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The Effect of Risk Management on Profitability: Empirical Study of Banking Companies Listed in Indonesian Stock Exchange 2019-2023

Ditya Alfiena Ainunnisa[1]; Delvi Oktaviani[2]; Asep Risman[3]

1) *ditya19alfiena@gmail.com, Department of Management, Faculty of Economics and Business, Mercu Buana University, Indonesia*
2) *delvioktaviani6@gmail.com, Department of Management, Faculty of Economics and Business, Mercu Buana University, Indonesia*
3) *aseeprisman@mecubuana.ac.id , Department of Management, Faculty of Economics and Business, Mercu Buana University, Indonesia*

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Abstract

This study aims to examine the influence of Capital Adequacy Ratio (CAR), Non-Performing Loans (NPL), and Loan to Deposit Ratio (LDR) on Return on Assets (ROA). The research utilizes a sample of conventional banking companies listed on the Indonesia Stock Exchange (IDX) during the period 2019-2023. The sample selection method used is purposive sampling with a sample of 10 conventional banks. The results indicate that partially, Capital Adequacy Ratio (CAR) and Loan to Deposit Ratio (LDR) do not affect Return on Assets (ROA), while Non-Performing Loans (NPL) have a significant negative influence on Return on Assets (ROA). Risk management can serve as a mechanism to address profitability-related issues by maintaining the company's capital levels, and investors should pay closer attention to industry risks when investing in banking companies.

INTRODUCTION

Bank is a business entity whose main function is as a financial intermediary, channeling funds from those with excess funds to those in need of funds at a specified time, according to Dendawijaya (2005) in Permata (2022). Banking plays a very important role in the sustainability of the economy, where the banking industry serves as a financial intermediary, transferring funds from surplus units to deficit units, or from savers to borrowers. Therefore, it is crucial for a banking company to evaluate its profitability.

Profitability is the company's ability to generate profit over a specific period. Profit is usually one of the determinants of whether a company is performing well. When a company has high profits, it indicates good performance; conversely, if profits decline, it suggests issues affecting the company's ability to earn high profits. Thus, the role of profitability is very important, especially in the financial sector within banking companies.

When a country's economic value declines, the banking sector holds significant control over the economy because it is the heart of a nation's economy. To minimize issues related to the performance of banking companies, effective risk management is essential.

Based on the perspective of signal theory, a company's profitability can be a good or bad signal, thus becoming a condition for risk management disclosure (Supriyadi & Setyorini, 2020). Risk management plays an important role in providing benefits, especially in banking companies. To address current and potential risks, banks must have high-quality procedures and governance to tackle, measure, monitor, and control the risks arising from their business activities.

Companies with good risk management will achieve better performance. One way to measure the performance of banking companies is by looking at the Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), and Loan to Deposit Ratio (LDR). The variables or indicators used as the basis for assessment are the company's financial reports. If a public company's performance improves, its enterprise value will increase. The profitability measure used in this study is Return on Assets (ROA).

Previous researchers studying the impact of risk management on profitability have not provided consistent empirical evidence. According to Sukmadewi (2020) and Sunaryo (2020), CAR, NPL, and LDR significantly positively affect ROA. This indicates that a bank's capital adequacy influences its main business operations, which is an absolute necessity. Fajari and Sunarto (2019) found that NPL significantly positively affects ROA. However, Indah Putrianingsih et al. (2019), Saputra & Saputra (2020), and Wicaksono & Debora (2020) found that NPL has a significant negative impact because NPL values affect the profitability of banking companies.

LDR as a proxy in risk management for ROA was also found in studies by Agustiningrum (2021), Juwita et al. (2022), and Rahmah & Retnasih (2023), which found that LDR significantly positively affects ROA because the LDR ratio corresponds to profitability, thus influencing the company's profit. The better the LDR value, the better the profit generated by the company. However, different faundings were reported by Wicaksono & Debora (2020) and Widyastuti & Aini (2021), stating that CAR and LDR do not affect ROA. Widyastuti & Aini (2021) argued that LDR does not affect bank profitability (ROA) because Bank Indonesia requires banks to maintain CAR values according to a minimum standard of 8%. This is a factor why CAR does not influence profitability. Rahmah & Retnasih (2023) also noted that CAR does not affect ROA due to a decrease in CAR in 2020 (during the pandemic). In reality, a high CAR value indicates that the bank's condition is improving, allowing it to finance its operations well and significantly contribute to profitability.

Based on the above background, this study aims to empirically determine the influence of risk management, as measured by the Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), and Loan to Deposit Ratio (LDR), on profitability using Return on Assets (ROA) in banking companies listed on the Indonesia Stock Exchange from 2019-2023.

LITERATURE STUDY AND HYPOTHESIS DEVELOPMENT

Signaling Theory

Signaling Theory was first developed by Jensen & Meckling in 1973 to explain the role of information in economic transactions, creating signal criteria to strengthen decision-making. Signaling Theory explains why companies should prepare financial reports to avoid information asymmetry between the company's internal information and the information available to external parties (Ghozali, 2020). This is because companies have more relevant information about themselves, they should voluntarily provide information to external parties.

This theory also addresses the necessity for companies to signal their condition through financial reports. These signals can be presented as information on management activities in aspects such as stock returns, cash flows, and company profits, and can also include company promotions to achieve their goals (Karen, 2019).

Profitability

Profitability refers to a company's profits, which can be seen from its financial statements. Profitability can be a determining factor in whether a company is performing well or not. According to Tri Hendro S.P. and Conny Tjandra Rahardja (2020) in Ansori & Almunawar (2022), profitability is a factor that should be considered when assessing the health of a bank, alongside liquidity, asset quality, capital, and management. It represents the bank's ability to generate profits from its operational and non-operational activities.

The indicator used to measure profitability is Return on Assets (ROA). ROA is a ratio that shows the return generated from the total assets used by the company. Additionally, ROA can provide a better measure of a company's profitability because it indicates the effectiveness of management in using assets to generate income (Kasmir, 2022).

Risk management

According to Fahmi (2011) and Risman et al. (2017), risk management is the science of applying measures to map various problems within an organization by employing a comprehensive and systematic management approach. When a company conducts its business, it inevitably faces risks. Therefore, it is essential to have methods in place to anticipate these risks to minimize potential losses.

Types of risks

Bank Indonesia regulation No. 13/23/PBI/2011 outlines the types of risks, which include:
Credit Risk: The risk arising from the failure of debtors and/or other parties to fulfill their obligations to the bank.
Market Risk: The risk on balance sheet and administrative account positions, including derivative transactions, due to overall changes in market conditions, including the risk of option price changes.
Liquidity Risk: The risk arising from the bank's inability to meet maturing obligations from cash flow funding sources and/or from high-quality liquid assets that can be collateralized, without disrupting the bank's activities and financial condition.
Operational Risk: The risk arising from inadequate and/or malfunctioning internal processes, human errors, system failures, and/or external events affecting the bank's operations.
Compliance Risk: The risk arising from the bank's failure to comply with and/or implement applicable laws and regulations.
Legal Risk: The risk arising from legal claims and/or weaknesses in juridical aspects.
Reputation Risk: The risk arising from a decline in stakeholder trust due to negative perceptions of the bank.
Strategic Risk: The risk arising from inaccuracies in making and/or implementing strategic decisions, as well as the failure to anticipate changes in the business environment.

***Capital Adequacy Ratio* (CAR) to *Return on Assets* (ROA)**

To accommodate the potential loss risks faced by a bank, a capital adequacy ratio is needed. The better the capital adequacy, the better the bank's ability to absorb potential losses. An improved Capital Adequacy Ratio (CAR) will positively impact the Return on Assets (ROA).

When assessing capital adequacy, a bank must relate it to its risks. The higher the bank's risk, the more capital it must prepare to manage or anticipate these risks. The ratio used to measure the decrease or increase in capital is the Capital Adequacy Ratio (CAR). CAR can be calculated using the following formula:

$$CAR = \frac{Capital}{Risk - Weighted\ Assets\ (RWA)}$$

Bernadin (2020) faund that CAR has a significant simultaneous effect on ROA. This occurs because if CAR increases, it will support the income that will be distributed to assets and add to the profit contribution. Other studies by Sukmadewi (2020) and Sunaryo (2020) also show that CAR has a positive and significant effect on ROA. This indicates that a bank's capital adequacy influences its main business activities, which is an absolute requirement. When the CAR is fulfilled by the bank, it can absorb the incurred losses, thus ensuring that the activities carried out will run efficiently (Sukmadewi, 2020). Based on previous research faundings, the proposed hypothesis is as follows:

H1: CAR has a positive effect on ROA.

***Non-Performing Loans* (NPL) to *Return on Assets* (ROA)**

Non-Performing Loan (NPL) refers to loans categorized as substandard, doubtful, or bad debts. NPL describes a situation where debtors cannot make timely installment payments. According to POJK No 18/PJOK.03/2016 regarding the Bank Soundness Rating System, if the NPL value exceeds 5%, the bank is considered unhealthy. This occurs because a high NPL value will lead to a decrease in the bank's profits and increase the credit risk borne by the bank (Martini et al., 2021). The formula used to calculate NPL is:

$$NPL = \frac{Non - Performing\ Loans}{Total\ Loans}$$

Wicaksono & Debora (2020) found that NPL has a significantly negative effect on ROA, meaning that the bank is unprofessional in granting loans to creditors, resulting in a high level of non-performing loans and a decrease in ROA. Similarly, studies by Indah Putrianingsih et al. (2020) and Saputra & Saputra (2020) indicate that NPL has a significantly negative effect on Return on Assets (ROA) in banking companies. This is because a lower NPL can indicate a lower credit risk level, allowing the bank to achieve higher profits. Based on previous research, the proposed hypothesis is as follows:

H2: NPL has a negative effect on ROA.

***Loan to Deposit Ratio* (LDR) to *Return on Assets* (ROA)**

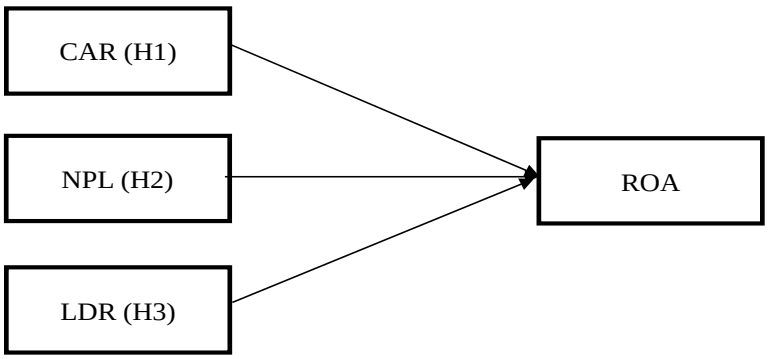
Loan to Deposit Ratio (LDR) is the ratio of total loans disbursed to total deposits received. A higher ratio indicates that a bank has a lower liquidity level. LDR is used to assess a bank's ability to fulfill its obligations and repay depositors by relying on loans provided as a source of company liquidity. The formula used for LDR is:

$$LDR = \frac{Total\ Loans}{Total\ Third - Party\ Funds\ (Deposits)}$$

Agustiningrum (2022) faund that LDR has a significant positive effect on profitability. A high LDR percentage increases a bank's profits because it boosts interest income, thereby enhancing the bank's profitability. Sukmadewi (2020) also faund that LDR has a positive effect on ROA. The higher the liquidity level of a bank, the more third-party funds can be channeled into loans, which can affect the financial performance of the bank positively or negatively. In line with this, Juwita et al. (2022) and Rahmah & Retnasih (2023) assert that LDR has a significant positive effect on ROA. This is because improving LDR enhances the company's profits, reflecting the public's confidence in the ability of banking companies to manage third-party funds. Based on previous research, the proposed hypothesis is as follows:
H3: LDR has a positive effect on ROA.

FRAMEWORK

Figure 1Framework



H_1: CAR has a positive effect on ROA
H_2:NPL has a positive effect on ROA
H_3: *LDR* has a positive effect on ROA

RESEARCH METHODS

Research design

This research employs a quantitative method. All data were obtained through processing and analysis using statistical techniques with SPSS. The research design adopts a causal approach, aimed at testing hypotheses regarding the influence of one or more variables (independent variables) on another variable (dependent variable). The study utilizes secondary data including ROA, CAR, NPL, and LDR extracted from Annual Reports on the Indonesia Stock Exchange website for the period 2019-2023.

Population and Sample

The population in this study consists of the 10 largest banks by assets listed on the Indonesia Stock Exchange over four periods, 2019-2023, which have reported complete financial statements published on http://www.idx.co.id. Out of 43 banks listed on the Indonesia Stock Exchange, 10 banks met the criteria to be included as the sample.

Table 1. Sample in research

No.	Company name	Stock code

1.	PT Bank Mandiri (Persero) Tbk	BMRI
2.	PT Bank Rakyat Indonesia (Persero) Tbk	BBRI
3.	PT Bank Central Asia Tbk.	BBCA
4.	PT Bank Negara Indonesia (Persero) Tbk	BBNI
5.	PT Bank Tabungan Negara (Persero) Tbk	BBTN
6.	PT Bank Danamon Indonesia Tbk	BDMN
7.	PT Bank CIMB Niaga Tbk	BNGA
8.	Bank Permata Tbk	BNLI
9.	PT Bank OCBC NISP Tbk	NISP
10.	PT Bank Pan Indonesia Tbk	PNBN

Data collection Technique

The data collection technique to obtain secondary data in this study was conducted using documentation technique, which involves retrieving data that has been available and published by the Indonesia Stock Exchange, and utilizing literature study technique by obtaining data through literature study by reading, studying books, and research results from others that have relevance to the research object being analyzed related to the required secondary data.

Data analysis technique

The method of analysis used to test hypotheses in this research is multiple linear regression. In addition, descriptive analysis is used to provide an overview of the variables in this study. Furthermore, the regression model's suitability is tested to assess the regression model. The following is an explanation of these analysis methods.

Descriptive analysis involves basic data transformation that describes fundamental characteristics such as central tendencies, distributions, and variabilities. Maximum, minimum, mean, variance, and standard deviation represent widely applied descriptive statistics. Descriptive statistics provide an overview of research data on variables including liquidity, profitability, and firm value.

Multiple linear regression is a statistical technique that uses multiple explanatory variables to predict the outcome of a response variable. The goal of multiple linear regression is to model the linear relationship between independent variables and the dependent variable.

RESULTS AND DISCUSSION

Table 2. Descriptive Statistics of Research Variables

Variabel	Mean	Std. Deviasi	N
ROA	1,9632	0,975835	50
CAR	24,4520	4,85533	50
NPL	2,7680	0,76942	50
LDR	84,7200	10,64097	50

Source: Processed Data SPSS, 2024*

This study uses Return On Assets (ROA) as a proxy for profitability, which is the net profit divided by total assets (Sherly et al., 2016). Based on Table 2, it can be seen that the positive average value of 1.9632 indicates that the companies in the research sample generate income/profits amounting to 1.96% of the total assets utilized. The standard deviation value, which is lower than the average ROA value at 0.975835, indicates relatively low variability in the profitability achieved by the banks in this study.

The independent variable Capital Adequacy Ratio (CAR) has an average CAR value of 24.4520, indicating that the average capital capability of banks to finance their operational

activities and bear the risk of loss from risky assets is 24.45%. With a CAR standard deviation value of 4.85533, which is smaller than the average value, it shows that there is less variability in the CAR owned by the banks.

The independent variable Non-Performing Loan (NPL) has an average NPL value of 2.7680, indicating that on average, 2.7% of the banks experience problematic loans. With a standard deviation value smaller than the average, at 0.76942, it shows that there is less variability in the problematic loans experienced by the banks.

The Loan to Deposit Ratio (LDR) has an average LDR value of 84.7200, indicating that on average, the banks provide loans amounting to 84.7% of their total third-party funds. With a standard deviation value lower than the average, at 10.64097, it indicates that there is a variability of 10.64% which is relatively low.

Multicollinearity Test Results

Tabel 3. Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	CAR	.862	1.160
	NPL	.867	1.153
	LDR	.770	1.299

Sumber: Data diolah SPSS, 2024

Based on Table 3 above, the independent variables CAR, NPL, and LDR have tolerance values higher than 0.10 and VIF values below 10. This indicates that the variables in this study are free from multicollinearity, making the data suitable for use in a regression model.

Table 4. Multiple Linear Regression Analysis Results

Variable	Coefficient of Regression	t-statistic	Sig.
Constant	5,362	4,269	0,000
CAR	-0,028	-1.194	0,238
NPL	-0,852	-5,736	0,000
LDR	-0,004	-0,365	0,717
R-squared	0,456		
Adjusted R-squared	0,421		
F-statistic	12,86		0,000

Source: Processed Data SPSS, 2024

Based on the results of the multiple linear regression analysis, the following regression equation is obtained:

$ROA=5{,}362 – 0{,}028CAR – 0{,}852NPL – 0{,}004LDR+\varepsilon$

Interpretation of Results:

The constant value of 5.362 in the above multiple linear regression equation means that if the values of CAR, NPL, and LDR are 0, the ROA will be 5.362. The regression coefficient for CAR (X1) of -0.028 indicates that every 1% increase in CAR will result in a 2.8% decrease in

ROA, assuming other variables remain constant. The significance value of 0.238 > 0.05 shows that CAR does not have a significant effect on ROA. The NPL (X2) regression coefficient of -0.852 indicates that every 1% increase in NPL will cause an 85.2% decrease in ROA, assuming other variables are constant. However, the significance value of 0.000 < 0.05 shows that NPL has a significant effect on ROA. The LDR (X3) regression coefficient of -0.004 indicates that every 1% increase in LDR will cause a 4% decrease in ROA, assuming other variables are constant. The significance value of 0.717 > 0.05 shows that LDR does not have a significant effect on ROA. The R-squared value of 0.421 indicates that 42.1% of the ROA variable can be explained by the CAR, NPL, and LDR variables. Meanwhile, the remaining 57.9% is explained by other variables outside the model

DISCUSSION

The Influence of CAR on ROA

The first hypothesis states that the Capital Adequacy Ratio (CAR) affects Return On Assets (ROA). From the statistical test results in this study, the obtained significance value is 0.238, while the obtained coefficient value is -0.028. These results show that CAR does not have a significant effect on ROA, as evidenced by the significance value being higher than 0.05. The obtained coefficient indicates that every 1% increase in CAR will reduce ROA by 2.8%. Therefore, the first hypothesis stating that the Capital Adequacy Ratio (CAR) affects Return On Assets (ROA) **is rejected.**.

In line with Bank Indonesia's regulation, which requires banks to maintain a CAR value of at least 8%, CAR's lack of effect on ROA can be attributed to this requirement. To anticipate credit risk, banks must always prepare funds used as reserves to meet the standard values stipulated by Bank Indonesia. This study is supported by the research of Fajari & Sunarto (2017); Maharani et al. (2020); Widyastuti & Aini (2021).

The Influence of NPL on ROA

The second hypothesis states that Non-Performing Loans (NPL) affect Return On Assets (ROA). The statistical test results in this study show that the significance value of the NPL variable is 0.000, while the obtained coefficient value is -0.852. These results indicate that NPL has a negative effect on ROA, as evidenced by a significance value lower than 0.05. The coefficient value of -0.852 means that each 1% increase in NPL will decrease ROA by 85.2%. Thus, the second hypothesis stating that NPL affects ROA **is accepted**.

In banking companies, NPL reflects the ability to manage problematic loans issued by the bank. In Indonesia, Bank Indonesia allows a maximum NPL value of 5%, so if a bank's NPL exceeds 5%, it affects the bank's professionalism in managing its credit according to the high NPL it faces. Therefore, it can be concluded that the higher the NPL ratio, the lower the ROA of a bank (Wicaksono & Debora, 2020). This finding aligns with the research by Fauziah (2021); Indah Putrianingsih et al. (2016); Widyastuti & Aini (2021), indicating that higher NPL values lead to increased credit failure risks.

The Influence of LDR on ROA

The third hypothesis states that the Loan To Deposit Ratio (LDR) affects Return On Assets (ROA). The statistical test results in this study show that the significance value of the LDR variable is 0.717, with a coefficient value of -0.004. These results indicate that LDR does not affect ROA, as evidenced by the LDR significance value being greater than 0.05 and the coefficient value being negative. Therefore, each 1% increase in LDR will reduce ROA by 4%. Thus, the third hypothesis stating that LDR affects ROA **is rejected**.

This finding is consistent with the research by Claudia & Yusbardini (2022); Maharani et al. (2020); Nurfitriani (2021); Wicaksono & Debora (2020); Widyastuti & Aini (2021). Low-interest rates may lead to no significant impact between LDR and ROA (Claudia & Yusbardini, 2022). Therefore, most of the bank's income comes from factors other than LDR, such as stock investments, current accounts, and placements in other banks and Bank Indonesia. Thus, the bank's liquidity risk can still be managed with profits obtained from these sources. The average LDR value in this study of 49.44% does not align with PBDI No. 15/15/PBI/2013 concerning the Statutory Reserves for Commercial Banks, which states that a good LDR level is around 78%-92%.

CONCLUSION

This study aims to present data and empirical evidence regarding the influence of risk management proxied by Capital Adequacy Ratio (CAR), Non-Performing Loans (NPL), and Loan to Deposit Ratio (LDR) on profitability proxied by Return On Assets (ROA) in banking companies in Indonesia. Several key findings from this study's hypothesis testing are: CAR does not affect ROA. The profit level obtained by the bank is not significantly impacted by CAR, especially if most of the bank's capital is used to address operational failures, such as the repayment of problematic loans. NPL has a significant negative effect on ROA. The lower the NPL value, the more profit the bank will experience, indicating a lower credit risk level. LDR does not affect ROA. The LDR value does not impact a bank's profitability because the provided credit is not based on good credit quality.

The results of this study have implications for signaling theory, where risk management by company management can serve as a mechanism to address profitability-related issues in banking companies. Additionally, this study has practical implications. Investors need to pay attention to the industry's risk level at the bank, which can be seen from NPL and LDR. Companies are also expected to maintain and uphold their capital levels with a high CAR since capital is one of the most important aspects a bank must possess.

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