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The Effect of Capital Adequacy Ratio (CAR) and Debt to Equity Ratio (DER) on Return On Asset (ROA) in State-Owned Banks Listed on the Indonesia Stock Exchange

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Abstract

Increasingly fierce business competition requires banks to increase competitiveness in attracting investors. Investors before investing their funds need information about the company's performance. The use of bank financial statements requires information that can be understood, relevant, and can be compared to evaluating the bank's financial position and performance as well as being useful in economic decision-making. This study was conducted to find out whether the Capital Adequacy Ratio (CAR) and Debt To Equity Ratio (DER) have an effect on Retrun On Asset (ROA) in state-owned banks for the period 2015 – 2022. The method used in this study is a quantitative method. The population in this study is state-owned banks listed on the Indonesia Stock Exchange (IDX) for the period 2015 – 2022. The population used by 4 banks. The number of samples studied was 32 obtained from 4 banks multiplied by 8 years of financial statements. The analysis technique used is multiple linear regression which includes classical assumption tests, as well as partial tests (t-test) and simultaneous tests (F-test) with a significant level (□) = 0.05 percent. The data was tested using the help of IBM SPSS version 26 software and Microsoft Excel.

The results of the study show that the hypothesis of the t-test is a significant value (Sig) for the CAR variable of 0.009 < 0.05, and t-count (2.792) > t-table (2.04227), so the Capital Adequacy Ratio (CAR) has an influence on Return On Asset (ROA). The significant value (Sig) for the DER variable is 0.000 < 0.05, and the t-count (-4.159) < t-table (2.04227), so the Debt to Equity Ratio (DER) has no effect on the return on asset (ROA) of the stock. For the F test, which is a significant value of 0.000 < 0.05, and F-count (21.509) > F-table (3.34), then simultaneously there is an influence on Return On Asset (ROA). The conclusions obtained in this study show that the Capital Adequacy Ratio (CAR) partially affects Return On Asset (ROA), while Debt to Equity Ratio (ROA) has no effect on Return On Asset (ROA). Simultaneously, the Capital Adequacy

Ratio (CAR) and Debt to Equity Ratio (DER) have an effect on Return On Asset (ROA).

Keywords: Return On Asset, Capital Adequacy Ratio, Debt to Equity Ratio.

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I. Introduction

Increasingly fierce business competition requires banks to increase competitiveness in attracting investors. Investors before investing their funds need information about the profits obtained by banks. The use of financial ratio analysis can help business people, both the government and other users of bank financial statements in assessing the financial condition of a bank.

The banking industry is an industry that has a lot of risks, because its activities always involve the management of public money and are rotated in various forms. The biggest risk of failure that occurs in the banking industry is usually caused by non-performing loans. Credit risk is a loan that cannot be returned is the same as the contract. Non-performing loans can cause erosion of bank capital, which can be seen from the Capital Adequacy Ratio (CAR).

The average Return On Asset (ROA) value at state-owned banks listed on the Indonesia Stock Exchange for the 2015-2022 period has increased and decreased. The Return On Asset (ROA) value experienced the lowest decline in 2020 at 1.21%. The average value of the Capital Adequacy Ratio (CAR) at state-owned banks listed on the Indonesia Stock Exchange for the 2015-2022 period has increased and decreased. The Capital Adequacy Ratio (CAR) value experienced the lowest decline in 2015 at 18.91%. The average value of the Debt to Equity Ratio (DER) at state-owned banks listed on the Indonesia Stock Exchange for the 2015-2022 period tends to be stable

2 Method

The research method used is a quantitative method, namely data in the form of numbers used to research on a certain population or sample, sampling techniques are carried out using saturated samples, data collection using research instruments, data analysis is quantitative/statistical with the aim of testing hypotheses that have been determined. It is said that descriptive quantitative research is research that is carried out to determine the value of independent variables, either one or more variables (independent) without making comparisons, or connecting with other variables.

This study aims to provide empirical evidence regarding the effect of CAR and DER on ROA. This research uses secondary data, namely data in the form of documents/annual financial statements of state-owned banks listed on the IDX for the

2015-2022 period, which is written data related to research objects published by companies and the Indonesia Stock Exchange.

The population of this study is all state-owned banks totaling 4 banks and sampling is carried out using saturated samples where the entire population is used as a sample as the object of research. The following is a sample table of the research:

Table 1 List of Banking Company Names

It	Name of State-Owned Bank
1	Bank Mandiri
2	Bank Rakyat Indonesia (BRI)
3	Bank Negara Indonesia (BNI)
4	State Savings Bank (BTN)

The data collection technique in this study, the researcher uses a documentation technique based on publication by the State-Owned Bank through the *www.idx.co.id* website published in 2015-2022. The data used is annual data that has been published on www.idx.co.id website. The data analysis technique is a form of applying a method in processing previously

3 Results and Discussion

From the results of descriptive static testing of two independent variables and one dependent variable, through the original data, the results are obtained according to the following table:

Table 3 Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	32	.13	4.19	2.3634	1.06398
CAR	32	16.78	25.28	20.1278	1.90274
THE	32	4.75	16.07	7.4197	3.12582
Valid N (listwise)	32				

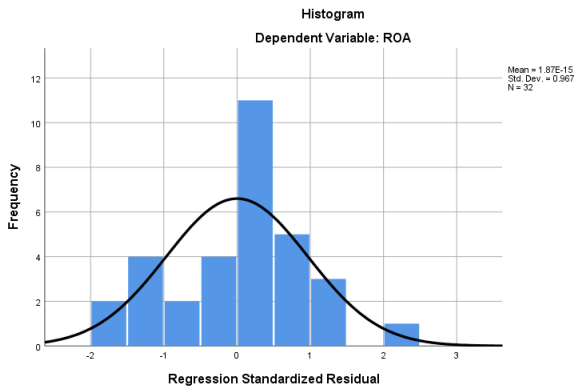
Source : *SPSS Statistc* Version 26 Output Data

Based on *Return On Asset* (ROA) has a minimum value of 0.13 and a maximum value of 4.19. The average value of the Return *On Asset* (ROA) variable is 2.3634 with a standard deviation of 1.06398.

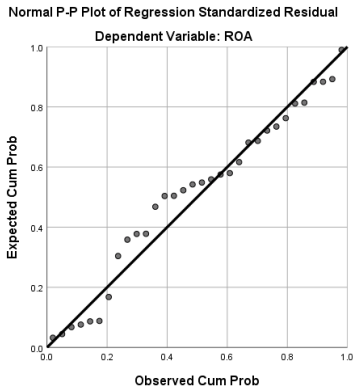
The Capital Adequacy Ratio (CAR) has a minimum value of 16.78 and a maximum value of 25.28. The average value of the *Capital Adequacy Ratio* (CAR) variable is 20.1278 with a standard deviation of 1.90264.

The Debt to Equity Ratio (DER) has a minimum value of 4.75 and a maximum value of 16.07. The average value of the Debt *to Equity Ratio* (DER) variable is 7.4197 with a standard deviation of 3.12582.

The normality test was tested using the Histogram and *Probability Plot* Tests as follows



Graph 1 Normality Histogram



Graph 2 Normal Plot of the Normality Test

Based on the results of the above test, it shows that the curve forms a *bell-shaped curve)* whose two sides are wide but not parallel to infinity, so that the conclusion of a normally distributed model can be drawn.

Based on the results of the above test, it can be seen that in the P-Plot there are points that spread around the diagonal line and follow the direction of the diagonal line (following the linear direction area). This shows that the data in this study is distributed normally or the model has been distributed normally, because the data is close to normal, the analysis can be continued.

Table 4 Multicoloniality Test Results

Coefficientsa

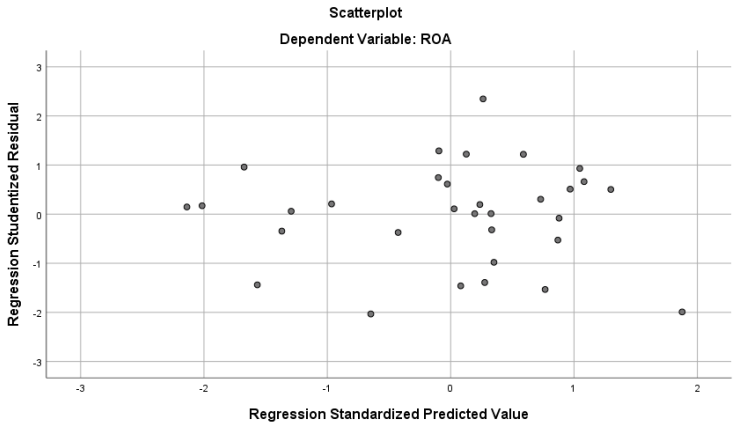
Model		Collinearity Statistics	
		Tolerance	BRIGHT
1	CAR	0,815	1,226
	THE	0,815	1,226

a. Dependent Variable: ROA

Source : *SPSS Statistic* Version 26 Output Data

Based on the multicoloniality test table above, the *tolerance* values of the *Capital Adequacy Ratio* and *Debt to Equity Ratio* variables range from 0.815 or greater than 0.10. The results of the calculation of *the tolerance* value showed that there were no independent variables that had a *tolerance* of less than 0.10. So it can be concluded that there is no correlation between independent variables.

The results of the calculation *of the Variance Inflation Factor* (VIF) value also show the same thing, there is no single independent variable that has a VIF value of more than 10 because the value is in the range of 1.226, so it can be concluded that there is no multicoloniality between independent variables in the regression model.



Graph 3 Heterokedasticity Test Results

Source : *SPSS Statistic* Version 26 Output Data

Based on the graph above, it can be concluded that the variant is homogeneous because of the irregular distribution of points. As well as the points spreading above and below the number 0 on the Y axis, it can be concluded that there is no heterokedasticity in the regression model.

Table 5 Autocorrelation Test Results

Runs Test

	Unstandardized Residual
Test Valuea	.07943
Cases < Test Value	16
Cases >= Test Value	16
Total Cases	32
Number of Runs	16
With	-.180
Asymp. Sig. (2-tailed)	.857

a. Median

Source : *SPSS Statistic* Version 26 Output Data

From the calculation above using SPSS Version 26, it can be seen that the autocorrelation test result on the Run Test value is 0.857. This value is more than 0.05, which means 0.857 > 0.05, so it can be concluded that there are no symptoms of autocorrelation problems. Thus the regression model used can be continued because it does not violate the classical assumption test.

$$Y = a+b1X1+b2X2$$

Based on the results of multiple linear regression analysis using IBM SPSS *statistical* Version 26 output data, multiple linear regression can be interpreted as follows:

1. The constant value of -0.367 means that if the variables *Capital Adequacy Ratio* (X1) and *Debt to Equity Ratio* (X2) are equal to 0 (zero), then the value of *Return On Asset* (Y) is -0.367.
2. The value of the regression coefficient in the Capital *Adequacy Ratio* (X1) variable is 0.204. shows that if the *Capital Adequacy Ratio* (X1) increases by one unit, then *the Return On Asset* (Y) will increase by 0.204 units with the other variables considered to be constant.
3. The value of the regression coefficient in the Debt *to Equity Ratio* (X2) variable is – 0.185, indicating that if the *Debt to Equity Ratio* (X2) increases by one unit, then *the Return On Asset* (Y) will decrease by 0.185 units with the other variables considered to be constant.

Table 6

Results of Testing the Partial Determination Coefficient of Variable X1 Against Y

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,598a	,357	,336	,86716

Source : *SPSS Statistic* Version 26 Output Data

Based on the table above, the value of the partial determination coefficient of the variable X1 to Y is 0.598 or 59.8% to *Return On Asset* (ROA), and the remaining 40.2% is influenced by other variables that are not known or included in the research model. The analysis of the determination coefficient shows that the value of 59.8% is in the range of 40%-59.9%, so it can be concluded that *the Capital Adequacy Ratio* (X1) has a moderate influence on *Return On Asset* (Y).

Table 7

Results of Testing the Variable Partial Determination Coefficient X2 to Y

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,699a	,489	,472	,77311

Source : *SPSS Statistic* Version 26 Output Data

Based on the table above, the results of the partial determination coefficient of the X2 variable against Y are 0.699 or equal to 69.9% while the remaining 30.1% is influenced by other factors that are not studied in this study. The analysis of the determination coefficient shows that the value of 69.9% is in the range of 60%-79.9%, so it can be concluded that *the Debt to Equity Ratio* (X2) has a strong influence on *Return On Asset* (Y).

Table 8 Results of Simultaneous Coefficient of Determination Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

1	,773a	,597	,570	,69806

Source : *SPSS Statistic* Version 26 Output Data

The results of the simultaneous determination coefficient test above show that the R2 *(R Square)* value of 0.773 The results show that the *Return On Assets* variable is influenced by *the Capital Adequacy Ratio* and *Debt to Equity Ratio* variables of 77.3%, while the remaining 22.7% is determined by other variables that are not included in this study. Based on the analysis table, the determination coefficient shows that the value of 77.3% is in the range of 60%-79.9%, so it can be concluded that *the Capital Adequacy Ratio* (X1) and *Debt to Equity Ratio* (X2) have a strong influence on *Return On Asset* (Y).

Table 9 : Test Results

Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Mr.
1	(Constant)	-,367	1,642		-,224	,825
	CAR	,204	,073	,364	2,792	,009
	THE	-,185	,044	-,543	-4,159	,000

a. Dependent Variable: ROA

Source : *SPSS Statistic* Version 26 Output Data

The value of the Capital *Adequacy Ratio* (CAR) is 2.792. Because the results obtained are positive, the basic assumption of decision-making is not reversed, so it can be concluded that the calculation > t_{table} (2.792 > 2.042) and the *sig* value is (0.009 < 0.05). This means that Ha is accepted and Ho is rejected. Thus, it can be concluded that *the Capital adequacy ratio* (CAR) has an influence on *Return On Asset* (ROA).

The value of the Debt *to Equity Ratio* (DER) is -0.185. Because the results obtained are negative, the basic assumption of decision-making is reversed, so it can be concluded that the < ttable (-0.185 < 2.042) and the *sig* value is (0.000 < 0.05). This means that Ha is rejected and Ho is accepted. Thus, *the Debt to Equity* Ratio (DER) has no effect on *Return On Asset* (ROA).

Table 10 : Test Results F

ANOVA

Model		Sum of Squares	df	Mean Square	F	Mr.
1	Regression	20,962	2	10,481	21,509	,000b
	Residual	14,131	29	,487		
	Total	35,094	31			

a. Dependent Variable: ROA

b. Predictors: (Constant), CAR, NPL

Source : *SPSS Statistic* Version 26 Output Data

The value of Fcal > Ftabel (21.509 > 3.34) and the *sig* value is (0.000 < 0.05), then H0 is rejected and Ha is accepted. Based on this, it can be concluded that there is an effect between *the Capital Adequacy Ratio* (CAR) and *the Debt to Equity Ratio* (DER) together on *Return On Asset* (ROA) in state-owned banks listed on the Indonesia Stock Exchange for the 2015-2022 period.

Effect of CAR on ROA

The Capital *Adequacy Ratio* (CAR) ratio theory has no effect on *Return On Asset* (ROA) because it is possible that banks still have a lot of funds that are not channeled for credit so that profits are not maximized. This is also in line with the fact in this study that the *Capital Adequacy Ratio* (CAR) that must be maintained by each bank as a certain proportion of total weighted assets of 8%, with this provision that banks are obliged to maintain the availability of capital because every increase in bank activities, especially which results in an increase in assets, must be balanced with an increase in capital.

The absence of an effect between *Capital Adequacy Ratio* (CAR) on *Return On Assets* (ROA) is reinforced by the results of previous research which said that *Capital Adequacy Ratio* (CAR) has an effect on *Return On Assets* (ROA). which states the result that partially *Capital Adequacy Ratio* has an effect on *Return On Assets*.

Effect of DER on ROA

The Debt *to Equity* Ratio (DER) ratio theory that the greater the value *of the Debt to Equity Ratio* (DER), the worse the credit quality owned by the bank and will result in a decrease in the value of net income. The increase in the value of DER is due to the failure of the debtor to fulfill its obligation to pay the principal credit along with the interest that has been agreed upon by both parties in the credit agreement.

This study has the effect of *Debt to Equity Ratio* (DER) on *Return On Asset* (ROA) strengthened by the results of previous research which stated *that Debt to Equity Ratio* (DER) partially does not have a significant influence on *Return On Asset* (ROA).

Effect of CAR and DER on ROA

Based on the results of statistical analysis in this study, the results of the F test (simultaneous) Fcal > Ftabel 21.509 > 3.34 and for significant values of 0.000 < 0.05. This shows that Ho was rejected and Ha was accepted, meaning that the independent variables, namely *the Capital Adequacy Ratio* and *the Debt to Equity Ratio* simultaneously or together, have a significant influence on the dependent variable, namely *Return On Asset* in SOEs listed on the Indonesia Stock Exchange for the 2015-2022 period.

This is also supported by the results of the simultaneous determination coefficient test showing that the R2 *(R Square)* value of 0.773 the results show that the *Return On Assets* variable is influenced by *the Capital Adequacy Ratio* and *Debt to Equity Ratio* variables of 77.3%, while the remaining 22.7% is determined by other variables that are not included in this study. Based on the analysis table, the determination coefficient shows that the value of 77.3% is in the range of 60%-79.9%, so it can be concluded that *the Capital Adequacy Ratio* (X1) and *Debt to Equity Ratio* (X2) have a strong influence on *Return On Asset* (Y).

The influence between *Capital Adequacy Ratio* and *Debt to Equity Ratio* on *Return On Asset* is strengthened by the results of previous research which stated the Influence of CAR, NPL, DER and LAR on ROA in commercial banks on the IDX which stated the result that *Capital Adequacy Ratio* and *Debt to Equity Ratio* together have a significant influence simultaneously.

This shows the results of this study that the variables Capital *Adequacy Ratio* and *Debt*

to Equity Ratio to *Return On Asset* have a simultaneous effect on SOEs listed on the IDX for the 2015-2022 period

4 Conclusion

Based on the results of data analysis and discussion of the effect of *Capital Adequacy Ratio* and *Debt to Equity Ratio* on *Return on Asset* in State-Owned Banks listed on the Indonesia Stock Exchange for the 2015-2022 Period. Therefore, the author can draw some conclusions as follows:

1. CAR affects the ROA of state-owned banks listed on the Indonesia Stock Exchange for the 2015-2022 period.
2. DER has no effect on ROA in state-owned banks listed on the Indonesia Stock Exchange for the 2015-2022 period.
3. CAR and DER have a joint effect on the ROA of state-owned banks listed on the Indonesia Stock Exchange for the 2015-2022 period

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