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THE INFLUENCE OF NIM AND NPL ON ROA AT NATIONAL PRIVATE BANKS IN INDONESIA FOR THE PERIOD 2021-2023

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Abstract
The level of profitability or the capability of an institution to generate profit is a quantitative indicator used in evaluating financial performance, especially in assessing the company's ability to obtain a profit that is considered appropriate. The main focus of the preparation of financial statements lies in the achievement of this profit. This study is intended to analyze the extent to which Net Interest Margin (NIM) and Non Performing Loan (NPL) have an effect on Return on Assets (ROA) at National Private Commercial Banks in Indonesia. This study adopts a quantitative approach, with data collection techniques carried out through the documentation method. Data analysis was carried out using multiple linear regression, determination test (R^2), and hypothesis testing. As the results of the regression model estimation, the equation obtained is: $Y = -0.103 + 0.494X_1 - 0.234X_2$. The value ($R^2$) was recorded at 0.472, which indicates that the NIM and NPL variables explain around 47.2% of the variation in ROA, while the remaining 52.8% is influenced by other factors not included in the model. The results of the partial test (t-test) show that both NIM and NPL have a high influence individually on ROA. Meanwhile, the results of the F test show a sig. 0.000 which is <0.05, so it is concluded that collectively NIM and NPL have an influence on ROA at National Private Commercial Banks.

Keywords: Net Interest Margin, Non Performing Loan, Return On Assets

1. Introduction

Banks can be understood as institutions that have the right to collect funds from the public in the form of current accounts, deposits, and savings, which are then given back to the public through the provision of credit. Public trust in banking is now increasing, so banks are chosen as a place to store funds as well as a means of investment through products such as gold savings and deposits. Banking services show flexible characteristics, both in terms of the type of service, the distribution of operational locations, and the cost policies applied to attract people to save funds. National Private Bank itself is a financial institution established or run by the private sector, whose purpose is to provide banking services such as fund raising, credit distribution, and other financial services, under the supervision of Bank Indonesia Muhammad Djumhana (2006).

Return on Assets (ROA) represents a performance indicator that reflects the proportion of profit to the total assets that belong to the company. This means that the greater the value of this ratio, the more it shows the company's ability to manage assets optimally to generate profitability (Kasmir, 2015). A positive ROA value indicates that a certain percentage of assets successfully operated in the company's activities are able to provide a certain level of profit. On the other hand, if the ROA shows a negative number, it reflects the potential losses incurred by the company. High earnings are a positive signal for the company's sustainability and growth prospects, so it can increase demand for shares by

investors. The increase in equity demand leads to an increase in the value of the company (Halimah and Komariah, 2015). The superior the company's performance, the higher the rate of return on capital that investors expect from the funds they have invested in the company.

Net Interest Margin (NIM) is a rational indicator that compares net interest income to outstanding loans, where this interest income is obtained from the difference between interest on loans disbursed and interest costs on funds raised. The increase in NIM value indicates that banks are increasingly optimal in managing productive assets through credit distribution (Sarifudin, 2005). This ratio that continues to increase reflects the improved performance of interest on productive assets, thereby minimizing the potential for financial problems in banks (Almilia & Herdiningtyas, 2005). NIM represents exposure to market risk that comes from the dynamics of external conditions that have the potential to exert negative pressure on the performance of banks (Hasibuan, 2007). On the other hand, NIM also functions as a parameter for the bank's managerial ability in projecting interest-based profits, based on the history of credit disbursement, considering that the bank's operating income is greatly influenced by the difference in loan interest rates. (Mahardian 2008).

Non-Performing Loans (NPLs) represent a proportional indicator that reflects the bank's ability to handle loans that experience payment dysfunction. This ratio describes the ratio between total non-performing loans and the total loans disbursed. The higher the NPL value, the more the quality of the bank's credit portfolio deteriorates, which has an impact on the increase in the number of non-performing loans and potential losses. On the other hand, the lower the NPL, the bank's profitability level tends to increase (Puspitasari, 2009). The surge in the NPL ratio implies an increase in non-performing loans that cause idle money, as well as the risk of suppressing ROA. This ratio is also adopted to assess the extent of the effectiveness of bank management in controlling credit portfolios that are at risk of default. Credit risk captured by banks represents a form of exposure to uncertainty in the debtor's ability to fulfill the repayment obligations that have been disbursed (Hasibuan, 2007). This increase in the value of this ratio reflects a decline in the quality of the bank's loan portfolio, as well as an increase in the proportion of non-performing loans, which can ultimately lead to a potential loss of 4,444. On the other hand, if the non-performing credit is low, the profit or ROA of a bank will increase.

Table 1. Average Profitability Bank Indonesia

No.	Bank	Year	NIM	NPL	ROA
1	PT. Bank Sahabat Sampoerna Tbk.	2021	5,36%	0,58%	0,46%
		2022	7,47%	1,00%	0,56%
		2023	5,57%	1,93%	0,67%
2	PT. Bank Victoria International Tbk.	2021	1,17%	4,48%	0,28%
		2022	2,73%	4,23%	0,43%
		2023	2,67%	2,94%	0,90%
3	PT. Bank Mandiri Taspen Tbk.	2021	6,84%	0,12%	2,7%
		2022	6,82%	0,10%	4,66%
		2023	6,13%	0,06%	3,71%
4	PT. Bank Mega Tbk.	2021	4,82%	0,99%	3,35%
		2022	4,99%	0,82%	2,83%
		2023	5,42%	1,06%	3,66%
5	PT. Bank Ctbc Indonesia Tbk.	2021	4,22%	0,42%	1,14%
		2022	3,87%	0,43%	0,87%
		2023	4,07%	0,09%	1,67%

Table 1 above reveals the average profitability value determined based on NIM, NPLs and ROA in the five BUSNs registered with the OJK for the 2021-2023 period. From the table, you can see the comparison of NPM (Non-Performing Loan) between Bank Sahabat Sampoerna Tbk and Bank Victoria International Tbk. At Bank Sahabat Sampoerna, NPLs have increased every year, because many debtors have lost their main source of income due to the pandemic. Sectors such as tourism, transportation, and retail experienced a decline in demand. Despite credit restructuring by banks, some debtors were unable to recover their businesses, which ended up falling into the category of bad loans.

However, Bank Victoria International NPL decreases every year, because Bank Victoria increases monitoring of its credit portfolio. They are more selective in providing credit to more stable sectors, as well as using technology to identify potential payment problems early.

2. Theoretical Background

2.1 Return On Asset

ROA represents a ratio that shows the yield of a company relative to the total assets used, the higher the ratio, the better, because the company is considered to be able to use its assets effectively to obtain profits (Kasmir, 2015).

2.2 Net Interest Margin (NIM)

NIM describes the comparison between net interest income and total outstanding loans, where net interest income is calculated from the difference in loan interest earned with interest costs on funds raised. The large NIM value indicates the bank's ability to maximize the use of productive assets through efficient credit distribution (Sarifudin, 2005).

2.3 Non Performing Loan (NPL)

NPLs reflect a proportional measure that describes the extent of a bank's capacity to handle loans that have defaulted. This ratio indicates the portion of non-performing loans in the overall loan portfolio. The increase in the value of NPLs indicates a degradation of the quality of credit assets, which has an impact on the accumulation of losses due to the increase in non-performing loans. On the other hand, the decrease in the NPL ratio indicates the effectiveness of credit risk management which has a positive impact on profit growth and the profitability level of banking institutions (Puspitasari, 2009).

2.4 The Influence of NIM on ROA

In theory, an increased NIM could potentially increase a company's ROA, as a higher NIM shows that a bank or financial institution can generate more interest income from the assets it owns compared to the interest costs paid on the source of funds. According to Rahman (2009) that NIM has an influence on ROA. However, this is not in line with the findings of Muhammad Hilmy Tsany, Batara Daniel Bagana (2022) which reveals that NIM has no effect on ROA.

2.5 The influence of NPL on ROA

An increase in NPLs generally does not increase ROA. Conversely, higher NPLs will lead to increased costs especially loss reserves, decreased interest income, and reduced asset efficiency, all of which lead to a decrease in net profit and a decrease in ROA.

Therefore, banks need to maintain the quality of their loan portfolios to ensure that ROAs remain healthy. According to Nugroho, Mangantar and Tulung (2019) who stated that there is no effect of NPL on ROA. However, it is different from the study of Dewi, Herawati and Sulindawati (2015) that NPL affects ROA. Influence of NIM, NPL on ROA. Supatra's (2007) findings that NIM has a strong and positive influence on ROA

2.6 Hypothesis Development

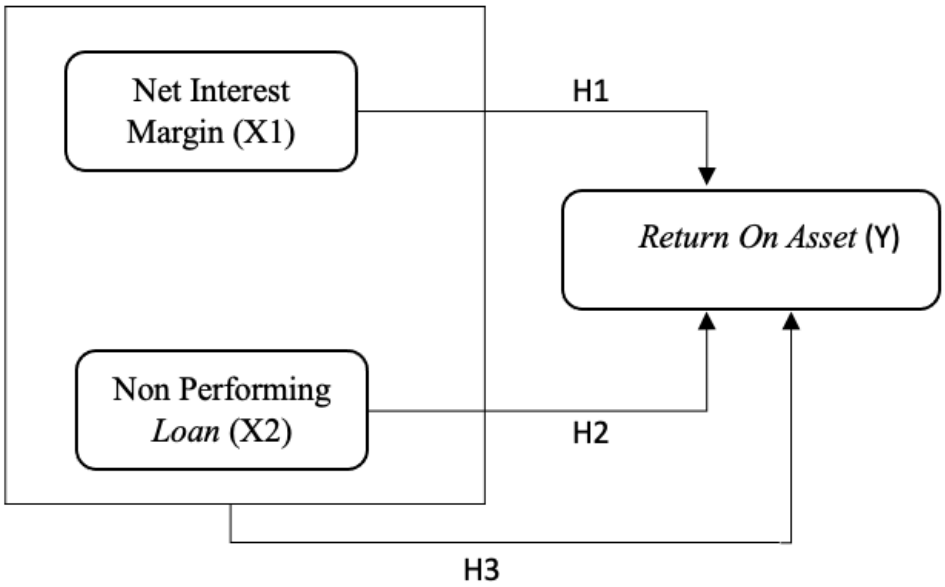

Figure 1. Conceptual Framework

H1: NIM has a significant effect on ROA.
H2: NPL has a significant effect on ROA.
H3*:* NIM and NPL have a significant effect on ROA.

3. Methods

3.1 Research Design

This study adopts a quantitative research design with a structured approach aimed at analyzing the relationship between financial indicators and corporate characteristics. The analysis is based on secondary numerical data obtained from audited financial statements and annual reports of national private commercial banks in Indonesia. These banks are officially registered and supervised by the Indonesian Financial Services Authority (OJK). The data used in this study were collected for the period 2021 to 2023, and are publicly accessible through the OJK's official website (www.ojk.go.id) and the respective companies' official websites.

The population in this research consists of all national private commercial banks registered with OJK during the 2021–2023 period. According to Sudjana (2005), a population is defined as the entire group of objects or subjects that possess specific characteristics and are relevant to the research objectives. However, due to limitations in data availability and relevance, the study applies a purposive sampling technique to select a representative sample of banks that meet the following criteria: (1) actively registered with OJK throughout the 2021–2023 period, and (2) consistently publish complete financial statements during the same timeframe. The sample selection process is presented in table 2.

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Table 2. Sample Selection Criteria

No.	Criteria	Number of Banks
1	National private commercial banks registered with OJK	16
2	Banks not consistently listed from 2021 to 2023	0
3	Banks without complete financial reports (2021–2023)	(2)
	Total Sample Banks	14
	Firm-Year Observations (14 banks × 3 years)	42

As shown, 14 banks were selected as the final sample, resulting in 42 firm-year observations for analysis. To gather the required data, this study utilizes a documentation method, involving systematic collection and recording of financial and annual reports published officially by the banks and available through the OJK portal. All data used in this research are quantitative in nature and categorized as secondary data, as they have been previously published and are not collected directly by the researchers. The selection of this method ensures objectivity, transparency, and the replicability of findings, which align with the standards of empirical research in the field of financial economics.

3.2 Data Analysis Method

To ensure the validity and reliability of the regression model, this study conducts several classical assumption tests prior to the main regression analysis. The data analysis process involves four stages: normality test, multicollinearity test, heteroscedasticity test, autocorrelation test, followed by multiple linear regression analysis and hypothesis testing. The core analysis method is multiple linear regression, which aims to identify the magnitude and direction of the influence of independent variables on the dependent variable (Ghozali, 2018). The model used is specified as follows:

$$Y=a+b1X1+b2X2+\varepsilon$$

Y = Return on Assets (ROA)
a = Constant
b1, b2 = Regression coefficients
X1 = Net Interest Margin (NIM)
X2 = Non-Performing Loan (NPL)
ε = Error term

4. Results and Discussion

4.1 Descriptive Statistics

Descriptive statistics provide a general overview of the dataset by summarizing key characteristics such as the minimum, maximum, mean, and standard deviation of the variables used in the study. Table 3 presents the descriptive statistics for the Net Interest Margin (NIM), Non-Performing Loan (NPL), and Return on Assets (ROA), based on 42 firm-year observations from 14 national private commercial banks over the 2021–2023 period.

Table 3. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Standard Deviation
NIM	42	1.17	8.22	4.2352	1.67457
NPL	42	0.03	4.48	1.0471	1.09967
ROA	42	0.21	4.66	1.7424	1.40300

1) The NIM variable has a mean of 4.24, with values ranging from 1.17 to 8.22, and a standard deviation of 1.67, indicating moderate variation in net interest margins across the sampled banks.

2) The NPL variable exhibits a mean of 1.05, with a minimum value of 0.03 and a maximum of 4.48, while its standard deviation of 1.10 suggests a relatively high degree of variation in credit risk.
3) The dependent variable, ROA, has an average of 1.74, ranging from 0.21 to 4.66, and a standard deviation of 1.40, implying diverse levels of profitability across the observed banks.

4.2 Classical Assumption

To validate the regression model, classical assumption tests were conducted, including normality, multicollinearity, autocorrelation, and heteroscedasticity. The test results are presented in Table 4.

Table 4. Classical Assumption Test Results

No	Assumption Test	Method Used	Criteria	Result	Conclusion
1	Normality	Kolmogorov–Smirnov Test	Sig. > 0.05	Sig. = 0.200	Residuals are normally distributed
		Histogram & P-P Plot	Bell-shaped curve and points near diagonal	Data visually follow normal pattern	Confirmed visually
2	Multicollinearity	Tolerance and VIF	Tolerance > 0.10 and VIF < 10	NIM: Tolerance = 0.821, VIF = 1.218 NPL: Tolerance = 0.821, VIF = 1.218	No multicollinearity
3	Autocorrelation	Durbin–Watson Statistic	1.60 < DW < 2.40	DW = 1.589	No autocorrelation
4	Heteroscedasticity	Scatterplot of Standardized Residuals	Random distribution without pattern	No clear pattern in residual spread	No heteroscedasticity
		Glejser Test (Sig. value)	Sig. > 0.05	Sig. > 0.05 for all predictors	Homoscedasticity confirmed

Notes:

1) Normality Test was conducted using both graphical and statistical approaches. The histogram and P–P plot indicate a visually normal distribution. This is supported by the Kolmogorov–Smirnov test showing a p-value greater than 0.05, implying that residuals are normally distributed.
2) Multicollinearity Test used tolerance and Variance Inflation Factor (VIF) values. Tolerance values for all independent variables are above 0.10, and VIF values are below 10, indicating no multicollinearity issues among predictors.
3) Autocorrelation Test applied the Durbin–Watson (DW) statistic. The DW value of 1.589 lies within the acceptable range, suggesting no positive or negative autocorrelation in the residuals.

4) Heteroscedasticity Test was performed visually via scatterplot and statistically using the Glejser test. The scatterplot shows a random pattern of residuals, and all predictor variables yielded significance levels greater than 0.05, suggesting the model meets the homoscedasticity assumption.

4.3 Regression Analysis Results

Multiple linear regression analysis was conducted to examine the effect of Net Interest Margin (NIM) and Non-Performing Loan (NPL) on Return on Assets (ROA). The results, including regression coefficients, t-values, significance levels, the F-statistic, and coefficient of determination (R^2), are summarized below.

Table 4. Summary of Regression Analysis Results

Variable / Model Statistic	Value	t-value / F-value	Sig. (p-value)	Interpretation
Constant	-0.103	-0.250	0.804	Not significant
NIM	0.494	4.589	0.000	Significant positive effect on ROA
NPL	-0.234	-1.428	0.161	Not significant negative effect on ROA
R-squared (R^2)	0.472	–	–	47.2% of ROA variation is explained by NIM and NPL
F-statistic	17.445	–	0.000	Model is significant at 5% level ($p < 0.05$)
t-table	–	2.023	–	Benchmark for evaluating partial significance ($df = 39$, $\alpha = 0.05$)
F-table	–	3.285	–	Benchmark for evaluating model significance ($df1 = 2$, $df2 = 39$, $\alpha = 5\%$)

Notes:

The regression results indicate that Net Interest Margin (NIM) has a statistically significant and positive effect on Return on Assets (ROA), as evidenced by a t-value (4.589) greater than the critical t-table value (2.023) and a p-value below 0.05. This suggests that higher NIM contributes to increased profitability. Conversely, Non-Performing Loan (NPL) shows a negative but statistically insignificant effect on ROA, as the t-value (-1.428) is lower than the t-table and the p-value exceeds 0.05, implying no strong evidence of influence. The R-squared value of 0.472 implies that 47.2% of the variation in ROA can be explained by the model. The F-statistic (17.445) is above the F-table value (3.285), and the model is significant at the 5% level, confirming the overall goodness-of-fit of the regression model.

4.4 Discussion

4.4.1 The Effect of Net Interest Margin (NIM) on Return on Assets (ROA)

The results of the regression analysis indicate that NIM has a significant and positive effect on ROA in banking companies listed by the Financial Services Authority (OJK) during the 2021–2023 period. This finding underscores the importance of NIM as an indicator of a bank's efficiency in managing its interest-based operations. A higher NIM reflects the bank's ability to generate more income from interest-bearing assets relative to the costs of its funding sources, thereby positively influencing its profitability.

This result supports the general theory that a strong NIM enhances profitability but offers a contrast to previous findings by Supatra (2007) and Mahardian (2008), which suggested that NIM, although positively related to ROA, may not always have a

consistently strong impact. The results of this study suggest that in the 2021–2023 period, Indonesian banks were more effective in optimizing their asset structures and interest margins, contributing directly to improved financial performance.

4.4.2 The Effect of Non-Performing Loans (NPL) on Return on Assets (ROA)

Unlike NIM, the NPL variable does not have a significant partial effect on ROA. Although theoretically, a high NPL ratio is expected to reduce profitability due to increased credit risk and provisioning costs, this study finds that its effect on ROA was statistically insignificant for the banks observed.

This finding differs from Mawardi (2005), who found that NPL had a significant negative impact on ROA. One possible explanation is that during the 2021–2023 period, banks maintained adequate levels of capital—particularly through the Capital Adequacy Ratio (CAR)—which absorbed potential losses from non-performing loans. Moreover, strengthened risk management systems and loan restructuring strategies may have mitigated the negative impact of credit quality deterioration on profitability.

5. Conclusion

Based on the results of the analysis, it can be concluded that Net Interest Margin (NIM) has a significant and positive partial effect on Return on Assets (ROA), indicating that the bank's ability to manage interest income from productive assets strongly contributes to profitability. In contrast, Non-Performing Loans (NPL) do not have a significant partial effect on ROA, suggesting that during the 2021–2023 period, credit risk was not the dominant factor influencing financial performance in the observed banking sector. These findings highlight the critical role of interest income management over credit risk in driving bank profitability within the period studied.

In light of these findings, future research is encouraged to explore other financial and non-financial variables that may influence ROA and to extend the scope of study across a broader set of banks or timeframes to strengthen generalizability. For Universitas Prima Indonesia, this research can serve as an initial conceptual foundation for further academic inquiry on banking performance.

References

Abdul Rahman. (2009). Profile of Mathematical Problem Submission based on Cognitive Style. State University of Surabaya

Agus Santoso. (2010). Descriptive Effect Size Study of Research at the Faculty of Psychology, Sanata Dharma University. Research Journal. 14(I). Pp. 1-17.

Almilia, L. S and W.Herdiningtyas. 2005. Analysis of CAMEL Ratio to Prediction of Problematic Conditions in Banking Institutions for the Period 2000-2002. Journal of Accounting and Finance, Vol. 7, No. 2.

Arham, Suwandi, 2019, Omnibus Law in the Perspective of Indonesian Law, Vol 7, No. 2

Arikunto, Suharsimi. 2010. Research Procedure: A Practical Approach. Jakarta: Rineka Cipta.

Dewi, Luh Eprima., Nyoman Trisna Herawati, Luh Gede Erni Sulindawati. 2015. Analysis of the Influence of NIM, BOPO, LDR, and NPL on Profitability (Case Study on National Private Commercial Banks Listed on the Indonesia Stock Exchange for the Period 2009-2013), e-Journal S1 Ak. Ganesha University of Education Department of Accounting S1 Program, volume 3, no. 1.

Ghozali, I. (2018). "Application of Multivariate Analysis with IBM SPSS Program"Ninth Edition.Semarang:Diponegoro University Publishing Agency

Gujarati, Damodar N, (2004). Basic Econometrics, Fourth edition, Singapore. McGraw-Hill Inc.

Hasibuan, 2007 Jakarta Human Resource Management: Print 9.PT Bumi Aksara.

Kasmir, (2015), Analysis of Financial Statements. Jakarta: Rajawali Press

Muhammad Djumhana, 2006, Development of Doctrine and Theory of Intellectual Property Rights Protection, Bandung: PT. Image of Aditya Bakti.

Puspitasari, D. 2009. The Impact of Water Pollution on Environmental Health in the Perspective of Environmental Law (Case Study of Sungai Code in Wiragunan Village, Mergansan District and Prawirodirjan Village, Gondomanan District, Yogyakarta), Legal Pulpit No. 1, Vol. 21.

Sarifudin, 2005, Analysis of the Influence of Financial Ratio on Affordability: An Empirical Study on a Banking Industry Listed on the Stock Exchange, THESIS of the Master of Management Postgraduate Program UNDIP, Semarang.

Sudjana. 2005. Statistical Methods. Bandung: Tarsito