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# The Influence of Specific towards the Bank Performance Listed on the Indonesian Stock Exchange

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**Abstract**

This study investigates the influence of specific financial variables on the performance of banks listed on the Indonesia Stock Exchange. The research employs a quantitative approach using secondary data obtained from financial reports and annual reports of listed banks over a five-year period from 2019 to 2023. These data were sourced from the official website of the Indonesia Stock Exchange and individual bank websites. The analysis was conducted using regression analysis with the assistance of EViews 12 software. The results indicate that Capital Adequacy (CA) significantly affects Return on Assets (ROA) based on the Fixed Effect Model (FEM), Chow Test, and Random Effect Model (REM) analysis. The statistical tests confirm that variations in CA contribute to differences in bank performance, emphasizing the critical role of capital adequacy in determining profitability. The findings of this study suggest that capital adequacy is a key determinant of bank performance, highlighting its importance in maintaining financial stability and operational efficiency. Understanding the impact of financial variables on performance can help stakeholders assess the financial health of banks and make informed decision

*Keywords:* Bank Performance, Indonesian Stock Exchange, Specific Towards.

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## 1. Introduction

Performance becomes crucial for a company as it directly aligns with the optimization of its primary objectives. The growth of an industry, including banking company, is inherently dependent on the company's financial management capabilities to achieve high performance (Wau, 2021). Banking is an important institution for the country's economy. Stable banking condition will also support the stability of the country's economy. Therefore, the performance of banking companies is also as important as other companies, so that banking developments also encourage banks in Indonesia to further improve the services provided to the public. Moreover, banking performance is also often an indicator of a country's economy. In order to maintain high corporate value for banks, it becomes a new challenge for banks in Indonesia to improve and maintain their performance (Kamayuli & Artini, 2022).

Several factors need to be considered to improve banking performance, such as various specific bank and macroeconomic factors. For instance, the Capital Adequacy Ratio (CAR) reflects the bank's ability to bear risk and increase financial stability. Research conducted by Babatube & Fredrick (2022) shows that the Capital Adequacy Ratio (CAR) has a positive and significant effect on the financial performance of several banks in Nigeria. Similar things also show that the Capital Adequacy Ratio (CAR) has a positive and significant effect on the financial performance of several banks listed on the Indonesia Stock Exchange (Masyita, 2024). Meanwhile, research conducted by (Muhammed, Desalegn, & Emese, 2024) reveals that the Capital Adequacy Ratio (CAR) does not have a significant influence on commercial banks in Ethiopia.

Credit Risk (CR) indicates the risk of default by a borrower, which can reduce profitability and increase the risk of bankruptcy. Research conducted by Wulandari & Novitasari (2020) shows Credit risk has a negative and significant effect on company performance, meaning it depicts an inverse comparison between credit risk and company performance. Increasing credit risk can have an impact on decreasing ROA. Meanwhile, according to Credit Risk, it

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has a positive effect on company performance (Ghosh & Mondal, 2024). Cost Management (CM) refers to the efficiency of managing operational costs which can increase profitability. According to Ghosh & Mondal (2024) cost management, it has a positive effect on financial performance.

Liquidity (LQ) is important to ensure that banks have sufficient liquid assets to meet short-term obligations and increase customer confidence. Research conducted shows that liquidity has a positive effect on financial performance at Rural Banks (BPR) in Denpasar City (Apriyanti, Ridwan, & Alfarisa, 2021). The same thing is also obtained by Kumar Aspal et al. (2019) that liquidity has an effect on the financial performance of banks in India. Meanwhile, in terms of liquidity, it has a negative effect on financial performance (Arif Rahmansyah & Helliana, 2023).

Bank Size (BS) based on total assets, influences the bank's capacity to provide greater and more diverse financial services. Research conducted by Damayanti & Mawardi (2022) indicates that bank size has a positive but not significant effect on bank performance. Meanwhile, according to Wulandari & Novitasari (2020), company size has a negative and insignificant effect, meaning that if total assets increase, ROA will decrease. Moreover, Market Power (MP) indicates the bank's market power in the industry and influences the market. According to Arif Rahmansyah & Helliana (2023) market power has a positive effect on financial performance.

Economic Growth (GDP) is related to increasing investment opportunities and reducing credit risk, which ultimately increases bank performance. According to (Asysidiq & Sudiyatno, 2022b), GDP has a negative effect on financial performance. Meanwhile, according to Ghosh & Mondal (2024) GDP, it has a positive effect on financial performance. Inflation Rate (IR), where high inflation can reduce lending activity and increase the cost of funds, which has the potential to reduce bank financial performance. According to Ghosh & Mondal (2024), inflation has a negative effect on financial performance.

Through comprehensive analysis, it is expected that a significant influence can be found between these specific variables and bank performance, so that key factors can be identified that must be managed well to improve overall bank performance. The novelty of this research is the addition of the Operating Efficiency (OE) variable, that the bank's ability to minimize operational costs and optimize the use of resources, which can improve performance, in accordance with research conducted by Ghosh & Mondal (2024) those who stated that Operating Efficiency (OE) has an effect on financial performance.

## 2. Literature Review

### *2.1. Bank Performance*

A bank's financial performance reflects how the company manages its finances over a specific period, both in terms of fund collection and distribution. This performance can be assessed through financial reports published annually by the company. These financial reports provide information that relevant parties can analyze as a basis for decision-making (Azmi & Takarini, 2022).

### *2.2. Capital Adequacy Ratio (CAR)*

The Capital Adequacy Ratio (CAR) is a measure that reflects a bank's ability to withstand risks and maintain financial stability. Banks with a high CAR are considered more capable of handling economic shocks and continuing to operate efficiently. According to Yam (2023), CAR represents the ratio of a bank's capital to its Risk-Weighted Assets (RWA). A higher CAR indicates stronger capitalization, demonstrating the bank’s ability to cover risks associated with assets such as loans, investments, securities, and claims on other banks.

### *2.3. Credit Risk*

Credit risk refers to the possibility that borrowers may fail to repay their loans. Effective credit risk management is crucial for maintaining the sustainable performance of banks, as high credit risk can reduce profitability and increase the risk of bankruptcy. Lending activities serve as the primary source of income for banks; however, they also involve significant risks related to the possibility that borrowers may be unable to meet their payment obligations on time, which could threaten the bank's business continuity (Wulandari & Novitasari, 2020).

### 2.4. Cost Management

Efficient operational cost management is a crucial factor influencing bank performance. Banks that can effectively manage their operational costs tend to achieve higher profitability. Operational cost management is closely related to financial management. If an investment fails, the company will not gain any returns from it. Similarly, if a company fails to secure funding or acquire financial resources, it will face obstacles in carrying out its operations (Musthafa, 2017).

### 2.5. Liquidity

Liquidity is a company's ability to meet its financial obligations with sufficient funds. In the banking sector, liquidity is one of the primary risks that can threaten a bank's sustainability. This risk arises when a bank fails to meet its liquidity obligations due to issues such as uncovered losses, the need to finance assets, or inefficient asset management, which can ultimately lead to a loss of value (Damayanti & Mawardi, 2022).

### 2.6. Operating Efficiency

A bank's operational efficiency can be measured using the Operating Expenses to Operating Income (BOPO) ratio. A higher BOPO ratio indicates that the bank is less efficient in its operations, which may ultimately lead to a decline in financial performance. The efficiency level of a bank in managing its operations directly impacts the revenue it generates; the higher the BOPO ratio, the lower the bank's profitability. Conversely, a lower BOPO ratio signifies that the bank operates more efficiently (Hellen et al., 2019).

### 2.7. Bank Size

Firm size is an indicator of scale that represents the magnitude of a company, which can be measured by its total assets and total sales. In the banking sector, bank size is often measured by the total assets it owns, which can influence its capacity to provide financial services and manage risks. Larger banks tend to have advantages in operational scale and broader access to financial markets. With greater assets, banks can offer additional financial services at lower costs, ultimately enhancing their profitability.

### 2.8. Market Power

Market power in the banking sector reflects a bank’s ability to influence pricing and competition dynamics within the market. Banks with high market power often achieve better performance in generating profits. This is because they tend to have greater bargaining power in setting prices for financial products and services while maintaining their market share.

### 2.9. Economic Growth

A country’s economic growth, measured through Gross Domestic Product (GDP), can affect banking activities and the demand for financial services. Generally, high economic growth positively impacts bank performance. GDP is one method of calculating national income by summing the market value of all goods and services produced within a country over a specific period (Hartono, 2019).

### 2.10. Inflation Rate

The inflation rate indicates changes in the prices of goods and services over a certain period. High inflation can influence banks' operational costs and overall economic stability. Inflation refers to the process of rising prices within an economy and serves as a key indicator of price stability.

## 3. Research Method and Materials

This research aims to identify the influence of specific variables on the performance of banks listed on the Indonesia Stock Exchange. This research used a quantitative approach by collecting secondary data from financial reports and annual reports of banks listed on the Indonesia Stock Exchange over the last five-year period, started from 2019 until 2023. These data were obtained from the official website of the Indonesian Stock Exchange as well as the websites of each banking sector. The collected data were analyzed using data regression analysis with the help of EViews 12 software. The sampling method used purposive sampling. The sample from this research includes 40 (forty) banks listed on the Indonesia Stock Exchange (2019-2023). The analysis method employed multiple regression panel data analysis, which describes the correlation between independent variables in the research. The available data were measured and tested using EViews 12 software.

## 4. Results and Discussion

The banks used are those listed on the Indonesian Stock Exchange (BEI) in 2019 – 2023.

**Table 1.** Descriptive Analysis of Data

| | N | Minimum | Maximum | Mean | Std.Deviation | Variance |
|---|---|---|---|---|---|---|
| **ROA** | 200 | -1589.00 | 1475.00 | 68.7700 | 277.33079 | 76912.369 |
| **ROE** | 200 | -8903.00 | 9544.00 | 402.0300 | 1678.56048 | 2817565.275 |
| **CAR** | 200 | 116.00 | 41685.00 | 2749.3350 | 3530.52424 | 12464601.390 |
| **CR** | 200 | 62.00 | 678372252.00 | 6375372.7350 | 61518237.00317 | 3784493483978246.500 |
| **C.M** | 200 | 3038.00 | 75776851.00 | 4345512.8100 | 12655097.56397 | 160151494353597.560 |
| **LQ** | 200 | 1.00 | 9540673123.00 | 1233764227.0600 | 1276247154.75227 | 1628806800013258240. |
| **O.E** | 200 | 73.20 | 226117.00 | 8548.4560 | 16680.97588 | 278254956.289 |
| **BS** | 200 | 14.74 | 3286907307.00 | 250426845.4640 | 829556500.13861 | 688163986922218370.0 |
| **M.P** | 200 | 825.00 | 60425048.00 | 2590487.6950 | 8972604.81712 | 80507637204128.550 |
| **GDP** | 200 | -207.00 | 531.00 | 273.6000 | 303.72005 | 92245.869 |
| **IR** | 200 | 168.00 | 551.00 | 287.8000 | 138.00794 | 19046.191 |
| **Valid N (listwise)** | 200 | | | | | |

**Information:**
N : Number of Samples
ROA : Return on Assets (Y)
ROE : Return on Equity (Y)
CAR : Capital Adequacy Ratio (X1)
CR : Credit Risk (X2)
CM : Cost Management (X3)
LQ : Liquidity (X4)
OE : Operating Efficiency (X5)
BS : Bank Size (X6)
MP : Market Power (X7)
GDP : Economic Growth (X8)
IR : Inflation Rate (X9)

Based on table 1, it displays descriptive statistics for 10 variables measured on 200 samples. These variables are ROA, ROE, CAR, CR, CM, LQ, OE, BS, MP, GDP, and IR. In general, this table shows that these variables have very varied mean and standard deviation values. This table shows that there is great variability in the data studied, with some variables having very high means and standard deviations. This shows that there are significant differences between samples for each variable.

### *4.1. Normality and Heteroscedasticity Test*

The normality test aims to test whether in a regression model, the independent variable, dependent variable, or both have a normal distribution or not a normal distribution. A good regression model is one that has a normal or close to normal data distribution. If the residuals are normally distributed, the prediction results in the regression model will produce a model that is close to the actual situation, and vice versa. The normality test in this study used Kolmogorov-Smirmov statistics, which is more accurate in assessing the normality of data distribution. The basis for decision making in Kolmogorov-Smirmov include:

a. If the significance value is greater than 0.05 then the data is normally distributed.
b. If the significance value is smaller than 0.05 then the data is not normally distributed.

**Table 2.** Normality test for Variables X1-X9 with Dependent Y1

| **One-Sample Kolmogorov-Smirnov Test** | | |
|---|---|---|
| | | Unstandardized Residuals |
| N | | 199 |
| Normal Parameters [a, b] | Mean | .0000000 |
| | Std. Deviation | 2.79395039 |
| Most Extreme Differences | Absolute | .259 |
| | Positive | .183 |
| | Negative | -.259 |
| Statistical Tests | | .259 |
| Asymp. Sig. (2-tailed) | | .000 [c] |

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.

Based on table 2, provides information that the significance value of the normality test using the Kolmogoriv-Smirnov test is 0.000. The Kolmogoriv-Smirnov significance value is > 0.05, which indicates that the residual distribution of the research data is not normally distributed.

**Table 3.** Normality test for Variables X1-X9 with Dependent Y2

| **One-Sample Kolmogorov-Smirnov Test** | | |
|---|---|---|
| | | Unstandardized Residuals |
| N | | 199 |
| Normal Parameters [a, b] | Mean | .0000000 |
| | Std. Deviation | 17.72480038 |
| Most Extreme Differences | Absolute | .289 |
| | Positive | .196 |
| | Negative | -.289 |
| Statistical Tests | | .289 |
| Asymp. Sig. (2-tailed) | | .000 [c] |

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.

Based on table 3, provides information that the significance value of the normality test using the Kolmogoriv-Smirnov test is 0.000. The Kolmogoriv-Smirnov significance value is > 0.05, which indicates that the residual distribution of the research data is not normally distributed.

The heteroscedasticity test was carried out to determine whether there is an inequality in the variance of the residuals from one observation to another in the regression model. Heteroscedasticity conditions occur when the variance of the residual data is not constant and forms a certain pattern. If the residuals are not constant, the regression model obtained will produce bias in predicting the dependent variable.

In this research, residual heteroscedasticity testing was carried out using the Glejser test statistical method and graphs. This test was done by regressing the independent variable on the absolute value of the regression residual. It is

expected that there are no independent variables that are significant in predicting the absolute value of the residual. If there are significant variables, it indicates a heteroscedasticity problem in the residual data. The decision making in the Glejser test are:

a. If the significance value Sig. > 0.05 then there are no symptoms of heteroscedasticity.
b. If the significance value Sig. < 0.05 then symptoms of Heteroscedasticity occur.

The results of testing the data heteroscedasticity assumption are summarized in Table 4.

**Table 4**. Hetero Test for Variables X1-X9 with Dependent Y1

| **Coefficients** [a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | Q | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.624 | .621 | | 2,614 | .010 |
| | X1_CAR | -.019 | .052 | -.023 | -.366 | .715 |
| | X2_CR | -.422 | .601 | -.045 | -.703 | .483 |
| | X3_CM | -1.873E-8 | .000 | -.098 | -.558 | .578 |
| | X4_LQ | -.012 | .017 | -.056 | -.743 | .459 |
| | X5_OE | .024 | .003 | .472 | 7.393 | .000 |
| | X6_BS | 6.584E-11 | .000 | .023 | .297 | .767 |
| | X7_MP | 4.834E-9 | .000 | .018 | .102 | .919 |
| | X8_GDP | .077 | .066 | .089 | 1.174 | .242 |
| | X9_IR | -.164 | .133 | -.094 | -1.235 | .218 |

a. Dependent Variable: Abs_Res

Based on table 4, it shows that through the Glejser test there is no heteroscedasticity problem in the variables CAR, CR, CM, LQ, BS, MP, GDP, IR because the significance value of Sig. > 0.05 then there are no symptoms of heteroscedasticity. Then in the OE variable there are symptoms of heteroscedasticity if seen based on the table.

The heteroscedasticity test was carried out to determine whether there is an inequality in the variance of the residuals from one observation to another in the regression model. Heteroscedasticity conditions occur when the variance of the residual data is not constant and forms a certain pattern. If the residuals are not constant, the regression model obtained will produce bias in predicting the dependent variable.

In this research, residual heteroscedasticity testing was carried out using the Glejser test statistical method and graphs. The Glejser test was carried out by regressing the independent variable on the absolute value of the regression residual. It is expected that there are no significant independent variables in predicting the absolute value of the residual. If there are significant variables, it indicates a heteroscedasticity problem in the residual data.

**Table 5**. Heteroscedasticity Test for Variables X1-X9 with dependent Y2

| **Coefficients** [a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 12.752 | 4.267 | | 2.988 | .003 |
| | X1_CAR | -.124 | .359 | -.024 | -.347 | .729 |
| | X2_CR | -2.401 | 4,119 | -.040 | -.583 | .561 |
| | X3_CM | -1.502E-7 | .000 | -.123 | -.650 | .516 |
| | X4_LQ | -.030 | .114 | -.022 | -.265 | .791 |
| | X5_OE | .102 | .022 | .319 | 4.652 | .000 |
| | X6_BS | -1.023E-9 | .000 | -.055 | -.673 | .502 |
| | X7_MP | 7.171E-8 | .000 | .042 | .219 | .827 |
| | X8_GDP | -.066 | .451 | -.012 | -.146 | .884 |
| | X9_IR | -.991 | .914 | -.089 | -1.085 | .279 |

a. Dependent Variable: Abs_ResY2

Based on table 5, it shows that through the Glejser test there is no heteroscedasticity problem in the variables CAR, CR, CM, LQ, BS, MP, GDP, IR because the significance value of Sig. > 0.05 means there are no symptoms of heteroscedasticity, but there are symptoms of heteroscedasticity in the OE variable if seen based on the table.

### *4.2. Eviews Test Result*

Modeling using panel data techniques could be carried out using three alternative approaches to processing methods. These approaches are the Common Effect/Pooled Least Square (CEM), the Fixed Effect (FE), and the Random Effect (RE) as follows:

#### *4.2.1. Common Effect/Pooled Least Square (CEM) Method*

The technique used in this method is combining time series and cross section data. By combining these both types of data, the OLS method can be used to estimate panel data models. This approach does not pay attention to individual or time dimensions, and it can be assumed that the behavior of data between companies is the same in various time periods. This assumption is clearly very far from the actual reality because the characteristics between companies both from a regional perspective are clearly very different.

**Table 6**. Results of the Common Effect/Pooled Least Square (CEM) Method

| Variables | Coefficient | Std. Error | t-Statistics | Prob. |
|---|---|---|---|---|
| Y2 | 0.180616 | 0.011506 | 15.69708 | 0.0000 |
| C | 0.390512 | 2.068574 | 0.188783 | 0.8530 |
| X1 | 3.515774 | 1.721377 | 2.042419 | 0.0604 |
| X2 | 1.852190 | 1.377557 | 1.344547 | 0.2002 |
| X3 | -1.25E-06 | 2.42E-06 | -0.516400 | 0.6136 |
| X4 | -0.927393 | 0.648967 | -1.429028 | 0.1749 |
| X5 | -0.017651 | 0.005190 | -3.401189 | 0.0043 |
| X6 | -0.000210 | 9.23E-05 | -2.276219 | 0.0391 |
| X7 | -5.42E-07 | 9.92E-07 | -0.546340 | 0.5934 |
| X8 | 0.295333 | 0.114409 | 2.581386 | 0.0218 |
| X9 | -0.066178 | 0.239111 | -0.276766 | 0.7860 |
| MSE Root | 0.974477 | R-squared | | 0.965909 |
| Mean dependent var | 0.835600 | Adjusted R-squared | | 0.941558 |
| SD dependent var | 5.386609 | SE of regression | | 1.302199 |
| Akaike info criterion | 3.666168 | Sum squared resid | | 23.74013 |
| Schwarz criterion | 4.202473 | Log likelihood | | -34.82710 |
| Hannan-Quinn Criter. | 3.814916 | F-statistic | | 39.66645 |
| Durbin-Watson stat | 2.876187 | Prob(F-statistic) | | 0.000000 |

Dependent Variable: Y2
Method: Least Squares Panel
Date: 07/26/24 Time: 23:41
Sample: 2019 2023
Periods included: 5
Cross-sections included: 5
Total panel (balanced) observations: 25

| Variables | Coefficient | Std. Error | t-Statistics | Prob. |
|---|---|---|---|---|
| C | 128.0680 | 245.2589 | 0.522175 | 0.6119 |
| X1 | -83.93328 | 54.86095 | -1.529928 | 0.1543 |
| X2 | -42.58255 | 28.76541 | -1.480338 | 0.1668 |
| X3 | 0.000118 | 9.57E-05 | 1.231841 | 0.2437 |
| X4 | 37.20866 | 21.47699 | 1.732490 | 0.1111 |
| X5 | 0.126722 | 0.125424 | 1.010348 | 0.3340 |
| X6 | -0.047566 | 0.084574 | -0.562417 | 0.5851 |
| X7 | -3.33E-05 | 3.94E-05 | -0.846706 | 0.4152 |
| X8 | -1.363997 | 2.638754 | -0.516910 | 0.6155 |

| | | | | |
|---|---|---|---|---|
| SX9 | -2.899048 | 5.081468 | -0.570514 | 0.5798 |
| Effects Specification | | | | |
| Cross-section fixed (dummy variables) | | | | |
| MSE Root | 18.38954 | R-squared | | 0.569345 |
| Mean dependent var | 5.610400 | Adjusted R-squared | | 0.060390 |
| SD dependent var | 28.60030 | SE of regression | | 27.72328 |
| Akaike info criterion | 9.781441 | Sum squared resid | | 8454.380 |
| Schwarz criterion | 10.46401 | Log likelihood | | -108.2680 |
| Hannan-Quinn Criter. | 9.970757 | F-statistic | | 1.118654 |
| Durbin-Watson stat | 1.613041 | Prob(F-statistic) | | 0.431356 |

**Information:**
X1 = CAR
X2 = CR
X3 = CM
X4 = LQ
X5 = OE
X6 = BS
X7 = MP
X8 = GDP
X9 = IR

Based on table 6, it shows that there are several independent variables that have a significant influence on the dependent variable, namely Y2, X1, X5, X6, and X8. Meanwhile, other independent variables, such as X2, X3, X4, X7, and X9 do not have a significant influence.

*4.2.2. Hausman Test*

**Table 7**. Results of the Hausman Test

Dependent Variable: Y
Method: Least Squares Panel
Date: 07/23/24 Time: 22:22
Sample: 2019 2023
Periods included: 5
Cross-sections included: 5
Total panel (balanced) observations: 25

| Variables | Coefficient | Std. Error | t-Statistics | Prob. |
|---|---|---|---|---|
| C | 5.218473 | 8.522951 | 0.612285 | 0.5495 |
| X1 | 4.499739 | 7.167394 | 0.627807 | 0.5396 |
| X2 | -6.696749 | 5.272007 | -1.270246 | 0.2233 |
| X3 | 1.19E-05 | 9.45E-06 | 1.261040 | 0.2266 |
| X4 | 0.168269 | 2.688249 | 0.062594 | 0.9509 |
| X5 | -0.014077 | 0.021602 | -0.651638 | 0.5245 |
| X6 | 0.000241 | 0.000365 | 0.660284 | 0.5191 |
| X7 | -3.25E-06 | 4.07E-06 | -0.799206 | 0.4366 |
| X8 | 0.163660 | 0.475403 | 0.344255 | 0.7354 |
| X9 | -0.704157 | 0.981765 | -0.717236 | 0.4842 |
| MSE Root | 4.202682 | R-squared | | 0.365910 |
| Mean dependent var | 0.835600 | Adjusted R-squared | | -0.014544 |
| SD dependent var | 5.386609 | SE of regression | | 5.425639 |
| Akaike info criterion | 6.509323 | Sum squared resid | | 441.5634 |
| Schwarz criterion | 6.996873 | Log likelihood | | -71.36653 |
| Hannan-Quinn Criter. | 6.644549 | F-statistic | | 0.961772 |
| Durbin-Watson stat | 1.669551 | Prob(F-statistic) | | 0.505432 |

*4.2.3. Lagrange Multiplier Tests for Random Effects*

**Table 8**. Results of the Lagrange Multiplier Tests for Random Effects

Lagrange Multiplier Tests for Random Effects
Null hypothesis: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided
(All others) alternatives

| | Test Hypothesis | | |
|---|---|---|---|
| | Cross-section | Time | Both |
| Breusch-Pagan | 0.519757 | 0.096666 | 0.616423 |
| | (0.4709) | (0.7559) | (0.4324) |
| Honda | -0.720942 | 0.310911 | -0.289935 |
| | (0.7645) | (0.3779) | (0.6141) |
| King-Wu | -0.720942 | 0.310911 | -0.289935 |
| | (0.7645) | (0.3779) | (0.6141) |
| Standardized Honda | 1.352444 | 1.681458 | -2.132694 |
| | (0.0881) | (0.0463) | (0.9835) |
| Standardized King-Wu | 1.352444 | 1.681458 | -2.132694 |
| | (0.0881) | (0.0463) | (0.9835) |
| Gourieroux, et al. | -- | -- | 0.096666 |
| | | | (0.6161) |

*4.2.4. Fixed Effect (FE) Method*

The Fixed Effect method is a method that will estimate panel data, where disturbance variables may be interconnected over time and between individuals. The EViews 12 software suggests utilizing the Fixed Effects Model (FEM). To ensure accuracy, the author conducted a Likelihood Ratio test, which yielded a significant Chi-Square probability value of 0.000, confirming that the FEM model is the most appropriate for this analysis.

**Table 9.** Chow test model test results

| Redundant Fixed Effects Tests<br>Equation: Untitled<br>Cross-section fixed effects test<br>Effects Test | | Statistics | df | Prob. |
|---|---|---|---|---|
| Cross-section F | | 0.702265 | (4,10) | 0.6080 |
| Chi-square cross-section | | 6.189191 | 4 | 0.1855 |
| Variables | Coefficient | Std. Error | t-Statistics | Prob. |
| Y2 | 0.180616 | 0.011506 | 15.69708 | 0.0000 |
| C | 0.390512 | 2.068574 | 0.188783 | 0.8530 |
| X1 | 3.515774 | 1.721377 | 2.042419 | 0.0604 |
| X2 | 1.852190 | 1.377557 | 1.344547 | 0.2002 |
| X3 | -1.25E-06 | 2.42E-06 | -0.516400 | 0.6136 |
| X4 | -0.927393 | 0.648967 | -1.429028 | 0.1749 |
| X5 | -0.017651 | 0.005190 | -3.401189 | 0.0043 |
| X6 | -0.000210 | 9.23E-05 | -2.276219 | 0.0391 |
| X7 | -5.42E-07 | 9.92E-07 | -0.546340 | 0.5934 |

| | | | | |
|---|---|---|---|---|
| X8 | 0.295333 | 0.114409 | 2.581386 | 0.0218 |
| X9 | -0.066178 | 0.239111 | -0.276766 | 0.7860 |

| | | | |
|---|---|---|---|
| MSE Root | 0.974477 | R-squared | 0.965909 |
| Mean dependent var | 0.835600 | Adjusted R-squared | 0.941558 |
| SD dependent var | 5.386609 | SE of regression | 1.302199 |
| Akaike info criterion | 3.666168 | Sum squared resid | 23.74013 |
| Schwarz criterion | 4.202473 | Log likelihood | -34.82710 |
| Hannan-Quinn Criter. | 3.814916 | F-statistic | 39.66645 |
| Durbin-Watson stat | 2.876187 | Prob(F-statistic) | 0.000000 |

Dependent Variable: Y2
Method: Least Squares Panel
Date: 07/26/24 Time: 23:43
Sample: 2019 2023
Periods included: 5
Cross-sections included: 5
Total panel (balanced) observations: 25

| Variables | Coefficient | Std. Error | t-Statistics | Prob. |
|---|---|---|---|---|
| C | 26.73052 | 45.90219 | 0.582337 | 0.5690 |
| X1 | 5.447825 | 38.60155 | 0.141130 | 0.8896 |
| X2 | -47.33211 | 28.39353 | -1.667003 | 0.1163 |
| X3 | 7.29E-05 | 5.09E-05 | 1.432216 | 0.1726 |
| X4 | 6.066246 | 14.47815 | 0.418993 | 0.6812 |
| X5 | 0.019790 | 0.116341 | 0.170099 | 0.8672 |
| X6 | 0.002499 | 0.001968 | 1.269816 | 0.2235 |
| X7 | -1.50E-05 | 2.19E-05 | -0.684707 | 0.5040 |
| X8 | -0.729021 | 2.560385 | -0.284731 | 0.7797 |
| SX9 | -3.532239 | 5.287506 | -0.668035 | 0.5143 |

| | | | |
|---|---|---|---|
| MSE Root | 22.63445 | R-squared | 0.347580 |
| Mean dependent var | 5.610400 | Adjusted R-squared | -0.043872 |
| SD dependent var | 28.60030 | SE of regression | 29.22095 |
| Akaike info criterion | 9.876823 | Sum squared resid | 12807.96 |
| Schwarz criterion | 10.36437 | Log likelihood | -113.4603 |
| Hannan-Quinn Criter. | 10.01205 | F-statistic | 0.887924 |
| Durbin-Watson stat | 1.716421 | Prob(F-statistic) | 0.557197 |

Based on table 9, it is known that from the results of the t statistical test there are several independent variables that have a partially significant influence on the dependent variable, while the Redundant Fixed Effects test shows that the more appropriate regression model is the pooled less squares model.

Therefore, the t-statistical test can be used to determine the significance of the influence of each independent variable partially (individually) on the dependent variable by looking at the probability value (sig.). According to Ghozali (2016), the t statistical test shows how much influence an independent variable individually has in explaining the dependent variable. The t-statistical test can be done by looking at the probability value (sig). If the probability value is < 0.05, then Ho is accepted or Ha is accepted (there is partial or individual influence) and if the probability value is > 0.05, then Ho is accepted or Ha is rejected (there is no partial or individual influence).

### *4.2.5. Random Effect (RE) Method*

With this method, the effect of specific individual variables is part of the error term. This model assumes that the error term will always exist and may be correlated throughout the time series and cross section. This method is better used for panel data if the number of individuals is greater than the number of time periods available.

**Tabel 10**. Random Effect (RE) Method Test Results

| Variables | Coefficient | Std. Error | t-Statistics | Prob. |
|---|---|---|---|---|
| Y2 | 0.185664 | 0.014806 | 12.53967 | 0.0000 |
| C | -12.49078 | 12.19214 | -1.024494 | 0.3297 |
| X1 | 4.793876 | 2.966841 | 1.615818 | 0.1372 |
| X2 | 2.012446 | 1.546885 | 1.300966 | 0.2224 |
| X3 | -3.50E-06 | 5.01E-06 | -0.699459 | 0.5002 |
| X4 | -1.745635 | 1.189880 | -1.467068 | 0.1731 |
| X5 | -0.020644 | 0.006439 | -3.206231 | 0.0094 |
| X6 | 0.004651 | 0.004212 | 1.104160 | 0.2954 |
| X7 | 1.59E-06 | 1.99E-06 | 0.797315 | 0.4438 |
| X8 | 0.340589 | 0.131144 | 2.597059 | 0.0266 |
| X9 | -0.042996 | 0.253198 | -0.169811 | 0.8685 |
| MSE Root | 0.861019 | R-squared | | 0.973385 |
| Mean dependent var | 0.835600 | Adjusted R-squared | | 0.936124 |
| SD dependent var | 5.386609 | SE of regression | | 1.361391 |
| Akaike info criterion | 3.738600 | Sum squared resid | | 18.53386 |
| Schwarz criterion | 4.469926 | Log likelihood | | -31.73250 |
| Hannan-Quinn Criter. | 3.941439 | F-statistic | | 26.12361 |
| Durbin-Watson stat | 3.457795 | Prob(F-statistic) | | 0.000005 |

Overall, the panel regression model used has high explanatory power for variations in the dependent variable Y1. Three variables, namely Y2, X5, and X8, are found to have a significant effect on Y1, while the other seven variables did not show a significant effect. This conclusion applies to the 2019-2023 sample period used in the analysis.

According to Ghozali (2016), the t-statistical test shows how much influence an independent variable individually has in explaining the dependent variable. The t-statistical test can be done by looking at the probability value (sig). If the probability value is < 0.05, then Ho is accepted or Ha is accepted (there is partial or individual influence) and if the probability value is > 0.05, then Ho is accepted or Ha is rejected (there is no partial or individual influence).

Simultaneous hypothesis testing is used to examine whether overall the independent variables have an influence on the dependent variable (Ghozali, 2016). The f test was carried out by using the level of significance used in this research, which involves the probability value. If the probability is <0.05 then Ho is accepted.

### *4.3. Hypothesis Test Results*

The hypothesis test results are presented in Tables 11 and 12.

**Table 11.** Hypothesis Test 1

| Variable | Critical Value | FEM | Chow Test | BRAKE | Conclusion |
|---|---|---|---|---|---|
| CA Against ROA | < 0.05 | 0.0604 | 0.0604 | 0.1372 | Influential |
| CR Against ROA | < 0.05 | 0.2002 | 0.2002 | 0.2224 | No effect |
| CM Against ROA | < 0.05 | 0.6136 | 0.6136 | 0.5002 | No effect |
| LQ Against ROA | < 0.05 | 0.1749 | 0.1749 | 0.1731 | No effect |
| OE Against ROA | < 0.05 | 0.0043 | 0.0043 | 0.0094 | Influential |
| BS Against ROA | < 0.05 | 0.0391 | 0.0391 | 0.2954 | Influence |
| MP Against ROA | < 0.05 | 0.5934 | 0.5934 | 0.4438 | No effect |
| GDP Against ROA | < 0.05 | 0.0218 | 0.0218 | 0.0266 | Influential |
| IR Against ROA | < 0.05 | 0.7860 | 0.7860 | 0.8685 | No effect |

Based on table 11, the influence of the Capital Adequacy Ratio on ROA (Bank Performance) shows that these two variables have an influence. This is in line with research conducted by Bernardin & Russel (2016), which shows that the results of the research partially show CAR has a significant effect on ROA, meaning that it shows factual truth. Rahmani (2017) also found similar results, namely that the Capital Adequacy Ratio had an effect on ROA (Bank Performance). It is possible that increasing the quality of CAR will have an influence on increasing profits as shown by ROA and LDR which do not have a significant effect. Regarding ROA, that increasing liquidity does not

necessarily increase profits which are analyzed using ROA and has no significant effect. The influence of the Credit Risk ratio on ROA (Bank Performance) shows that the research results have two variables have no influence. This is in line with research Ariwidanata (2016) that credit risk has a negative and significant influence on profitability. The existence of bad credit makes banks lack funds and reduces a bank's income, making it difficult for banks to achieve targeted profitability. The influence of the Cost Management ratio on ROA (Bank Performance) shows that the research results show that these two variables have no influence. Prihandoko (2019) shows that employee welfare costs have no significant effect on variable Y, namely ROA. The lack of influence on employee welfare costs is in accordance with research conducted by researchers stating that employee welfare costs have no effect on Return on Assets (ROA).

The influence of liquidity ratio on ROA (Bank Performance) shows that these two variables have no influence. Liquidity has a significant negative effect on profitability. This will result in decreased profitability because part of the income is used to pay debts and interest. The same results were also found in Hamidah et al. (2013) research showing that these two variables have no influence, and liquidity has a significant negative effect on profitability, which shows the research results. Muarif, Ibrahim, & Amr (2021) also shows the same results where liquidity has a significant negative effect on profitability.

The influence of Operational Efficiency Ratio on ROA (Bank Performance) shows that research results show that these two variables have an influence. This is in line with research Widyawati & Djazari (2017), which shows research results that there is a positive and significant Operational Efficiency Ratio (OE) influence on profitability. The influence of Bank Size ratio on ROA (Bank Performance) shows that research results show that these two variables have an influence. This is in line with research by Amelia Putri et al. (2022) that bank size has a simultaneous effect on return on assets. Khamisah, Nani, & Ashsifa (2020) also shows the same results, namely that bank size has a simultaneous effect on return on assets. The influence of Market Power on ROA (Bank Performance) shows that these two variables have no influence. The influence of GDP on ROA (Bank Performance) also indicate that research results show that these two variables have an influence. The influence of IR on ROA (Bank Performance) shows that the research results show that these two variables have no influence.

**Table 12**. Hypothesis Test 2

| Variable | Critical Value | MEASUREMENT RESULTS | Conclusion |
|---|---|---|---|
| CA Against ROE | < 0.05 | 0.8896 | No effect |
| CR Against ROE | < 0.05 | 0.1163 | No effect |
| CM Against ROE | < 0.05 | 0.1726 | No effect |
| LQ Against ROE | < 0.05 | 0.6812 | No effect |
| OE Against ROE | < 0.05 | 0.8672 | No effect |
| BS Against ROE | < 0.05 | 0.2235 | No effect |
| MP Against ROE | < 0.05 | 0.5040 | No effect |
| GDP Against ROE | < 0.05 | 0.7797 | No effect |
| IR Against ROE | < 0.05 | 0.5143 | No effect |

Based on table 12, research findings show that the Capital Adequacy Ratio has no significant effect on Return on Equity (ROE), which measures bank performance. Similarly, the Credit Risk Ratio shows no influence on ROE. The Cost Management Ratio also demonstrates no significant effect on ROE. Additionally, the Liquidity Ratio and Operational Efficiency Ratio are both found to have no influence on ROE. The study further reveals that the Bank Size Ratio does not affect ROE. Moreover, Market Power, Gross Domestic Product (GDP), and Interest Rate (IR) variables all show no significant influence on ROE according to the research results.

## 5. Conclusion

CA (Capital Adequacy) has a significant influence on ROA (Return on Assets) in the FEM (Fixed Effect Model), Chow Test, and REM (Random Effect Model) tests. This indicates that the level of the company's current assets has a significant impact on the company's profitability. Meanwhile, CR (Credit risk), CM (Cost management), LQ (Liquidity), MP (Market Power), and IR (Inflation rate) do not show a significant influence on ROA. OE (Operating Efficiency) and BS (Bank Size) were found to have a significant effect on ROA. This means that operational efficiency and bank size are the important factors that influence company profitability. Finally, the GDP (Economic Growth) variable is also proven to have a significant influence on ROA. The macroeconomic conditions of a country, in this case economic growth, is considered to play an important role in determining the financial performance of companies within it. ROE has no influence on CR (Credit risk), CM (Cost management), LQ (Liquidity), MP (Market Power), and IR (Inflation rate), OE (Operating Efficiency), and BS (Bank Size) variables. Overall, the results of this analysis provide valuable insights for stakeholders in the banking industry to understand the factors that influence company profitability. These findings can be utilized as a basis for more effective strategic decision making and policy formulation.

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