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Factors Influencing Bank Profitability: A Study of Indonesian Commercial Banks

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Abstract

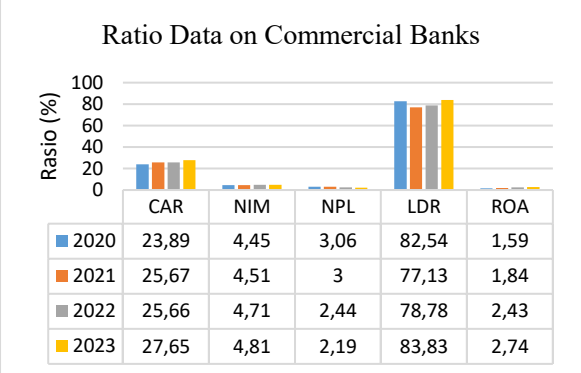
This study aims to analyze the effect of Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), Non-Performing Loan (NPL), and Loan to Deposit Ratio (LDR) on Return on Asset (ROA) at Go Public Commercial Banks listed on the Indonesia Stock Exchange during the period 2020 to 2023. The method employed in this research is a purposive sampling technique, utilizing secondary data from the official website of the Indonesia Stock Exchange (IDX) and a quantitative approach. This research was conducted by collecting all secondary data, such as financial data from each sample, to be processed and analyzed. Hypothesis testing uses panel data regression analysis using SPSS version 30. Based on the research findings, CAR and LDR have no significant effect on ROA, while NIM and NPL exhibit a substantial impact on ROA. Strong CAR does not always guarantee bank profitability, as high cost of funds can still burden operational performance. LDR does not affect ROA, as profitability depends more on credit quality than credit volume. Poor credit assessment increases risk, limiting LDR's impact. Higher NIM indicates greater interest income from productive assets, leading to increased bank profitability. A high NPL ratio indicates poor credit quality and potential operational losses, which in turn lowers the return on assets (ROA). Therefore, maintaining a low NPL is essential.

Keywords: Capital Adequacy Ratio, Loan to Deposit Ratio, Net Interest Margin, Non-Performing Loan, Return on Assets.

1. Introduction

The banking sector has a vital role in improving, strengthening the industry and has a very strategic role in creating a conducive climate, primarily to support the improvement of the country's economy (Nurhayat, 2014) and make a significant contribution to the smooth running of a country's economic activities (Ani Nur Fadilah et al., 2024). The primary function of banking in Indonesia is to collect and distribute public funds, as stated in Article 3 of the Banking Law (Otoritas Jasa Keuangan, 2024). This means that, in the context of State development, banking institutions must play an active role in raising funds from the public. In addition, based on the provisions of Article 4 of the Banking Law, the purpose of banking in Indonesia is to support the implementation of State development, aiming to increase equity, economic growth, and State stability, thereby improving the welfare of the community at large (Otoritas Jasa Keuangan, 2024).

Seeing the importance of the role of banking, it is understandable why the banking sector is in dire need of public trust (society), so that it needs to be maintained in good health (Bank Indonesia, 2011). Only a healthy bank can maintain confidence and trust in its customers' money and play a key role as a driver of the economy (Bank Indonesia, 2011). The economy has a significant impact on the performance and financial ratios of banks. Financial ratios play a crucial role in analyzing financial health (Breliastiti et al., 2024), including the Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), Non-Performing Loans (NPL), and Loan-to-Deposit Ratio (LDR) (Saputra & Angriani, 2023). Profitability is the most relevant indicator for assessing a company's performance (Pardian et al., 2022). One of the commonly used ratios in measuring profitability is ROA (Pardian et al., 2022).



	CAR	NIM	NPL	LDR	ROA
2020	23,89	4,45	3,06	82,54	1,59
2021	25,67	4,51	3	77,13	1,84
2022	25,66	4,71	2,44	78,78	2,43
2023	27,65	4,81	2,19	83,83	2,74

Figure 1. Ratio data on commercial bank 2020 -2023
Source: OJK, 2023

The CAR, NIM, NPL, and LDR ratios in commercial banks from 2020 to 2023 have an average ratio value that is relatively healthy or good, despite experiencing fluctuations (Otoritas Jasa Keuangan, 2023). However, the problem with a good ratio value is that it can also signal something. For example, based on the central bank's statement, the resilience of the current capital adequacy ratio (CAR) is classified as very good. However, on the other hand, it shows that banks have not been able to utilize capital optimally (Winarto,

2019), a high NIM provides benefits to the banks, but on the other hand, it can burden the public (Sayed, 2023), and high LDR may indicate that the bank is more aggressive in lending. Still, it also increases liquidity risk (Cahyani et al., 2024). Therefore, research in this area is expected to provide valuable insights into the overall stability of the economy.

Several studies on the effects of the Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), Non-Performing Loans (NPL), Loan-to-Deposit Ratio (LDR), and Return on Assets (ROA) have yielded mixed results. (Wulandari, 2022) examines the effect of CAR, NIM, and NPL on return on assets (ROA). The results of his research indicate that CAR does not affect ROA, NIM has a positive impact on ROA, and NPL has an adverse effect on ROA. Meanwhile, other research conducted by Supeno & Aminudin (2023) examines the effect of CAR, NPL, and NIM on ROA. The research results and hypothesis testing show that NPL, NIM, and CAR have a significant impact on ROA, either partially or simultaneously.

Based on the background and phenomena previously described and the differences in the results of previous studies, the authors are interested in reexamining the effect of Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), Non-Performance Loan (NPL), Loan to Deposit Ratio (LDR) on Return on Asset (ROA).

2. Literature Review

2.1. Return on Assets

Return on Assets is a ratio used to measure the bank's ability to generate net income or profit compared to its total assets (Kumalasari et al., 2023). Return on Assets is a ratio used to measure the bank's ability to generate net income or profit compared to its total assets (Amalia et al., 2022)

The formula for Return on Asset (ROA) (Puspita & Mustanda, 2024) is as follows:

$$\text{Return on Asset} = \left(\frac{Net\ Profit}{Total\ Assets}\right) \text{x } 100\%$$

The higher the ratio, the better the asset's ability to generate a net profit (eLibrary.unikom.ac.id). This makes the company very attractive to investors (elibrary.unikom.ac.id). The increased attractiveness of a company makes it more appealing to investors, as the potential return or dividend is likely to be greater (Rahman et al., 2023).

2.2. Capital Adequacy Ratio

According to Silaban (2023), CAR is a bank performance ratio used to measure the adequacy of capital owned by banks in supporting assets that contain risk or have the potential to generate risk. In addition, Br et al. (2024) also argue that CAR functions as an indicator that reflects a bank's ability to bear a decrease in asset value caused by losses experienced. Suppose the bank's capital can absorb inevitable losses. In that case, the bank can carry out all its activities more efficiently, which in turn is expected to increase the value of its assets and bank wealth. (Amalia, 2023)

According to Bank Indonesia Circular Letter No. 3/30/DPNP, the formula of Capital Adequacy Ratio (CAR) (Yanti, S., Suryani, S., & Jajuli, 2024) is as follows:

$$\text{Capital Adequacy Ratio} = \left(\frac{Capital\ owned\ by\ the\ bank}{Risk-weighted\ assets}\right) \text{x } 100\%$$

The higher the CAR value, the greater the profit that the bank can obtain, and the better the bank's condition (Setiawati et al., 2024). In other words, a more negligible risk to the bank will increase the profit earned (Nasution, 2019), which means that CAR has a positive effect on ROA (Wijayani, 2023). The results of this study are also supported by researchers (Wijayani, 2023), which show that the Capital Adequacy Ratio (CAR) has a positive and significant effect on Return on Assets (ROA). Based on the results obtained in previous studies, the researchers formed a hypothesis as follows:

H_1: Capital Adequacy Ratio (CAR) has a significant effect on Return on Asset (ROA).

2.3. Net Interest Margin

The Net Interest Margin (NIM) is a ratio that measures a bank's ability to effectively manage its productive assets and generate net interest income, which is obtained by reducing interest expenses from interest income (Nurhasanah, 2021). A bank's NIM is healthy if it has a Net Interest Margin above 3% (Agnes Erika Manullang, Eddy Soegiarto K, 2019).

According to Bank Indonesia Circular Letter No.13/24/DPNP dated October 25, 2011, the formula for Net Interest Margin (NIM) (Jati et al., 2022) is as follows:

$$\text{Net Interest Margin} = \left(\frac{Net\ Interest\ Income}{Average\ Earning\ Assets}\right) \text{x } 100\%$$

The higher the NIM, the better and more effective the performance achieved by a bank in placing productive assets, such as credit, which will increase the company's profit (Mulyadi & Cipta, 2022). Increasing company profits is expected to improve the company's Return on Assets (ROA) (Mulyadi & Cipta, 2022). This is also supported by research conducted by Regina Arthamevia and Husin (2023), which found that NIM has

a significant effect on ROA. Based on the results of these studies, which examine the impact of NIM on ROA, the researchers form the following hypothesis:

H_2: Net Interest Margin (NIM) has a significant effect on Return on Asset (ROA).

2.4. Non-Performing Loan

The Non-Performing Loan (NPL) ratio measures a bank's ability to handle non-performing loans that have been disbursed (Octaviani & Andriyani, 2018). It can be said that NPLs are an indicator of potential financial problems within the bank, if not resolved immediately it will have a negative impact on the bank, which based on Bank Indonesia Circular Letter No.31/10/ UPPB banks with good performance must have a maximum NPL of 5% (Kartika, 2021).

According to SE BI 13/30/DPNP, the formula for Non-Performing Loan (NPL) (Octaviani & Andriyani, 2018) is as follows:

$$\text{Non-Performing Loan} = \left(\frac{Total\ NPL}{Total\ Credit}\right) \text{x } 100\%$$

The higher the NPL, the worse the bank's credit quality, which has an impact on increasing the number of non-performing loans and causing losses or the greater the possibility that the bank will experience difficulties, but if the lower the NPL, the bank's ROA will increase (Saputra & Angriani, 2023). This research is also supported by a study conducted by Nurfitriani (2021), which found that Non-Performing Loans have a positive and significant effect on Return on Assets (ROA). Based on the results obtained in previous studies, the researchers made the following hypothesis:

H_3: Non-Performing Loan (NPL) has a significant effect on Return on Asset (ROA).

2.5. Loan to Deposit Ratio

The Loan-to-Deposit Ratio (LDR) is a liquidity ratio that measures the amount of funds disbursed as credit against funds raised from the public by banks (Meitasari & Budiasih, 2016). It is necessary to maintain the LDR ratio at a safe and ideal level of 80% to 90% (Ni Nyoman Juli Nuryani, 2022). The maximum LDR limit allowed by Bank Indonesia is 110% (Irawati & Siregar, 2022).

The formula for Loan to Deposit Ratio (LDR) (Nathasya & Setyawan, 2019) is as follows:

$$\text{Loan to Deposit Ratio} = \left(\frac{Total\ Credit}{Total\ Deposit}\right) \text{x } 100\%$$

According to Komariah (2023), the greater the Loan to Deposit Ratio value, the greater the credit income received by the bank, which in turn has an impact on the higher Return on Assets value. The results of research conducted by Regina Arthamevia and Husin (2023) also show that the LDR variable influences the ROA variable. That way, the hypothesis formulated is as follows:

H_4: Loan to Deposit Ratio (LDR) has a significant effect on Return on Asset (ROA).

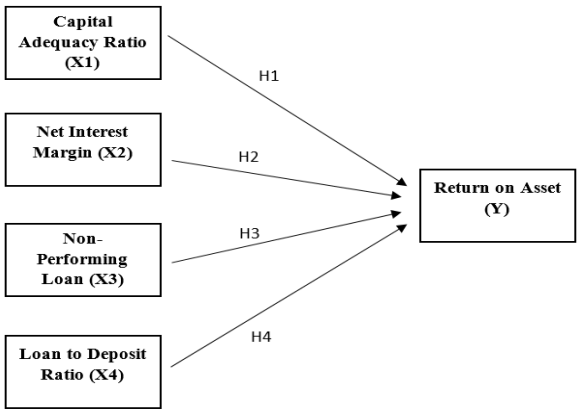


Figure 2. Research model

3. Methods

Based on the research data, the type of research used in this research is quantitative research methods (Abadiyah, 2023). Data analysis in quantitative research is statistical to describe and test predetermined hypotheses. The type of research used in this study is causal associative research. Causal associative research aims to identify whether there is a relationship or influence between the independent variable and the dependent variable. According to research from Sugiyono (2016: 37)

In this study, the data collection technique is secondary data. The source for obtaining secondary data is through documentation and literature (literature review). The documentation technique utilizes the official website of the Indonesia Stock Exchange (www.idx.co.id/id) in the financial statements section (annual reports for the 2020-2023 period) to obtain information on CAR, NIM, NPL, LDR, and ROA figures. Literature data from previous research, journals, and internet information sites related to the research. Researchers collect all secondary data, namely financial data, to be processed and analysed (Tannia et al., 2020).

The population in this study consists of commercial banks listed on the IDX in the Financials category for the period from 2020 to 2023. The sampling technique used in this study is non-probability sampling, specifically a purposive sampling approach. The non-probability sampling technique (Sugiyono, 2022) does not provide equal opportunities for each element of the population to be sampled. The purposive sampling ap-

proach (Sugiyono, 2022: 134) is a technique that determines specific criteria for the sample. Therefore, the criteria for determining the sample of this study are Banks categorized as go public banks that have been listed on the Indonesia Stock Exchange from 2020-2023, registered and remain active in the Indonesian banking industry in 2020-2023, banks have complete data needed during the 2020-2023 period, namely reports consisting of balance sheet reports, income statements, financial ratio reports and notes to financial statements or annual reports used as research data.

In this study, the independent variables used are CAR (X_1), NIM (X_2), NPL (X_3), and LDR (X_4), and the dependent variable is ROA (Y). The data used in this study will undergo classical assumption testing, multiple regression analysis, and hypothesis testing using the t-test, F-test, and coefficient of determination test in SPSS version 30.

The multiple linear regression equation that researchers will use in this study is as follows:

$$ROA = \alpha + (\beta_1 CAR) + (\beta_2 NIM) + (\beta_3 NPL) + (\beta_4 LDR) + e$$

Notes:
ROA = Return on Assets
α = Constant
β = Coefficient of Determination
CAR = Capital Adequacy Ratio
NIM = Net Interest Margin
NPL = Non-Performing Loan
LDR = Loan to Deposit Ratio
e = Error term

4. Result

4.1. Descriptive Statistical Test Results

Quantitative descriptive statistical analysis encompasses various techniques, including measurement of data concentration (mean), measurement of data distribution (range, variance, standard deviation).

Table 1. Descriptive statistics

Variable	Min	Max	Mean	Std. Dev
CAR	0.17	390.50	40.6799	48.12255
NIM	-12.24	20.23	4.0763	3.61607
NPL	0.00	4.95	1.3495	1.24141
LDR	0.00	527.91	89.3956	56.72460
ROA	-14.75	11.36	0.7261	3.22717

Source: Output of SPSS Version 30, 2024

Based on Table 1, we can see the descriptive statistical analysis after discarding outlier data, with a total sample size (N) of 180 (45 Companies x 4 Years). The results of the descriptive statistical test of each variable in the study are as follows:

The CAR variable has an average of 40.6799% and a standard deviation of 48.12255%. The minimum value of CAR, at 0.17%, is the CAR of Bank Pembangunan Daerah Jawa Barat and Banten Tbk (BJBR) as of 2020. The maximum value of CAR of 390.50% is the CAR of Bank Aladin Syariah Tbk (BANK) in 2021.

The NIM variable has a mean of 4.0763% and a standard deviation of 3.61607%. The minimum value of NIM, at -12.24%, is that of Bank Aladin Syariah Tbk (BANK) in 2022. The maximum value of NIM of 20.23% is the NIM of Bank Amar Indonesia Tbk (AMAR) in 2023.

The NPL variable has an average of 1.3495% and a standard deviation of 1.24141%. The minimum NPL value of 0.00% is the NPL of Bank Capital Indonesia Tbk (BACA) and Bank Aladin Syariah Tbk (BANK) from 2020 to 2023, and Bank Pembangunan Daerah Jawa Barat and Banten Tbk (BJBR) from 2020 to 2022. The maximum NPL value of 4.95% is the NPL of Bank KB Bukopin Tbk (BBKP) in 2020 and 2023.

The LDR variable has an average of 89.3956% and a standard deviation of 56.72460%. The minimum LDR value of 0.00% corresponds to Bank Aladin Syariah Tbk (BANK) in 2021. The maximum LDR value of 527.91% corresponds to Krom Bank Indonesia Tbk (BBSI) in 2023.

The ROA variable has an average of 0.7261% and a standard deviation of 3.22717%. The minimum ROA value of -14.75% corresponds to Bank Raya Indonesia Tbk (AGRO) in 2021. The maximum ROA value of 11.36% is the ROA of Bank BTPN Syariah Tbk (BTPS) in 2022.

4.2. Classical Assumption Test Results

4.2.1. Multicollinearity Test

Table 2. Multicollinearity test

Model		Collinearity Statistics	
		Tolerance	VIF
1	CAR	0.835	1.198
	NIM	0.828	1.207
	NPL	0.966	1.035
	LDR	0.729	1.372

Source: Output of SPSS Version 30, 2024

The multicollinearity test results in Table 2 show that the results of the multicollinearity test do not have a VIF value > 10 or Tolerance < 0.10. The VIF value of the CAR variable is 1.198, and the Tolerance value is 0.835. The VIF value of the NIM variable is 1.207, and the Tolerance value is 0.828. The VIF value of the NPL variable is 1.03,5 and the tolerance value is 0.966. The VIF value of the LDR variable is 1.37,2 and the tolerance value is 0.729. The VIF value of each variable in

the study is all below 10, and Tolerance is above 0.10, meaning that the relationship between variables does not contain multicollinearity.

4.2.2. Heteroscedasticity Test

Based on Table 3 below, the results of the heteroscedasticity test, conducted using the Glejser test, show that the significance values for the CAR variable, NIM, NPL, and LDR are 0.609, 0.231, 0.938, and 0.844, respectively. Because of this, the significance value of all independent variables in the study is greater than 0.05. This indicates that there is no disturbance or symptoms of heteroscedasticity, making this regression model suitable for use.

Table 3. Heteroscedasticity test

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.722	.679		1.063	.289
	Capital Adequacy Ratio (CAR)	.145	.283	.061	.512	.609
	Net Interest Margin (NIM)	.324	.269	.137	1.203	.231
	Non-Performing Loan (NPL)	-.012	.150	-.006	-.078	.938
	Loan to Deposit Ratio (LDR)	-.001	.003	-.017	-.198	.844

Source: Output of SPSS Version 30, 2024

4.3. Multiple Linear Regression Test Results

Regression analysis is used to find the effect of the variables tested in this study, such as CAR, NIM, NPL, and LDR, as independent variables, on the dependent variable, namely ROA.

Table 4. Multiple linear regression test

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.155	.480		.324	.747
	Capital Adequacy Ratio (CAR)	-.002	.005	-.028	-.391	.696
	Net Interest Margin (NIM)	.390	.063	.437	6.150	<,001
	Non-Performing Loan (NPL)	-.677	.171	-.260	-3.960	<,001
	Loan to Deposit Ratio (LDR)	.000	.004	-.006	-.075	.941

Source: Output of SPSS Version 30, 2024

From the output results of Table 4 Above, a multiple linear regression equation can be formed as follows:

$$ROA = 0.155 - 0.002\ CAR + 0.390\ NIM - 0.677\ NPL + 0.000\ LDR + e$$

Based on the multiple linear regression equation, the meaning of each regression coefficient variable can be explained as follows:

The constant value obtained is 0.155. This indicates that when the values of the independent variables CAR, NIM, NPL, and LDR are 0, the dependent variable ROA is 0.155.

The regression coefficient for the CAR variable is -0.002. This means that if the value of the CAR variable increases by 1%, it will result in a decrease in the dependent variable, namely ROA, by -0,002.

The regression coefficient for the NIM variable is 0.390. This means that if the value of the NIM variable increases by 1%, it will result in a 0.390% increase in the dependent variable, namely ROA.

The regression coefficient for the NPL variable is -0.677. This means that if the value of the NPL variable increases by 1%, it will result in a decrease in the dependent variable, namely ROA, by -0,677.

The regression coefficient for the LDR variable is 0.000. This means that if the value of the LDR variable increases by 1%, it will increase the dependent variable, namely ROA, by 0.000.

4.4. F Test (Simultaneous)

Based on the table below, the F-test results show that the calculated F value is greater than the F table value of 16,145 > 2.42, and the significance value is smaller than 0.05 (less than 0.001 <0.05). Therefore, the independent variables have a significant effect on ROA simultaneously.

Table 5. F test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	502.508	4	125.627	16.145	<,001[b]
	Residual	1361.712	175	7.781		
	Total	1864.220	179			

Source: Output of SPSS Version 30, 2024

4.5. T-Test (Partial)

The purpose of the t-test is to assess the extent to which each dependent variable is influenced. To determine whether the regression model in the t-test has a partial effect between the independent and dependent variables, one must examine the significance value.

Table 6. T-test

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.155	.480		.324	.747		
	Capital Adequacy Ratio (CAR)	-.002	.005	-.028	-.391	.696	.835	1.198
	Net Interest Margin (NIM)	.390	.063	.437	6.150	<,001	.828	1.207
	Non-Performing Loan (NPL)	-.677	.171	-.260	-3.960	<,001	.966	1.035
	Loan to Deposit Ratio (LDR)	.000	.004	-.006	-.075	.941	.729	1.372

Source: Output of SPSS Version 30, 2024

The t-statistical test in Table 6 shows the following results:

1. For the Capital Adequacy Ratio (CAR) variable, the t-count is -0.391, while the t-table size with a confidence level of α = 0.05 is 1.97361 with a significance level of 0.696 > 0.05. Based on the table, the t-test yielded a Sig value of > 0.05. It can be concluded that Ho is accepted, indicating that the Capital Adequacy Ratio (CAR) variable has no significant effect on Return on Asset (ROA).
2. For the Net Interest Margin (NIM) variable, the t-count is 6.150 while the t-table size with a confidence level of α = 0.05 is 1.97361 with a significance level of less than 0.001 < 0.05. Based on the table, the t-test obtained the results of the Sig value < 0.05, which indicates that Ho is rejected or the Net Interest Margin (NIM) variable has a significant effect on Return on Asset (ROA).
3. For the Non-Performing Loan (NPL) variable, the t-count is -3.960, while the t-table size with a confidence level of α = 0.05 is 1.97361 with a significance level of less than 0.001 < 0.05. Based on this table, the t-test obtained the results of the Sig value < 0.05, which indicates that Ho is rejected or the Non-Performing Loan (NPL) variable has a significant effect on Return on Asset (ROA).
4. For the Loan to Deposits Ratio (LDR) variable, the t-count is -0.075, while the t-table size with a confidence level of α = 0.05 is 1.97361 with a significance level of 0.941 > 0.05. Based on the table, the t-test yielded a Sig value of > 0.05. It can be concluded that Ho is accepted, indicating that the Loan to Deposits Ratio (LDR) variable has no significant effect on Return on Assets (ROA).

4.6. Determinant Coefficient Test (R^2)

From the table below, it is evident that the R^2 value reflects the ability of the independent variables to explain the dependent variable. According to the R-squared value in the SPSS results, it can be seen that R^2 is 0.270, which corresponds to 27%. This value indicates that the amount of variation in the dependent variable, ROA, that can be explained by the independent variables — namely, CAR, NIM, NPL, and LDR — is 27%, while other variables outside the scope of this study explain the remaining 73%.

Table 7. Determinant coefficient test (R^2)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.519[a]	.270	.253	2.78948

Source: Output of SPSS Version 30, 2024

5. Discussion

5.1. The Effect of Capital Adequacy Ratio on the Return on Assets

The Capital Adequacy Ratio (CAR) variable has no significant impact on the Return on Assets (ROA).

Even though the bank has a healthy capital adequacy ratio (CAR), the profit obtained is not always proportional to the amount of capital. Referring to the BIS (Bank for International Settlements) standard, which requires banks to maintain a minimum Capital Adequacy Ratio (CAR) of 8%, makes banks tend to focus more on meeting these requirements than maximizing capital to increase profits. This shows that banks prioritize compliance with regulations to anticipate the risk of loss due to asset fluctuations. Thus, even though the bank's capital is sufficient, this does not always guarantee the bank's ability to maintain its operations in the long term which can affect the bank's burden to increase by bearing a significant cost of funds so that the Capital Adequacy Ratio (CAR) does not really affect bank profitability (ROA).

This finding aligns with the research conducted by Saputra and Angriani (2023), which suggests that CAR has an insignificant effect on ROA.

5.2. The Effect of Net Interest Margin on the Return on Assets

The results of the Net Interest Margin (NIM) variable have a significant effect on Return on Assets (ROA).

This indicates that the higher the NIM achieved by the bank, the higher the interest income on productive assets managed by the bank, resulting in increased bank profitability. This shows that NIM has a significant impact on ROA. In this study, the average research sample shows a high percentage of NIM, indicating that the bank is in a healthy state. A high NIM indicates the bank's ability to utilize its productive assets efficiently.

This research is supported by Puspitasari et al. (2022), who found that NIM has a significant positive effect on ROA.

5.3. The Effect of Non-Performing Loans on the Return on Assets

The results of the Non-Performing Loan (NPL) variable have a significant effect on Return on Asset (ROA), and the null hypothesis is rejected.

NPL reflects the effectiveness and efficiency of credit management, and a healthy ratio is crucial, as it significantly impacts financial performance. The higher the NPL ratio, the worse the credit quality of the bank,

and the bank must bear losses in terms of its operational activities, thus affecting the decline in ROA. Therefore, it needs to be maintained to prevent the NPL ratio from increasing. Anticipatory steps that need to be taken to prevent an increase in NPLs in the banking sector include expanding credit assessment, avoiding errors in initial credit assessment, so that credit is not given to customers who are not eligible for credit or is not offered in excessive amounts.

The results of this study align with research conducted by Kenzen and Afandy (2023), which indicates that NPL has a significant negative impact on Return on Assets (ROA).

5.4. The Effect of Loan-to-Deposit Ratio on the Return on Assets

The results of the Loan to Deposits Ratio (LDR) variable have no significant effect on Return on Assets (ROA).

The effect of LDR on ROA is unclear or insignificant, as it may be attributed to the lack of application of prudential principles by bank management in evaluating prospective customers who apply for financing. The size of a bank's Loan to Deposit Ratio (LDR) does not directly affect profitability (ROA), as the amount of credit provided must still be balanced with good credit quality. If the bank provides credit without sufficient prudence, the risk that must be borne will be higher, which means LDR will not affect ROA.

The results of this study are also supported by Widyastuti and Aini (2021), who state that LDR has no effect on ROA.

5.5. Suggestion

From the research findings above, the authors provide the following suggestions:

1. For Investors

Based on the research findings, investors are expected to be able to conduct analysis and observations as a basis or basis for making decisions to invest their funds and investors can focus more on NIM because it is proven to have a positive and significant effect on ROA, investors can consider banks with high NIM to maximize their potential investment returns. Investors should exercise caution when dealing with banks that have a high non-performing loan (NPL) ratio, as this may indicate poor credit risk management. Not overly dependent on CAR and LDR variables, although CAR and LDR are essential indicators in assessing bank health, the results suggest that neither has a significant effect on ROA. Therefore, investors can focus more on other variables, such as NIM and NPL.

2. For Companies (Banks)

Banks are expected to continue increasing their net interest margins (NIM) through operational efficiency and optimal management of loan and deposit interest rates. They must also manage credit risk, as non-performing loans (NPLs) have been proven to have a negative impact on return on assets (ROA). To address this, banks need to improve their supervision and evaluation of credit quality and strengthen credit risk management to reduce NPL ratios. Although the LDR variable does not have a significant effect on ROA in this study, maintaining the LDR ratio at a healthy level is still essential to ensure liquidity and lending ability. Although the CAR variable does not have a significant effect on ROA, companies must comply with regulations and maintain capital adequacy to be prepared to face future financial risks.

3. For Academics / Further Researchers

Future researchers or future studies are expected to explore other variables beyond this research variable that may affect ROA, such as Operating Expenses on Operating Income (BOPO) or macroeconomic influences (Interest rates, Inflation).

6. Conclusions

Seeing the results of the research that has been conducted, namely the effect of the Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), Non-Performing Loan (NPL), and Loan to Deposit Ratio (LDR) on Return on Asset (ROA) at Commercial Banks listed on the Indonesia Stock Exchange for the 2020-2023 Period, the following conclusions can be drawn. The Capital Adequacy Ratio (CAR) has no significant effect on the Return on Assets (ROA) because the bank prioritizes regulatory compliance to avoid the risk of loss; however, a large cost of funds burden remains a potential hindrance to long-term operational stability. The Net Interest Margin (NIM) has a significant impact on Return on Assets (ROA). The higher the NIM, the greater the interest income, which in turn leads to an increase in bank profitability. Non-Performing Loan (NPL) has a significant effect on Return on Asset (ROA) the higher the NPL ratio, the worse the credit quality and the increase in operating losses, leading to a decrease in ROA, and Loan to Deposits Ratio (LDR) has no significant effect on Return on Asset (ROA) bank profitability depends on the quality of loans, not just the amount. Without prudence, risk increases, rendering LDR ineffective in affecting ROA at Commercial Banks listed on the Indonesia Stock Exchange for the 2020-2023 Period. Research using historical data may not fully reflect dynamic economic conditions and may change over time; therefore, an adaptive approach

with more recent data or predictive methods, such as econometric models or machine learning, is needed. In addition, the factors that affect ROA are not limited to the independent variables studied (CAR, NIM, NPL, and LDR); therefore, the scope of the research needs to be expanded by including other variables to provide a more comprehensive analysis.

References

Abadiyah, F. (2023). The role of net profit margin, asset turnover, and equity multiplier in driving stock returns: The moderating effect of ROE Dupont. *Petra International Journal of Business Studies*, *6*(2),185–192. https://doi.org/10.9744/petraijbs.6.2.185-192

Agnes Erika Manullang, Eddy Soegiarto K, S. (2019). *Bank health, risk profile, good corporate governance, earnings, and capital* 1–12. https://media.neliti.com/media/publications/398716-analisis-penilaian-tingkat-kesehatan-ban-e59679f9.pdf

Amalia, T. E. (2023). Analisis kinerja keuangan perbankan syariah pada masa pandemi covid-19 di indonesia. *Mutiara: Multidisciplinary Scientific Journal*, *1*(8), 438–450. https://doi.org/10.57185/mutiara.v1i8.59

Ani Nur Fadilah, Muhammad Rois, & Rikawati. (2024). Prediksi financial distress bank menggunakan metode bankometer. *Jurnal Akuntansi Trisakti*, *11*(1), 129–140. https://doi.org/10.25105/jat.v11i1.19538

Bank Indonesia. (2011). Agar bank sehat, uang nasabah selamat, ekonomi kuat. *Bank Indonesia*. https://www.bi.go.id/id/publikasi/E-Magazine/Documents/ba3bab1dd9ba4b1d88d27beebbcb8badGIed19_okt2011_low.pdf

Br, S., Tarigan, & Zurriah, R. (2024). Analisis capital adequacy ratio, non performing loan dan return on asset dalam menilai tingkat kinerja perusahaan pada pt. Bank Sumut Medan. *Jurnal Ekonomi Bisnis, Manajemen Dan Akuntansi (Jebma)*, *4*(2), 716–725. https://jurnal.itscience.org/index.php/jebma/article/view/3835

Breliastiti, R., Nelson, C. I., Daynarra, B., Sutanto, K. A., & Claudia T., S. (2024). Dinamika kinerja keuangan perusahaan di sektor kesehatan, keuangan, dan teknologi. *Media Ilmiah Akuntansi*, *12*(1), 61–80. https://doi.org/10.34208/mia.v12i1.43

Cahyani, R. D., Kurniawan, B., & Prabowo, H. (2024). Pengaruh loan to deposit ratio, non-performing loan, dan net interest margin terhadap profitabilitas bank swasta devisa yang terdaftar di bursa efek indonesia tahun 2018-2022. *Profit: Jurnal Manajemen, Bisnis Dan Akuntansi*, *3*(2), 1–14. https://journal.unimar-amni.ac.id/index.php/profit/article/view/2056

Irawati, D. P., & Siregar, D. L. (2022). Analisis npl, likuiditas dan rentabilitas terhadap car pada perbankan yang terdaftar di bursa efek indonesia. *SCIENTIA JOURNAL: Jurnal Ilmiah …*. https://mail.pbtv.co.id/index.php/scientia_journal/article/download/4802/2608

Jati, W., Oktrima, B., & Ariyanti, E. (2022). Pengaruh net interest margin (nim) dan biaya operasional dan pendapatan operasional (bopo) terhadap return on asset (roa) pada pt bank central asia, tbk periode 2010-2020. *Jurnal Ilmiah Swara MaNajemen (Swara Mahasiswa Manajemen)*, *2*(4), 509. https://doi.org/10.32493/jism.v2i4.25618

Kartika, R. (2021). *Pengaruh capital adequacy ratio (car), net intereset margin (nim), biaya operasional pendapatan operasional (bopo), loan to deposit ratio (ldr) terhadap non-performing loan (npl) pada pt. Bank pembangunan daerah bali periode 2009-2017*. 1–36. https://eprints.perbanas.ac.id/8613/4/BAB II.pdf

Kenzen, S., & Afandy, C. (2023). Pengaruh capital adequacy ratio (car), loan to deposit ratio (ldr) dan non performing loan (npl) terhadap return on assets (roa) pada sektor perbankan di bursa efek indonesia (bei) tahun 2018-2022 dengan suku bunga sebagai variabel moderasi. *Jurnal Manajemen Terapan Dan Keuangan*, *12*(04 SE-), 1185–1196. https://online-journal.unja.ac.id/mankeu/article/view/29936

Komariah, S. (2023). Pengaruh loan to deposit ratio (ldr), non performing loan (npl), dan beban operasional pendapatan operasional (bopo) terhadap return on assets (roa) pada pt bank keb hana indonesia periode 2014-2022. *Nucl. Phys.*, *13*(1), 104–116. https://repository.pnj.ac.id/id/eprint/12336/

Kumalasari, M., Aminda, R. S., & Nurhayati, I. (2023). Analisis rasio return on assets (roa) dan return on equity (roe) terhadap kinerja keuangan. *COMSERVA : Jurnal Penelitian Dan Pengabdian Masyarakat*, *3*(06), 2465–2480. https://doi.org/10.59141/comserva.v3i06.1017

Meitasari, I. G. A. S., & Budiasih, I. G. A. N. (2016). Pengaruh ukuran perusahaan, struktur modal dan loan to deposit ratio pada kinerja keuangan. *E-Jurnal Akuntansi Universitas Udayana*, *16*(2), 1516–1543. https://ojs.unud.ac.id/index.php/Akuntansi/article/view/18332

Mulyadi, N. L. A., & Cipta, W. (2022). Pengaruh net interest margin dan non performing loan terhadap return on assets pada perusahaan perbankan yang terdaftar di bursa efek indonesia. *Jurnal Manajemen Dan Bisnis*, *4*(3), 327–336. https://ejournal.undiksha.ac.id/index.php/Prospek/article/view/40015

Nasution, Y. (2019). *Pengaruh car,npl dan ldr terhadap return on asset pada bank umum konvensional yang terdaftar di bei periode 2015-2019*. https://ojs.jekobis.org/index.php/manajemen/article/view/150

Nathasya, N., & Setyawan, I. R. (2019). Faktor penentu net interest margin bank umum konvensional di indonesia. *Jurnal Manajerial Dan Kewirausahaan*, *1*(4), 872. https://doi.org/10.24912/jmk.v1i4.6584

Ni Nyoman Juli Nuryani. (2022). Ldr dan kredit terhadap npl dimasa pandemi covid-19. *Artha Satya Dharma*, *15*(2), 71–78. https://doi.org/10.55822/asd.v15i2.264

Nurhasanah, D. (2021). Analisa pengaruh rasio keuangan terhadap profitabilitas pada perusahaan perbankan periode 2016 – 2018. *JURNAL KEUNIS (Keuangan Dan Bisnis)*, *9*(1),85–95. https://eprints.unisbank.ac.id/id/eprint/8540/

Nurhayat, W. (2014). *Ini arti penting perbankan di indonesia bagi pemerintah*. Detik Finance. https://finance.detik.com/moneter/d-2459047/ini-arti-penting-perbankan-di-indonesia-bagi-pemerintah

Octaviani, S., & Andriyani, Y. (2018). Pengaruh non performing loan (npl) dan loan to deposit ratio (ldr) terhadap profitabilitas pada perusahaan perbankan yang terdaftar di bursa efek indonesia (bei). *Jurnal Akuntansi : Kajian Ilmiah Akuntansi (JAK)*, *5*(1),64. https://doi.org/10.30656/jak.v5i1.504

Otoritas Jasa Keuangan. (2017). *Lembaga perbankan*. Otoritas Jasa Keuangan. https://ojk.go.id/id/kanal/perbankan/ikhtisar-perbankan/Pages/Lembaga-Perbankan.aspx

Otoritas Jasa Keuangan. (2023). *Statistik perbankan indonesia*. https://ojk.go.id/id/kanal/perbankan/data-dan-statistik/statistik-perbankan-indonesia/Documents/Pages/Statistik-Perbankan-Indonesia---Desember-2023/STATISTIK PERBANKAN INDONESIA - DESEMBER 2023.pdf

Pardian, D., Kuntadi, C., & Maidani, M. (2022). Pengaruh non performing financing, financing to deposit ratio, capital adequacy ratio, biaya operasional pendapatan operasional, dan bank size terhadap profitabilitas bank umum syariah di indonesia. *Journal of Comprehensive Science (JCS)*, *1*(5), 1176–1187. https://doi.org/10.59188/jcs.v1i5.148

Puspita, L. D. P., & Mustanda, I. K. (2024). Pengaruh capital adequacy ratio, loan to deposit ratio, dan non performing loan terhadap profitabilitas lpd. *E-Jurnal Manajemen Universitas Udayana*, *8*(7), 4017. https://doi.org/10.24843/ejmunud.2019.v08.i07.p01

Rahman, A., Umar, U., & Jumria, J. (2023). Pengaruh net profit margin (npm) dan return on asset (roa)terhadap harga saham pada pt. Mayora Indah TBK. *Movere Journal*, *5*(1), 38–49. https://doi.org/10.53654/mv.v5i01.324

Regina Arthamevia, R. A., & Husin, R. N. (2023). Pengaruh net interest margin (nim) dan loan to deposit ratio (ldr) terhadap return on asset (roa) pada bank bumn yang terdaftar di bei periode 2013-2021. *Akuntoteknologi*, *15*(1), 160–176. https://doi.org/10.31253/aktek.v15i1.2129

Saputra, A. J., & Angriani, R. (2023). Pengaruh capital adequacy ratio (car), non performing loan (npl), net interest margin (nim), loan to deposit ratio (ldr) dan biaya operasional pendapatan operasional (bopo) terhadap return on asset (roa) pada bank perkreditan rakyat (bpr) di kota batam. *Akuntansi Dan Manajemen*, *18*(1), 93–115. https://doi.org/10.30630/jam.v18i1.210

Sayed, A. (2023). *Nim perbankan masih tinggi, jangan bangga!* Id Investing. https://id.investing.com/analysis/nim-perbankan-masih-tinggi-jangan-bangga-200241762

Setiawati, D., Shabrina, N., Nurhamdi, ; Muhamad, Satria, R., Manajemen, P., Pamulang, U., & Selatan, T. (2024). *Pengaruh capital adequacy ratio dan non performing loan terhadap return on asset pada pt bank tabungan negara (persero) tbk periode 2012-2021*. *2*(1), 273–284. https://doi.org/10.61132/nuansa.v2i1.747

Silaban, F. (2023). Analisis pengaruh tingkat kesehatan bank terhadap profitabilitas perbankan di bursa efek indonesia. *Jurnal Bisnis Dan Manajemen*, *1*(2), 146–157. https://doi.org/10.51622/jbm.v1i2.2006

Supeno, W., & Aminudin, A. (2023). Analisis pengaruh npl, nim dan car terhadap roa pada perusahaan perbankan yang terdaftar di bursa efek indonesia. *Jurnal Ekonomi Pembangunan STIE Muhammadiyah Palopo*, *9*(2), 315. https://doi.org/10.35906/jep.v9i2.1629

Tannia, T., Aryanilo, A., & Edward, E. (2020). Analisis faktor-faktor yang mempengaruhi peringkat obligasi pada perusahaan-perusahaan sektor perbankan yang terdaftar di bursa efek indonesia tahun 2015-2018. *ECOBISMA (JURNAL EKONOMI, BISNIS DAN MANAJEMEN)*, *7*(2), 12–25. https://doi.org/10.36987/ecobi.v7i2.1777

Widyastuti, P. F., & Aini, N. (2021). Pengaruh car, npl, ldr terhadap profitabilitas bank (roa) tahun 2017-2019. *Jurnal Ilmiah Mahasiswa Akuntansi) Universitas Pendidikan Ganesha*, *12*(03), 2614–1930. https://ejournal.undiksha.ac.id/index.php/S1ak/article/view/37828

Wijayani, D. I. L. (2023). Faktor-faktor yang mempengaruhi profitabilitas bank: studi pada perbankan swasta di indonesia. *Owner*, *7*(1),563–575. https://doi.org/10.33395/owner.v7i1.1223

Winarto, L. M. S. S. ; Y. (2019). *Ini penyebab kredit perbankan belum maksimal, meski car tebal*. Keuangan Kontan. https://keuangan.kontan.co.id/

news/ini-penyebab-kredit-perbankan-belum-maksimal-meski-car-tebal

Wulandari, I. (2022). *Determinasi kinerja keuangan pada perusahaan perbankan di indonesia*.*4*,12. https://journal.maranatha.edu/index.php/jafta/article/download/6166/2607/29897

Yanti, S., Suryani, S., & Jajuli, S. (2024). Analisis pengaruh nim , car , npf , dan der terhadap profitabilitas (roa) pada bank umum syariah (bus) periode 2017-2022. *EKSISBANK (Ekonomi Syariah Dan Bisnis Perbankan)*, *8*, 15–30. https://journal.sties-purwakarta.ac.id/index.php/EKSISBANK/article/view/1083