The Effect of Non-Performing Loans, Return On Equity and Capital Adequacy Ratio on the Profit Growth of State-Owned Banks 2014-2023

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Abstract. Stable profit growth reflects a bank's operational efficiency and resilience in responding to market dynamics. Increasing profits provide opportunities for reinvestment, innovation, and business expansion, thereby strengthening long-term competitiveness. This study employed purposive sampling with a sample of four state-owned banks (BUMN) and data processing was conducted using EViews 12 software. The best-fit model identified was the Fixed Effect Model (FEM). The results indicate that NPL, ROE, and CAR have a significant simultaneous effect on profit growth. Partially, ROE and CAR have a significant influence, while NPL does not. The R-squared value of 90.32% shows that these independent variables explain a substantial portion of the variation in profit growth. Steady profit growth reflects the bank's operational efficiency and resilience in the face of market dynamics. Increased profit growth provides opportunities for banks to reinvest, innovate, and expand their businesses, thereby strengthening long-term competitiveness. This study uses a purposive sampling method with a sample of 4 state-owned banks (Mandiri, BRI, BNI, BTN) and data processing using EViews 12 software. The best model obtained is the Fixed Effect Model (FEM). The results of the study show that NPL, ROE, and CAR simultaneously have a significant effect on profit growth. Partially, ROE and CAR have a significant effect, while NPLs do not. The R-squared value of 90.32% indicates that the three independent variables explain most of the variation in profit growth.
Keywords: profit growth, Non-Performing Loan, Return on Equity, Capital Adequacy Ratio

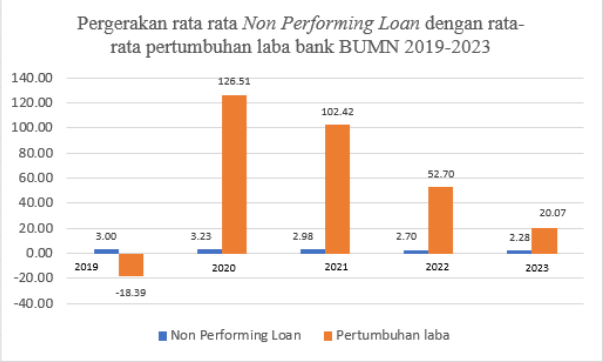
INTRODUCTION

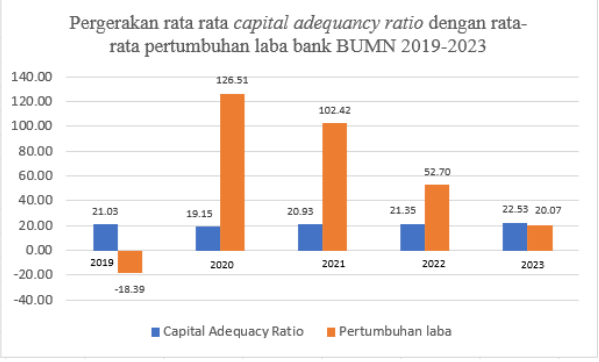
Indonesia as a developing country is influenced by various factors in its growth process, one of which is the banking sector. The bank acts as a financial intermediation institution that collects funds from the community in the form of deposits, then redistributes them in the form of credit to support the improvement of the welfare of the community in general (Baihaqqy, 2020). In Indonesia's national economy, banks have a central role as part of the financial system that widely known by the public, as well as many other financial institution activities that depend on the role of banks (Ningtyas, 2021).

Banks have a strategic role in the national economy, especially in terms of credit distribution. Referring to the press release of the Financial Services Authority (OJK) number SP 03/GKPB/OJK/I/2024, as of December 2023, state-owned banks contributed 45.81% to the total loans disbursed by national banks. This contribution, SOE Banks are the main actors in supporting financing in various sectors, such as infrastructure, industry, and Micro, Small, and Medium Enterprises (MSMEs). This role makes SOE Banks not only an intermediary institution, but also a strategic tool for the government in expanding financial inclusion, maintaining economic stability, and encouraging equitable development.

Good bank performance contributes directly to profit growth through operational efficiency and effective business strategies. Growing profits reflect healthy financial conditions, strengthen banks' resilience to economic risks, and increase investor confidence. This encourages investment and supports the stability and sustainability of the bank's overall business.

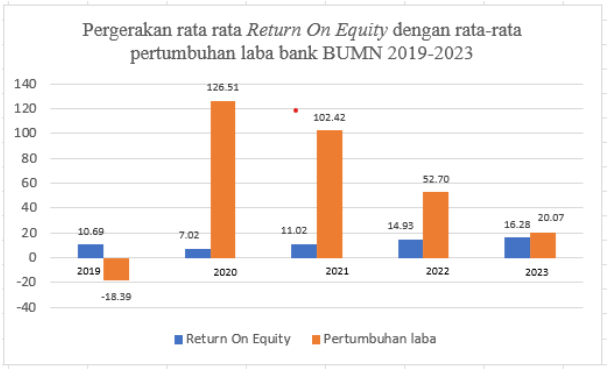
Based on the figure above of the average NPL with the average profit growth of state-owned banks for the 2019–2023 period, it can be seen that the average trend *of Non-Performing Loans* (NPLs) is not always in line with profit growth. For example, although NPLs increased in 2019–2020, profit growth actually jumped sharply. On the other hand, when NPLs declined in 2020–2023, profit growth declined. The study by Cahyo et al. (2023) shows that NPLs have no effect on profit growth, because during the pandemic profits continue to grow even though NPLs increase. On the other





hand, Baihaqi & Yulianti (2021) found that NPLs have a negative effect on profit growth, because an increase in NPLs encourages the formation of loss reserves that suppress profits.

Based on the image above the average ROE with the average profit growth of state-owned banks for the 2019–2023 period, the average *Return On Equity* (ROE) shows a trend that is not in line with profit growth. In 2019–2020, ROE decreased, but profit growth actually increased sharply. Similar conditions occurred in the following years, where the increase in ROE was followed by a decrease in profit growth. The study by Fawzi (2022) concluded that ROE does not have a significant effect on profit growth because profits are more influenced by external factors and other funding sources. On the other hand, Agustina & Hikmah (2020) found that ROE has a positive effect on profit growth, because effective capital management can increase profits and encourage growth.



Based on the figure above of the average CAR with the average profit growth of state-owned banks for the 2019–2023 period, the average trend of *the Capital Adequacy Ratio* (CAR) is not in line with profit growth. In 2019–2020, CAR decreased while profit growth increased sharply. A similar thing happened in 2020–2023, where CAR rose, but profit growth actually decreased. Research by Azizzah et al. (2023) shows that CAR has no effect on profit growth, because large capital is not always followed by an increase in profit. On the contrary, Mauliddia et al. (2024) found that CAR has a positive effect, because strong capital provides flexibility for banks to invest and face risks, thereby encouraging profit growth.

The first theory in this study is *the Credit Rationing Theory* by Stiglitz & Weiss (2008) which is the foundation of the relationship between NPLs and profit growth. This theory explains that in an imperfect credit market, banks limit lending due to the asymmetry of information related to the risk and ability of borrowers. This theory is relevant to the *Non-Performing Loan* (NPL) ratio, which reflects the level of non-performing loans. When interest rates are raised, safe borrowers tend to back off, while borrowers risk staying on loans, triggering negative selection and moral hazard. To prevent an increase in NPLs, banks implement credit restrictions to maintain financial stability.

The second theory in this study, the *Trade-Off* Theory, developed by Kraus & Litzenberger (1973), explains the importance of a balance between the use of debt and equity in the capital structure. This theory is relevant to *Return On Equity* (ROE), as optimal use of debt can increase the bank's profitability and profit growth. However, excessive use of debt can increase financial risk, so banks need to balance the tax-saving benefits of debt with the potential costs of bankruptcy to maintain performance and stability.

The third theory in this study, namely the Risk and Return Theory put forward by Mishkin (2001), explains that every bank's financial decision involves an exchange between risk and return. The *Capital Adequacy Ratio* (CAR) is the main indicator in assessing a bank's ability to face the risk of loss. A high CAR reflects capital strength and increases confidence, but can limit credit disbursement and reduce profits. In contrast, a low CAR can drive profit growth through credit expansion, but increases the risk of bankruptcy. Therefore, banks need to strike a balance between capital security and profit potential. Regulations such as *the Basel Accord* are here to set the minimum CAR limit so that banks stay healthy and do not take excessive risks.

According to Law No. 10 of 1998, banks are financial institutions that collect funds from the public through savings and deposits, then redistribute them in the form of credit or other financial products to support economic growth (Ministry of Finance, 1998). In general, banks function as trust agents in collecting and distributing funds, development agents in encouraging economic activities, and service agents through the provision of various financial services (Hasibuan, 2015).

The *Non-Performing Loan* (NPL) ratio is an indicator that reflects the bank's ability to manage non-performing credit risk (Fadillah et al., 2024). *Return on Equity* (ROE) is a ratio that shows the extent to which a bank is able to generate after-tax profits from its capital (Siswanto, 2021). *Capital Adequacy Ratio* (CAR) is a ratio that measures a bank's ability to provide capital for operations and bear credit risk. A high CAR indicates a better capacity to finance business activities and increase profitability (Dewi & Ghalib, 2024).

RESEARCH METHODS

This study uses a quantitative approach with secondary data from the financial statements of conventional state-owned banks listed on the Indonesia Stock Exchange during the period 2014–2023. The purpose of this study is to analyze the influence of *Non-Performing Loans* (NPL), *Return On Equity* (ROE), and *Capital Adequacy Ratio* (CAR) on profit growth. The three independent variables are explained through their respective operational definitions and calculated using the relevant financial formula based on the bank's annual report.

The research population included all state-owned banks, but the sample was selected using *purposive sampling techniques*, limited to conventional banks because they were more representative than only one state-owned Islamic bank. The data is collected through the documentation method from each bank's official website, then tabulated and calculated in Excel before further analysis using the EViews 12 software. This stage ensures that the data used is valid and in accordance with the research variables.

Data analysis was performed using panel data regression, which combines *time-series* and *cross-section data.* The selection of the best model is done through the Chow, Hausman, and Lagrange Multiplier (LM) tests to determine whether *the Common Effect*, *Fixed Effect,* or *Random Effect model* is the most suitable. After the model is selected, classical assumptions such as normality, multicollinearity, heteroscedasticity, and autocorrelation are tested to ensure that the regression model used is unbiased and statistically qualified.

Once the model is declared feasible, the analysis continues with hypothesis testing. The partial test *(t-test)* is used to measure the influence of each independent variable on profit growth, while the simultaneous test *(F-test)* tests the influence of all three together. Finally, the determination coefficient (R^2) is used to find out how much the NPL, ROE, and CAR variables contribute in explaining the variation in profit growth. This approach, the research is expected to provide a clear and accurate picture of the relationship between the variables studied.

RESULTS AND DISCUSSION

Model Selection Test

Chow Test

Table 1. Chow Test

Redundant Fixed Effects Tests Equation: Untitled Test cross-section fixed effects			
Effects Test	Statistic	D.F.	Prob.
Cross-section F	37.611888	(3,33)	0.0000
Cross-section Chi-square	59.438914	3	0.0000

Eviws 12 output results, (2025)

The results of the Chow test show a probability value of *cross-section* F and *chi-square* of 0.0000 < 0.05, which means that the best model chosen temporarily is *the Fixed Effect Model* (FEM) and needs to be continued with the Hausman test.

Hausman Test

Table 2. Hausman Test

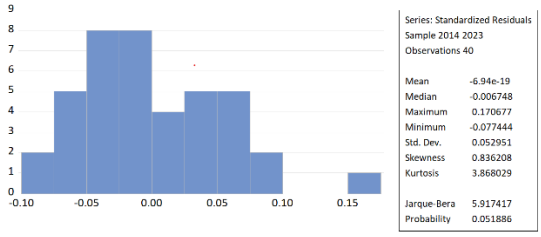
Correlated Random Effects – Hausman Test Equation: Untitled Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	112.835665	3	0.0000

Eviws 12 output results, (2025)

The results of Hausman's test showed a chi-square probability value of 0.0000 (< 0.05), which means that the Fixed Effect Model (FEM) model is the most appropriate model to use in this study.

Classic Assumption Test
Normality Test

Table 3 Normality Test



Eviws 12 output results, (2025)

The results in Table 3 show that the residual is normally distributed, indicated by a probability value of 0.0519 (> 0.05).

Multicollinearity Test

Table 4. Multicollinearity Test Results

Variance Inflation Factors Date: 05/30/25 Time: 00:02 Sample: 1 40 Included observations: 40

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.023326	69.50864	ON
NPL	5.291443	13.20561	1.063347
ROE	0.000329	67.85613	1.146385
CAR	0.000146	29.46800	1.109232

Eviws 12 output results, (2025)

The results of the multicollinearity test showed that all VIF values were below 10, so there were no problems with multicollinearity in the regression model.

Heteroscedasticity Test

Table 5. Heteroscedasticity Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.100883	0.064005	1.576183	0.1245
NPL	-0.395300	0.737089	-0.536299	0.5953
ROE	-0.008250	0.009033	-0.913278	0.3677
CAR	0.002503	0.008957	0.279380	0.7817

Eviws 12 output results, (2025)

The results of the Glejser test showed that all variables had a probability value of > 0.05, so that the regression model was free of heteroscedasticity and met the assumption of homoscedasticity.

Auto Correlation Test

The method used is *Durbin-Watson* (DW), based on the results of the DW value test of 1.798208, n = 40, and k = 3. Based on the results of this calculation, a dU value of 1.6000 (4 - dU = 2.4) and a dL of 1.3908 (4 - dL = 2.255688) were obtained. Based on these results, it can be concluded that this study passed the autocorrelation test, because 1.6000 < 1. 798208 < 2.4 (dU < DW < 4 - dU).

Result
Multiple Linear Regression Test

Based on the results of the panel data model test, the *Fixed Effect Model* (FEM) method was chosen as the best model for this analysis. The final regression model was compiled based on estimates using the FEM approach.

Pertumbuhan Labait =1.46 + 0.190NPLit + 0.058ROEit + 0.039CARit + ε

The interpretation of the results of the regression equation is as follows:

a. The constant (α) in multiple linear regression models has a value of 1.46. Profit growth will be at 1.46 if the NPL, ROE, and CAR variables remain unchanged.
b. The NPL regression coefficient in the multiple linear regression model is 0.190. There is a positive relationship between NPLs and profit growth, where an increase in NPL by 1 point will push profit growth up by 0.190, if other variables do not change.

c. The ROE regression coefficient in multiple linear regression models is 0.058. There is a positive relationship between ROE and profit growth, where an increase in ROE by 1 point will increase profit growth by 0.058 if the other variables do not change.
d. The CAR regression coefficient in multiple linear regression models is 0.039. There is a positive relationship between CAR and profit growth, which means that an increase in CAR by 1 point will drive profit growth up by 0.039 if other variables remain the same.

Pengujian Hypothesis

Hypothesis testing was carried out by analyzing the regression coefficient through the T test, the F test, and the determination coefficient (R^2) to determine the influence of independent variables (NPL, ROE, and CAR) on the dependent variable, namely profit growth.

T test

In this study, the t-value of the table of 2.02809 was obtained from the distribution t with a degree of freedom (df) of 36, the result of the calculation from n – k (40 – 4), at a significance level of 0.05 and a double-sided test.

Table 1 Results of the t test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.460384	0.113499	12.86697	0.0000
NPL	0.190155	1.307066	0.145482	0.8852
ROE	0.058233	0.016018	3.635463	0.0009
CAR	0.039407	0.015884	2.480897	0.0184

a. The calculation results showed a t-count of 0.145482 < t-table of 2.02809, with a probability value of 0.8852 > 0.05. This means that H_0 is accepted and H_a is rejected, so it can be concluded that NPLs have no significant effect on profit growth partially.
b. The calculation results showed a t-count of 3.635463 > t-table 2.02809, with a significance value of 0.0009 < 0.05. This means that H_0 is rejected and H_a is accepted, so it can be concluded that ROE has a significant effect on profit growth partially.
c. The results of the statistical test showed a t-count value of 2.480897 > t-table 2.02809 with a significance of 0.0184 < 0.05. So H_0 is rejected and H_a is accepted, so it can be concluded that CAR has a partial significant effect on profit growth.

Test F

The F test is used to test whether independent variables (NPL, ROE, and CAR) simultaneously affect the dependent variables (Profit Growth).

Table 2 Test Results F

Cross-section fixed (dummy variables)			
R-squared	0.901974	Mean dependent var	2.263903
Adjusted R-squared	0.884152	S.D. dependent var	0.169124
S.E. of regression	0.057564	Akaike info criterion	-2.714217
Sum squared resid	0.109349	Schwarz criterion	-2.418663
Log likelihood	61.28434	Hannan-Quinn criter.	-2.607354
F-statistic	50.60782	Durbin-Watson stat	1.798208
Prob(F-statistic)	0.000000		

Based on the results of the F-test, the F-calculation value was obtained as 50.60782 with df1 = 3 and df2 = 36, while the F-table value was 2.87. Since F-calculates > F-table and the significance value is 0.000000 < 0.05, H_0 is rejected and H_a is accepted. This means that the variables of NPL, ROE, and CAR simultaneously have a significant effect on Profit Growth.

Coefficient of determination (R2)

The *R-squared* value can be seen in table 2 of the t-test results where *the R-squared* value of 0.901974 shows that 90.19% variation in Profit Growth can be explained by the variables NPL, ROE, and CAR. Meanwhile, the remaining 9.81% was influenced by other factors outside the model, such as the relevant ROA according to Humayra & Maulana's research (2024), as well as the DER as described in the Agustinus (2021) study. This shows that although the model is quite robust, there are still other variables that also affect Profit Growth.

DISCUSSION

The Effect of *Non-Performing Loans* (NPLs) on Profit Growth

The results of the study show that *the Non-Performing Loan* (NPL) ratio does not have a significant influence on the profit growth of state-owned banks during 2014–2023. Although NPLs are often considered an indicator of credit risk, their impact on profits can be minimized if banks have a good risk management strategy in place. During the COVID-19 pandemic, the OJK issued a credit restructuring policy to ease the burden on affected debtors, so that the surge in NPLs can be suppressed. State-owned banks are actively following up on this policy by restructuring loans and increasing the Reserve for Impairment Losses (CKPN).

In addition to credit risk management, profit growth was also driven by an increase in non-interest income, such as *fee-based income* from digital services and administration. Amid the pressure of the pandemic, banks such as Mandiri, BRI, BNI, and BTN continued to record an increase in revenue from *e-channels,* digital applications, and other services. This shows that the income diversification strategy is able to balance the decline in interest income while maintaining the bank's profitability.

As a result of the strategy that has been carried out, the influence of NPLs on profit growth is not direct. The effectiveness of risk management, *credit rationing strategies*, and optimization of non-interest income sources play a greater role in maintaining the bank's financial performance. Therefore, even though NPLs are increasing, banks can still maintain profit growth as long as risk and revenue management strategies are optimally implemented.

The Effect of *Return On Equity* (ROE) on Profit Growth

The results of the study show that *Return On Equity* (ROE) partially has a significant effect on the profit growth of state-owned banks in Indonesia during the 2014–2023 period. This finding is in line with the research of Agustina & Hikmah (2020), and supported by *the Trade-Off* Theory put forward by Kraus & Litzenberger (1973), which states that the optimal use of debt can increase ROE through the leverage effect. Banks with the right leverage, can generate greater profits from relatively small equity, thus encouraging profit growth.

When a bank is able to balance the use of debt and equity efficiently, ROE increases and reflects the bank's ability to manage capital to generate profits. This shows that wise management of capital structure will accelerate profit growth. Therefore, the increase in ROE is an important indicator in reflecting the operational efficiency and success of the bank's financial strategy.

The Effect of *Capital Adequacy Ratio* (CAR) on Profit Growth

The results of the study show that *the Capital Adequacy Ratio* (CAR) partially has a significant effect on the profit growth of state-owned banks in Indonesia for the 2014-2023 period. These findings are in line with the research of Utami et al. (2021) and Mauliddia et al. (2024) which stated that CAR affects profit growth. A high CAR reflects the bank's readiness to bear credit, market, and operational risks, thereby providing stability in generating profits.

From the perspective of Risk and Return theory (Mishkin, 2001), banks with good CAR management have sufficient capital *buffers* to deal with potential losses. This allows banks to be more resilient to crises and market fluctuations, and to maintain long-term profitability. Thus, optimal risk management through CAR can drive profit growth and improve the bank's financial performance.

The Effect of *Non-Performing Loans* (NPLs), *Return on Equity* (ROE) and *Capital Adequacy Ratio* (CAR) on Profit Growth

The test results showed that simultaneously the *variables Non-Performing Loan* (NPL), *Return on Equity* (ROE), and *Capital Adequacy Ratio* (CAR) had a significant effect on the profit growth of state-owned banks in Indonesia during the study period. This is evidenced by a statistically significant regression model. This means that the lower the NPL (indicating good credit quality), the higher the ROE (efficiency in generating profits), and the more optimal the CAR (sufficient capital to bear the risk), the better the bank's financial performance, which ultimately drives profit growth.

Each independent variable has an important role. Low NPLs reflect the effectiveness of credit restriction policies and are in line with *credit rationing* theory, which encourages selective credit management to minimize the risk of default. High ROE is in line with the *Trade-Off Theory,* where capital use efficiency and debt utilization balance can increase profits. Meanwhile, a strong CAR supports the theory of Risk and Return, where capital adequacy is able to absorb financial risks and maintain bank stability. The three NPLs, ROE, and CAR complement each other in creating a solid foundation for sustainable bank profit growth.

CONCLUSIONS AND SUGGESTIONS

Conclusion

The test results show that the *Non-Performing Loan* (NPL) variable has no effect on profit growth in state-owned banks in Indonesia from 2014 to 2023. Meanwhile, the *Return on Equity* (ROE) and *Capital Adequacy Ratio* (CAR) variables have been proven to have a significant influence partially on profit growth. Simultaneously, the three variables NPL, ROE, and CAR have a significant effect on the profit growth of state-owned banks, which shows that risk management, capital use efficiency, and capital adequacy together play an important role in driving banking profit performance.

Suggestion

Based on the conclusions obtained, it is recommended that state-owned banks focus on improving financial performance through optimal management of NPLs, ROE, and CAR. NPLs can be depressed by credit selectivity, ROE reflects profit-to-equity efficiency, and CAR indicates capital adequacy in the face of risk, which overall supports sustainable profit growth. Although NPLs do not have a significant effect, investors still need to consider other aspects such as the bank's fundamental condition, management strategy, as well as macroeconomic factors such as interest rates and inflation. For the next researcher, it is recommended to add other variables such as liquidity and market conditions so that the research results are more comprehensive and reflect the dynamics of banking performance as a whole.

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