THE INFLUENCE OF CREDIT RISK ON BANK PROFITABILITY IN INDONESIA

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Abstract

This study aims to examine the effect of capital adequacy ratio, non-performing loan, loan loss provisions ratio, loan-to-deposit ratio, loan-to-asset ratio, bank size, and bank age on financial performance as measured by return on assets (ROA) in 35 banking companies listed on the Indonesia Stock Exchange during the period 2018-2022. The study results indicate that capital adequacy ratio, non-performing loan, loan loss provisions ratio, and bank size do not significantly affect bank financial performance. On the other hand, loan-to-deposit ratio, loan-to-asset ratio, and bank age were found to significantly impact ROA, indicating that liquidity and company age factors are important determinants in improving banking financial performance.

Keywords: Credit Risk, Bank Profitability, Indonesia

INTRODUCTION

In every country, the financial industry is an important part of the economy and the banking sector is one of the important components in the financial industry that contributes to social and economic development (Pakurár et al., 2019). There is a role for banks to act as intermediaries by collecting money from people who have more money and providing loans to borrowers, with this the bank will get a high interest rate (Khan, Siddique, & Sarwar, 2020a). To improve financial performance, banks can play their role as intermediaries and can issue loans to customers, but this will result in risks that must be faced by the bank (Siddique, Khan, & Khan, 2022a).

In a study conducted in Palestine on the effect of credit risk on the profitability of banks in Palestine, profitability was measured using return on assets (ROA) and bank-specific measurements such as capital adequacy ratio (CAR), loan-to-deposit ratio (LDR), non-performing loans (NPL), loan loss provision ratio (LLPR), bank size, and bank age as indicators of credit risk (Abdallah Saleh & Paz, 2023).

Based on the results of research conducted in Palestine by (Abdallah Saleh & Paz, 2023) it was proven that the capital adequacy ratio (CAR), non-performing loans (NPL), loan loss provision ratio (LLPR), loan-to-deposit ratio (LDR) as independent variables, bank size and bank age as a control variable have different effects on ROA using the fixed effect model method.

The results of the study conducted by (Abdallah Saleh & Paz, 2023) stated that there was a positive effect of CAR on profitability with ROA measurements but it was not significant. This is supported by research conducted in Vietnam by (Nguyen, 2020), that there is a positive relationship between CAR and profitability with ROA as the measurement indicator, there is a significant impact of capital adequacy on small banks but conversely, large banks do not have a significant impact on profitability. There are different results, which show that there is no significant effect of CAR on profitability as measured by ROA in commercial banks in the United Arab Emirates (UAE) (Al Zaidanin & Al Zaidanin, 2021).

A study conducted by (Abdallah Saleh & Paz, 2023) at a bank in Palestine, stated that there is a bank size variable as a control variable where there is no significant positive effect of bank size on ROA. This study is supported by (Rini Syahril Fauziah & Fadhilah, 2022),

that there is no effect of bank size on ROA. However, it is different from the study conducted by (Aliu & Çollaku, 2021) which stated that there is a positive and significant effect of bank size on ROA, this shows that bank size has an important role in obtaining better financial results and functions as an allocation of costs in a period if the bank experiences default.

The control variable of bank age in a study conducted by (Abdallah Saleh & Paz, 2023) in Palestine, stated that there was no significant positive effect on ROA. This is in line with research conducted by (Atahuu & Cronje, 2022) which stated that there is a positive and significant effect of bank age on ROA because older banks tend to have higher ROA levels when compared to younger banks in a certain period. However, it is different from the results of research conducted by (Szegedi, Khan, & Lentner, 2020) in Pakistani banks that there is a significant negative effect on profitability with ROA measurements, this can be caused by a decline in bank performance along with the increasing age of the bank but there are benefits obtained along with the increasing age of the bank. However, this is in contrast to the results of research conducted by (IŞIK & ERSOY, 2022) in China which states that there is a positive effect on profitability with ROA measurements.

REVIEW OF LITERATURE

Profitability

Profitability is very important for banking because banks must generate sufficient profits to meet capital needs and expand costs (Yüksel et al., 2018). According to (Antony, 2023) who conducted research in India, revealed that profitability explains the ability of a company or bank to generate profits from its operational activities.

Capital Adequacy Ratio (CAR) and Profitability

Capital Adequacy Ratio (CAR) is one of the important indicators to assess financial stability in banks and ensure a bank's compliance with banking regulations (Gharaibeh, 2023). CAR is a ratio to measure a bank's ability to cover all risks in bank income assets which mostly consist of loans and meet its obligations which function to reduce the potential for unexpected losses and increase trust in customers and investors (Naoaj, 2023).

Non-Performing Loans (NPL) and Profitability

Non-Performing Loans (NPL) refer to a situation where a borrower fails to make scheduled payments over some time. The term is used to describe loans that are in default or near default, usually due to the borrower's inability to make required payments (Umaternate & Mongid, 2023).

Loan Loss Provision Ratio (LLPR) and Profitability

LLPR is a financial metric that measures the percentage of a financial institution's loans allocated as reserves for potential credit losses. This ratio has a direct impact on the profitability of financial institutions, making it one of the important mechanisms for reducing credit risk and preserving banks' financial resources (Abdallah Saleh & Paz, 2023).

Loan to Deposit Ratio (LDR) and Profitability

LDR is a financial metric that measures the ratio of a bank's loans to all its deposits, it shows how the bank lends based on its deposit base and can impact the company's profitability (Abdallah Saleh & Paz, 2023).

Loan to Asset Ratio (LTA) and Profitability

Loan to Asset (LTA) is a ratio that measures how much total loans a bank provides compared to the bank's total assets. This ratio is important when analyzing a bank's credit risk and financial health, as it can affect the bank's profitability and stability (Mohammad, Nour, & Al-Atoot, 2024a).

Bank Size (SIZE) and Profitability

The size of a bank, calculated using the logarithm of its total assets, helps in understanding how banks can be more efficient and generate greater profits by reducing unit costs while increasing efficiency, capital base, and market share (Ebimobowei & Felix, 2021).

Bank Age (AGE) and Profitability

The measurement of bank age as the number of years since its establishment is carried out through the bank age variable calculated using logarithms, showing that, in general, the older the bank, the higher its profitability level; however, the pattern of the relationship between bank age and profitability is different for banks that are not listed on the stock exchange, following an inverted U-shaped pattern where the level of profitability tends to

increase with the age of the bank, reaches a certain peak, and then decreases with the age of the bank (IŞIK & ERSOY, 2022).

RESEARCH METHOD

This study uses a quantitative method with a descriptive analysis method. Descriptive analysis is a statistical approach used to summarize and present data numerically or visually without making in-depth inferences, with the main goal of providing clear and concise information about the basic characteristics of a data set, such as measures of central tendency, measures of dispersion, data distribution, and relationships between variables, without intending to make broader conclusions or generalizations (Lesko, Fox, & Edwards, 2022). A research design is a description made by researchers in which they predict the relationship or extent of the expected correlation between independent and dependent variables to achieve the specified goals (Al Zaidanin & Al Zaidanin, 2021).

The approach used in this study is quantitative because the analysis uses statistical data. So, this study uses statistical and quantitative methods to analyze the available data through central tendency measurements including mean, median, maximum, minimum, and standard deviation. In addition, the multicollinearity test is used to analyze whether the explanatory variables are highly correlated or not. However, the current study follows many studies such as (Al Zaidanin & Al Zaidanin, 2021) and (Al-Eitan & Bani-Khalid, 2019) which use the same structure and context, namely using the E-views 9.0 software application. In this study, the effect of the capital adequacy ratio (CAR), loans loss provision ratio (LLR), loans-to-deposit ratio (LDR), and bank age (SIZE) on return on assets in conventional banks that operate will be analyzed.

RESULTS AND DISCUSSION

Selection of the First Regression Model with ROA Variable

Chow Test

Table 1.
Chow Test Results

Effects Test	Statistics	df	Prob.
Cross-section F	43.400587	(34,133)	0.0000
Cross-section Chi-square	436.236988	34	0.0000

Source: Data Processing Results, Eviews 12

Hypothesis:

H0 = if Prob. > 0.05 then the accepted model selection is the Common Effect Model (CEM).

Ha = if Prob. < 0.05 then the accepted model selection is the Fixed Effect Model (FEM).

Based on the results of data testing using EViews 12, as in the table above, the value obtained by the Prob. Cross-section Chi-square is 0.0000, so the model selection used is the Fixed Effect Model (FEM) or rejects H0 and accepts Ha.

Hausman Test

Table 2.
Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq.df	Prob.
Cross Section-Random	1470.949977	7	0.0000

Source: Data Processing Results, EViews 12

Hypothesis:

H0 = if Prob. > 0.05 then the accepted model selection is the Random Effect Model (REM).

Ha = if Prob. < 0.05 then the accepted model selection is the Fixed Effect Model (FEM).

Based on the results of data testing using EViews 12, as in the table above, the value obtained by the Random Cross-section Prob. is 0.0000, so the model selection used is the Fixed Effect Model (FEM) or reject H0 and accept Ha.

Data Analysis Methods

Panel data regression analysis in this study aims to determine the effect of capital adequacy ratio, non-performing loan, loan loss provisions ratio, loan-to-deposit ratio, loan-to-assets ratio, bank size, and bank age on the dependent variable of financial performance (ROA) in banking companies listed on the Indonesia Stock Exchange (IDX) in 2018 - 2022.

Furthermore, based on the model selection test that has been carried out, the results show that the model that should be used is the Fixed Effect Model (FEM).

Panel Data Regression Analysis with ROA Variable

Table 3.
Panel Data Regression Analysis Results

Variables	Coefficient	Std. Error	t-Statistics	Prob.
c	0.861608	0.691374	1.246226	0.2149
CAR	-0.030345	0.048239	-0.629047	0.5304
NPL	0.006558	0.040975	0.160039	0.8731
LLPR	0.000809	0.037846	0.021367	0.9830
LDR	0.096475	0.038527	2.504101	0.0135
LTA	-0.030060	0.000559	-53.77939	0.0000
SIZE	-0.031276	0.023432	-1.334779	0.1842
AGE	0.011093	0.005551	1.998446	0.0477

Source: Data Processing Results, EViews 12

Based on the selected estimation model, the following panel data regression model equation is obtained:

$$ROA = 0.861608 + (-0.030345CAR) + 0.006558NPL + 0.000809LLPR + 0.096475LDR + (-0.030060LTA) + (-0.031276SIZE) + 0.011093AGE + \varepsilon$$

Thus, the results of the panel data regression above can be interpreted as follows:

a. The constant value of α is 0.861608, meaning that if the independent variable is ignored/has a value of zero, then ROA is a constant, namely 0.861608.
b. The CAR coefficient value is -0.030345, which means that if the CAR variable is increased by 1 unit assuming NPL, LLPR, LDR, LTA, SIZE, and AGE are ignored or zero, then CAR increases by -0.030345.
c. The NPL coefficient value is 0.006558, which means that if the NPL variable is increased by 1 unit assuming CAR, LLPR, LDR, LTA, SIZE, and AGE are ignored or zero, then the NPL increases by 0.006558.
d. The LLPR coefficient value is 0.000809, which means that if the NPL variable is increased by 1 unit assuming CAR, NPL, LDR, LTA, SIZE, and AGE are ignored or zero, then the LLR increases by 0.000809.

e. The LDR coefficient value is 0.096475, which means that if the LDR variable is increased by 1 unit assuming CAR, NPL, LTA, LLPR, SIZE, and AGE are ignored or zero, then the LDR increases by (-0.030060). The LTA coefficient value is (-0.030060), which means that if the LTA variable is increased by 1 unit assuming CAR, NPL, LLPR, LDR, SIZE, and AGE are ignored or zero, then the LDR increases by (-0.030060).
f. The SIZE coefficient value is (-0.031276), which means that if the SIZE variable is increased by 1 unit assuming CAR, NPL, LLPR, LDR, LTA, and AGE are ignored or zero, then SIZE increases by (-0.031276).
g. The AGE coefficient value is 0.011093, which means that if the AGE variable is increased by 1 unit assuming CAR, NPL, LLR, LDR, LTA, and SIZE are ignored or zero, then AGE increases by 0.011093.

Hypothesis Testing

T-Test

The T-test was conducted to determine the influence of the independent variables capital adequacy ratio, non-performing loan, loan loss provisions ratio, loan-to-deposit, loan-to-asset ratio, bank size, and bank age individually in influencing the dependent variable return on assets.

Research Results with ROA Variable

1) The Influence of Capital Adequacy Ratio on Bank Financial Performance
   Based on the table above, the test results for the first hypothesis have a t-statistics value of -0.629047 with a probability value of 0.5304 > 0.05, so it can be concluded that CAR does not affect the bank's financial performance.
2) The Effect of Non-Performing Loans on Banksar's Financial Performance 0.096475.
   Based on the table above, the test results for the first hypothesis have a t-statistics value of 0.160039 with a probability value of 0.8731 > 0.05, so it can be concluded that non-performing loans do not affect the bank's financial performance.
3) The Influence of Loan Loss Provisions Ratio on Bank Financial Performance
   Based on the table above, the test results for the first hypothesis have a t-statistics value of 0.021367 with a probability value of 0.9830 > 0.05, so it can be concluded that the loan loss provisions ratio does not affect the bank's financial performance.

4) The Influence of Loan-to-Deposit Ratio on Bank Financial Performance

   Based on the table above, the test results for the first hypothesis have a t-statistics value of 2.504101 with a probability value of 0.0135 <0.05, so it can be concluded that the loan-to-deposit ratio has an effect on bank financial performance.

5) The Influence of Loan-to-Asset Ratio on Bank Financial Performance

   Based on the table above, the test results for the first hypothesis have a t-statistics value of (-53.77939) with a probability value of 0.0000 <0.05, so it can be concluded that the loan-to-asset ratio has an effect on bank financial performance.

6) The Influence of Bank Size on Bank Financial Performance

   Based on the table above, the test results for the first hypothesis have a t-statistics value of (-1.334779) with a probability value of 0.1842 > 0.05, so it can be concluded that bank size does not affect bank financial performance.

7) The Effect of Bank Age on Bank Financial Performance Based on the table above, the test results for the first hypothesis have a t-statistics value of 1.998446 with a probability value of 0.0477 <0.05, so it can be concluded that bank age affects bank financial performance.

F Test

The F test is conducted to determine the influence of independent variables capital adequacy ratio, non-performing loan, loan loss provisions ratio, loan-to-deposit, loan-to-asset ratio, bank size, and bank age simultaneously in influencing the dependent variable return on assets. The main focus of this F-test is to determine the feasibility of the research regression model.

Table 4.
F Test Results with ROA Variable

R-Square	0.967745	Mean dependentvar	- 0.023482
Adjusted R-Square	0.957802	SD dependent var	0.388532
SE of regression	0.079813	Sum squared residual	0.847223
F-statistic	97.32704	Durbin-Watson stat	2.341146
Prob (F-statistic)	0.000000		

Source: Data Processing Results, EViews 12

Based on Table 4. the results of the F statistical test with the ROA variable, it can be seen that the F-Statistic value is 97.32704 with a probability value of 0.000000, so it can be concluded that the independent variable affects the dependent variable.

Coefficient of Determination (R^2) Test

The coefficient of determination (R^2) measures how well a regression model can explain the variation in the dependent variable. The R^2 value ranges between 0 and 1, with values close to 1 indicating that the independent variables provide almost all the information needed to predict the dependent variable. R^2 can be interpreted as the proportion of the total variation in the dependent variable that can be explained by the independent variables together. The higher the R^2 value, the better the model is at explaining changes in the dependent variable. The results of the coefficient of determination test can be seen in Table 5 below.

Table 5.
Results of the Determination Coefficient Test with the ROA Variable

R-Square	0.967745	Mean dependent var	- 0.023482
Adjusted R-Square	0.957802	SD dependent var	0.388532
SE of regression	0.079813	Sum squared residual	0.847223
F-statistic	97.32704	Durbin-Watson stat	2.341146
Prob(F-statistic)	0.000000		

Source: Data Processing Results, EViews 12

Based on the test results above, it can be seen that the Adjusted R-Square value is 0.957802 or 95.78%, meaning that the variables capital adequacy ratio, non-performing loan, loan loss provisions ratio, loan-to-deposit, loan-to-asset ratio, bank size, and bank age can explain the variation of the bank performance variable, which is 95.78%, while the remaining 4.22% is explained by other variables not used in this study.

Discussion

H1: There is an influence of the Capital Adequacy Ratio on bank financial performance.

Capital Adequacy Ratio to ROA has a probability value of 0.5304 > 0.05. The magnitude of the coefficient on ROA is negative at (-0.030345). The results of research conducted by (Pandey & Joshi, 2023) in Nepalase, that there is a positive influence of CAR has a significant positive influence on ROA. With an optimal CAR value, it can protect profitability from various characteristics of the financial industry that are constantly changing and can pose several challenges for banks (Abdallah Saleh & Paz, 2023).

H2: There is an influence of Non-Performing Loans on bank financial performance

Non-performing loans to ROA have a probability value of 0.8731 > 0.05. The magnitude of the coefficient to ROA is positive at 0.006558. The results of a study conducted on thirty-one banks analyzed by (Karadayi, 2023) revealed that there was a negative and insignificant relationship between NPL and profitability using ROA, which indicates the low risk faced by the bank because the credit risk management system implemented works effectively. As supported by research conducted by (Prasad Bhattarai, 2020) this can be caused by several factors, such as increased operational costs to handle NPLs, decreased bank asset quality, and decreased investor and customer confidence in the bank. Therefore, effective management of NPLs is very important to minimize its negative impact on bank profitability.

H3: There is an influence of the Loan Loss Provisions Ratio on bank financial performance.

Loan loss provision ratio on ROA has a probability value of 0.9830 > 0.05. The magnitude of the coefficient on ROA is positive at 0.000809. The results of research conducted in Pakistan by (Ul Mustafa et al., 2012) state that the effect of LLPR on ROA is negative and significant in accordance with the theory that LLPR has a negative effect on bank profitability with ROA measurements (Serwadda, 2018) which indicates that the higher the LLPR, the more likely it will have a negative impact on the level of bank profitability measured using ROA

H4: There is an influence of the Loan-to-Deposit Ratio on bank financial performance.

Loan-to-deposit ratio on ROA has a probability value of 0.0135 <0.05. The magnitude of the coefficient on ROA is positive at 0.096475. The results of research conducted by (Pranowo et al., 2020) that there is an insignificant positive effect on profitability using ROA, this is in accordance with the theory that the higher the LDR ratio, the lower the ROA in the bank and this states that the bank's liquidity conditions are getting worse due to high risk. This is supported by (Yulyanti et al., 2022) that the LDR variable does not have a significant effect on return on assets (ROA) in conventional commercial banks listed on the Indonesia Stock Exchange.

H5: There is an influence of Loan-to-Asset Ratio on bank financial performance

Loan to asset ratio to ROA has a probability value of 0.0000 <0.05. The magnitude of the coefficient on ROA is negative (- 0.030060). Research conducted by (DaSouza et al.,

2023), states that high LTA tends to have a negative impact on the profitability of Return on Assets (ROA). The same study by (Mkalaf & Hilo, 2023) shows that an increase in the Loan Asset ratio tends to have a negative impact on the profitability of the bank's ROA. Research conducted by (Tarekegn et al., 2024) found that there is a negative correlation between the loan-to-asset ratio, or loan-to-asset ratio, and profitability as measured by Return on Assets (ROA). This suggests that high loan levels can have a negative impact on bank profitability, indicating that there is a greater risk associated with asset and credit management.

H6: There is an influence of bank size on bank financial performance.

Bank size on ROA has a probability value of 0.1842 > 0.05. The magnitude of the coefficient on ROA is negative at (-0.031276). The results of research conducted by (Abdallah Saleh & Paz, 2023) on banks in Palestine, state that there is a bank size variable as a control variable where there is no significant positive effect of bank size on ROA. This research is supported by (Rini Syahril Fauziah & Fadhilah, 2022), that there is no effect of bank size on ROA.

H7: There is an influence of bank age on bank financial performance.

Bank age on ROA has a probability value of 0.0477 <0.05. The magnitude of the coefficient on ROA is positive at 0.011093. The results of research conducted by (IŞIK & ERSOY, 2022) in China stated that there is a positive influence on profitability with ROA measurements. The same research conducted by (Jain & Kashiramka, 2024) showed a positive correlation between company age and profitability. Research conducted by (Mohammad, Nour, & Al-Atoot, 2024) showed that bank age and profitability are positively correlated.

CONCLUSION

This study aims to determine and test whether there is an influence of the independent variables of capital adequacy ratio, non-performing loan, loan loss provisions ratio, loan-to-deposit, loan-to-asset ratio, bank size, and bank age on the dependent variable return on assets in 35 banking companies listed on the Indonesia Stock Exchange for the period 2018-2022. The conclusions that can be written are as follows:

1. Capital Adequacy Ratio does not affect the bank's financial performance.

2. Non-performing loans do not affect the bank's financial performance.
3. Loan loss provision ratio does not affect the bank's financial performance.
4. Loan-to-deposit ratio affects the bank's financial performance.
5. Loan to asset ratio affects the bank's financial performance.
6. Bank size does not affect bank financial performance.
7. Bank age affects the bank's financial performance.

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