (NPLs) tended to exhibit higher profitability.

2.2 Studies Focused on Bangladesh

Studies that cover the issue highlighting the context of Bangladesh are discussed in this section. Pervin and Nowreen (2018) analyzes the determinants of capital structure in 30 private commercial banks in Bangladesh, using data from 2007 to 2016 and applying the ordinary least square (OLS) technique. Findings show that profitability and size negatively impact capital structure, while risk has a positive impact. However, liquidity, age, tangibility, and asset growth have no significant effect. In addition, Islam et al. (2017) explores theories and empirical evidence related to capital structure, profitability, and bank size, focusing on private commercial banks in Bangladesh. The findings of the study reveal that banks increase capital to mitigate bankruptcy costs and avoid financial distress, thus enhancing profitability. In contrast, the study argues that higher leverage, which increases risk, leads to higher expected return but reduces the equity-to-asset ratio. Therefore, banks with more leverage may experience lower capital relative to profitability.

Rahman, Hamid and Khan (2015) examine the determinants of bank profitability in Bangladesh, focusing on both bank-specific and macroeconomic factors using data from 25 commercial banks between 2006 and 2013. Key findings indicate that higher capital strength and loan intensity positively impact profitability. Conversely, cost efficiency and off-balance sheet activities negatively affect profitability. Moreover, Banna, Ahmad and Koh (2017) examines how the global financial crisis and other factors affect the efficiency of commercial banks in Bangladesh using Data Envelopment Analysis (DEA) for the period 2000 to 2013. The results show that bank efficiency peaked in 2001 but declined to its lowest point in 2010. The study finds that the financial crisis, along with bank size, capital adequacy ratio, return on average equity, and real interest rates, significantly impacts efficiency.

Dey (2014) examines the financial performance of privately listed commercial banks in Bangladesh, focusing on profitability. Using cross-sectional data from 15 banks' annual financial statements (2008-2012), the analysis explores five determinants. The correlation matrix reveals that asset quality, operating performance, bank size, and liquidity position are positively related to profitability, whereas capital

adequacy are negatively related. Furthermore, Hosen (2020) investigates internal factors affecting the profitability of commercial banks in Bangladesh, using ROA and ROE as measures. Analyzing data from 23 banks for 2014-2018, the study finds that capital adequacy ratio (CAR) significantly influences ROA, while the credit ratio (CR) affects both ROA and ROE. The study suggests that efficient management of CAR aJnd CR is crucial for enhancing profitability, especially for PCBs and ICBs. In addition, Akhter (2018) examines how liquidity and profitability affect the operational efficiency of scheduled commercial banks in Bangladesh from 2011 to 2016, using data from 30 banks. Analysis with various panel data models shows that liquidity and profitability explain 66.23% to 98.85% of operational efficiency. The findings suggest that banks should focus on maintaining minimum liquidity and making high-quality loans to improve shareholder earnings. The study underscores the importance of operational efficiency in the competitive banking sector and notes that bank size does not significantly impact efficiency.

2.3 Research Gaps

Despite the growing interest in the relationship between financial structure and profitability of conventional banks, several research gaps remain, particularly in the context of Bangladesh. Firstly, while existing studies have explored various aspects of banking performance, there is a lack of comprehensive research specifically focusing on the unique characteristics of Bangladesh's banking sector, which includes a diverse mix of public, private, and foreign banks. This diversity necessitates a nuanced understanding of how different financial structures impact profitability across these bank types. Additionally, much of the existing literature has concentrated on macroeconomic factors influencing bank performance, often neglecting the internal financial variables such as capital structure, asset-liability management, and liquidity ratios. Furthermore, empirical studies that analyze the dynamic relationship between financial structure components and profitability over time are scarce, limiting insights into how these relationships evolve in response to changing economic conditions and regulatory environments. Another critical gap is the limited examination of the impact of emerging technologies and digital banking on financial structures and profitability in the Bangladeshi context. Finally, there is a need for more localized studies that consider the specific regulatory frameworks, cultural factors, and market dynamics in Bangladesh, as these elements can significantly influence how financial structure affects profitability. Addressing these gaps will provide a more comprehensive understanding of the role of financial structure in the profitability of conventional banks in Bangladesh, ultimately informing better financial practices and regulatory policies.

3 Research Methodology

Research methodology is one of the critical parts of the study as the successful achievement of research goals primarily depends on it.

3.1 Research Approach

This research adopts a quantitative approach. The quantitative component involves the collection and analysis of secondary financial data from a sample of banks, focusing on key financial metrics such as capital adequacy, asset composition, liquidity ratios, Return on Assets (ROA), and Return on Equity (ROE). Statistical techniques, including regression analysis, will be employed to identify relationships and correlations between financial structure elements and profitability outcomes.

3.2 Data Collection

In this study, a comprehensive data collection method will be employed to gather relevant information on the financial structure and profitability of commercial banks in Bangladesh. Quantitative data will be gathered from secondary sources, primarily focusing on the financial statements and annual reports of sel-

ected commercial banks. This will include

- Financial Statements: Balance sheets, income statements, and cash flow statements from the past five to ten years to assess trends in capital adequacy, asset composition, liquidity ratios, Return on Assets (ROA), and Return on Equity (ROE).

3.3 Variables and Measures

The dependent variable of the study is profitability, and the independent variables are capital adequacy, asset quality, liquidity management and leverage. Measurement of the variables of the study are discussed below.

- Profitability: Measured by Return on Assets (ROA) and Return on Equity (ROE). ROA is calculated as Net Income divided by Total Assets, and ROE is calculated as Net Income divided by Shareholders' Equity.
- Capital Adequacy: Measured by the Capital Adequacy Ratio (CAR), which is calculated as the ratio of a bank's capital to its risk-weighted assets.
- Asset Quality: Measured by the Non-Performing Loans (NPL) ratio, which is the ratio of non-performing loans to total loans.
- Liquidity Management: Measured by the Loan-to-Deposit Ratio (LDR), which is calculated as the ratio of total loans to total deposits.
- Leverage: Measured by the Debt-to-Equity Ratio, which is the ratio of total debt to total equity.

4. Empirical findings of the study

4.1 Results of the correlation matrix

As mentioned in the research methodology of the study, correlation matrix is conducted in the initial phase. The results of correlation matrix mentioned below.

Table 1 Correlation matrix of EPS

	EPS	TDTA	DE	LDE	CACL	CAR	GDP	SIZE	INF
EPS	1								
TDTA	0.284	1							
DE	0.753	0.189	1						
LDE	-0.343	-0.347	-0.117	1					
CACL	-0.382	-0.031	-0.024	0.279	1				
CAR	-0.071	0.038	-0.295	-0.167	-0.314	1			
GDP	-0.070	0.149	-0.024	0.034	0.076	-0.016	1		
SIZE	0.636	0.100	0.630	-0.349	-0.023	0.159	-0.032	1	
INF	0.098	0.060	-0.073	-0.119	-0.124	0.516	0.151	0.247	1

This correlation matrix reveals relationships among financial and economic variables. EPS (Earnings Per Share) is strongly correlated with SIZE (0.637), indicating that larger firms tend to have higher earnings per share, possibly due to economies of scale or market dominance. Additionally, EPS has a moderate positive correlation with DE (Debt-to-Equity, 0.753), suggesting that firms with higher leverage might also be generating more earnings, though this can indicate increased financial risk. There is a weak negative relationship between EPS and TDTA (Total Debt to Total Assets, 0.285), implying that as a firm's

total debt increases relative to assets, earnings per share slightly decrease, possibly due to higher debt costs.

Among other variables, CACL (Current Assets to Current Liabilities) and CAR (Capital Adequacy Ratio) are weakly negatively correlated with LDE (Long-term Debt to Equity, -0.348 and -0.167, respectively), suggesting that firms with higher long-term debt ratios might maintain lower liquidity and capital adequacy. INF (Inflation) and CAR also show a moderate positive correlation (0.516), indicating that as inflation increases, firms might hold a higher capital adequacy ratio as a buffer against economic instability. Overall, this matrix provides insights into how financial structure, firm size, and external economic factors like GDP and inflation interact with each other and influence earnings and financial health.

Table 2 Correlation matrix of ROA

	ROA	TDTA	DE	LDE	CACL	CAR	GDP	SIZE	INF
ROA	1								
TDTA	0.167	1							
DE	0.122	0.189	1						
LDE	-0.285	-0.347	-0.117	1					
CACL	-0.489	-0.031	-0.023	0.279	1				
CAR	-0.047	0.038	-0.295	-0.167	-0.314	1			
GDP	-0.075	0.149	-0.024	0.034	0.076	-0.016	1		
SIZE	0.044	0.100	0.630	-0.349	-0.023	0.159	-0.032	1	
INF	-0.033	0.060	-0.073	-0.119	-0.124	0.516	0.151	0.247	1

This correlation matrix highlights the relationships among Return on Assets (ROA) and various financial and economic metrics. ROA shows a weak positive correlation with Total Debt to Total Assets (TDTA) (0.167), implying that firms with higher leverage may experience slightly better asset returns, possibly due to effective asset utilization. However, ROA is negatively correlated with Current Assets to Current Liabilities (CACL) (-0.490), suggesting that companies with greater liquidity may have lower returns on their assets, indicating a potential inefficiency in using liquid assets for profitable investments. Additionally, the correlations between ROA and leverage measures (Debt-to-Equity and Long-term Debt to Equity) are weak, implying that the debt structure does not significantly influence asset returns. The moderate positive correlation between Inflation (INF) and Capital Adequacy Ratio (CAR) (0.516) indicates that as inflation increases, firms may maintain higher capital reserves as a safeguard against economic fluctuations. Overall, the matrix reflects that while certain relationships exist, the factors affecting ROA are multifaceted and not solely determined by debt levels, liquidity, or economic conditions.

Table 3 Correlation Matrix of ROE

	ROE	TDTA	DE	LDE	CACL	CAR	GDP	SIZE	INF
ROE	1								
TDTA	0.138	1							
DE	0.517	0.189	1						

LDE	-0.116	-0.347	-0.117	1					
CACL	-0.401	-0.031	-0.024	0.279	1				
CAR	-0.166	0.038	-0.295	-0.167	-0.314	1			
GDP	-0.080	0.149	-0.024	0.034	0.076	-0.016	1		
SIZE	0.257	0.100	0.630	-0.349	0.023	0.159	-0.032	1	
INF	-0.003	0.060	-0.073	-0.119	-0.124	0.516	0.151	0.247	1

This correlation matrix examines the relationships among Return on Equity (ROE) and several financial and economic indicators. ROE displays a moderate positive correlation with Debt-to-Equity (DE) (0.517), suggesting that firms with higher leverage might achieve greater returns on equity, likely due to the amplifying effect of debt on profitability. However, ROE is negatively correlated with Current Assets to Current Liabilities (CACL) (-0.401), indicating that companies with higher liquidity may experience lower returns on equity, which could suggest inefficiencies in utilizing liquid assets for profitable investments. The correlation between ROE and Total Debt to Total Assets (TDTA) is weakly positive (0.138), indicating a slight tendency for firms with higher total debt relative to assets to have improved equity returns. Conversely, ROE shows a weak negative relationship with the Capital Adequacy Ratio (CAR) (-0.167), implying that as firms hold more capital relative to their assets, their returns on equity may decline, potentially reflecting a conservative approach to financing. The moderate positive correlation between ROE and SIZE (0.258) suggests that larger firms tend to achieve higher returns on equity, possibly due to scale advantages or market power. Overall, while some notable correlations exist, the factors influencing ROE are multifaceted, highlighting the complexity of financial performance drivers in the context of leverage, liquidity, and firm size.

4.2 Findings of the regression analysis

Regression analysis has been employed in the study to determine the effect of capital structure towards profitability. Findings of the regression analysis are discussed below.

Table 4 Test of Regression Analysis of EPS

Multiple R	0.882
R Square	0.777
Adjusted R Square	0.693
Standard Error	1.472
Observations	30

	Coefficients	Standard Error	T Stat	P-value
Intercept	-21.162	17.317	-1.222	0.235
TDTA	1.279	1.024	1.249	0.225
DE	0.130	0.044	2.913	0.008
LDE	-0.146	0.456	-0.321	0.750
CACL	-5.104	1.574	-3.241	0.004
CAR	-0.354	0.337	-1.047	0.306
GDP	-0.099	0.191	-0.519	0.608
SIZE	2.653	1.545	1.717	0.100

INF	0.296	0.419	0.706	0.487

The regression analysis provides a comprehensive examination of the relationships between the dependent variable and various financial and economic indicators, yielding valuable insights into their interactions. With a robust Multiple R value of 0.882, the model indicates a strong correlation between the observed and predicted values, suggesting that the independent variables collectively account for a significant proportion of the variance in the dependent variable. The R-squared value of 0.778 implies that approximately 77.8% of the variability can be explained by the selected predictors, highlighting the model's overall explanatory power. Among the independent variables, Debt-to-Equity (DE) stands out with a statistically significant positive coefficient of 0.131 and a p-value of 0.008, indicating that higher leverage is associated with improved performance of the dependent variable. This finding aligns with the notion that firms utilizing debt effectively can enhance their returns, potentially due to the amplified effects of financial leverage. Conversely, the Current Assets to Current Liabilities (CACL) ratio exhibits a significant negative relationship with a coefficient of -5.104 and a p-value of 0.004, suggesting that an increase in liquidity, which generally reflects a firm's ability to meet short-term obligations, may paradoxically lead to decreased performance. This result may indicate that firms overly focused on maintaining high liquidity could be sacrificing investment opportunities that drive profitability.

In contrast, other independent variables such as Long-term Debt to Equity (LDE), Capital Adequacy Ratio (CAR), GDP, Firm Size (SIZE), and Inflation (INF) do not demonstrate statistically significant effects, as indicated by their higher p-values, suggesting that they may not play a substantial role in influencing the dependent variable within this model's framework. The standard error of 1.473 suggests a moderate level of prediction error, reflecting the variability of the observed values around the regression line. Additionally, the model underscores the importance of focusing on leverage and liquidity as key factors impacting the dependent variable, while also highlighting the need for further exploration into the complex dynamics of firm size and broader economic conditions. Overall, while the model effectively captures critical relationships among the variables, it also opens avenues for additional research to refine understanding and identify potential additional predictors that could further enhance its explanatory capacity. This analysis emphasizes the intricate balance firms must maintain between leveraging debt for growth and ensuring adequate liquidity for operational stability, revealing crucial insights for financial decision-making.

Table 5 Test of Regression Analysis of ROA

Multiple R	0.573
R Square	0.328
Adjusted R Square	0.073
Standard Error	0.316
Observations	30

	Coefficients	Standard Error	T Stat	P-value
Intercept	2.994	3.716	0.805	0.429
TDTA	0.134	0.219	0.612	0.546
DE	-0.000	0.009	-0.057	0.954
LDE	-0.058	0.097	-0.592	0.559

CACL	-0.866	0.337	-2.562	0.018
CAR	-0.073	0.072	-1.008	0.324
GDP	-0.012	0.041	-0.299	0.767
SIZE	0.022	0.331	0.068	0.946
INF	0.005	0.090	0.055	0.956

The regression analysis provides a detailed look at the relationships between the dependent variable and various financial and economic metrics, with significant implications for understanding these dynamics. The model's Multiple R value of 0.573 indicates a moderate correlation between the observed and predicted values, while the R-squared value of 0.329 suggests that approximately 32.9% of the variability in the dependent variable can be explained by the independent variables included in the model. This relatively low explanatory power is further emphasized by the Adjusted R-squared value of 0.073, which adjusts for the number of predictors and suggests that the model does not significantly improve its fit when accounting for the complexity introduced by additional variables.

Among the independent variables, the coefficient for the Current Assets to Current Liabilities (CACL) ratio is noteworthy, showing a significant negative relationship with the dependent variable, indicated by a coefficient of -0.866 and a p-value of 0.018. This suggests that higher liquidity, as represented by CACL, is associated with decreased performance, which could imply that firms overly focused on maintaining liquidity might be missing out on investment opportunities that would enhance profitability. In contrast, the other variables, including Total Debt to Total Assets (TDTA), Debt-to-Equity (DE), Long-term Debt to Equity (LDE), Capital Adequacy Ratio (CAR), GDP, Firm Size (SIZE), and Inflation (INF), exhibit weak or non-significant relationships with the dependent variable, as evidenced by their high p-values. For instance, the coefficients for DE, LDE, CAR, GDP, SIZE, and INF are all close to zero, indicating little to no effect on the dependent variable, with p-values ranging from 0.324 to 0.956, reflecting a lack of statistical significance.

The standard error of 0.316 suggests a modest level of prediction error in the model, pointing to the potential variability of the observed values around the regression line. Overall, this regression analysis indicates that while some factors like CACL play a significant role in determining the dependent variable's behavior, the overall model does not robustly capture the relationships among the other financial and economic indicators. This highlights a potential need for further investigation, perhaps involving the inclusion of additional variables or different model specifications, to gain a more comprehensive understanding of the factors influencing the dependent variable. The findings underscore the importance of liquidity management while also suggesting that the relationships among other financial metrics and the dependent variable may be more complex and warrant deeper exploration to uncover any underlying patterns or effects.

Table 6 Test of Regression Analysis of ROE

Multiple R	0.676
R Square	0.457
Adjusted R Square	0.251
Standard Error	3.137
Observations	30

	Coefficients	Standard Error	T Stat	P-value
Intercept	31.004	36.885	0.840	0.410
TDTA	0.893	2.181	0.409	0.686
DE	0.163	0.095	1.711	0.101
LDE	0.310	0.972	0.318	0.752
CACL	-8.377	3.354	-2.497	0.020
CAR	-0.711	0.719	-0.989	0.333
GDP	-0.166	0.408	-0.408	0.687
SIZE	-0.172	3.291	-0.052	0.958
INF	0.479	0.894	0.536	0.597

The regression analysis provides important insights into the relationships between the dependent variable and several independent financial and economic indicators. The Multiple R value of 0.677 indicates a moderate correlation between the observed and predicted values, while the R-squared value of 0.458 suggests that approximately 45.8% of the variability in the dependent variable can be explained by the independent variables included in the model. However, the Adjusted R-squared value of 0.251 indicates that, after accounting for the number of predictors, the model has limited explanatory power, suggesting that the independent variables do not significantly improve the model's fit.

Among the independent variables, the Current Assets to Current Liabilities (CACL) ratio is particularly noteworthy, exhibiting a significant negative relationship with the dependent variable, as shown by a coefficient of -8.377 and a p-value of 0.021. This result indicates that higher liquidity is associated with poorer performance, implying that firms may be sacrificing potential profitability by maintaining excess liquid assets instead of investing them in growth opportunities. In contrast, other variables such as Total Debt to Total Assets (TDTA), Debt-to-Equity (DE), Long-term Debt to Equity (LDE), Capital Adequacy Ratio (CAR), GDP, Firm Size (SIZE), and Inflation (INF) do not show significant relationships with the dependent variable, as evidenced by their high p-values. For instance, DE has a coefficient of 0.164 with a p-value of 0.102, which suggests a potential positive effect that is not statistically significant at conventional levels. Similarly, the coefficients for TDTA, LDE, CAR, GDP, SIZE, and INF indicate minimal or no impact on the dependent variable, with p-values well above 0.05, highlighting their lack of statistical significance.

The standard error of 3.137 indicates a considerable level of prediction error, reflecting variability in the observed values around the regression line. Overall, while the model captures some important relationships—most notably the significant negative impact of CACL on the dependent variable—it also indicates that the overall model may not fully explain the dynamics at play. The limited explanatory power suggests that additional factors or alternative model specifications may be necessary to enhance the understanding of the relationships among these financial metrics and the dependent variable. These findings underscore the importance of effective liquidity management in optimizing firm performance, while also indicating the need for further research to explore other potential drivers and refine the analytical model for better insights.

5. Discussions

The analysis of a sample of 30 firms reveals a notable reliance on debt financing, with the total debt to total assets (TDTA) ratio averaging around 76.24%, indicating that most firms use debt for a large portion

of their asset financing. This reliance is further highlighted by an average debt-to-equity (DE) ratio of 16.34, signifying a heavy dependency on debt relative to equity, and a long-term debt to equity (LDE) ratio of 1.4575, suggesting a consistent approach to long-term debt. Profitability varies across datasets, with earnings per share (EPS) ranging from moderate to high levels, influenced by factors like firm size. Larger firms tend to have higher EPS (correlation of 0.637 with SIZE), possibly due to economies of scale, while higher leverage (DE) is moderately associated with increased earnings, though it may entail greater financial risk. Liquidity is stable, with a current asset to current liabilities (CACL) ratio averaging 1.2686, indicating that most firms maintain sufficient liquidity for short-term obligations. The capital adequacy ratio (CAR) averages 15.41%, underscoring firms' preparedness to manage financial risks. Economic conditions are generally favorable, with GDP growth averaging around 6.39% and inflation at 6.15%, suggesting a stable environment with manageable inflation.

The analysis of correlations and regression models across various financial and economic indicators provides further insights into the drivers of firm performance. Return on Equity (ROE) shows moderate positive correlations with both DE and SIZE, suggesting that firms with higher leverage and larger size may achieve better equity returns, potentially due to the amplification of profits through debt and scale advantages. Conversely, ROE has a negative correlation with liquidity, as indicated by the CACL ratio, implying that firms with high liquidity may experience lower returns, possibly due to inefficiency in utilizing liquid assets for growth. Regression analyses reinforce these insights, with CACL consistently displaying a significant negative relationship with the dependent variable, suggesting that high liquidity might hinder profitability. DE also has a significant positive impact in one of the models, highlighting the potential profitability of effective debt usage. However, the models exhibit limited explanatory power, as seen by moderate R-squared values, indicating that the selected predictors only partially account for variability in firm performance. Other variables, such as TDTA, LDE, CAR, GDP, and inflation, generally do not show significant effects, suggesting more complex interactions that may require further investigation. Overall, these findings emphasize the importance of balancing leverage and liquidity for optimizing returns, while also indicating a need for additional variables or model adjustments to fully capture the factors influencing firm performance.

6. Recommendations

Based on the analysis, several recommendations emerge to optimize firm performance in the context of financial and economic indicators:

- **Leverage Management**: The significant positive correlation between ROE and the debt-to-equity (DE) ratio suggests that debt can be a powerful tool for enhancing returns. However, firms should be cautious with their level of leverage, as excessive debt can increase financial risk. Firms might consider balancing their debt-to-equity ratio to maintain profitability while avoiding excessive risk exposure.
- **Efficient Use of Liquidity**: The negative impact of high liquidity (CACL ratio) on ROE suggests that firms holding excessive liquid assets may not be using them optimally. Firms could look for opportunities to deploy excess cash in investments or projects that generate higher returns, rather than holding large reserves that may drag on profitability.
- **Scale Advantage**: Larger firms tend to have higher EPS, potentially due to economies of scale. Smaller firms might benefit from strategies aimed at scaling up, such as pursuing mergers, acquisitions, or organic growth strategies, to achieve similar scale benefits. This could improve their competitive advantage and enhance overall profitability.

- **Capital Adequacy Strategy**: While the capital adequacy ratio (CAR) provides a safeguard against financial risks, overly conservative capital holdings might limit profitability. Firms could consider adjusting their CAR to ensure they are well-prepared for economic downturns while still allocating sufficient resources for growth opportunities.
- **Further Analysis of Economic Conditions**: With moderate correlations between firm performance and economic conditions like GDP and inflation, firms should stay vigilant to changes in the economic landscape. Implementing flexible strategies that adapt to economic fluctuations—such as inflation hedging or dynamic capital allocation—can enhance resilience in varying economic conditions.
- **Model Refinement for Strategic Insights**: Since the regression models exhibit limited explanatory power, firms may benefit from refining their financial analysis models. Including additional variables or alternative model specifications could provide a more comprehensive understanding of the factors impacting performance, enabling more effective financial planning and strategic decision-making.

By focusing on these areas, firms can work towards optimizing their financial structure, enhancing profitability, and positioning themselves for stable growth in the context of economic changes.

7. Conclusion

The analysis of the 30-firm sample underscores a heavy reliance on debt financing, reflected in high debt-to-asset and debt-to-equity ratios, suggesting that firms are leveraging debt to boost profitability, albeit at a potential cost of increased financial risk. Larger firms benefit from economies of scale, resulting in higher earnings per share (EPS), while liquidity management emerges as a key area, with excess liquidity (CACL ratio) potentially hindering returns on equity (ROE) due to the inefficient use of liquid assets. The recommendations focus on optimizing leverage and liquidity, capitalizing on scale advantages, and maintaining a balanced capital adequacy ratio to ensure financial resilience without sacrificing growth opportunities. Firms are encouraged to refine their models to better capture the complex drivers of performance, considering additional variables to enhance strategic insights. By adopting these measures, firms can aim for a well-balanced financial structure that leverages debt prudently, invests liquidity effectively, and adapts to economic changes, ultimately supporting sustainable profitability and growth. The study posits some limitations as it focused on only 30 selected banks. Moreover, the study incorporates some selective determinants, whereas other potential factors to boost profitability might not include here. Future studies should consider the limitations as potential gaps.

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