THE EFFECT OF FINANCIAL RISK AND CAPITAL STRUCTURE ON THE FINANCIAL PERFORMANCE OF BANKS ON THE INDONESIAN STOCK EXCHANGE

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Abstract

The impact of capital structure and financial risk on the financial performance of banks listed on the Indonesia Stock Exchange is examined in this study. The primary question posed is how profitability as determined by return on assets is impacted by liquidity risk, credit risk, operational risk, leverage, and net interest margin. In order to give a thorough grasp of the elements influencing bank performance, this study aims to investigate the relationships between these variables. Banks' yearly financial reports for the 2020–2024 period are subjected to panel data regression analysis as part of the quantitative research methodology. The addition of net interest margin as a variable that mediates the association between financial risk and profitability is what makes this study novel. It is anticipated that the study's findings will demonstrate how effective capital structure management and financial risk reduction can boost bank profitability. The significance of an integrated risk management strategy is emphasized in the study's conclusion. The implications of the study provide practical recommendations for financial managers, investors, and regulators, and open up space for further research on external factors that affect banking performance.

Keywords: Capital Structure, Financial Performance, Financial Risk

INTRODUCTION

This strategy assists organizations in reducing the effects of unpredictability and enhancing their financial security. The focus lies on a structured way of handling risk, recognizing that investment choices need to balance possible gains with associated risks Neykov & Pashaly, (2024). Additionally, the ongoing application of risk management allows businesses to foresee potential losses in advance and develop better strategies for minimizing them. Consequently, organizations can reach their financial objectives more sustainably while preserving the trust of their stakeholders.

According to Xu, (2024), the use of debt in a company's capital structure can increase its profitability potential, but it also increases financial risk. This creates a dilemma for financial managers in balancing the use of debt to maximise returns with the higher risk of bankruptcy. Therefore, careful analysis is needed to determine the optimal level of leverage that can support performance without sacrificing the company's financial stability

Research by Pratama et al., (2025) shows that bank health indicators significantly influence credit risk, which directly impacts the financial performance of the Indonesian banking sector. These findings confirm that a bank's ability to manage financial risk, particularly credit risk, is a crucial factor in maintaining stable profitability and operational efficiency. An suitable capital structure and efficient financial risk management are important factors in enhancing the financial performance of banks listed on the Indonesia Stock Exchange in the setting of the Indonesian capital market. Therefore, in order to provide an empirical understanding of the financial dynamics of the national banking industry, more study into the interaction between capital structure and financial risk on bank financial performance is essential.

Research conducted by Sudrajat et al., (2024) shows that risk is a crucial element that affects the stability and operational efficiency of banking institutions in Indonesia. Their study reveals that various determinants of financial risk significantly affect variations in bank profitability, particularly in a volatile domestic market environment. The findings of this study highlight the need for more thorough scientific research on the connection between financial risk and financial performance in the Indonesian banking sector by giving banks listed on the Indonesia Stock Exchange (IDX) a crucial foundation for risk management in order to sustain their financial performance.

Manurung, (2022)indicate that both the size of a company and its level of debt can collectively influence its value, with Return on Assets (ROA) serving as a crucial measure of financial success. This suggests that a company’s worth is influenced not only by its financial results but also by structural components that play a significant role in its overall financial prosperity. Their findings emphasize the necessity of coordinating growth strategies with prudent management of the capital framework. Improving operational effectiveness becomes equally important, as it aids in enhancing ROA and subsequently boosts the firm’s value. Therefore, attaining enduring company value necessitates a synergistic approach involving robust financial outcomes alongside an effectively organized structural design.

In the financial sector, having a strong capital structure is crucial. Research conducted by Gautam and Bangshi emphasizes that the connection between long-term debt, overall debt, and profitability, represented by Return on Assets (ROA), offers important insights into how banks can structure their capital for enhanced performance Gautam & Bangshi, (2024) Additionally, elements like growth, liquidity, and the size of a firm have proven to be key factors when making decisions regarding capital structure in diverse industries Rehan et al.,

(2023)These results highlight the necessity of harmonizing debt and equity to maintain a competitive edge and ensure operational effectiveness. Effective management of capital structure can also reduce financing expenses and bolster a bank's ability to withstand financial uncertainties.

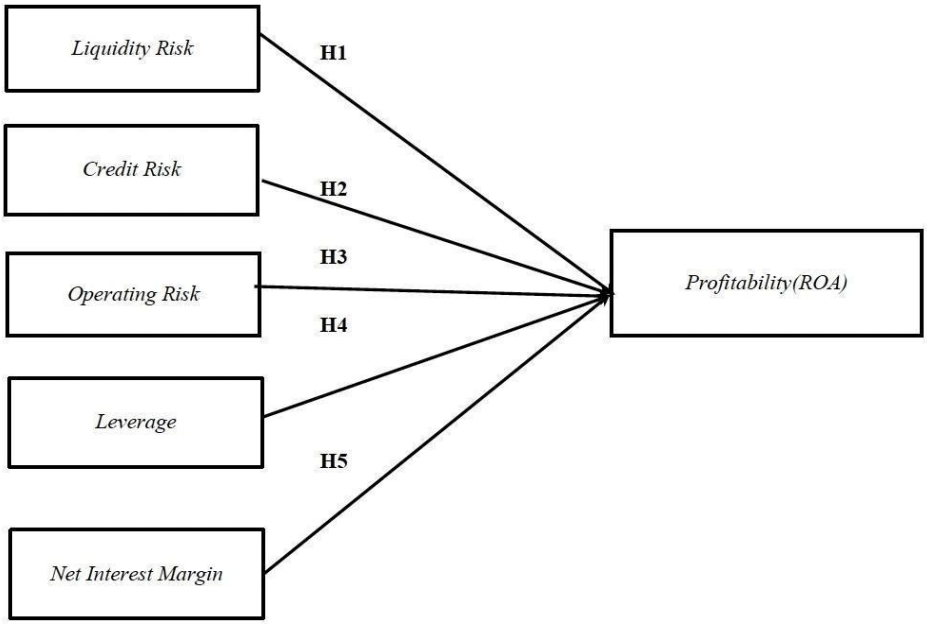
Thus, grasping these factors is vital for creating sustainable financial plans. Furthermore, the impact of capital structure on a business's financial outcomes cannot be overlooked. The research by Zhang indicates that in the pharmaceutical industry, the ratio of debt to equity and various leverage metrics significantly affect firm performance, with organizations that have a more optimized capital structure typically enjoying greater profitability Zhang, (2022) These results underscore the essential role of financing choices in influencing a company's capacity to generate profits. An uneven capital structure may lead to increased financial strain and diminished operational efficacy. Therefore, it is vital to refine the balance between debt and equity to maintain a robust ROA and enhance overall financial success.

REVIEW OF LITERATURE

Research conducted by Mustafa et al., (2021) confirm that credit risk does not significantly impact bank performance metrics. The study, which analyzed data from various banking sectors, recommends that financial institutions prioritize other operational risks for better resource allocation. The phenomenon of liquidity risk exhibits a more uniform trend, as evidenced by the findings of The impact of operational risk presents a heterogeneous picture: considered insignificant for banking institutions according to Mustafa et al., (2021), but significant for ROA. This suggests that while operational risk may not broadly affect overall bank stability, it can notably influence profitability measures like return on assets. Consequently, banks should tailor risk management strategies to address ROA-specific vulnerabilities to enhance financial outcomes.

Furthermore, Hu points out that excessive growth in corporate debt ratios can trigger greater systemic risks, fostering a perilous cycle where elevated debt aggravates economic conditions and heightens overall risk Chaochao, (2023). This highlights the necessity for rigorous debt oversight to avert the worsening of financial crises. Moreover, external elements like global market volatility can intensify this cycle, magnifying the effects of systemic risks. Regarding weaknesses in capital structure, Nguyen et al. reveal that elements such as profitability and firm size contribute to shaping financial risk, with leverage and firm size showing a positive link to the extent of that risk Nguyen et al., (2023). These insights underscore the value of diversifying funding avenues to lessen dependence on high leverage. Additionally, bigger firms might possess superior abilities to manage risks, yet they are still susceptible to profitability shifts that could spark financial problems..

Figure 1
Figure Conceptual



RESEARCH METHOD

In order to test the relationship between the independent variables—Liquidity Risk, Credit Risk, Operating Risk, Leverage, and Net Interest Margin—and the dependent variable, which is Profitability (ROA) in banks listed on the Indonesia Stock Exchange (IDX), this study employs a quantitative approach with an explanatory research method. The annual bank financial reports that served as the study's source of secondary data were examined using panel data regression with the use of EViews software. The combination of cross-sectional and time series data (2020–2024) led to the selection of this analysis.

Table 2
displays the description of the variables included in this study

Variable Type	Variable Name	Proxy	Symbol	Formula	Reference
Dependent variable	Profitability	Return on assets	ROA	$\frac{Net\ Income}{Total\ Assets}$	Arifaj & Baruti, (2023)
Independent	Credit risk	Non Performing Loan Ratio	NPL	$\frac{Non\ Performing\ Loans}{Total\ Loans}$	Arifaj & Baruti, (2023)
Independent	Liquidity risk	Loan to Deposit Ratio	LDR	$\frac{Total\ Loans}{Total\ Deposits}$	Oudat et al., (2023)
Independent	Operational risk	Cost to Income ratio	OPR	$\frac{Operating\ Expense}{Total\ Assets}$	Oudat et al., (2023)

Independent	Leverage	Debt to Equity Ratio	DER	$\frac{Total\ Debt}{Equity}$	Cobbinah et al., (2024)
Independent	Net interest margin	Interest Income	NIM	$\frac{(Interest\ Income - Interest\ Expense)}{Interest\ Income}$	Sifrain, (2025)

Sampling Method

Purposive sampling is the method of sampling that is employed. The selection of samples based on certain criteria in accordance with the research objectives was one of the factors that led to the selection of this method. The following criteria were applied in this study:

1. Commercial banks listed on the Indonesia Stock Exchange during the period 2020–2024.
2. Banks that went public before 2020.
3. Banks that consistently published complete annual financial reports during the period 2020–2024.
4. Banks that had complete data related to the research variables (ROA, LDR, NPLR, OPR, DER, NIM).

Table 2
Sampling Criteria

Description	Number
Commercial banks listed on the Indonesia Stock Exchange for the period 2020–2024. Excludes Islamic banks	36
Banks that have not gone public/IPO after 2020.	(5)
Banks with incomplete data in this study.	(9)
Banks eligible for sampling.	22
Total data used for the study (22 × 5 years).	110

The steps for evaluating the regression model in this study are as follows. The following testing steps must be used to choose the best model before testing the theoretical hypothesis for the panel regression model.

RESULTS AND DISCUSSION

Descriptive statistics for the dependent and independent variables on Return on Assets (ROA) in the banking industry for the years 2020–2024 are shown in Table 3. These variables include credit risk, liquidity risk, operating risk, leverage, and net interest margin. According to the findings of hypothesis testing, there is no significant association between any of the independent variables and ROA, according to the null hypothesis (H_0), but there is, according to the alternative hypothesis (H_1). Marginal significance is taken into consideration at the 10% level ($p < 0.10$), whereas statistical significance is evaluated at the 5% level ($p < 0.05$). The discussion highlights the implications for risk management and financial performance while interpreting these findings within the framework of banking literature.

The results were gathered in order to determine whether ROA is impacted by credit risk. The processing results generated an estimated coefficient of 0.001833, which suggests that an increase in interest risk will boost ROA and vice versa. It may be determined that

Credit Risk has no effect on ROA because the t-statistic value of 0.564258 gave a p-value of 0.5733 > 0.05, which indicates that Ho is accepted (Ha is rejected).

The purpose of the results was to determine whether ROA is impacted by liquidity risk. According to the data, the calculated coefficient was -0.0084708, meaning that ROA will drop as liquidity risk increases and vice versa. Given that the t-statistic value of -1.74990 yields a p-value of 0.0820 < 0.1, indicating that Ho is rejected (Ha is accepted), it can be said that ROA is significantly impacted negatively by liquidity risk.

The purpose of the results was to determine whether operating risk had an impact on ROA. The findings of the investigation obtained an estimated coefficient of -0.092872, which suggests that an increase in Operating Risk will decrease ROA and vice versa. With a p-value of 0.0947 < 0.1 and a t-statistic value of -1.680510, it can be determined that operating risk significantly lowers ROA. Ho is rejected, whereas Ha is approved.

The purpose of the results was to determine whether leverage had an impact on ROA. An rise in leverage will result in an increase in ROA, and vice versa, according to the processing findings' predicted coefficient of 0.000125. It is concluded that leverage has no influence on ROA because the t-statistic value of 0.169181 produces a p-value of 0.8659 > 0.05, indicating that Ho is rejected (Ha is accepted).

The results were gathered in order to determine whether ROA is impacted by net interest margin. According to the data, the projected coefficient was 0.049043, meaning that ROA will rise as bank size increases and vice versa. Since Ho is accepted based on the t-statistic value of 0.169181 and the p-value of 0.8659 > 0.05, it can be said that ROA is significantly positively impacted by net interest margin.

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Table 3
Descriptive Statistics

	ROA	NPL	LDR	OPR	DER	NIM
Mean	**0.005303**	**0.037109**	**0.970765**	**0.040150**	**4.859402**	**0.574592**
Median	**0.007159**	**0.029172**	**0.832634**	**0.028834**	**4.751109**	**0.585329**
Maximum	**0.044167**	**0.284287**	**4.836969**	**0.226460**	**16.07858**	**0.982571**
Minimum	**-0.180577**	**2.41E-05**	**0.296698**	**0.003211**	**0.080986**	**0.024915**
Std. Dev.	**0.023786**	**0.036801**	**0.609515**	**0.032355**	**3.018540**	**0.193542**

The Effect of Credit Risk on ROA

Because credit risk affects bank performance, financial studies have placed a lot of emphasis on the relationship between credit risk and return on assets (ROA). Numerous studies have demonstrated that a rise in credit risk is typically linked to a fall in ROA, primarily because non-performing loans have a negative financial impact on bank profits. For instance, Ally(Ally, 2022) (2022) found that non-performing loans significantly reduce return on assets (ROA), highlighting the necessity for banks to take a cautious approach to credit risk management. Additionally, research on the UAE region demonstrates that loan loss provisions and non-performing loans both significantly lower ROA, underscoring the significance of effective credit risk management Ally, (2022). The findings highlight the importance of upholding high asset standards for the stability and profitability of banks. As a result, it is crucial for banks to improve their strategies for managing credit risk in order to diminish possible losses and promote improved financial results.

Baidury & Anggraeni, (2025)research indicated that credit risk has a substantial and adverse effect on ROA in rural banking institutions in Indonesia, implying that operational inefficiencies and poor risk management can reduce profit margins. The findings highlight the crucial importance of effectively managing credit portfolios to maintain financial health in these organizations. As a result, it is important to implement more rigorous credit assessment procedures and improve monitoring systems to secure more reliable and sustainable financial results.

The Effect of Liquidity Risk on ROA

Liquidity Risk's Impact on ROA by Naoaj (2023) found that there was a negative association between liquidity risk and Return on Assets (ROA) in Bangladeshi commercial banks, indicating that higher liquidity risk is linked to lower ROA. This conclusion is consistent with broader studies, which indicate that excessive liquidity risk can reduce bank profits. Furthermore, the findings highlight that efficient liquidity management is an important factor in maintaining the stability and profit performance of banks.

On the other hand, research conducted by Thoa, (2022) reveals that ineffective management of liquidity risk significantly detrimentally affects banks' financial performance, demonstrating that banks that do not efficiently manage liquidity often see a drop in their return on assets (ROA). These results underscore the crucial importance of having sufficient liquidity to enhance and maintain profitability. Consequently, it is vital to reinforce liquidity strategies and improve cash-flow oversight as key actions to boost the overall performance of banks.

The Effect of Operating Risk on ROA

Yousef et al., (2023), Indicates that an escalation in operating risk adversely affects the financial performance of banking institutions, particularly with respect to Return on Assets (ROA).In this scholarly work, operating risk is analyzed through a variety of operational loss occurrences, including but not limited to system malfunctions, human errors, fraudulent activities, and disruptions in internal processes, all of which result in financial detriments. The results elucidate that an increase in the frequency or intensity of operational losses correlates with a diminished capacity for banks to generate profits, as unanticipated expenses escalate and operational efficacy wanes. These results highlight how crucial it is to effectively manage operational risk in order to maintain bank profitability and guarantee ROA stability.

The Effect of Leverage on ROA

Tesema, (2024)conducted an examination of the impact of capital structure, as represented by leverage ratios, on corporate profitability, specifically focusing on return on assets (ROA). The research revealed that leverage exerts a negative and statistically significant effect on ROA, indicating that firms with elevated debt levels tend to encounter diminished profitability. This phenomenon arises from substantial debt commitments that escalate interest expenditures and financial strain, which in turn lead to a decrease in net income and impair operational efficiency. The results underscore that an excessive degree of leverage undermines financial stability and constrains a firm's capacity to yield satisfactory returns, thereby reinforcing the imperative for prudent management of capital structure to avert detrimental profitability consequences.

The investigation by (Widiasmara et al., 2024) points out that leverage adversely affects ROA. Their research shows that an increase in the debt-to-equity ratio (DER) renders companies more susceptible to financial risks, which diminishes the profit potential generated from their assets. This implies that relying more on debt exerts extra pressure on a company’s capacity to uphold robust profitability. Therefore, meticulous management of capital structure is crucial to ensure that leverage does not obstruct the achievement of optimal ROA.

The Effect of Net Interest Margin on ROA

According to Mashamba et al., (2023)amba et al. (2023), NIM is essential for bolstering bank profitability, and a larger NIM indicates the bank's capacity to produce more revenue from its interest-earning assets. The study finds that increases in NIM consistently contribute to improvements in (ROA), indicating that efficient interest management directly boosts overall financial performance. This positive relationship suggests that banks with stronger pricing power and better asset–liability management are more capable of enhancing profitability, making NIM one of the key internal determinants of ROA in the international banking sector.

Jílková & Kotěšovcová, (2022) point out that net interest margin (NIM) serves as a primary metric for assessing the profitability of banks, stressing that proper handling of NIM can greatly affect return on assets (ROA). In addition, further investigation by Chantha et al. (2024) supports the significance of NIM by showing that effective management of both assets and liabilities, particularly concerning NIM, directly contributes to enhancing ROA. These observations imply that a bank's capability to preserve a consistent interest margin is crucial for maintaining its profitability. Therefore, improving NIM not only boosts interest earnings but also fortifies the bank's overall financial results by enhancing ROA.

At the same time, Dani et al.,(2023)remark that calculations of NIM should take into account credit risk and liquidity ratios, since both elements can influence overall financial outcomes and subsequently render ROA more vulnerable to changes.

Within the current literature, it is clear that NIM has a positive correlation with ROA, where improved management of NIM can result in increased bank profitability. Nevertheless, external factors such as economic conditions, risk levels, and operational expenses should also be taken into account to achieve a more thorough comprehension of these outcomes.

Table 4
T test (partial test)

Variabel	Coefficient	Prob.	Conclusion
Credit Risk	**-0.084708**	**0.0820**	**Not significant to ROA**
Liquidity Risk	**0.001833**	**0.5733**	**Not significant to ROA**
Operating Risk	**-0.092872**	**0.0947**	**Not significant to ROA**
Leverage	**0.000125**	**0.8659**	**Not significant to ROA**
Net Interest Margin	**0.049043**	**0.0000**	**Significantly positive impact on ROA**

Regression Model Research

In this study, the analysis method used is multiple regression panel data analysis. This method describes the relationship between the independent variables of Liquidity Risk (LDR), Credit Risk (NPLR), Operating Risk (OPR), Leverage (DER), and Net Interest Margin (NIM) and the dependent variable of Return on Assets (ROA). The available data will be processed and tested using E-Views software.

$$ROA_{it} = -0.018394 + 0.001833LDR_{it} + -0.084708NPLR_{it} + -0.092872EFFR_{it} + 0.000125\ DER_{it} + 0.000125\ NIM_{it}$$

Where:

- ROA = Return on Assets (dependent variable)
- LDR = Loan to Deposit Ratio (Liquidity Risk)
- NPLR = Non-Performing Loan Ratio (Credit Risk)
- EFFR = Efficiency Ratio (Operating Risk)
- DER = Debt to Equity Ratio (Leverage)
- NIM = Net Interest Margin
- β_0 = constant
- β_1–β_5 = regression coefficients

CONCLUSION

According to the study's findings, ROA is strongly positively impacted by Net Interest Margin (NIM) but not by Liquidity Risk, Credit Risk, Operational Risk, or Leverage. This provides tangible benefits for financial managers and investors through reduced costs, smoother decision-making processes, and increased competitiveness by emphasizing NIM development without the need for excessive hedging against irrelevant risks. As a result, managers can allocate funds to drive innovation in financial products that increase long-term profits.

Furthermore, this research shows that investors can evaluate company performance more accurately, avoid errors in assessing conventional risks, and select investment options

with high NIM for optimal results and more efficient portfolio diversification strategies. Ultimately, this reduces the risk of investment mistakes amid unstable economic conditions.

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