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The Influence of Bank-Specific and Macroeconomic Factors on the Profitability of Listed Ghanaian Banks

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Abstract: From 2012 to 2021, the study examines the effects of macroeconomic and bank-specific factors on the profitability of Ghana's listed banks. The study looked at how banks' profitability factors affected their performance metrics, return on equity (ROE) and return on assets (ROA), using a panel data regression model. The results show that bank performance is significantly impacted by both internal and external economic factors. This gives regulators, investors and bank managers important information to use when making decisions to improve financial stability in Ghana's banking industry. The study also demonstrates the crucial relationship between macroeconomic variables and bank profitability metrics, providing empirical support for strategies aimed at creating a stable and lucrative banking environment in Ghana.

Keywords: Banks profitability, macroeconomic indicators, banks specific indicators, commercial banks, Ghana

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1. INTRODUCTION

Instead of merely depending on their function as money marketers or sector intermediates, banks in complex economies must prioritise the advancement

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of economic development (Allen & Carletti, 2012). In many different areas of the economy, they play a crucial role in directing deposits and paying off debt. An economy's sustainability is largely dependent on the efficiency and viability of its financial system. A country's economic standing is a reflection of the quality of its banking system (Mbilla et al., 2021). The resilience and steadiness of a nation's banking sector are essential to its economic expansion and advancement. One of the service areas supporting the expansion of the Ghanaian economy is the banking industry. It helps in the provision of capital, and employment and ensures the transfer of other relevant resources (Yakubu, 2016).

Many governments have made some changes in the banking industry in recent years, to achieve stability and economic growth. The sector has also grown exponentially since the introduction of the Financial Industry Adjustment Programme (FINSAP) in 1988 as a factor of the Economic Recovery Programme of the 1980s (Owusu-Antwi, 2011). FINSAP was introduced in an attempt to address challenges with low profitability, a lack of innovation and technology, a lack of competition and inadequate liquidity in Ghana's banking sector (Sena et al., 2021; Abisuga et al., 2019).

As of 2018, the Bank of Ghana (BoG) collapsed some banks while others were consolidated as a result of liquidity challenges. The implementation of these recapitalisation laws has caused changes in the competitive land space and sparked concerns about how to identify profitability components and how these factors may affect bank profits to redirect the attention of stakeholders to these profitability factors. According to Dadzie (2017), external variables such as GDP, inflation rate, interest rates and banks internal elements significantly affect the financial performance of banks elsewhere. It is, however, unclear if the above factors contribute to banks' financial success in Ghana (Dadzie, 2017). This study was therefore instituted to identify and examine the variables influencing Ghanaian banks' profitability with data spanning from 2012 to 2021.

To achieve the study goals, the following research questions were required to be addressed;

- What internal elements affect the financial success of Ghanaian listed banks?
- What are the major external factors affecting Ghana's listed banks' profitability?

2. EMPIRICAL REVIEW

The Paris-based European Banking Authority (EBA) presents an important noteworthy analysis of the factors affecting the performance of banks globally. The study findings demonstrate that internal bank characteristics and external bank conditions have a significant effect on financial institutions' performance indicators. Notably, the results again found that smaller banks are often linked to lower tax rates, lower deposit interest rates and higher levels of leverage compared to larger banks, suggesting that the differences in taxation and regulation between countries may be a major contributory factor in the differences in the development of banks.

The essence of unique bank characteristics including asset quality and managerial effectiveness as major factors influencing banks' profitability outcomes has been highlighted in historical assessments, such as the work of Athanasoglou et al. (2008). The particular factors that affect banks' profitability in Ghana have been the focus of this investigation. While Aboagye et al. (2008) highlighted the implications of external indicators such as GDP growth and inflation rates, Abor's (2005) research identified capital adequacy, asset quality and management efficiency as the essential factors of banks' financial success.

By evaluating the internal and external factors that impact the financial success of publicly traded banks in Ghana's financial sector, the current study builds on the groundwork laid by earlier research. The knowledge gained from this study clarifies the complex interactions among these different elements and how they all work together to impact the profitability of banks operating in Ghana.

INDEPENDENT VARIABLES

Bank-Specific (Internal) components

Capital Adequacy Ratio (CAR)

One essential financial indicator that banks and regulatory bodies utilise to evaluate a bank's capital capability is the Capital Adequacy Ratio (CAR). It is explained as the capital-to-risk-weighted-assets (RWA) ratio of a bank. To ensure banks have adequate capital to withstand possible losses, CAR protects depositor funds and supports the financial stability of an economy (Greuning

& Bratanovic, 2020). Tier 1 capital and Tier 2 capital are the two fundamental parts of CAR. Banks' core capital which is made up of reported reserves and equity capital is included in Tier 1 Capital. According to the Basel Committee on Banking Supervision (2019), it is the most dependable and accessible type of capital for absorbing losses. Subordinated debt, hybrid instruments and revaluation reserves are examples of supplemental capital that makes up Tier 2. Tier 2 capital presents a buffer against losses even though it is less dependable as compared to Tier 1 capital (Hull, 2018). As a safeguard measure against financial instability, CAR is relevant to banking regulations. It protects depositors and ensures trust in the financial system by guaranteeing that banks can withstand a fair amount of losses before going bankrupt. Regulatory authorities, such as central banks, use CAR as a measure to monitor and control the risk exposure of banks (Greuning & Bratanovic, 2020).

In his study in 1995, Berger explored the association between banks' capital and performance, particularly the effect of capital sufficiency on bank performance in the US banks. The study results indicated a greater capital adequacy ratio (CAR) boosts profitability by presenting a strong buffer against losses.

Bokpin (2013) studied how capital requirements affected Ghanaian banks' profitability and discovered that a larger CAR increased stability and confidence, which in turn improved financial success.

Studies have shown that CAR has a significant impact on a bank's performance. A greater CAR indicates a better capital base, which can result in an increase in investor confidence and low funding costs. However, maintaining a high CAR means, banks are holding excess capital, which could otherwise be used for lending and other profitable ventures. This trade-off between safety and profitability is of key importance to banks' management (Kosmidou, 2017).

CAR is again linked to the broader concept of financial stability. During financial challenges, banks with higher CARs are better positioned to withstand shocks and continue their operations without needing government assistance. The global financial crisis of 2007-2008, had shown the relevance of CAR buffers, which led to the introduction of more stringent capital requirements under the Basel III framework (Blundell-Wignall & Atkinson, 2012).

$$\text{CAR is calculated as} = \frac{TOTAL\ SHAREHOLDER'S\ EQUITY}{TOTAL\ ASSETS}\ X\ 100$$

Deposit to Asset Ratio

A higher deposit-to-asset ratio has a beneficial influence on banks' performance, according to Mensah et al. (2014), who researched the factors influencing bank performance in Ghana. This highlights the relevance of deposits as a dependable source of funding banks.

The components affecting interest margins and profitability among commercial banks across different nations were assessed by Demirguc-Kunt and Huizinga (1999). According to their study, banks around the world that have a greater deposit-to-asset ratio typically enjoy the advantages of more reliable and affordable funding. One important financial indicator that shows the percentage of banks' total assets financed by client deposits is the deposits to asset ratio. Because it sheds light on a bank's funding structure and its preference for more reliable customer-generated deposits over other funding sources like wholesale borrowing. In general, a more secure funding source that is less vulnerable to market swings and liquidity challenges is indicated by a greater deposit-to-asset ratio.

The Deposit to Asset Ratio is usually used as a metric of a bank's liquidity and sustainability. Banks that rely heavily on deposits are generally considered to be in a stronger liquidity position since deposits are less likely to be withdrawn in masses compared to other forms of short-term funding. This makes the bank less vulnerable to liquidity challenges and can contribute to overall financial stability in an economy.

Deposit to Asset Ratio also has implications for banks' profitability and operational strategy. Banks with a greater Deposit Asset Ratio may benefit from lower funding costs, as deposits may typically offer lower interest rates than other categories of funding. This can enhance banks' net interest margin, contributing to the overall profitability of banks. However, an excessively high ratio might also suggest that banks are overly conservative and may not be fully utilising available funding opportunities to maximise returns.

$$\text{It is measured by; DAR} = \frac{TOTAL\ DEPOSITS}{TOTAL\ ASSETS}\ X\ 100$$

Bank Size

Ansah-Adu et al. (2011) studied the factors that influence banks' financial performance in Ghana and concluded that bigger banks typically make more returns. The advantage of economies of scale is that they increase the market power of firms. In a similar vein, Sufian and Habibullah (2009) assessed the variables affecting Chinese banks' profitability. According to the writers, a bank's profitability is positively and significantly impacted by its size. These banks can improve profitability metrics like ROE and ROA by reducing banks' operational costs per unit, due to the efficiency that comes with economies of scale.

Non-Performing Loans (NPL)

Quartey and Afful (2014) researched the multifaceted effects that non-performing loans (NPLs) exert on the operational profits of banks situated within the Ghanaian financial sector and discovered that elevated ratios of non-performing loans substantially diminish the overall profitability of these banks, thereby underscoring the critical necessity for the implementation of robust and effective credit risk management strategies to mitigate these adverse effects.

Kithinji (2010) observed that higher ratios of non-performing loans have a detrimental effect on the financial success of banks, fundamentally due to the increased financial burden imposed by the necessity for higher levels of provision for anticipated loan losses, which ultimately hampers the overall financial success of these banks. NPL is calculated by:

$$\text{NPL} = \frac{TOTAL\ NON-PERFORMING\ LOANS}{TOTAL\ LOANS}\ X\ 100$$

Net Interest Margin

Abor (2005) examined the intricate nexus between the capital structure of publicly listed firms in Ghana and its consequential impacts on their overall profitability. While the research encompassed a diverse array of businesses operating within the Ghanaian market, it particularly indicated that Net Interest Margin (NIM) plays a pivotal role in shaping profitability outcomes using key performance metrics such as ROE and ROA. Furthermore, the study underscored the critical role net interest margin serves to markedly enhance the

financial success metrics of banks operating in Ghana. Thereby accentuating the vital necessity for these financial institutions to proficiently manage their interest rate spreads to optimise their financial success.

Athanasoglou et al. (2008) investigated the various factors that significantly influence the profitability of banks within the context of Greece, meticulously examining a range of critical elements including but not limited to, the net interest margin (NIM) and the prevalence of non-performing loans, while taking into account both industry-specific dynamics and broader external conditions that may exert an influence. Their comprehensive study findings indicated a robust positive nexus between the net interest margin and the overall profitability of banks operating in Greece, thereby demonstrating that an increase in the net interest margin is likely to enhance ROE and ROA.

Owusu-Antwi (2010) researched the effects of macroeconomic variables and the financial profitability of Ghanaian banks. Based on the study, banks' profitability is positively impacted by GDP growth because economic expansion can increase lending activities and lower credit risk, which raises ROE and ROA. By allowing banks to modify interest rates on loans and deposits, moderate inflation was proven to have a favourable influence on profitability. High inflation, however, can lower profitability by raising operating expenses and lowering actual returns. Furthermore, the analysis demonstrated that higher real interest rates have a beneficial impact on bank profitability by expanding the difference between lending and deposit rates, which raises ROE and ROA and improves returns on earnings. NIM is calculated as:

$$\text{NIM} = \frac{\textit{TOTAL INTEREST INCOME} - \textit{TOTAL INTEREST EXPENSES}}{\textit{TOTAL ASSETS}} X\ 100$$

INDEPENDENT VARIABLES

Macroeconomic components

Inflation (INF)

This phenomenon pertains to the velocity at which the aggregate price level for a wide array of goods and services experiences an upward trajectory, ultimately resulting in a reduction of the purchasing power held by consumers and economic agents. A state of moderate inflation can prove to be beneficial for banking institutions, as it typically leads to an elevation in nominal interest

rates, thereby augmenting the interest rate margins that these financial entities can command, which in turn significantly enhances their overall profitability and financial performance. Higher inflation on the other hand can lead to economic instability and increase the risk of loan defaults, which can have a negative impact on performance (Perry, 1992).

Real Interest Rate (RIR)

The nominal interest rate that has been inflation-adjusted is the real interest rate. Real and nominal interest rates are divided into two categories. While the real interest rate is modified to account for inflationary effects, the nominal interest rate does not. A more accurate indicator of borrowing costs and bank returns is the real interest rate (Alper & Anbar 2011).

The real interest rate significantly affects bank performance, according to Alper and Anbar (2011), who looked at the effects of macroeconomic and bank-specific factors on banking performance in Turkey between 2002 and 2010. They came to the conclusion that improved bank performance is correlated with higher real interest rates. Changes in interest rates also have an impact on the amount of interest received, which has a direct impact on banks' performance.

Gross Domestic Product Growth (GDP)

GDP Growth quantifies the rise in a nation's production and economic output. By creating favourable economic conditions that encourage lending and lower credit risk, positive GDP growth typically increases bank profitability. On the other hand, bank profitability may suffer during economic downturns (Athanasoglou et al., 2008).

DEPENDENT VARIABLES

Return on Assets (ROA)

ROA is computed as total net profit divided by net book value of assets. Financial regulators use it to predict structural changes and measure market trends, but it is most commonly employed to assess bank performance. Additionally, by showing how successfully managers use the bank's resources, ROA aids in the evaluation of managerial effectiveness. A greater ROA suggests that the bank is successfully utilising its resources to generate better earnings, hence increasing financial success (Brissimis & Delis, 2008).

Return on Equity (ROE)

ROE calculates net income as a proportion of equity held by shareholders. It assesses a bank's ability to turn a profit from equity investments. According to Flamini and Schumacher (2009), a high return on equity (ROE) indicates that the bank is successfully turning shareholders' equity into sizable profits, which may increase profitability and inspire investor confidence. ROE is calculated as:

ROE= (NET PROFIT)/(SHAREHOLDER S EQUITY) X 100.

CONCEPTUAL FRAMEWORK

The conceptual framework elucidates the intricate relationships between various bank-specific factors, which are unique to individual financial institutions and macroeconomic variables that pertain to the broader economic environment, all of which collectively influence the financial performance metrics of listed Ghanaian banks. In this analytical discourse, ROA and ROE emerge as the primary dependent variables employed in the evaluation of profitability measures, serving as critical indicators that reflect the financial performance and operational efficiency of these banks. Figure 1 below illustrates the nexus among the variables.

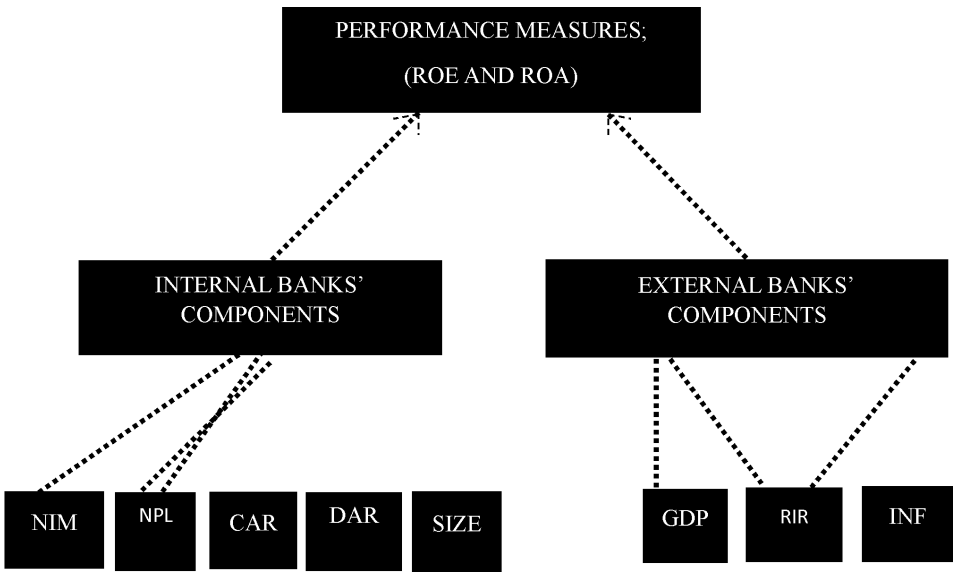

Figure 1: Constructs of the Authors, 2024

3. METHODOLOGY

3.1. Sample and Data Collection

To address the study goals, the authors used secondary data in their analysis. For the study analysis, audited yearly financial statements from each of the eight banks listed on the Ghana Stock Exchange (GSE) were downloaded from the banks' websites and extracted. These banks' data span from 2012–2021 was analysed using the panel data regression research technique because it produces more accurate estimates than cross-sectional or time series data models (Chronopoulos et al., 2013). Once more, the research model is suitable since it examines several variables whose values were derived from secondary sources and are verifiable. The method is also favoured because it is rigorous, efficient and clear, enabling comprehensive statistical analysis, generalising results, drawing logical inferences from numerical data and making it simple to compare various studies (Dietrich & Wanzenried, 2011).

3.2. Model for Data Analysis

The links between two important performance measures (ROA and ROE) and eight significant factors are examined in this study using a panel data regression approach. The model offers a thorough examination of the relationships between each independent variable and the dependent variables. Since all the variables used in the research are speculative, the random effect technique was used to check the robustness of the data to serve the purpose of the investigation. The analysis's study models are shown below.

$$ROA=\beta+\beta Bsize+\beta CAR+\beta NPL+\beta DA+\beta NIM+\beta INF+\beta GDP+\beta RIR+\mu$$

$$ROE=\beta+\beta Bsize+\beta CAR+\beta NPL+\beta DA+\beta NIM+\beta INF+\beta GDP+\beta RIR+\mu$$

Where:

μ denotes the error term

β represents the intercept

4. RESULTS AND DISCUSSIONS

Descriptive Statistics

The descriptive statistics are shown in Table 1, which provides an overview of the data used in the analysis. The table also demonstrates the relevance of the independent variables against the dependent variables.

Table 1: Descriptive Statistics

Variable	*Total Count*	*Mean*	*St.Dev*	*Mini*	*Max*
ROA	80	2.360	0.7117	1.10	4.40
ROE	80	17.500	6.0470	2.00	35.80
B size	80	2.159	1.5210	0.50	12.00
DA	80	73.880	47.8800	5.33	487.89
NIM	80	5.897	5.5890	0.92	51.93
NPL	80	5.487	1.5950	2.50	10.10
CAR	80	17.411	2.8560	11.60	25.40
INF	80	11.576	3.8010	7.07	17.46
GDP	80	6.310	3.5910	0.40	14.00
RIR	80	8.460	2.8280	3.90	12.50

From Table 1, the mean values of the dependent variables (ROA and ROE) are 2.360 and 17.500 and their corresponding standard deviations are 0.7117 and 6.0470, respectively. The results imply that listed banks in Ghana can generate about 2.360 and 17.500 Ghana cedi from their investment in asset and equity capital, respectively. This will lead to a profit generation of 4.40 and 35.80 Ghana cedi for the study period. The losses these banks may incur range from 1.10 Ghana cedi to 2.00 Ghana cedi. DA has a mean value of 73.880 and a standard deviation of 47.8800 while NIM has a mean score of 5.897 and a standard deviation of 5.5890. CAR and NPL had means scores of 17.411, and 5.487 and their respective standard deviations of 2.8560 and 1.5950 for the study period. Bsize also has a mean score of 2.159 and its standard deviation is 1.5210. With regards to the macroeconomic variables (INF, GDP and RIR), their means scores are 11.576, 6.310 and 8.460 and the standard deviations are 3.8010, 3.5910 and 8.460, respectively for the research period. The means values of the study indicate all the constructs considered in the research are essential to listed banks' financial success in Ghana for the period as their profit generation ranged from 4.40 Ghana cedi to 487.89 Ghana cedi. The study results are consistent with studies by Adams and Mehran (2005); Andres and Vallelado (2008); Demirgüç-Kunt and Huizinga (1999) and Ghosh (2015), who conducted their studies across various parts of the globe. It therefore implies that stakeholders within the industry should implement strategies regarding the above variables discussed as their contributions to banks' financial success in Ghana and Sub-Sahara Africa are significant.

4.2. Pearson Correlation among the Variables

The Pearson correlation matrix in Table 2 illustrates the connections between several internal and external variables and bank profitability metrics, ROA and ROE.

Table 2: Pearson Correlation among the Variables

	ROA	*ROE*	*Bsize*	*DA*	*NIM*	*NPL*	*CAR*	*INF*	*GDP*
ROE	0.856***								
Bsize	-0.129	-0.122							
DA	0.065	0.091	-0.088						
NIM	0.334**	0.365**	-0.066	0.920***					
NPL	0.401***	0.409***	0.147	0.053	0.193				
CAR	0.500***	0.530***	0.288*	0.103	0.316**	0.432***			
INF	0.081	0.054	-0.110	-0.136	-0.094	0.005	0.070		
GDP	0.121	0.073	-0.200	0.059	0.069	-0.166	-0.371**	-0.541***	
RIR	0.175	0.141	-0.336**	-0.030	0.030	-0.166	-0.322**	0.296**	0.547***

Table 2 illustrates the relationships among the variables used in the study. This was done to eliminate highly correlated variables used for the study analysis. It is observed that the correlation among the variables is weak and therefore appropriate for this study. Among the variables, only NIM and DA have a high correlation value (0.920). The rest of the variables have correlational values ranging from positive/negative figures of 0.005 to 0.530. The study findings demonstrate there is no multicollinearity issue among the variables or if there is any available, it is weak and does not affect the variables utilised for the study analysis.

Regression Analysis of the Variables

Table 3 presents the regression models that analyse the impact of both external and internal factors on the financial performance of Ghanaian listed banks. ROA and ROE are used as the performance measures in these models, whereas the external variables are RIR, INF and GDP while, the bank-specific variables are Bsize, NIM, CAR and NPL.

The regression analysis results for Models 1 and 2 are illustrated in Table 3, which examines the nexus among the variables. The adjusted R-square of the performance measures (ROA and ROE) are 0.624 and 0.621, respectively. This result implies that the model can explain about 62.4% and 62.1% of the study

Table 3: The Nexus between the Independent and Dependent Variables

	Model 1	*Model 2*
Variables	**ROA**	**ROE**
Constant	0.045600	2.72600
Bsize	-0.090760*	-0.80900*
DA	-0.015191***	-0.13688***
NIM	0.143280***	1.31160***
NPL	0.077650*	0.60330*
CAR	0.082620**	0.67340**
INF	0.060370*	0.16010
GDP	0.097490*	0.37310
RIR	-0.046210	-0.04070
Observations	80	80
R-squared	.624	.621
F-value	10.120	9.210

sample of ROA and ROE, respectively which are the performance measures in the study. The F statistic values during the period were 10.120 and 9.210 for Models 1 and 2 respectively. The model's significance was demonstrated by the F-statistics as contained in Table 3 above. The results suggest that the association between Bsize and DA and banks' financial measure, ROA is negative and insignificant. This implies that, these two independent variables do not contribute to listed banks financial success in Ghana during the period. Yakubu (2016) obtained similar results when the author conducted a study on the determinants of banks' financial performance in Ghana. The nexus between the rest of the independent constructs and ROA is positive but insignificant. This means that, though these identified variables contribute to banks' performance measure, ROA, their contributions are negligible confirming a study result by Kosmidon (2017). However, the nexus between NIM, NPL and CAR and ROE, one of the performance measures is positive and significant. By implication, these variables are the reasons for the listed banks' financial performance in Ghana. Studies by Hull (2018), Mensah et al. (2014) and Quartey and Afful (2014) claimed that higher CAR demonstrates higher capital which in effect can lead to higher investor confidence. Higher DPL according to Quartey and Afful is detrimental to a firm's financial success while higher NIM is an important element of a firm's profit according to Abor (2005). In summary, equity capital holders should invest more in firms

that implement strategies attempting to improve these bank's performance components if they want their interests to be safeguarded. The macroeconomic indicators regarding both profitability measures are positive and relevant to banks' performance in Ghana except RIR which demonstrates a negative nexus with listed banks' financial performance. The policy implications regarding these external banks' profit factors are that a policy framework is needed to increase economic expansion which could facilitate bank performance and stabilise the macroeconomic environment that allows for achievable inflation rates in Ghana. This will assist bank managers create more products for higher profits.

5. CONCLUSION

The goal of the study was to identify the elements that influence the profitability of Ghanaian listed banks by taking into account the performance of both internal and external banks variables. The findings show that listed banks' value creation during the time can be attributed to the fundamental aspects of their performance that have been recognised in the literature. Higher NIM indicates better profit and highlights the significance of interest income and expenses in the bank's overall performance, according to the study's findings. The findings once more demonstrate a positive and significant correlation between CAR and ROE, indicating that banks with higher capital have a stronger ability to withstand financial shocks, resulting in a more stable and lucrative operations. The study results showed a positive and substantial association between NPL and banks' profits, although other literature identified a strong negative relationship between NPL and profitability. The results suggest that implementing aggressive lending practices could lead to a flourishing banking industry. According to the results, Bsize has a detrimental effect on profitability, indicating that economies of scale lose their advantages when inefficiencies persist past a certain point. With respect to macroeconomic indicators, the nexus between GDP and banks profitability is positive, implying that an economy's expansion increases bank business and significantly reduces default risk, resulting in a higher level of profits that can be generated in several ways. A bank's profit is impacted by the inflation rate since banks profit from efficient inflation rate control. The data supports the notion that banks profit from low inflation as businesses must contend with rising nominal interest rates, which raise lending margins. Since

higher real interest rates can lower overall returns on assets and allegedly raise borrowing costs and default risk, even when they improve the return generated by the entire portfolio, RIR has a negative correlation with banks' financial success. According to the policy's implications, stakeholders should support the improvement of interest margin management techniques to guarantee long-term profitability, uphold a strong capital adequacy ratio to protect against financial instability and foster an environment in which banks can make money, including low inflation and faster economic growth.

Declarations and Conflict of Interest

Ethical Approval and Consent to Participate: Not applicable.

Consent for publication: Not applicable.

Availability of Data and Materials: Upon reasonable request, the associated author is willing to make the datasets generated and/or analysed during the current work available.

Competing Interests: The writers disclose that they have no conflicting interests that could influence the content of this article.

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