THE EFFECT OF CREDIT RATIO, LIQUIDITY, AND CAPITAL ADEQUACY ON THE PROFITABILITY OF STATE-OWNED GENERAL BANKS

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ABSTRACT

This study analyzes the effect of credit ratio, liquidity, and capital adequacy on the profitability of State-Owned Commercial Banks listed on the IDX for 2015-2023. This study uses quantitative data, sourced from the Bank's official annual report, with a total of 36 samples. The study shows that simultaneously NPL, LDR, and CAR have a significant positive effect on ROA and partially, the credit ratio (NPL) has a negative and significant effect, the liquidity ratio (LDR) has a negative and insignificant effect, the capital adequacy ratio (CAR) has a positive and significant effect. The need for optimal management of NPL, LDR, and CAR to increase profitability and maintain financial stability. Further research is expected to add other variables, use wider research objects, and expand the number of research samples.

Keywords: Profitability, credit ratio, liquidity ratio, capital adequacy ratio, NPL, LDR, CAR, ROA.

1. INTRODUCTION

Banking has an important role in the Indonesian economy and acts as a financial intermediary that facilitates the flow of funds from parties who have excess funds to parties who need funds. Law Number 21 of 2011 concerning the Financial Services Authority (OJK), emphasizes that the role of OJK is as an independent institution that has the responsibility to supervise the financial services sector including banking, insurance, capital markets, and other financial sectors.

In Indonesia, there are various types of banks, one of which is the State-Owned Commercial Bank. This bank is a type of bank owned by the government, which operates nationally. State-Owned Commercial Banks also provide forms of banking services such as collecting deposits and providing credit services that will support national economic growth, as well as managing risks and operational efficiency. In achieving optimal bank profitability, State-Owned Commercial Banks with a balance of various factors including credit ratios, liquidity ratios, and capital adequacy ratios.

This credit ratio is a ratio that measures the proportion of loans given compared to deposits, this is important to determine how well a bank is in utilizing the funds it has to generate income. In uncertain situations and circumstances, such as those experienced during the COVID-19 pandemic, banks must still be careful in distributing credit, this is done to avoid high credit risk, including non-performing loans. Then the liquidity ratio, ratio also has an important role, where this ratio will measure the bank's ability to fulfill its short-term obligations and also reflect how efficient a bank is in managing available funds. In uncertain economic situations, such as during the COVID-19 pandemic, banks must be able to maintain sufficient liquidity in the face of possible spikes in credit risk due to customers experiencing financial difficulties. The increase in credit risk during the pandemic focuses on the importance of managing good liquidity to protect profitability.

According to the Financial Services Authority (OJK) report in 2022, many banks transferred some of their liquidity to safer investments, such as Government Securities (SBN), this was done to maintain their profitability even though credit growth slowed down. In addition to the credit and liquidity ratios in banks, the capital adequacy ratio using the Capital Adequacy ratio (CAR) which measures how much capital a bank has compared to weighted assets, is used to see the bank's ability to bear the risk of losses from risky assets, such as credit provided. In the post-pandemic era, banks are trying to maintain a healthy CAR, this is done to deal with economic uncertainty, especially because of NPLs from restructured credit, so with a good CAR, banks will have reserves to bear the risk of credit losses that may still arise in the future.

The phenomenon illustrating the importance of financial ratio analysis can be observed through various news reports and policy responses related to Indonesia's economic recovery post-COVID-19. A 2021 press release from the Financial Services Authority (OJK) highlighted large-scale credit restructuring carried out to mitigate the economic crisis caused by the pandemic. This underscores the need for banks to remain cautious in managing restructured loans and to consistently monitor the potential for non-performing loans (NPL). Furthermore, a 2023 statement from OJK emphasized that although the economy has shown signs of recovery, banks are still advised to remain vigilant against credit risks arising from global economic uncertainty. High NPLs can reduce profitability, especially if not accompanied by an optimal Loan to Deposit Ratio (LDR) and sufficient Capital Adequacy Ratio (CAR), both of which are essential

for maintaining financial stability. Several prior studies have examined the impact of credit ratios (NPL), liquidity ratios (LDR), and capital adequacy (CAR) on bank profitability (Return on Assets/ROA), either partially or simultaneously. For instance, Solihah et al. (2023) analyzed these variables in National Private Commercial Banks (BUSN) Foreign Exchange listed on the Indonesia Stock Exchange during 2017–2021. Novita Elisabeth Aruan (2022) focused on the influence of NPL and LDR on profitability in banks listed on the LQ-45 index for the 2019–2022 period. Similar research was conducted by Widyastuti and Aini (2021) and Safitri (2023), who explored the effect of NPL, LDR, and CAR on ROA in the period before and during the pandemic. Other relevant studies include those by Yulianah & Seno Aji (2021), Debora (2020), and Rembet & Baramuli (2020), which analyzed various bank groups over periods ranging from 2015 to 2020. However, these studies largely focus on periods before or during the pandemic without extending the analysis to the post-pandemic recovery phase.

This creates a significant research gap. While many studies have addressed the individual or partial effects of NPL, LDR, and CAR on profitability, few have combined all three variables in a comprehensive analysis—particularly over an extended timeline covering the pre-pandemic, pandemic, and post-pandemic periods. Moreover, most existing research focuses on commercial banks or those listed on the IDX, LQ-45, or categorized as Foreign Exchange Banks. Therefore, this study seeks to fill the gap by examining the simultaneous influence of NPL, LDR, and CAR on profitability (ROA) in State-Owned Commercial Banks (BUMN) listed on the Indonesia Stock Exchange over the 2015–2023 period. This research aims to contribute a novel perspective by integrating a broader timeframe and a focused analysis on BUMN banks during the economic recovery period following the COVID-19 pandemic.

2. LITERATURE REVIEW

Profitability is a key indicator of a bank's financial health and performance. One of the most commonly used measures of profitability in banking is Return on Assets (ROA), which reflects the efficiency of a bank in generating profits from its assets. Several financial ratios are theorized to influence ROA, including Capital Adequacy Ratio (CAR), Non-Performing Loans (NPL), and Loan to Deposit Ratio (LDR). Capital Adequacy Ratio (CAR) represents a bank's capacity to absorb losses and protect depositors. According to the risk-based capital theory, a higher CAR indicates a stronger capital buffer, which can enhance bank stability and potentially profitability, although in some cases, excess capital may lower returns due to underutilization of funds.

Non-Performing Loans (NPL) reflect credit risk and the quality of a bank's loan portfolio. According to credit risk theory, a higher NPL ratio implies poor asset quality, increased provisioning, and reduced earnings, which negatively affects ROA. Managing credit risk is thus crucial for maintaining profitability. Loan to Deposit Ratio (LDR) measures a bank's ability to convert deposits into income-generating loans. According to liquidity management theory, while higher LDR can indicate efficient use of funds and higher income, excessively high LDR may signal liquidity risk, potentially harming profitability.

These financial ratios provide insights into how well a bank manages its capital, risk, and liquidity, three essential elements influencing overall profitability. By analyzing their effects on ROA, the research contributes to a better understanding of the performance dynamics in State-Owned Commercial Banks in Indonesia.

Previous Study

Solihah, Suriana, and Ismawanto (2023) conducted a study on Foreign Exchange Private National Commercial Banks (BUSN Devisa) listed on the Indonesia Stock Exchange for the 2017–2021 period. Their findings indicate that CAR, LDR, and NPL simultaneously influence ROA. However, when analyzed partially, CAR and LDR did not significantly affect ROA, while NPL had a negative and significant effect (Solihah, Suriana, & Ismawanto, 2023). This study differs from the current research, which focuses on State-Owned Commercial Banks (BUMN) and covers a longer period from 2015–2023.

Aruan (2022) examined the effect of the liquidity ratio (LDR) and non-performing loans (NPL) on profitability (ROA) in banks listed on the LQ-45 index from 2019 to 2021. The results showed that LDR had a positive and significant effect on ROA, while NPL did not significantly affect ROA. Both variables jointly influenced ROA (Aruan, 2022). In contrast, the current study analyzes BUMN banks and includes an additional independent variable—Capital Adequacy Ratio (CAR)—while covering a broader period from 2015 to 2023.

Widyastuti and Aini (2021) focused on banking companies listed on the Indonesia Stock Exchange from 2017 to 2019. Their research showed that CAR and LDR did not significantly affect profitability (ROA), while NPL had a negative and significant impact on ROA (Widyastuti & Aini, 2021). The key difference lies in the object and scope of the research; the current study focuses on State-Owned Commercial Banks over a longer analysis period from 2015 to 2023.

Safitri (2023) explored the effect of CAR, NPL, and LDR on profitability (ROA) in banking sector companies listed on the IDX from 2017 to 2022. The findings revealed that CAR did not have a significant effect, NPL had a negative

impact, and LDR had a positive and significant effect on ROA (Safitri, 2023). Unlike Safitri's study, which did not test the simultaneous effect of all variables, the present research examines both partial and simultaneous effects of CAR, NPL, and LDR from 2015 to 2023.

Yulianah and Aji (2021) investigated the influence of NPL, LDR, NIM, BOPO, and CAR on the profitability (ROA) of State-Owned Banks in Indonesia during the 2016–2020 period. Their study found that all variables jointly affected ROA, with NPL and NIM having a positive impact, BOPO having a negative impact, and LDR and CAR showing no significant effect (Yulianah & Aji, 2021). Compared to their study, the current research focuses on three independent variables only—CAR, NPL, and LDR—within a longer research span from 2015 to 2023 and with an emphasis on BUMN listed on the IDX.

Wicaksono and Sarah Debora (2020) analyzed the impact of NPL, NIM, LDR, and CAR on ROA in banking companies listed on the Indonesia Stock Exchange from 2016 to 2018. They found that all variables significantly affected ROA simultaneously. Partially, only NPL and NIM had significant effects on ROA, while LDR and CAR did not (Wicaksono & Debora, 2020). In contrast, the current research centers on BUMN banks over a broader period (2015–2023) and uses different variables of focus (NPL, LDR, and CAR).

Rembet and Baramuli (2020) examined the effect of CAR, NPL, NIM, BOPO, and LDR on ROA in Foreign Exchange National Private Commercial Banks listed on the IDX during the 2015–2018 period. Their results showed that only CAR had a significant effect on ROA, while NPL, NIM, BOPO, and LDR did not (Rembet & Baramuli, 2020). In contrast, the present study investigates BUMN banks with a longer observation period from 2015–2023, focusing on three main variables: CAR, NPL, and LDR.

3. METHODOLOGY

The research to be conducted will focus on the influence of the credit ratio will be measured by Non-performing Loan (NPL), the liquidity ratio will be measured by the Loan to Deposit Ratio (LDR), the capital adequacy ratio will be measured by the Capital Adequacy Ratio (CAR), and profitability will be measured using Return On Assets (ROA) with the object of research at State-Owned Commercial Banks (BUMN) listed on the Indonesia Stock Exchange in the period 2015-2023.

4. RESULTS AND DISCUSSION

4.1 Descriptive Analysis

Descriptive statistics is a method used for collecting, organizing, summarizing, and presenting data to make it easier to understand. This analysis aims to provide a general overview of the characteristics of the data without making generalizations to a broader population. Descriptive statistics involve the use of diagrams or tables to present data, as well as the calculation of measures such as the mean, median, maximum value, and standard deviation.

Table 1. Results of Descriptive Statistics Analysis

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std.Deviation
ROA	36	.13	4.19	2.4208	1.09693
NPL	36	1.02	4.78	2.8567	.78488
LDR	36	77.61	113.50	90.0264	8.17353
CAR	36	16.97	27.27	20.7103	2.40032
Valid N (listwise)	36				

Source: Authors

a. Return on Assets (ROA)

The ROA variable in the conducted test shows an average value of 2.4208 with a standard deviation of 1.09693. In this test, the minimum value recorded was 0.13, and the maximum value was 4.19. This indicates that during the research period, the profitability level of State-Owned Commercial Banks (BUMN) listed on the Indonesia Stock Exchange (IDX) from 2015 to 2023 met the expected criteria.

b. Non-Performing Loan (NPL)

The NPL variable in the test shows an average value of 2.8567 with a standard deviation of 0.78488. The minimum value recorded was 1.02, and the maximum value was 4.78. It can be concluded that during the research period, the NPL of BUMN banks listed on the IDX met the standard set by Bank Indonesia, which stipulates a maximum threshold of 5%.

c. Loan to Deposit Ratio (LDR)

The LDR variable in the test shows an average value of 90.0264 with a standard deviation of 8.17353. The minimum value recorded was 77.61, and the maximum value was 113.5. Based on the average obtained from the test, it can be concluded that during the research period, the LDR of BUMN banks listed on the IDX complied with the standard set by Bank Indonesia, which ranges between 78% and 92%.

d. Capital Adequacy Ratio (CAR)

The CAR variable in the test shows an average value of 20.7103 with a standard deviation of 2.40032. The minimum value recorded was 16.97, and the maximum value was 27.27. It can be concluded that during the research period, the CAR of BUMN banks listed on the IDX met the standard set by Bank Indonesia, which requires a minimum of 8%.

Based on the descriptive statistical analysis of State-Owned Commercial Banks (Bank Umum Milik Negara/BUMN) listed on the Indonesia Stock Exchange during the 2015–2023 period, several key financial ratios were analyzed to understand their relationship with bank profitability, as measured by Return on Assets (ROA). The ROA variable showed an average value of 2.42%, indicating that BUMN banks were able to generate relatively stable profits from their total assets during the observed period. The range of ROA values, from a minimum of 0.13% to a maximum of 4.19%, reflects variations in profitability performance across the years, potentially influenced by both internal bank management and external economic conditions, including the pandemic and the subsequent recovery period. The Non-Performing Loan (NPL) ratio averaged 2.86%, with the highest value recorded at 4.78%, which remains below the regulatory threshold of 5% set by Bank Indonesia. This suggests that, overall, the credit risk faced by BUMN banks remained under control, and they were able to manage the quality of their credit portfolios effectively. A lower NPL indicates that fewer loans are failing, which positively contributes to bank profitability, as fewer provisions are needed for bad debts.

For the Loan to Deposit Ratio (LDR), the average stood at 90.03%, within the recommended range of 78%–92%. This indicates a healthy level of liquidity utilization, showing that the banks were actively channeling funds received from deposits into productive lending activities. However, the upper range of LDR reaching 113.5% in certain periods suggests that some banks might have been aggressively lending, potentially increasing their liquidity risk. Nonetheless, an optimal LDR contributes positively to profitability as it indicates efficient asset utilization. Lastly, the Capital Adequacy Ratio (CAR) showed a strong average of 20.71%, well above the minimum regulatory requirement of 8%. This reflects the solid capital position of BUMN banks, indicating that they have a strong buffer to absorb potential losses. A higher CAR not only ensures stability but also enhances public and investor confidence, which in turn supports long-term profitability.

In summary, the analysis shows that the BUMN banks have maintained sound financial ratios in terms of credit risk (NPL), liquidity (LDR), and capital adequacy (CAR), all of which positively support their profitability (ROA). The observed consistency in maintaining regulatory standards across these variables suggests a strong and stable financial foundation among state-owned banks, especially important in navigating the economic turbulence during and after the Covid-19 pandemic.

4.2 Classical Assumption Test Results

Normality Test

The purpose of the normality test in this study is to determine whether the data used, such as the credit ratio, liquidity ratio, capital adequacy ratio, and profitability of the banks, are normally distributed or not. This test uses the One-Sample Kolmogorov-Smirnov Test to assess whether the data follow a normal distribution.

Table 2. Results of the Normality Test

One-Sample Kolmogrov-Smirnov Test	
	Understandardized Residual
N	36
Normal Parameters [a,b] Mean	.0000000
Std. Deviation	.53498950
Most extreme Differences Absolute	.105
Positive	.085
Negative	-.105
Test Statistic	.105

| Asymp. Sig. (2-tailed) | 200[c,d] |

a. Test distribution is Normal

b. Calculated from data

c. Lilliefors significance correction

d. This is a lowe bound of the true significance

Source: Authors

Based on the results of the normality test using the One-Sample Kolmogorov-Smirnov test, as shown in the table above, the Asymp. Sig. (2-tailed) value is **0.200**, which is greater than the significance level of **0.05** (or **0.200 > 0.05**). Therefore, based on this test result, it can be concluded that the data analyzed are **normally distributed**.

Multicollinearity Test

This multicollinearity test is used to identify the strong correlation between independent variables (X) in the regression model. The test uses the Variance Inflation Factor (VIF). If the VIF value is greater than 10 or tolerance is less than 0.10, it indicates the presence of multicollinearity.

Table 3. Multicollinearity Test Results

Coefficients[α]		
Model	Colinearity statistics	
	Tolerance	VIF
NPL	.902	1.109
LDR	.720	1.389
CAR	.789	1.267

[a] Dependent Variable : ROA

Source: Authors

The multicollinearity test in this study was conducted to identify whether there is a strong correlation among the independent variables (NPL, LDR, and CAR) in the regression model. The test uses the Variance Inflation Factor (VIF) and tolerance values as indicators. Based on the SPSS output, the tolerance values for NPL, LDR, and CAR are 0.902, 0.720, and 0.789 respectively—all of which are greater than the threshold of 0.10. This indicates that there is no multicollinearity among the independent variables.

Additionally, the VIF values for NPL, LDR, and CAR are 1.109, 1.389, and 1.267, respectively—each of which is below the critical value of 10. This further confirms that multicollinearity does not exist in the regression model. Therefore, it can be concluded that the model is considered statistically good and reliable, with no high intercorrelation among the independent variables.

Autocorrelation Test

The autocorrelation test is used to determine whether the data in the study exhibit correlation. In this analysis, the Durbin-Watson test is used to detect the presence of autocorrelation.

Table 4. Autocorrelation Test Results (Durbin-Watson)

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the estimete	Durbin-Watson
1	.873[a]	.762	.740	.55951	1.469

[a] Predictors: (Constant), CAR, NPL, LDR

[b] Dependent Variable: ROA

Source: Authors

Based on the results of the study, the Durbin-Watson test shows a value of 1.469 (with n=36 and k=3). The critical values are dL = 1.317 and 4 - dL = 2.683, while dU = 1.650 and 4 - dU = 2.350. Since the Durbin-Watson value falls between dL and dU, and does not exceed the critical boundaries, it can be concluded that the regression model does not suffer from autocorrelation problems.

Heteroskedacity Test

The heteroscedasticity test is conducted to determine whether there is non-constant variance in the residuals of a regression model. This test aims to identify whether the data exhibit heteroscedasticity. Ideally, good data should not

	INTERNATIONAL JOURNAL OF PROGRESSIVE	e-ISSN :
	RESEARCH IN ENGINEERING MANAGEMENT	2583-1062
	AND SCIENCE (IJPREMS)	Impact
www.ijprems.com	(Int Peer Reviewed Journal)	Factor :
editor@ijprems.com	Vol. 05, Issue 04, April 2025, pp : 559-568	7.001

exhibit heteroscedasticity. The test can be conducted through graphical methods or statistical approaches such as the White test, Spearman test, Park test, Glejser test, and Breusch-Pagan test. In this study, the White test is used via SPSS. The White test for heteroscedasticity is employed to determine whether the residual variance in the regression model is constant or not, by regressing the squared residuals on the independent variables, the squared independent variables, and their interactions.

The formula for calculating the chi-square statistic is:

Chi-square calculated = N × R square,

where N is the number of sample data, and the statistical confidence level is 95% ($\alpha = 0.05$). The decision rule is as follows:

1. If Chi-square calculated < Chi-square table, then there is no indication of heteroscedasticity.
2. If Chi-square calculated > Chi-square table, then heteroscedasticity is present.

Table 5. Heteroscedasticity Test Results (White Test)

Model Summary				
Model	R	R square	Adjusted R Square	Std. Error of the estimate
1	.580[a]	.336	.170	.25865

N = 36

Chi-square calculated = N × R Square = 36 × 0.336 = 12.096

Chi-square table at 5% significance level with df = 7 (X1, X2, X3, X1 squared, X2 squared, X3 squared, X1X2X3) = 14.017

Source: Authors

Since Chi-square calculated < Chi-square table (12.096 < 14.017), the results show that the calculated value is smaller than the table value. Therefore, it can be concluded that there is no heteroscedasticity in the tested regression model.

Multiple Linear Regression Analysis Test

The multiple linear regression analysis test is used to determine the extent of the influence of the independent variables on the dependent variable.

Table 6. Results of Multiple Linear Regression Analysis

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.178	1.787		1.778	.085
NPL	-1.011	.127	-.724	-7.969	.000
LDR	-.013	.014	-.095	-.934	.357
CAR	.158	.044	.346	3.570	.001

Source: Authors

Using the regression formula:

$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$

Then the regression equation becomes:

ROA = 3.178 - 1.011 NPL - 0.013 LDR + 0.158 CAR

a. The multiple linear regression analysis was conducted to determine the extent to which the independent variables influence the dependent variable. Based on the SPSS output presented in Table 15, the resulting regression equation is: ROA = 3.178 - 1.011 NPL - 0.013 LDR + 0.158 CAR. The constant value (α) is 3.178, meaning that if the independent variables NPL, LDR, and CAR are assumed to be constant or zero, the Return on Assets (ROA) would increase by 3.178%.

b. The regression coefficient for NPL (Non-Performing Loan) is -1.011, indicating a negative relationship between NPL and ROA. This means that, assuming other variables remain constant, an increase in NPL will reduce ROA by 1.011%. Similarly, the regression coefficient for LDR (Loan to Deposit Ratio) is -0.013, which also shows a

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	AND SCIENCE (IJPREMS)	Impact
www.ijprems.com	(Int Peer Reviewed Journal)	Factor :
editor@ijprems.com	Vol. 05, Issue 04, April 2025, pp : 559-568	7.001

negative relationship with ROA. If LDR increases while other variables are held constant, ROA will decrease by 0.013%.

c.   On the other hand, the regression coefficient for CAR (Capital Adequacy Ratio) is 0.158, indicating a positive relationship between CAR and ROA. This means that if CAR increases and other variables remain constant, ROA will increase by 0.158%. These results show that while NPL and LDR negatively affect ROA, CAR has a positive effect.

Hipotheses Test

f-Test

The F-test, also known as the simultaneous test, is a statistical test in regression analysis used to assess whether the overall regression model has a significant effect. It evaluates whether all independent variables (X) collectively influence the dependent variable (Y).

Table 7. Simultaneous Test (F-Test) Results

ANOVAª					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	32.097	3	10.699	34.177	.000ᵇ
Residual	10.017	32	.313		
Total	42.114	35			

Dependent Variable: ROA

Predictors: (Constant), CAR, NPL

Source: Authors

Before determining the F-calculated value, the F-table value must be established as a reference for decision-making. With df1 = 3 (number of independent variables) and df2 = n – (k + 1) = 36 – (3 + 1) = 32, and using a 5% significance level, the F-table value is F(3; 32) = 2.90. The F-calculated value is 34.177, which is greater than the F-table value (34.177 > 2.90), and the significance value is 0.000 < 0.05. Therefore, it can be concluded that the regression model is valid and that the independent variables NPL, LDR, and CAR have a simultaneous effect on the dependent variable ROA.

t-Test

The t-test, also known as the partial test, is a statistical analysis method used to assess the individual influence of each independent variable (X) on the dependent variable (Y). Using the formula df = n – k – 1, we get df = 36 – 3 – 1 = 32. At a 5% significance level (α = 0.05), we use α/2 = 0.025. The t-table value is t(0.025; 32) = 2.037.

Table 8. Simultaneous Test (F-Test) Results

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.178	1.787		1.778	.085
NPL	-1.011	.127	-.724	-7.969	.000
LDR	-.013	.014	-.095	-.934	.357
CAR	.158	.044	.346	3.570	.001

Dependent Variable: ROA

Predictors: (Constant), CAR, NPL

Source: Authors

Based on the above results:

a.   For the NPL variable, the significance value is 0.000 < 0.05 and the t-calculated value is -7.969 < 2.037. With a regression coefficient of -1.011, this means Ha is accepted and Ho is rejected, indicating that NPL has a significant negative effect on ROA.

b.   For the LDR variable, the significance value is 0.357 > 0.05 and the t-calculated value is -0.934 < 2.037. With a regression coefficient of -0.013, this means Ha is rejected and Ho is accepted, indicating that LDR has a negative but not significant effect on ROA.

c. For the CAR variable, the significance value is 0.001 < 0.05 and the t-calculated value is 3.570 > 2.037. With a regression coefficient of 0.158, this means Ha is accepted and Ho is rejected, indicating that CAR has a significant positive effect on ROA.

5. DISCUSSION

The Influence of NPL, LDR, and CAR on ROA

From the proposed hypothesis, H1, namely, that the Credit Risk Ratio (NPL), Liquidity Ratio (LDR), and Capital Adequacy Ratio (CAR) simultaneously influence Profitability (ROA) in State-Owned Commercial Banks (BUMN) during the period 2015–2023, is accepted. This conclusion is drawn from the results of the F-test, which shows that the combined variables (NPL, LDR, and CAR) have a strong and statistically significant impact on profitability (ROA). The F-test results indicate that the regression model as a whole is able to explain variations in ROA effectively. Therefore, the null hypothesis (Ho) is rejected, and the alternative hypothesis (Ha) is accepted. This indicates that the variables NPL, LDR, and CAR collectively influence profitability (ROA).

NPL reflects credit quality and the risk of problematic loans; LDR indicates how efficiently the available funds are used to generate interest income; and CAR provides an overview of the bank's capacity to face loss-related risks. Proper management of these ratios can complement one another and contribute positively to profitability. These findings are in line with the research conducted by Solihah et al. (2023), which concluded that Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), and Non-Performing Loan (NPL) have a simultaneous effect on Return on Assets (ROA). The results also support the study by Debora (2020), which stated that NPL, LDR, and CAR have a positive and significant influence on ROA.

The Infuence of NPL to ROA

Based on the proposed hypothesis, H2, that the Credit Risk Ratio (NPL) has a negative and significant effect on Profitability (ROA) in State-Owned Commercial Banks (BUMN) during the period 2015–2023, is accepted. The analysis of the credit ratio variable (NPL) on profitability, based on the results of the t-test and its significance value and t-statistic as previously mentioned, leads to the rejection of the null hypothesis (Ho) and the acceptance of the alternative hypothesis (Ha). This indicates that the NPL variable has a negative and significant effect on Profitability (ROA).

Low credit quality reflects weak initial credit analysis and the inability of debtors to repay their loans, which in turn reduces interest income and lowers bank profits. This situation causes NPL to have a negative impact on profitability (ROA). Additionally, the need for loan loss provisions increases, reducing the bank's net income due to the added expense of provisioning, which ultimately leads to lower profitability (ROA).

Kasmir (2020) stated that when NPL increases, banks must allocate more reserves to cover potential losses, reducing the profit generated from assets. The increase in NPL reflects a higher credit risk, and such an increase may lead to credit losses, thereby lowering profitability (ROA). These findings are consistent with research by Widyastuti & Aini (2021), which concluded that Non-Performing Loans (NPL) have a negative and significant effect on ROA, as well as research by Safitri (2023), which also found that NPL negatively and significantly affects Profitability (ROA).

The Influence of LDR to ROA

The proposed H3 hypothesis, that the Liquidity Ratio (LDR) has a positive and significant effect on Profitability (ROA) in State-Owned Commercial Banks (BUMN) during the period 2015–2023, is rejected. Based on the research results regarding the liquidity ratio (LDR) and its effect on profitability, as shown by the t-test results (with significance value and t-statistic previously stated), it indicates that the alternative hypothesis (Ha) is rejected and the null hypothesis (Ho) is accepted. This means the LDR variable has a negative and insignificant effect on ROA.

The t-statistic value being lower than the critical t-table value indicates a negative relationship, as the t-statistic is both negative and smaller than the t-table value. Furthermore, the significance value (p-value) being higher than the predetermined threshold indicates that the influence of the liquidity ratio measured by LDR is not statistically strong enough to be considered significant.

This may be due to the COVID-19 pandemic, during which many debtors faced financial difficulties, leading to a decline in credit quality and thus weakening the potential positive impact of LDR on profitability (ROA). As a result, banks found it harder to convert liquidity into profits. Additionally, the LDR values during the tested period were not in the optimal range (either too high or too low). The 2015–2023 period experienced various economic conditions, including slowed economic growth, changes in interest rate policies, and the COVID-19 pandemic, which shifted bank priorities due to market instability. Consequently, banks focused more on liquidity stability rather than increasing profitability, weakening the relationship between LDR and ROA. This caused ROA to be negative, although not significantly so.

Therefore, a high LDR does not always indicate good financial performance. As a result, the findings of this study are not in line with the research conducted by Aruan (2022), which concluded that the liquidity ratio (LDR) has a positive and significant effect on profitability (ROA), and also contradict the study by Safitri (2023), which also stated that LDR has a positive and significant effect on ROA.

The Influence of CAR to ROA

The proposed H4 hypothesis, that the Capital Adequacy Ratio (CAR) has a positive and significant effect on Profitability (ROA) in State-Owned Commercial Banks (BUMN) during the period 2015–2023, is accepted. The t-statistic value, which is positive and greater than the critical t-table value, along with a significance (p-value) lower than the threshold, indicates a significant effect.

Banks with sufficient capital are better able to maintain financial stability and build investor confidence, enabling them to continue generating optimal net profits. Adequate capital also allows banks to manage risks more effectively, thus minimizing potential losses, which in turn leads to an increase in profitability (ROA). Additionally, sustained financial stability and high credit distribution, so long as it remains within the set risk limits, can further boost ROA. High credit distribution contributes to increased interest income, which in turn enhances net profit and profitability (ROA).

Sudana (2015) also explains that a sufficient CAR can help increase investor confidence in a bank. This, in turn, gives banks more room to grow and expand, ultimately boosting Return on Assets (ROA) and overall profitability. A strong CAR not only provides protection against risks but also facilitates growth and improved financial performance. This finding is in line with the research by Rembet & Baramuli (2020), which states that CAR has a significant effect on ROA.

6. CONCLUSION

Based on the tests that have been conducted, the following conclusions can be drawn:

a. Credit Ratio (NPL), Liquidity Ratio (LDR), and Capital Adequacy Ratio (CAR) have a simultaneous positive and significant effect on the profitability (ROA) of State-Owned Commercial Banks (BUMN) during the period 2015–2023. By managing NPL, LDR, and CAR optimally, banks can improve overall profitability.

b. The Credit Ratio (NPL) has a negative and significant effect on profitability (ROA) in BUMN during the period 2015–2023. Poor credit quality, caused by suboptimal credit analysis and the inability of debtors to repay their loans, leads to a decline in interest income, reduced profits, and increased credit loss provisions, all of which negatively impact profitability.

c. The Liquidity Ratio (LDR) has a negative and insignificant effect on profitability (ROA) in BUMN during the period 2015–2023. Several factors such as the COVID-19 pandemic, declining credit quality, slow economic growth, and a shift in bank priorities toward maintaining liquidity stability rather than focusing on profitability have resulted in LDR having no significant impact on ROA.

d. The Capital Adequacy Ratio (CAR) has a positive and significant effect on profitability (ROA) in BUMN during the period 2015–2023. Adequate capital enables banks to maintain financial stability, increase investor confidence, reduce risk of losses, and maximize interest income, all of which contribute to improved profitability (ROA).

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