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Net Interest Margin and Return on Assets: A Case Study in Indonesia

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Abstract

The study aims to examine and analyze the factors that affect the return on assets (ROA) by placing net interest margin (NIM) as a moderating variable in influencing ROA. This research was conducted on 27 banks listed on the Indonesia Stock Exchange (IDX) for the period 2015 to 2018 with a total sample data of 91. The data used is a combination of time series data and cross-section data. The sampling technique used was the purposive sampling method. The data analysis technique used was path analysis with multiple regression analysis technique. The results of the analysis showed that the capital adequacy ratio (CAR) and loan to deposit ratio (LDR) have a positive but insignificant effect on ROA. NIM as a moderating variable does not influence the impact of CAR on ROA. However, NIM as a moderating variable is able to influence the impact of LDR on ROA. From the results of this study, it is evident that the LDR will increase the ROA at banks that generate high NIM.

Keywords: Capital Adequacy Ratio, Loan to Deposit Ratio, Net Interest Margin, Return on Asset

JEL Classification Code: G30, G34, G38

1. Introduction

The banking sector was always deemed to be one of the most vital **sectors** for the economy to be able to function. **The banking sector plays a vital role in the development of one country's economy.** The banking industry in Indonesia has received serious attention from the government, because of its role as an agent of development. If you look at the financial markets in Indonesia today, banks still play a dominant role in providing financing the economy. **Therefore, banks can be the key to sustainable economic development in Indonesia.**

As the banking system becomes ever more important in its role as a financial intermediary, the modern concept of asset management and allocation continues to evolve (Saksonova, 2014). Banks act as financial intermediaries that channel funds from individuals or corporations with surplus capital to other individuals or corporations that require cash to carry out certain economic activities. A key role of central banks is to conduct monetary policy to achieve price stability (low and stable inflation) and to help manage economic fluctuations. Monetary policy is the macroeconomic policy laid down by the central bank. It involves the management of money supply and interest rate and is the demand side economic policy used by the government of a country to achieve macroeconomic objectives like inflation, consumption, growth, and liquidity. Thus, the existence of a healthy bank, both individually and as a whole as a system, is a prerequisite for a healthy economy.

Bank Indonesia as the central bank is obliged to creating healthy banking, by creating effective bank regulation and supervision. Bank Indonesia carries a three-fold responsibility as a monetary authority and the regulatory and supervisory authority for the banking system and payment system. As such, BI's most important task is not only to safeguard monetary stability, but also financial system stability. Bank Indonesia has a vital role in building the sound performance of financial institutions, particularly in the banking sector. The performance of banking institutions is promoted through the supervisory and regulatory mechanism. Like in other countries, the banking sector plays a dominant role in the financial system. **For this reason, any failure in this sector could lead to financial instability and disruption of the economy. To prevent such failure, it is essential to uphold an effective system for bank supervision and banking policy.**

Banks inevitably continue to attract significant attention from the public and scrutiny by financial regulators as there is a growing need to evaluate banks more efficiently. Not only supervising institutions, regulators, and bank management bodies but also clients of banks, are becoming increasingly concerned about the stability and sustainability of these financial institutions. Therefore, it is necessary to measure the banks' performance to determine their contribution to business development. The first key measure is the Return on Assets ratio, also known as ROA. It is the most commonly used benchmark for bank profitability since it measures the company's return on investment in a format that is easily comparable with other institutions. ROA is a ratio of net income produced by total assets during a period of time. In other words, it measures how efficiently a bank can manage its assets to produce profits. Investors will be interested in saving or investing in banks that are performing well.

Investors look at a bank's growth potential as a key valuation factor when determining a fair value for the stock. The market price of bank shares can be used as a basis for indicators of efficiency and effectiveness of bank management. A stock's valuation should always reflect the current health of the underlying business and its future growth potential. For banks, this means being able to make healthy loans, receive interest and fees on other accounts, and limit counterparty risk. Besides return on assets

(ROA) as an indicator of bank performance, other bank performance indicators are return on equity (ROE) and net interest margin (NIM). These three bank performance indicators play an important role in maintaining bank effectiveness and stability. Likewise, the three bank performance indicators can serve as information signals for investors to save or invest in the bank. Saksonova (2014) showed that net interest margin is the most appropriate criterion for evaluating the effectiveness and stability of banks' operations. It is superior to the return on assets in illustrating how successfully a bank manages its interest-bearing assets. The author analyzed banking sectors in the Baltic countries, the Euro Area as well as the United States, and their management strategies, as well as indicators of their operations to show that net interest margin is one of the most important criteria for asset structure optimization. The novelty of this research was developing Saksonova research with placing the net interest margin (NIM) as a moderating variable which strengthens its effect on return on assets (ROA).

The following table 1 shows the growth of conventional commercial bank performance during the last 5 years, namely the 2015 - 2019 period.

Table 1: Performance Growth of Conventional Commercial Banks for the Period of 2015 - 2019

No	Years	NIM (%)	ROA (%)
1	2015	5.39	2.32
2	2016	5.63	2.23
3	2017	5.32	2.45
4	2018	5.14	2.56
5	2019	4.91	2.47

Source: Indonesian Banking Statistics - December 1, 2019

The performance of conventional commercial banks in the last 5 years has fluctuated with a tendency to decline. Net interest margin in 2015 was 5.39% and increased to 5.63% in 2016, but continued to decline in 2017 to 5.32%, in 2018 to 5.14%, and again in 2019 to 4.91%. Meanwhile, the return on assets in 2015 was 2.32%, decreased to 2.23% in 2016, and increased again to 2.45% in 2017 and 2.56% in 2018, but decreased again in 2019 to 2.47%. This downward trend in performance shows how intense business competition is in the banking sector.

Previous research related to return on assets has been done a lot, although the results are different. Ayanda et al. (2013) found out what factors really determined profitability in the banking sector of the Nigerian economy using First Bank of Nigeria Plc as a case study. Results from the study revealed that contrary to the views of some authors, bank size and cost efficiency did not significantly determine bank profitability in Nigeria. However, credit risk and capital adequacy were found to be significant drivers which affected bank profitability both in the long run and short run respectively.

The results of research from Samad (2015) indicated that bank-specific factors such as loan-deposit ratio, loan-loss provision to total assets, equity capital to total assets, and operating expenses to total assets are significant factors. Bank sizes and macroeconomic variables show no impact on profits. Hardiyanti et al. (2016) and Agustina and Kennedy (2016) found that net interest margin has a positive effect on return on assets.

Based on the empirical conditions and the results of previous research, this study examines the role of net interest margin (NIM) as a moderating variable in strengthening the effect of capital adequacy ratio (CAR) and loan to deposit ratio (LDR) on return on assets (ROA). NIM is the most appropriate measure to assess the efficiency, effectiveness, and stability of bank operations. Therefore, this study aims to examine the role of NIM in strengthening its effect of CAR and LDR on ROA.

2. Literature Review

2.1 The Basic of Reasoning

An important function of the bank is managing finances to be distributed to customers in the form of credit, from which the bank will receive interest from the customer. Banks give interest on deposits which adds to the original deposit amount and is a great incentive to the depositor. This promotes saving habits among the public. **Bank also grants loans based on deposits thereby adding to the economic development of the country and well being of the general public.** The deposits accepted from the public are utilized by the banks to advance loans to businesses and individuals to meet their uncertainties. **The bank charges a higher rate of interest on loans and advances than what it pays on deposits. The difference between the lending interest rate and interest rate for deposits is bank profit.**

Net interest income is a financial performance measure that reflects the difference between the revenue generated from a bank's interest-bearing assets and expenses associated with paying on its interest-bearing liabilities. Net interest margin (NIM) is a measure of the difference between the interest income earned by a bank or other financial institution and the interest it pays out to its lenders (for example, depositors), relative to the amount of their assets that earn interest.

The net interest margin is positively related to profitability, the higher the interest income obtained from lending, the profit will also increase. Kun and Huizinga (1999) showed that differences in interest margins and bank profitability reflect a variety of determinants: bank characteristics, macroeconomic conditions, explicit and implicit bank taxation, deposit insurance regulation, overall financial structure, and underlying legal and institutional indicators.

The relationship between risks faced by banks and net interest margin has received special attention, such as liquidity risk, credit risk, operating risk, risk of changes in interest rates, and risk of capital adequacy. These risks can also affect bank profitability because if bank management fails to manage these risks, it can have an impact on bank profits. To determine the profitability of banks, simply looking at the earnings per share isn't quite enough. It's also important to know how efficiently a bank is using its assets and equity to generate profits.

To calculate a bank's return on assets, you need to know two pieces of information. First, you need to find the net income, which can be found on the bank's income statement. Next, you need to find the bank's assets (loans, securities, cash, etc.), which can be found on the bank's balance sheet. To calculate return on assets, simply divide the net income by the total assets (Dao & Nguyen, 2020). Return on assets as an indicator of bank performance is beneficial for bank management in determining the direction of bank policies and strategies with regard to business expansion. Meanwhile, for shareholders, return on assets is useful in indicating the effectiveness of the bank in converting their money invested into net income

Therefore, it is important for bank management to know the factors that determine a bank's ROA to maintain the stability of its operations. Several factors determine ROA, but this study will only use three determinants of return on assets, namely capital adequacy ratio (CAR), loan to deposit ratio (LDR), and net interest margin (NIM).

2.1.1 Capital Adequacy Ratio (CAR)

The capital adequacy ratio (CAR) is a measurement of a bank's available capital expressed as a percentage of a bank's risk-weighted credit exposures. The capital adequacy ratio, also known as the capital-to-risk weighted assets ratio (CRAR), is used to protect depositors and promote the stability and efficiency of financial systems around the world. Two types of capital are measured: tier-1 capital, which

can absorb losses without a bank being required to cease trading, and tier-2 capital, which can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors.

When this ratio is high, it indicates that a bank has an adequate amount of capital to deal with unexpected losses. A bank with a high capital adequacy ratio is considered to be above the minimum requirements needed to suggest solvency. Therefore, the higher a bank's CAR, the more likely it is to be able to withstand a financial downturn or other unforeseen losses. When the ratio is low, a bank is at a higher risk of failure, and so may be required by the regulatory authorities to add more capital. A low ratio indicates that the bank does not have enough capital for the risk associated with its assets, and it can go bust with any adverse crisis, something which happened during the recession. Thus, CAR measures the amount of capital a bank retains compared to its risk. **The CAR is important to shareholders because it is an important measure of the financial soundness of a bank.**

2.1.2 Loan to Deposit Ratio (LDR)

The loan-to-deposit-ratio (LDR) compares the size of a bank's loan book to its deposits to analyze the bank's funding strategy. Funding can come from customer deposits or the wholesale markets (in the form of demand deposits, savings accounts, time deposits, time deposits certificates, and other immediate obligations in the form of credit). Lending is the main activity of the bank, besides collecting funds from customers, because it is the main source of bank income. Banks generally make money by borrowing money from depositors and compensating them with a certain interest rate. The banks will lend the money out to borrowers, charging the borrowers a higher interest rate, and profiting off the interest rate spread.

To calculate LDR, divide a bank's total amount of loans by the total amount of deposits for the same period. The LDR is used to assess a bank's liquidity by comparing a bank's total loans to its total deposits for the same period. The LDR is expressed as a percentage. If the ratio is too high, it means that the bank may not have enough liquidity to cover any unforeseen fund requirements. Conversely, if the ratio is too low, the bank may not be earning **as much as it can.**

Profitability and liquidity are two basic concepts that attract the attention of all banks. Given the position of banks as a catalyst to economic development, they cannot afford to fail their customers nor the public in any of these two issues. Banks want to make profits but at the same time, they are concerned about liquidity and safety. To make the best out of these conflicting corporate objectives, there is a need to strike a balance between profitability and liquidity. All in all, striking a balance between the two corporate objectives, gives a win-win situation for all parties as shareholders interest will be protected by **earning returns on invested funds which add up to profit to be declared at the end of the year and customers (most especially demand deposit customers,) will have access to their deposit at any time.**

2.1.3 Moderating Role of Net Interest Margin

According to Kunt and Huizinga (1999), banks act as financial intermediaries because they stand between savers and borrowers. A financial intermediary is typically an institution that facilitates the channeling of funds between lenders and borrowers indirectly. That is, savers (lenders) give funds to an intermediary institution, and that institution gives those funds to spenders (borrowers). Net interest margin (NIM) is a measure of the difference between the interest income earned by a bank or other financial institution and the interest it pays out to its lenders (for example, depositors), relative to the amount of their assets that earn interest

In short, NIM is one indicator of a bank's profitability and growth. It reveals how much the bank is earning in interest on its loans compared to how much it is paying out in interest on deposits. Interest

expense is the price the lender charges the borrower in a financing transaction. It is the cost of borrowing money. It is the interest that accumulates on outstanding liabilities. Common examples include customer deposits and wholesale financing. Interest revenue is generated through interest payments the bank receives on outstanding loans. It is made up of credit lines and loans on the financial institution's balance sheet.

Several factors can affect NIM, especially the demand and supply of money because these factors have an impact on bank interest rates. If there is a greater demand for loans compared to savings, the NIM will increase, because the bank pays less interest than it receives. The increase in NIM has an impact on the increase in ROA because the profit generated by banks increases. Therefore, NIM plays an important role in influencing the increase in ROA.

2.1.4 Return on Assets (ROA)

Banks that are able to absorb the losses that are hidden, able to reduce the cost of capital (COC), their performance would be higher. **When the cost of capital is used by the market in determining the possible return out of the investment, bank performance is directly affected** (Tabash, 2019). This happens because the interest rate is a determining factor of bank income, and bank income will affect the resulting return on assets (ROA).

Return on assets is a profitability ratio that provides how much profit a company (bank) is able to generate from its assets. In other words, return on assets (ROA) measures how efficient a company's (bank) management is in generating earnings from their economic resources or assets on their balance sheet. The return on assets ratio formula is calculated by dividing net income by average total assets. This ratio can also be represented as a product of the profit margin and the total asset turnover. Either formula can be used to calculate the return on total assets. The net income of a bank informs customers or investors how much profit the bank makes. To increase ROA, banks must be able to optimize the position and growth of their earning asset and improve their credit quality (low Non-Performing Loan (NPL)).

2.2 Previous Research

Many studies related to NIM and ROA as indicators of bank performance have been carried out. As previously explained, this study places NIM as a moderating variable in determining ROA. The determining variables in this study are the capital adequacy ratio as a proxy for capital risk and the loan to deposit ratio as a proxy for liquidity risk.

Ayanda et al. (2013), Bernardin (2016), and Arsyad and Djoko, (2019) in their research found that the capital adequacy ratio has a positive effect on the return on assets. Islam and Rana (2017) showed that the capital adequacy ratio has a negative effect, while Sudiyatno and Fatmawati (2013), Agustina and Kennedy (2016), Harun (2016), Silaban (2017), and **Pranowo et al.** (2019) showed that capital adequacy ratio does not influence the return on assets.

Research conducted by **Ayanda et al.** (2013), Samad (2015), **Hardiyanti et al.** (2016), and Harun (2016) found that the loan to deposit ratio has a positive effect on the return on assets. Sudiyatno and Fatmawati (2013), Capraru and Ihnatov (2014), Agustina and Kennedy (2016), Bernardin (2016), Islam and Rana (2017), **Zainuddin et al.** (2017), **Yudha et al.** (2017), **Pranowo et al.** (2019), and Arsyad and Djoko (2019) found that loan to deposit ratio has no effect on the return on assets.

Other research results by **Hardiyanti et al.** (2016), Agustina and Kennedy (2016), **Yudha et al.** (2017), Silaban (2017), **Pranowo et al.** (2019), and Arsyad and Djoko (2019) showed a positive effect of

net interest margin on the return on assets. However, Harun (2016) showed that net interest margin did not affect the return on assets.

2.3 Hypothesis

Based on the basic concepts of thought and the results of previous research, the following hypothesis can be formulated:

H₁: Capital adequacy has a positive and significant effect on the return on assets.

H₂: The loan to deposit ratio has a positive and significant effect on the return on assets.

H_{3a}: The net interest margin moderates the impact of capital adequacy ratio on return on assets.

H_{3b}: The net interest margin moderates the impact of loan to deposit ratio on return on assets.

2.4 Research Empirical Model

Based on the formulation of the hypothesis and to make it easier to understand the role of net interest margin (NIM) as a moderating variable in influencing return on assets, an empirical research model is formulated as in Figure 1 below.

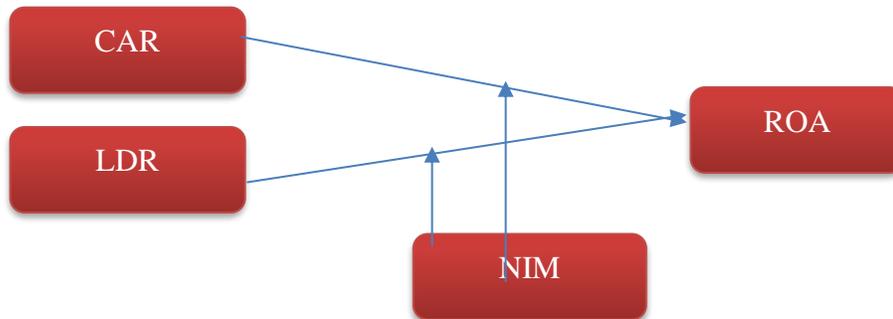


Figure 1: NIM as moderation between CAR and ROA as a well as LDR and ROA

3. Research Methods

3.1 Data

The population of this research is banking companies listed on the Indonesia Stock Exchange (IDX) for the period 2015-2018. Data was collected using the purposive sampling method, where the researcher determines the sample according to certain criteria needed by the researcher. Purposive sampling, also known as judgmental, selective, or subjective sampling, is a form of non-probability sampling in which researchers rely on their own judgment when choosing members of the population to participate in their study.

3.2 Research Variables

This study uses one dependent variable, namely, return on assets (ROA), one moderating variable, namely the net interest margin (NIM), and two independent variables, namely the capital adequacy ratio (CAR) and the loan to deposit ratio (LDR).

3.3 Data Analysis

The equation is as follows:

$$ROA = a + b_1CAR + b_2LDR + b_3CAR*NIM + b_4LDR*NIM + e$$

Where are:

ROA = Return on Asset

NIM = Net Interest Margin

CAR = Capital Adequacy Ratio

LDR = Loan to Deposit Ratio

4. Results and Discussion

4.1. Descriptive Analysis

Table 2. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
CAR	91	3.41	66.43	20.56	7.30
LDR	91	8.63	165.83	86.97	18.95
CAR*NIM	91	10.81	297.60	101.76	47.54
LDR*NIM	91	59.29	1315.03	429.45	183.96
ROA	91	-.20	3.69	1.29	.77
Valid N (listwise)	91				

From Table 2 it can be explained that the average capital adequacy ratio is 20.56%, which is relatively high compared to the requirement of Bank Indonesia, which is 8%. With this requirement, it shows that banks listed on the Indonesian Stock Exchange (IDX) are included in the “very healthy category”, although there are several banks that are categorized as unhealthy.

However, this condition can result in decreased lending to customers. The average loan to deposit ratio (LDR) value is 86.97% with the lowest LDR being 8.63% and the highest LDR being 165.83%. Although there are banks whose LDR is below 80% and above 110%, in general, LDR of banks listed on the Indonesia Stock Exchange (IDX) is quite healthy. Meanwhile, the average return on assets (ROA) value is 1.29%, with the lowest ROA being -0.20% and the highest ROA being 3.69%. Therefore, the average banking condition on the Indonesia Stock Exchange (IDX) according to the general requirements of Bank Indonesia is “healthy”.

4.2. Regression Analysis

4.2.1. Coefficient of Determination

The model test results show that the coefficient of determination R^2 is 79.3% and the Adjusted R^2 is 78.3%. Thus, 78.3% ROA is influenced by CAR, LDR, and NIM, while 21.7% is influenced by other factors outside the model.

Table 3. Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.890 ^a	.793	.783	.35702

a. Predictors: (Constant); CAR, LDR, CAR*NIM, LDR*NIM

b. Dependent Variable ROA

4.2.2. Significance Test F

The ANOVA test results - F significance show that the sig-F value = 0.000, thus the regression model meets the requirements of the goodness of fit as required in ordinary least square (OLS).

Table 4. ANOVA – Significance Test F

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	41.902	4	10.475	82.185	.000 ^b
	Residual	10.962	86	.127		
	Total	52.863	90			

a. Dependent Variable ROA

b. Predictors: (Constant); CAR, LDR, CAR*NIM, LDR*NIM

4.2.3. Hypothesis Testing

Hypothesis testing is done by looking at the results of t-value or sig-t to determine the significance level of each independent variable in the model to the dependent variable.

Table 5. Coefficients – Significance Test t

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
1 (Constant)	-1.011	.279		-3.624	.000
CAR	.003	.019	.028	.155	.877
LDR	.009	.006	.212	1.389	.168
CAR*NIM	.005	.004	.340	1.272	.207
LDR*NIM	.002	.001	.527	2.145	.035

a. Dependent Variable ROA

The t-value of CAR is 0.155 with a significance of t (sig-t) = 0.877, hence, hypothesis 1 is rejected, meaning that CAR has no effect on ROA. The t-value of LDR is 1.389 with a significance t (sig-t) = 0.168, hence, hypothesis 2 is also rejected, meaning LDR has no effect on ROA. In statistics, an interaction may arise when considering the relationship among three or more variables and describes a situation **in which the effect of one causal variable on an outcome depends on the state of a second causal variable (that is, when effects of the two causes are not additive)**. The t-value of the moderating variable from the interaction between CAR and NIM (CAR * NIM) is 1.272 with a significance t (sig-t) = 0.207 greater than 0.05, hence, hypothesis 3a is rejected. The interaction test results indicate that NIM does not strengthen the effect of CAR on ROA, so NIM does not moderate the effect of CAR on ROA. Meanwhile, the t-value of the moderating variable from the interaction between LDR and NIM (LDR *

NIM) is 2.145 with a significance t (sig- t) = 0.035 less than 5%, hence, hypothesis 3b is accepted. Thus, the results of the interaction test show that NIM strengthens the effect of LDR on ROA, meaning that NIM moderates the effect of LDR on ROA.

4.3. Discussion and Implications

CAR does not influence ROA; the results of this study support the research findings of Sudiyatno and Fatmawati (2013), Agustina and Kennedy (2016), Harun (2016), Silaban (2017), [Pranowo et al. \(2019\)](#), and [Tangngisalu et al. \(2020\)](#). However, they do not support the research results of Islam and Rana (2017) who found a negative effect, while [Ayanda et al. \(2013\)](#), Bernardin (2016), and Arsyad and Djoko (2019) found a positive effect of CAR on ROA.

The results of this study are also not in accordance with the concept of CAR, which determines the bank's capacity to meet the time liabilities and other risks such as credit risk, operational risk, etc. **In the most simple formulation, a bank's capital is the cushion for potential losses and protects the bank's depositors and other lenders.** Banking regulators in most countries define and monitor CAR to protect depositors, thereby maintaining confidence in the banking system. A high CAR indicates that the bank has a good ability to bear this risk because a high CAR means that the bank's capital is also paid up by the owner. The amount of owner's capital provides opportunities for banks to expand credit, which can have an impact on increasing ROA. A high CAR means the bank can absorb losses without diluting capital.

LDR does not influence ROA; the results of this study support the research findings of [Sudiyatno and Fatmawati \(2013\)](#), Capraru and Ihnatov (2014), Agustina and Kennedy (2016), Bernardin (2016), Islam and Rana (2017), [Zainuddin et al. \(2017\)](#), [Yudha et al. \(2017\)](#), [Pranowo et al. \(2019\)](#), and Arsyad and Djoko (2019). However, the results of this study do not support Samad (2015), Harun (2016), and [Hardiyanti et al. \(2016\)](#) who found that LDR has a positive effect on return on assets.

LDR is a ratio between the banks' total loans and total deposits. The ratio is generally expressed in percentage terms. If the ratio is lower than one, the bank relied on its own deposits to make loans to its customers, without any outside borrowing. If on the other hand, the ratio is greater than one, the bank borrowed money which it reloaned at higher rates, rather than relying entirely on its own deposits. **Banks may not be earning an optimal return if the ratio is too low. If the ratio is too high, the banks might not have enough liquidity to cover any unforeseen funding requirements or economic crises.** Banking analysts commonly used metrics for assessing a bank's liquidity.

According to the liquidity theory, there is a trade-off between liquidity and profitability. Liquidity is very essential for the survival of a bank as it is expected to be able to meet up with its financial obligations as and when due. The failure of a bank to meet its obligations due to lack of sufficient liquidity will result in poor creditworthiness, loss of customers' confidence, or even in legal tangles resulting in the closure of the bank. Profitability shows the management approach and the competitiveness position of banks in a market-based economy. Earning enough profit is a necessity for the sustenance, growth, and expansion of a business entity. Banks will extinct where there is no profit as it will fail the moment it fails to make profit

The results of the moderation test by placing NIM as a moderating variable indicate that NIM does not moderate the effect of CAR on ROA, but NIM moderates the effect of LDR on ROA. LDR has a positive effect on increasing ROA if moderated by NIM. Thus, NIM does not strengthen the influence of CAR on ROA, but it does strengthen the effect of LDR on ROA.

This research implies that bank management needs to maintain a high level of NIM to increase ROA. This is because the NIM plays a role in strengthening the effect of LDR on ROA. To maintain a high NIM, increasing credit is necessary because, in this way, the bank's interest income will increase.

5. Conclusion

This study examines the role of the NIM variable in influencing ROA. The results showed that the CAR does not influence ROA, and NIM did not moderate the effect of CAR on ROA. Likewise, LDR does not influence ROA, but NIM moderates the effect of LDR on ROA. Thus, NIM plays a role in strengthening the effect of LDR on ROA. A high LDR will increase ROA in banks with high net interest margins. NIM is one indicator of a bank's profitability and growth. It reveals how much the bank is earning in interest on its loans compared to how much it is paying out in interest on deposits

The results of this study are expected to contribute to using NIM and ROA as indicators of profitability in bank performance. **Profitability ratios mean a class of financial parameters or indices that are used to assess a business's ability to generate earnings as compared to its expenses and other relevant costs incurred in a period.** However, there are definitely some limitations in this research. This study does not differentiate between conventional banks and Islamic banks, even though there are clear differences in determining the interest rate. Therefore, to make the results more accurate, researchers can consider separating conventional banks and Islamic banks.

References

- Agustina, D. O., & Kennedy, P. S. J. (2016). The effect of bank's performance on return on asset. *Fundamental Management Journal*, 1(1), 1-13. <http://ejournal.uki.ac.id/index.php/jm/article/view/191>
- Arsyad, M. I., & Djoko, S.R. (2019). *The effect of NPL, CAR, NIM, LDR, and DER on the bank's performance on return on asset: Case study on conventional banking listed on the IDX for the period 2013-2017*. [Undergraduate Thesis, Fakultas Ekonomika dan Bisnis Universitas Diponegoro]. http://eprints.undip.ac.id/72848/1/08_ARSYAD.pdf
- Ayanda A. M., Christopher E. I., & Mudashiru M. A. (2013). Determinants of banks' profitability in developing economy: Evidence from the Nigerian banking industry. *Interdisciplinary Journal of Contemporary Research in Business*, 4(9), 155-181. <https://journal-archievs27.webs.com/155-181.pdf>
- Bernardin, D. E. Y. (2016). The effect of CAR and LDR to Return on Assets. *Jurnal Ecodemica: Jurnal Ekonomi, Manajemen, dan Bisnis*, 4(2), 232-241. <https://ejournal.bsi.ac.id/ejurnal/index.php/ecodemica/article/view/334>
- Căpraru, B., & Ilnatov, I. (2014). Banks' Profitability in Selected Central and Eastern European Countries. *Procedia Economics and Finance*, 16, 587-591. [https://doi.org/10.1016/s2212-5671\(14\)00844-2](https://doi.org/10.1016/s2212-5671(14)00844-2)
- Dao, B. T. T., & Nguyen, K. A. (2020). Bank capital adequacy ratio and bank performance in Vietnam: A simultaneous equations framework. *Journal of Asian Finance, Economics, and Business*, 7(6), 39-46. <https://doi.org/10.13106/jafeb.2020.vol7.no6.009>
- Hardiyanti, W., Febriatmoko, B., & Wulandari, S. (2016). Effect of LDR and BOPO on ROA with NIM as the intervening variable: Studies on commercial banks in Indonesia for the period 2011 –

- 2013). *Dinamika Akuntansi, Keuangan dan Perbankan*, 5(2), 155-166. <https://www.unisbank.ac.id/ojs/index.php/fe9/issue/view/335>
- Harun, U. (2016). The influence of financial ratios CAR, LDR, NIM, BOPO, NPL to ROA. *Jurnal Riset Bisnis dan Manajemen*, 4(1), 67-82. <https://ejournal.unsrat.ac.id/index.php/jrbm/article/view/12352>
- Islam, M. A., & Rana, R. H. (2017). Determinants of bank profitability for the selected private commercial banks in Bangladesh: A panel data analysis. *Banks and Bank Systems*, 12(3), 179–192. [https://doi.org/10.21511/bbs.12\(3-1\).2017.03](https://doi.org/10.21511/bbs.12(3-1).2017.03)
- Kunt, D., & Huizinga, H. (1999). Determinants of **commercial bank interest margins and profitability**: Some **international evidence**. *The World Bank Economic Review*, 13(2), 379-408. <https://www.jstor.org/stable/3990103?seq=1>
- Pranowo, T., Haris, A., Budianto, E., & Mardiyani, M. (2020). Effect of CAR, LDR, NPL, and NIM on ROA in Devisa public and private banks registered on the IDX 2013–2017 Period. *Advances in Economics, Business, and Management Research*, 1(6), 165–168. <https://doi.org/10.2991/aebmr.k.200305.041>
- Saksonova, S. (2014). The role of net interest margin in improving banks' asset structure and assessing the stability and efficiency of their operations. *Procedia - Social and Behavioral Sciences*, 150, 132–141. <https://doi.org/10.1016/j.sbspro.2014.09.017>
- Samad, A. (2015). Determinants **bank profitability**: Empirical evidence from Bangladesh commercial banks. *International Journal of Financial Research*, 6(3), 173–179. <https://doi.org/10.5430/ijfr.v6n3p173>
- Silaban, P. (2017). The effect of capital adequacy ratio, net interest margin and non-performing loans on bank profitability: The Case of Indonesia. *International Journal of Economics and Business Administration*, 5(3), 58–69. <https://doi.org/10.35808/ijeba/135>
- Sudiyatno, B., & **Fatmawati, A.** (2013). Effect of credit risk and operational efficiency on the bank performance: Empirical study on banks listed on the Indonesia Stock Exchange. *Jurnal Organisasi dan Manajemen*, 9(1), 73-86. <http://jurnal.ut.ac.id/index.php/jom/issue/view/9>
- Tabash, M. I. (2019). An empirical investigation on the relationship between disclosure and financial performance of Islamic banks in the United Arab Emirates. *Journal of Asian Finance, Economics, and Business*, 6(4), 27-35. <https://doi.org/10.13106/jafeb.2019.vol6.no4.27>
- Tangngisalu, J., Hasanuddin, R., Hala, Y., Nurlina, N., & Syahrul, S. (2020). Effect of CAR and NPL on ROA: Empirical study in Indonesia Banks. *Journal of Asian Finance, Economics, and Business*, 7(6), 9-18. <https://doi.org/10.13106/jafeb.2020.vol7.no6.009>
- Yudha, A., Chabachib, M., Rini, I., & Pangestuti, D. (2018). Analysis of the effect of NPL, NIM, non-interest income, and LDR toward ROA with size as control variables: Study on domestic and foreign banks listed on BEI period 2010-2015. 26(2), 100–113. <https://doi.org/10.14710/jbs.26.2.100-113>
- Zainuddin, P., Wancik, Z., Rahman, S. A., Hartati, S., & Rahman, F. A. (2017). The determinant of financial performance on Indonesian Banks through return on assets. *International Journal of Applied Business and Economic Research*, 15(20), 243–251. <https://www.researchgate.net/profile/Periansya-Periansya/publication/320911396>



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