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Interest Rates Moderating Effect of Financial Risk’s Impact on Indonesia’s Financial Performance List of Banks

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ABSTRACT

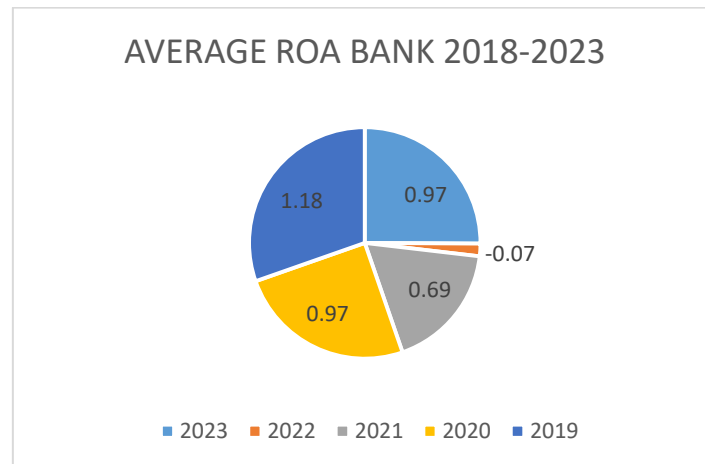
In this study, the effects of financial risk as measured by the Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), Operating Costs on Operating Income (BOPO), Loan to Deposit Ratio (DPR), and Net Interest Margin (NIM) on financial performance as measured by the Return to Asset (ROA) ratio are tested and examined for their moderating effects. additionally, the way in which LDR mitigates the impact of NPL on financial performance. During the years 2018–2023, this study was carried out at banking institutions that were listed on the Indonesia Stock Exchange. The sample acquisition technique in this observation uses the purposeful sampling method. Data obtained by visualizing secondary data obtained based on financial reports from the Indonesia Stock Exchange website at www.idx.co.id and banking company websites. The system utilized in this observation is descriptive quantitative, and statistical analysis data in this study were tested using partial least square and SEM with the help of Warp PLS 8.0. The study's findings show that while BOPO significantly negatively affects banking financial performance, CAR, NPL, LDR, and NIM have little effect on that performance. However, interest rates can mitigate the effects of LDR and NIM on the financial performance of banking companies. And interest rates cannot moderate the impact of CAR, NPL and BOPO on banking financial performance. While NPL has a positive effect on LDR, LDR cannot mediate the effect of NPL on banking financial performance.

Keywords: Interest Rate, Financial Performance; Moderating Effect

INTRODUCTION

The wheels of the economy within the realm of business have a very important role for society, government, entrepreneurs and investors in supporting the development of a country. The bank functions as a payment system, and controls inflation, act as a monetary authority, and stabilizes the Indonesian economy (Wiratno et al., 2018). The financial performance of banks is a reflection of the economic results obtained by banks within a certain period of time, including the the gathering and allocation of financial resources (Arsyad & Haeruddin, 2022). In the current era of rapid economic growth, banks are required to maintain public confidence. By maintaining stability and striving for positive performance in the company. Overall positive performance can help maintain the financial system's stability (Rahayu et al., 2021). An assessment of banking health can be done by looking at the financial performance of the bank

itself (Rohimah & Mahardhika, 2022). Among the indicators used to observe the bank's financial performance is Return on Asset (ROA) (Sawitri, 2018).



Source: Data processed 2024

Figure 1 . Average ROA

Based on Figure 1, it can be concluded that from 2018-2021, the average ROA in banks faced a decline due to the COVID-19 pandemic, increased again in 2022 after the completion of the pandemic period, and continued to move up in 2023. Meanwhile, banks also have several risk factors in carrying out their financial performance. There are several measures in measuring banking risks that affect financial performance, (Dini & Manda, 2020) including capital adequacy risk (CAR), credit risk (NPL), operational risk (BOPO), liquidity risk (LDR), market risk (NIM) interest rate risk (SBI), and other business risks. These risks can affect the financial performance of banks positively or negatively (ALI et al., 2018). The first factor is capital adequacy risk. The capital adequacy risk assessment that is commonly utilized in measuring bank health is the Capital Adequacy Ratio (CAR). Capital Adequacy Ratio illustrates the bank's proficiency in terms of capital. Capital is the funds available to underwrite banking activities (Hanafi & Imelda, 2020). CAR can be measured by dividing capital against risk-weighted assets (Safitri et al., 2021). Research conducted by (Juwita et al., 2018) and (Safitri, Suyanto, et al., 2020) stated that CAR has a positive impact on return on assets. In the meanwhile, studies carried out by (Fani et al., 2018) and (Aprilia & Soebroto, 2020) explained the opposite that CAR has a negative effect on ROA .

The second risk factor is credit risk. Credit risk assessment is generally done using the Non-Performing loan (NPL) ratio. NPL is the ratio of total bad and substandard loans to total loans (Azizah et al., 2021). Some earlier studies carried out by (Faradillah et al., 2020) and (Teshome et al., 2018) stated that ROA is negatively impacted by NPL. In the meanwhile, studies carried out by (Harahap & Effendi, 2020) and (Yusuf & Surjaatmadja, 2018) states otherwise if NPL has a positive effect on ROA. The third risk factor is the operational risk factor. The bank's operational risk assessment in this case uses the ratio of Operating Expenses to Operating Income (BOPO) (Winarni et al., 2022). The results of previous research by (Mwangi et al., 2022) and (Hamdi et al., 2021) explain that BOPO has a negative effect on ROA. Meanwhile, research conducted by (Dayana & Untu, 2019) and (Arintoko, 2021) explains that BOPO has a positive impact on ROA.

The fourth risk factor is liquidity risk. To measure liquidity risk using Loan to Deposit Ratio (LDR). Previous research on the effect of LDR on ROA has several different and inconsistent results. Research by (Safitri et al., 2021) and (Ahmed et al., 2018) states that LDR has a beneficial impact on ROA. Meanwhile, the results of research by (Dayana & Untu, 2019) and

(Wasiaturrahma et al., 2020) state that LDR has a adverse impact on ROA. The fifth risk factor is market risk, market conditions with various stability will affect the Company's performance in this case referring to the Company's profit. Research by (Adnanhasan et al., 2020) and (Suparno et al., 2022) states that NIM has a beneficial impact on ROA. Meanwhile, research by (Wood & McConney, 2018) and (Dayana & Untu, 2019) states the opposite, namely ROA is negatively impacted by NIM.

Interest rates are a key tool of monetary policy and an important macroeconomic variable that is positively related to a country's economic growth (Ahmed et al., 2018). The rise and fall of interest rates will spur several macro indicators that affect the micro economy. Numerous research projects have examined the connection between financial risk and banking financial performance. Research conducted by (Sahyunu & Aprianti, 2021) in analyzing , NPL has a negative effect It was discovered that CAR had a favorable impact on the variables influencing financial performance, BOPO has a negative effect and LDR has no effect on financial performance proxied by ROA. This is consistent with studies carried out by (Wood & McConney, 2018) in Risk factors' effects on Barbados' commercial banking industry's financial performance which states that CAR has a beneficial impact, NPL has a detrimental impact, BOPO has a detrimental impact and LDR has a negative effect.

Meanwhile, the results of research by (Darwis et al., 2018) in the influence of CAR, NPL, LDR and interest rates on banking financial performance, produced different findings, namely that CAR, NPL, LDR and interest rates have no effect on financial performance. This finding is consistent with studies carried out by (Jaouad & Lahsen, 2018) in Factors influencing bank performance: Moroccan empirical data, which states that CAR has no effect on ROA, NPL has no effect on ROA and only LDR has an effect on ROA.

The existence of gap problems in this study and the phenomenon of fluctuating banking ROA so that it can be concluded if This study aims to investigate how financial risk affects banking financial performance, using interest rates as a moderating factor. The banking industry was chosen because banking activities are needed to smooth the economy in the real sector. Based on research by (Rachmawati, 2018) that states interest rates as an indicator that determines whether someone will invest or save.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Agency Theory

Agency theory is a contract between owners of capital (principals) and managers (agents) put forward by (Jensen & Meckling, 1976) the existence of different interests between owners of capital and managers can cause conflicts referred to as agency problems. According to (Brigham & Houston, 2018) management is a party contracted by the owner of capital and given a mandate to represent the interests of the owner of capital.

Signaling Theory

Signal theory according to (Ross, 1977) is built on asymmetric information. The existence of asymmetric information arises because the manager (agent) has more information about the company's prospects (Prmono & Widiarto, 2019). (Hamdi et al., 2021) concluded that if the performance of a company is good, it will give a good signal to external parties and vice versa.

Financial Performance

Financial success/performance is the ability of an institution to achieve predetermined financial objectives (Mwangi et al., 2022; Sulastri & Mahardhika, 2023) usually measured by profitability ratios ROA, ROE, ROI. Performance needs to be measured to determine how far

success has been achieved in achieving certain goals. The annual report is a source of information in order to produce a gauge of the business's financial success (Pratiwi & Kurniawan, 2018). The bank will earn more profit and be in a stronger position if its return on assets (ROA) is higher. In this research, the scale used in assessing the financial performance of banks is Return on Assets.

$$\text{ROA} = \text{Profit before tax} / \text{Total Asset}$$

Capital Adequacy Ratio

Capital Adequacy ratio (CAR) is the basic capital that must be met by banks (Kristanto, 2018) also known as the capital ratio. According to (Dini & Manda, 2020) the CAR equity ratio reflects the capital used by the company to generate profits. The quantity of money available to support a bank's daily operations is known as capital and also provide support in case the bank experiences difficulties (Hanafi & Imelda, 2020).

$$\text{CAR} = (\text{Capital} / \text{ATMR}) \times 100\%$$

According to certain research, partly CAR significantly improves ROA as found by (Safitri, Suyanto, et al., 2020) discovers that the performance score increases with the capital adequacy score. other studies have found that CAR on performance has a negative impact (Adnanhasan et al., 2020). Thus, the study's premise is that there may be a relationship between the Capital Adequacy Ratio and the financial performance of banks

H₁: Capital Adequacy Ratio affects the financial performance of banks

Non Performing Loan

Non Performing Loan (NPL) according to (Rini & Aristanto, 2019) is the risk of inability to repay loans and loan principal according to maturity, also known as credit risk. (Azizah et al., 2021) states that the ratio known as Non-Performing Loan indicates how well bank management is able to oversee non-performing loans within the bank, so NPL is often referred to as non-performing loans.

$$\text{NPL} = (\text{Non performing loan} / \text{Total Loan}) \times 100\%$$

Faradillah et al. (2020) argues that the performance of the bank will be hampered more by a larger NPL value. This is due to the fact that a high NPL value will result in higher reserve costs for the bank to bear and poorer bank performance. Research conducted by (Suryanto et al., 2022) states if NPL has a significant positive effect on financial performance. And (Korompis et al., 2020) states otherwise if NPL has a significant negative effect on financial performance. According to the preceding description, the study's premise is that non-performing loans may have an impact on banks' bottom lines.

H₂: Non-Performing Loan affects the financial performance of banks

A bank's liquidity will be negatively impacted if its Non-Performing Loan (NPL) ratio is high, which suggests that the bank is not managing its credit well. The impact of NPL is positive on LDR research by (Hernawati et al., 2024), however, research indicates contrary (Alphamalana & Paramita, 2021). Consequently, there is a suspicion that NPL benefits NPL.

H₁₁: Non-Performing Loan affects the Loan Deposit Ratio in banks

Operating Expenses on Operating Income

BOPO or Operating Expenses on Operating Income Loan to is an instrument to gauge how effectively the bank is able to perform its operational tasks (Dini & Manda, 2020). The ratio of operating expenses to operating income is used with the aim of describing the ability of a bank's operating income to cover the operating costs of a bank (Aprilia & Soebroto, 2020).

$$\text{BOPO} = (\text{Operating expense} / \text{Operating income}) \times 100\%$$

The bank's effectiveness in leveraging expenses to boost profits is indicated by a low BOPO value, which has a significant impact on performance (Ahmadyan, 2018). This notion is supported by a large body of prior research, including work by (Mwangi et al., 2022). Conversely, (Arintoko, 2021) discovered in his study that BOPO positively impacts performance. Thus, the study's premise is that there may be a relationship between BOPO and financial performance based on this description.

H₃: Operating Costs on Operating Income affect the financial performance of banks

Loan to Deposit Ratio

Loan to Deposit Ratio is a measuring tool that is a comparison of the total amount of loans provided with the amount of funds deposited by customers (Winarni et al., 2022). The ratio of cash received by the bank to the amount of credit it extends is known as the loan to deposit ratio (Aprilia & Soebroto, 2020).

$$\text{LDR} = (\text{Total Loan} / \text{Third party funds}) \times 100\%$$

A high Loan to Deposit Ratio indicates that the bank is not sufficiently liquid to meet its client obligations (Hanafi & Imelda, 2020). The bank's performance will rise in tandem with its increased profit, as evidenced by the high Loan to Deposit Ratio (LDR). Previous studies undertaken by (Allifiyani & Pangestuti, 2021) have provided evidence in favor of this notion. In contrast, (Ali et al., 2018) asserts. Accordingly, the research's hypothesis is that there may be a relationship between LDR and financial performance based on the description provided above.

H₄: Loan to Deposit Ratio affects the financial performance of banks

A bank is not competently managing its credit if its Non-Performing Loan (NPL) ratio is high. It is anticipated that the use of LDR as mediation will either increase or decrease the impact of non-performing loans (NPLs) on bank financial performance. Previous studies by (Hernawati et al., 2024) provided evidence for the beneficial role that LDR plays in mitigating the impact of non-performing loans (NPLs) on financial performance. However, research indicates contrary (Alphamalana & Paramita, 2021). Thus, the impact of LDR on the financial performance of banks is thought to be mediating NPLs.

H₁₂: Loan to Deposit Ratio can mediate the effect of Net Performing Loan on financial performance in banks

Net Interest Margin

The difference between net interest income and earning assets is known as net interest margin. (Adnanhasan et al., 2020). Meanwhile, according to (Kristanto, 2018) net interest margin that is the proportion of the overall interest costs for funding to the total interest costs for borrowin,. (Dewi, 2018) states that The ratio of net interest income to the total amount of credit extended is known as the net interest margin.

$$\text{NIM} = (\text{Net interest income} / \text{Earning asset}) \times 100\%$$

A bank's net interest income on the productive assets it manages improves with its net asset multiplicity (NIM), which raises the profitability of the business and boosts performance. According to studies done by (Winarni et al., 2022), NIM improves financial performance. On the other hand, research by (Wood & McConney, 2018) indicates that NIM may not have a detrimental effect on financial success. Thus, the hypothesis put out in this study is that there may be a relationship between NIM and financial performance.

H₅: Net Interest Margin affects the financial performance of banks

Interest Rate

Interest rate (BI Rate) is an interest rate set by Bank Indonesia which is a reference for banks to set deposit interest rates and lending interest rates (Cahyani, 2018). According to (Yesika, 2020) interest is the reward for holding back. Interest is the bank's income received from the debtor because of the credit provided (Winarni et al., 2022). Research done by (Noreen et al., 2018) explained that interest rates benefit the banking system performing.

An adequate capital base will influence the interest rates that banks charge in order to maximize profits since it can boost public trust. which will improve the performance of the business. According to research from the past, explaining CAR significantly improves ROA (Wasiaturrahma et al., 2020). In contrast, studies by (Safitri, Kadarningsih, et al., 2020) indicate that if CAR has a detrimental impact on performance, then the contrary is true. Consequently, it is believed that interest rates attenuate the effect of CAR on financial performance.

H₆: Interest rates can moderate the impact of Capital Adequacy Ratio on financial performance.

A high non-performing loan (NPL) ratio suggests that the bank is not competently managing its credit and that the risk of lending to the bank is considerable. Research by (Rini & Aristanto, 2019) indicates that non-performing loans (NPLs) have a noteworthy positive impact on financial performance, hence providing support for this claim. However, research by (Jaouad & Lahsen, 2018) indicates that NPL may actually have a negative impact on performance. Thus, it is believed that interest rates mitigate the impact of non-performing loans (NPLs) on financial performance.

H₇: Interest rates can moderate the impact of Non Performing Loan on financial performance

The ratio of operational expenses to operating profit is known as the operating expense ratio. As a result, interest rates have a big impact on income. Income will decline along with a decline in interest rates, which will impact financial performance. The notion is supported by prior research carried out by (Madjit et al., 2021). However, study by (Lee, 2018) indicates otherwise. Consequently, it is believed that interest rate-modified BOPO has a major impact on financial performance.

H₈: Interest rates can moderate the impact of Operating Costs on Operating Income on financial performance

The quantity of loans is impacted by interest rate values. In the event that interest rates rise, the percentage of LDR will boost profit, improving performance. Previous studies have demonstrated that LDR improves performance (Faradillah et al., 2020). However, (Dini & Manda, 2020) research indicates different. Consequently, it is believed that interest rates minimize the impact of LDR on financial performance.

H₉: Interest rates can moderate the impact of Loan to Deposit Ratio on financial performance

Market risk is dependent on the volatility of market parameters; in particular, shifts in interest rates, stock market values, securities, and foreign exchange rates are some of the variables that might impact a company's market value. This implies that there is a positive correlation between market risk and financial performance. Research from the past has been done to bolster this notion (Desiko, 2020). NIM is thought to have an impact on financial performance that is tempered by interest rates, despite study by (Ibrahim, 2018).

H₁₀: Interest rates can moderate the impact of Net Interest Margin on financial performance

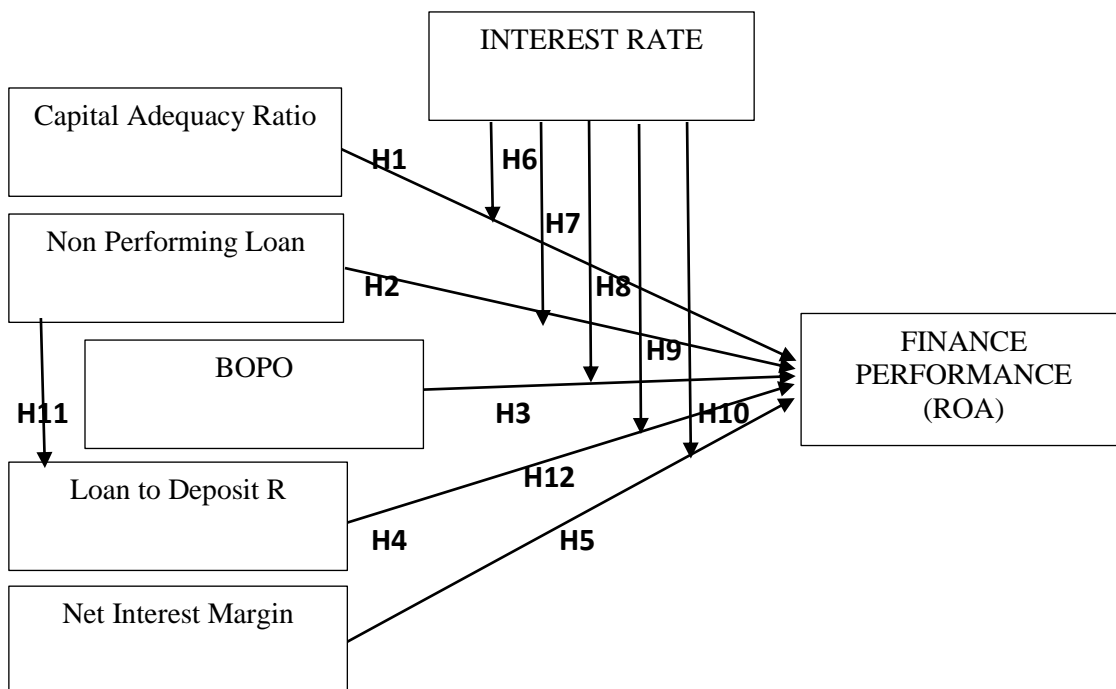


Figure 1 – Research Model

METHOD

This study employed causal type explanatory research, which aims to evaluate the relationship between the variables in a structural model. Based on the process, the methodology used in this study is quantitative. The banking companies that are listed on the Indonesia Stock Exchange comprise the study's population from 2018 to 2023, totaling 47 banking companies. Sampling was carried out using a non-probability sampling method with a type of purposive sampling, namely sample selection based on certain predetermined criteria. Based on predetermined criteria, only 36 banking companies meet the criteria. Total sample 36x6 = 216 sample. The analysis used in this research is structural analysis using a partial least square approach where the processing uses WarpPLS software. Partial Least Square is a statistical analysis method with variance-based structural equation modeling (SEM).

RESULT AND DISCUSSION

The results of statistical data processing with SEM-PLS from research data conducted with the help of WarpPLS are as follows:

Table 1. Convergent Validity test Result

Variable	Loading factor	Pvalue	Conclusion
CAR	1.000	<0,001	significant
NPL	1.000	<0,001	significant
BOPO	1.000	<0,001	significant
LDR	1.000	<0,001	Significant
NIM	1.000	<0,001	Significant
ROA	1.000	<0,001	Significant
SB	1.000	<0,001	significant
ZSB*X1CAR	1.000	<0,001	Significant
ZSB*X2NPL	1.000	<0,001	significant
ZSB*X3BOPO	1.000	<0,001	Significant
ZSB*X4LDR	1.000	<0,001	significant
ZSB*X5NIM	1.000	<0,001	significant

Source: Data processed WarpPLS 8.0 (2024)

The results of Table 1 above demonstrate that the outcomes of the convergent validity test on each indicator have met the applicable requirements. According to (Hair et al., 2019) which says that if an indicator is declared valid it must have a value greater than 0.7. And the results of table 1 above each indicator is worth 1.00 which means greater than 0.7 it means that each indicator is valid and significant because the Pvalue <0.001 is smaller than the 0.05 significance.

Table 2. Discriminat Validity (Fornel Lacker Method)

	X1CAR	X2NPL	X3BOPO	X4LDR	X5NIM	YROA	ZSB	ZSB*X1C	ZSB*X2N	ZSB*X3B	ZSB*X4L	ZSB*X5N
CAR	1.000	0.099	-0.215	0.636	0.202	0.059	-0.066	-0.389	0.083	0.069	0.021	0.222
NPL	0.099	1.000	0.393	0.071	0.180	-0.353	-0.033	0.081	-0.092	-0.109	0.168	0.072
BOPO	-0.215	0.393	1.000	-0.255	-0.154	-0.929	-0.082	0.080	-0.130	-0.582	-0.035	-0.018
LDR	0.636	0.071	-0.255	1.000	0.453	0.161	0.155	0.022	0.187	-0.033	0.338	0.270
NIM	0.202	0.180	-0.154	0.453	1.000	0.247	0.139	0.212	0.071	-0.015	0.240	0.222
ROA	0.059	-0.353	-0.929	0.161	0.247	1.000	0.166	0.048	0.162	0.562	0.114	0.134
SB	-0.066	-0.033	-0.082	0.155	0.139	0.166	1.000	0.069	0.002	0.015	0.009	-0.032
ZSB*X1C	-0.389	0.081	0.080	0.022	0.212	0.048	0.069	1.000	0.135	-0.218	0.657	0.252
ZSB*X2N	0.083	-0.092	-0.130	0.187	0.071	0.162	0.002	0.135	1.000	0.340	0.134	0.238
ZSB*X3B	0.069	-0.109	-0.582	-0.033	-0.015	0.562	0.015	-0.218	0.340	1.000	-0.233	-0.165
ZSB*X4L	0.021	0.168	-0.035	0.338	0.240	0.114	0.009	0.657	0.134	-0.233	1.000	0.521
ZSB*X5N	0.222	0.072	-0.018	0.270	0.222	0.134	-0.032	0.252	0.238	-0.165	0.521	1.000

Source: Data processed WarpPLS 8.0 (2024)

The requirement that must be met from lacker fornел is that the root value of the relative construct AVE is more than 0.5, and The correlation value between the constructs is less than

the square root value of AVE located in one column and one other row. It is evident from table 2 results above that all indicators are worth one, which means greater than 0.5, which means they meet the valid requirements for research.

Table 3. Reliability Test Result

Variable	Cronbach's alpha	Composite reliability	Average variances extracted (AVE)	Conclusion
CAR	1.000	1.000	1.000	Valid
NPL	1.000	1.000	1.000	Valid
BOPO	1.000	1.000	1.000	Valid
LDR	1.000	1.000	1.000	Valid
NIM	1.000	1.000	1.000	Valid
ROA	1.000	1.000	1.000	Valid
SB	1.000	1.000	1.000	Valid
ZSB*X1CAR	1.000	1.000	1.000	Valid
ZSB*X2NPL	1.000	1.000	1.000	Valid
ZSB*X3BOPO	1.000	1.000	1.000	Valid
ZSB*X4LDR	1.000	1.000	1.000	Valid
ZSB*X5NIM	1.000	1.000	1.000	Valid

Source: Data Processed WarpPLS 8.0 (2024)

Reliability test results with conditions are met if the Cronbach Alpha value exceeds 0.60 and the Composite Reliability value exceeds 0.70. Composite reliability is used to measure the reliability of parameters in a construct. Considering the outcomes of the table 3 above, it is evident that the outcomes for each variable are worth 1, which means that the value of each construct has been met which is greater than the minimum requirement for the composite reliability coefficient and Cronbach alpha coefficient.

From table 4 below evidently, the R-square value is 0.950, which means that the influence of the relationship between the dependent variables CAR, NPL, BOPO, LDR and NIM is 95% in influencing the independent variable performance (ROA) and other factors can account for the remaining 5%.

Table 4. R square test Result

R-squared coefficients

X1CAR	X2NPL	X3BOPO	X4LDR	X5NIM	YROA	ZSB	ZSB*X1C	ZSB*X2N	ZSB*X3B	ZSB*X4L	ZSB*X5N
			0.047		0.950						

Adjusted R-squared coefficients

X1CAR	X2NPL	X3BOPO	X4LDR	X5NIM	YROA	ZSB	ZSB*X1C	ZSB*X2N	ZSB*X3B	ZSB*X4L	ZSB*X5N
			0.043		0.948						

Source: Data processed WarpPLS 8.0 (2024)

Table 5 Goodnes Fit of Model Test Result

Criteria Parameter	Conclusion
Average path coefficient (APC)=0.153, P=0.005	FIT
Average R-squared (ARS)=0.499, P<0.001	FIT
Average adjusted R-squared (AARS)=0.495, P<0.001	FIT
Average block VIF (AVIF)=2.419, acceptable if <= 5, ideally <= 3.3	FIT
Average full collinearity VIF (AFVIF)=4.205, acceptable if <= 5, ideally <= 3.3	FIT
Tenenhaus GoF (GoF)=0.706, small >= 0.1, medium >= 0.25, large >= 0.36	FIT
Simpson's paradox ratio (SPR)=0.818, acceptable if >= 0.7, ideally = 1	FIT
R-squared contribution ratio (RSCR)=0.988, acceptable if >= 0.9, ideally = 1	FIT
Statistical suppression ratio (SSR)=0.909, acceptable if >= 0.7	FIT
Nonlinear bivariate causality direction ratio (NLBCDR)=0.773, acceptable if >= 0.7	FIT

Source: Data processed WarpPLS 8.0 (2024)

Model fit testing objective to test whether a model is feasible or not and to determine the ability of a model to anticipate. Based on the table above, it can be seen that the research model value has a good fit model. Where the APC value is 0.147 and Pvalue 0.007 indicating that the fit model is approved, the ARS value is 0.950 and Pvalue <0.001 which means the fit model is accepted, the AARS value is 0.948 and Pvalue <0.001 which means the fit model is accepted, the AVIF value of 2.419 and the AFVIF value of 4.205 is accepted because it is still below 5 with an ideal value of 3.3 this indicates that there isn't a problem with multicollinearity in exogenous variables and indicators. And the GoF (Goodnes of Fit) value is 0.975, which means that the predictive power of the model is large or strong based on the interpretation of the feasibility of Tenenhaus.

Table 6. Direct Effect Test Result

Description Path	Path Coefficient	Pvalue
X1CAR -- ROA	0.093	0.082
X2NPL -- ROA	-0.008	0.452
X3BOPO -- ROA	-0.877	<0.001
X4LDR -- ROA	0.027	0.346
X5NIM -- ROA	0.080	0.116

Note : Significant at 5% error level ($\alpha=0,05$)

Source: Data processed WarpPLS 8.0 (2024)

The effect of CAR on financial performance (ROA)

The path coefficient value from table 6 on the CAR variable is 0.093 with a Pvalue of 0.082 > 0.05 alpha value so that the first hypothesis is rejected, it is said that CAR has no effect on banking financial performance. The findings of this investigation are consistent with the findings of studies from (Efriyenty, 2020) and (Safitri et al., 2021) which states if CAR has a positive effect on banking financial performance . This result reflects if the size and financial performing is unaffected by size of capital risk of banks. However, the results of this study contradict the results of research from (Mawardi et al., 2021) and (Safitri, Suyanto, et al., 2020). The results of this study also show that a rise in CAR there won't cause a decline in ROA, It is necessary to maintain the level of capital adequacy according to the rules applied by Bank Indonesia to maintain customer confidence in banking.

The effect of NPL on financial performance (ROA)

The second hypothesis is also rejected because the path coefficient value from table 6 of NPL is -0.008 with a Pvalue of 0.452 which is greater than 0.05, so that NPL has no impact on banking financial performance. The findings of this investigation are consistent with the

findings of studies from (López-Penabad et al., 2022) and (Anisa & Anwar, 2021). The study's findings explain if credit risk is unaffected the financial performing of banks. The results in this study contradict the results of research from (Suryanto et al., 2022) and (Safitri & Primadhita, 2022) which states if NPL has a positive impact on banking financial performance. NPL reflects the level of non-performing loans or bad debts, a high NPL value indicates a lot of problematic financing in bank operations, while the source of bank income, among others, comes from financing so that if a lot of financing has a bad collectibility level, it will make bank income decrease.

The effect of BOPO on financial performance (ROA)

The third hypothesis is accepted, which shows if BOPO affects the financial performance of banks with a value of -0.877 and Pvalue <0.001 which less than $\alpha=0,05$ from table 6. The findings of this investigation are consistent with the findings of studies from (Mwangi et al., 2022) and (Kusumastuti & Alam, 2019). This result reflects that operational risk has a negative effect on banking financial performance, which means that any increase in BOPO value will decrease ROA value. Based on the operating income that banks earn, the BOPO ratio seeks to assess how well they are able to control operating costs. The banking industry's management is ineffective at controlling its operations if the BOPO ratio's value keeps rising. The high expenses of collecting donations and the meager interest income from investing funds may also contribute to BOPO's enormous worth. As a result, a bank's financial performance increases with a lower BOPO and vice versa. The results in this study contradict the results of research from (Arintoko, 2021) and (Lee, 2018). If the value of the BOPO ratio continues to increase, it means that the banking management is inefficient in managing its operations. A high BOPO value reflects that the bank incurs large costs in its operational activities.

The effect of LDR on financial performance (ROA)

The fourth hypothesis is also disproved, with an LDR coefficient of 0.027 and a Pvalue of 0.346 from table 6, which means that LDR has no effect on banking financial performance because Pvalue more than 0,05. The findings of this investigation are consistent with the findings of studies from (Hamdi et al., 2021) and (Madjit et al., 2021). LDR reflects the bank's ability to fulfill its obligations, in this case current debt. The ability of bank management to maintain its liquidity level will result in the level of trust of their customers to keep their money in the bank and can be withdrawn when needed. Because of the trust of its customers and will affect the bank's reputation. The results of this study are not in line with the results of research from (Allifiyani & Pangestuti, 2021) and (Desiko, 2020) which states if LDR has a beneficial impact on financial performance.

The effect of NIM on financial performance (ROA)

The fifth hypothesis is also disproved, from table 6 where the coefficient value is 0.08 and Pvalue 0.116 which is greater tahn 0,05 so that NIM has no effect on banking financial performance. This can be attributed to the low interest income from lending when compared to interest expenses. The findings of this investigation are consistent with the findings of studies from (Dewi, 2018). NIM is a ratio that reflects. The capacity of a bank to oversee its profitable assets in order to produce net interest income. The results of this study contradict the results of research from (Korompis et al., 2020) and (Winarni et al., 2022) which states that NIM has a positive effect on banking financial performance.

Table 7. Moderation Effect test Result

Description Path	Path Coefficient	Pvalue
ZSB*X5NIM	0.129	0.027
ZSB*X4LDR	0.129	0.027
ZSB*X3BOPO	0.055	0.210
ZSB*X2NPL	-0.037	0.294
ZSB*X1CAR	-0.033	0.313

Note : Significant at 5% error level ($\alpha=0,05$)

Source: Data processed WarpPLS 8.0 (2024)

The effect of interest rates in moderating CAR on ROA

Based on table 7, the results of the interest rate moderation test on the CAR variable show that the coefficient value is -0.033 and the Pvalue is 0.313, which reflects that the impact of CAR on ROA cannot be mitigated by the interest rate variable, because the Pvalue is greater than 0.05. The findings of this investigation are consistent with the findings of studies from (Hidayanty & Julia, 2023) and (Ginting, 2019) which states that interest rates are not able to moderate the effect of CAR variables on bank financial performance (ROA). This means that the 6th hypothesis is disproved, this can be caused by regulations from OJK regarding the increase in capital reserves which will affect potential profitability. However, the results of this study are not in line with the results of research from (Kenzen & Afandy, 2023) and (Kristanto, 2018) which states if the impact of CAR can be mitigated by interest rates on bank financial performance. Changes in interest rates are decided by the central bank through monetary policy which is influenced by inflation, economic growth, employment and economic considerations. Changes in interest rates can differ from time to time and are not directly proportional to changes in the Capital Adequacy Ratio.

The effect of interest rates in moderating NPL on ROA

The study's outcome of table 7 on the moderating effect of interest rates on the NPL variable show a coefficient of -0.037 and a Pvalue of 0.294 which reflects that the interest rate variable cannot moderate the impact of NPL on banking financial performance (ROA) due to the Pvalue > 0.05. This means that hypothesis 7 is rejected. NPL is the ratio of non-performing loans which is the ratio of the number of non-performing loans to total loans. Strong market competition in banking may explain why interest rates cannot moderate the effect of NPL on financial performance, as this competition may limit banks' interest rate policies. Losses generated by non-performing loans cannot be covered by high interest rates. The results of this study are not in line with (Kenzen & Afandy, 2023) which states that interest rates can moderate the impact of NPL on financial performance.

The effect of interest rates in moderating BOPO on ROA

Considering the study's outcomes, the coefficient value of the moderating effect of interest rates on the BOPO variable is 0.055 with a Pvalue of 0.210, which reflects that interest rates cannot moderate the impact of BOPO on banking financial performance (ROA). Due to the Pvalue of 0.210 which is > 0.05, this means that the 8th hypothesis is rejected. The study's outcome are not in line with research (Kristanto, 2018) which states that interest rates can strengthen the effect of BOPO on banking financial performance (ROA). And the results of this study are the same as those (Ginting, 2019) that state if interest rates are unable to moderate the effect of BOPO on banking financial performance (ROA). The increase in interest rates on banks will cause investor and customer reactions to existing deposits and loans, because high interest rates will provide income to banks but will make it difficult for customers because they have to pay a high interest burden this can make customers divert their loans to other financial services.

The effect of interest rates in moderating LDR on ROA

The research results in table 7 explain that the coefficient value of the moderating impact of interest rates on the LDR variable is 0.129 with a Pvalue of 0.027 which demonstrates how interest rates have the power to mitigate the impact of LDR on banking financial performance (ROA). Due to the Pvalue of 0.027 which is <0.050, it explains that the effect of interest rates in moderating LDR on ROA has a significant positive effect. This means that the 9th hypothesis is accepted. These results contradict the results of research from (Hidayanty & Julia, 2023) and (Ginting, 2019) which states if interest rates are not able to moderate the influence of LDR on banking financial performance (ROA). The findings of this investigation are consistent with the findings of studies from (Kristanto, 2018). The good quality of assets and portfolios from the bank itself is the reason the interest rate can moderate the effect of LDR on banking financial performance (ROA). High interest rates will be able to cover losses from non-performing loans, so that the rise and fall of interest rates affect the financial performance of banks.

The effect of interest rates in moderating NIM on ROA

Based on table 7, the results of the study show that the coefficient value of the effect of interest rates in moderating the NIM variable on financial performance (ROA) is 0.129 with a Pvalue of 0.027 which reflects that interest rates can moderate the effect of NIM on banking financial performance (ROA). This is because the Pvalue of 0.027 which is <0.05 which is smaller than the significant value of 0.05 means that the 10th hypothesis is accepted. The positive value on the coefficient reflects if the moderating effect of interest rates is to strengthen the effect of NIM on financial performance. This result is not in line with the research results of (Ginting, 2019). The NIM ratio is a measure of how well bank management is performing to generate net interest income and manage its productive assets. If net interest income increases, profit before tax will increase so that financial performance (ROA) will also increase. Interest rate policy affects net interest income, this is because customers have to pay higher loan interest costs.

Table 8. Mediation test Result

Direct Effect	Path Coefficeint	Pvalue
NPL -- LDR	0,217	<0.001
Indirect Effect	Path Coefficeint	Pvalue
NPL -- LDR -- ROA	0,006	0,452
Total Effect	Path Coefficeint	Pvalue
NPL - ROA	-0,002	0.452

Note: Significant at 5% error level ($\alpha=0,05$)

Source: Data processed WarpPLS 8.0 (2024)

The effect of NPL on Loan to Deposit Ratio (LDR)

The research results in table 8 show that the path coefficient value on the impact of Non-Performing loan on Loan Deposit Ratio is 0.217 with Pvalue <0.001 which illustrates that NPL has a positive effect on LDR. Where the Pvalue of <0.001 is less than 0.05the 11th hypothesis is approved. The positive value reflects that NPL moves in the same direction as LDR, which means that if the NPL value increases by 1%, LDR will increase by 0.217 or 21.7%.The findings of this investigation are consistent with the findings of studies from (Alphamalana & Paramita, 2021) those that state if NPL has a positive effect on LDR and the results of this study contradict the results of research from (Anisa & Anwar, 2021) those who state if NPL has a negative effect on LDR. This result reflects that the number of non-performing loans will affect the liquidity of the company, because the possibility of uncollectible loans will affect the liquidity ratio itself and have an impact on the company's bankruptcy. This result is in line with the theory of (Ross, 1977) where signals are used to make investment decisions and credit decisions.

The effect of LDR in mediating the relationship between NPL and ROA

The results in table 8 indirect effect show that the path value on the effect of LDR in mediating NPL on ROA is 0.006 with a Pvalue of 0.452 which reflects that LDR is not able to mediate the effect of NPL on ROA seen from the Pvalue of 0.452 this indicates the rejection of the 12th hypothesis and is higher than the alpha value of 0.05. The findings of this investigation are consistent with the findings of studies from (Alphamalana & Paramita, 2021) and (Anisa & Anwar, 2021) which states that LDR is not able to mediate the effect of NPL on performance (ROA). Where the value of the indirect effect is smaller than the direct effect. This research contradicts the results of research from (Hernawati et al., 2024) and (Marisyah, 2019) which explains if NPL has a significant negative effect on ROA through LDR.

CONCLUSION

The goal of this study is to investigate how interest rates, which act as a moderator of financial risk, affect financial performance. The banking institutions where this study was carried out were listed on the Indonesian stock exchange for the period 2018-2023. Based on the analysis and discussion of the research results described earlier, there are several conclusions that can be reached, namely : Capital risk (CAR) has no effect on banking financial performance. This result indicates that the size of the capital does not guarantee good financial performance.

Credit risk (NPL) has no impact on banking financial performance. These results illustrate that the increase in NPL value is not a benchmark for decreasing financial performance. The financial performance of banks is negatively impacted by operational risk. This explains if the increase in BOPO value will reduce the ROA value. For this reason, management must carry out maximum efficiency in carrying out its operations so that it can be proportional to the income received and produce good performance The financial performance of banks is unaffected by liquidity risk. This result is because banks are required to maintain their liquidity level regardless of the ROA value generated due to penalties from the financial services authority for banks with low liquidity values. Market Risk has no effect on banking financial performance. This explains if financial performance does not depend on net interest income. This can be caused by the amount of interest costs borne rather than interest income.

The impact of CAR on ROA cannot be mitigated by interest rates. These results explain if interest rates do not influence the increase or decrease in CAR value in improving financial performance because the tight capital policy will limit performance. Interest rates cannot moderate the effect of NPL on bank financial performance. This reflects that the rise and fall of interest rates has no effect on the number of bad debts of a bank in affecting its financial performance. Interest rates cannot moderate the effect of BOPO on banking financial performance. This explains if the interest rate variable can weaken the relationship between BOPO and financial performance.. Interest rates have the power to mitigate LDR's negative impact on bank profitability. These results show if interest rates strengthen the influence of the relationship between LDR and financial performance. Interest rates can moderate the effect of NIM on banking financial performance. This shows that interest rates strengthen the influence of the relationship between NIM and financial performance. For this reason, management can apply competitive lending rates in order to earn interest income from lending.

Loan to Deposit Ratio is positively impacted by non-performing loans. This result shows that if bad debts can be managed properly, the bank's liquidity level will be smooth. LDR cannot mediate the indirect effect of the NPL relationship on financial performance. This shows that if the level of NPL value in a period cannot guarantee the financial performing of banks according

to the amount of credit channeled to the public as assessed by LDR. This is in line with agency theory where management must carry out maximum policy and efficiency so that risk management can run well so that it can provide a positive signal. Where signal theory explains if the signal is used to make investment or credit decisions.

Advice

The study's findings, which indicate that the BOPO ratio has a detrimental impact on financial performance, demonstrate that financial performance will decline as the BOPO ratio rises. So that management needs to pay attention and maintain its operating costs efficiently so that they are balanced with its operating income so that it will improve financial performance. Meanwhile, investors can see the BOPO ratio to assess management performance in running their operations and it is important to know all the factors that affect financial performance.

For further research, it can add other macro variables besides interest rates to be used as moderating or mediating variables in research such as inflation, corporate governance, GDP and others to determine their influence and impact on studies related to financial performance, as well as comparing if using other financial performance measurement tools besides ROA such as ROE or ROI.

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