

EFFECT OF CAR, LDR, ROA, ROA AND NIM TOWARD THE COMMERCIAL BANK IN INDONESIA

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Abstract : The purpose of this study to determine the effect of CAR, LDR, ROA, and NIM either partially or simultaneously on ROA in a conventional commercial bank in Indonesia. The study used secondary data drawn from the Indonesian Banking Statistics published by the Financial Services Authority. The research sample of 60 monthly time series data began in December 2014 s / d November 2019. The analysis tool using multiple linear regression, t-test, F test and coefficient of determination. The study concluded: 1) CAR significant negative effect on ROA, 2) LDR significant negative effect on ROA; 3) BOPO significant negative effect on ROA, 4) NIM significant negative effect on ROA, 5) CAR, LDR, ROA, and NIM simultaneous and significant impact on ROA.

Keywords : *CAR, LDR, ROA, NIM, ROA*

1. Introduction

The banking business has different characteristics with other types of business both in terms of transaction activity and its financial structure. The Bank is a financial services business that has the main function of collecting funds from the public and channel them back to the community for various purposes or as a financial intermediary (Budisantoso and Nuritomo, 2014). With these functions then loans (receivables) is part of the assets of the most dominant, and on the liabilities, on group liability, visible deposits of society's most dominant, It has an impact on operating results of banks, where the interest income and interest expense be the main elements of the income statement.

With the characteristics of the financial structure of the specific bank then the experts make the formulation ratio can describe the financial performance of a bank. The performance of bank capital can be measured by the Capital Adequacy Ratio (CAR). According to Kashmir (2014), the CAR is the ratio between the ratio of capital to risk-weighted assets and according to government regulations. While the bank's liquidity can be measured with a loan to deposit ratio (LDR). Loan to Deposit Ratio) is the ratio used to measure the composition of total loans compared to the number of public funds and own capital employed.

To measure the profitability of banks can use the ratio of Operating Expenses to Operating Income (ROA), Net Interest Margin (NIM) and Return on Total Assets (ROA). Bank Indonesia Circular Letter No. 6/23 / DPNP May 31, 2004, Operating Expenses Operating Income (ROA) is often called the ratio of efficiency that is used to measure the ability of bank management in controlling operating expenses to operating income, while net interest margin is the ratio of net

interest income to average productive assets. Then, according to Kashmir (2014) Return on Total Assets ratio is used to measure the ability of the bank's management in the overall gain. ROA is calculated by dividing the profit before tax to total assets.

Analysis of the bank's financial ratios derived from the financial statements that could lead to the interconnection between these ratios. The research result Bilian & Purwanto (2017) which took four samples of bank-owned (SOE) concluded CAR significant negative effect on ROA, NIM has a positive and significant impact on ROA, LDR positive effect was not significant to the ROA, ROA has a negative and significant impact. Simultaneously four independent variables have a significant influence on ROA.

Research conducted Setyarini (2020) took samples of the Regional Development Bank in Indonesia indicates that the variable NPL no significant effect on the ROA, the variable CAR, NIM, and LDR positive and significant impact on ROA, while variable BOPO significant negative effect on ROA. The research result Goddess (2017) shows the CAR has a negative effect is not significant to the ROA, ROA has a negative influence significantly to the ROA, the NPL has a negative influence significantly to the ROA, NIM has a negative effect is not significant to the ROA, LDR has a positive influence significantly to the ROA. Research Sudarmawanti & Pramod (2017) resulted in the conclusion CAR does not have a significant negative influence on ROA, NPL has a significant influence on ROA, ROA has a significant negative influence on ROA, NIM does not have a significant positive effect ROA, LDR has a significant positive effect on ROA. Simultaneous testing CAR, NPLs, ROA, NIM and LDR jointly affect the ROA.

The fourth study resulted in the conclusion that a varied and just the same conclusion, namely BOPO significant effect on ROA. This study examines a wider scope than conventional commercial banks listed on the Financial Services Authority. Commercial banks are conducting business in a conventional or based on sharia principles in their activities providing services in payment traffic (Kashmir, 2014). This study specifically analyzes commercial banks conducting conventional business.

The research problems are "whether the CAR, LDR, ROA, and NIM partially and simultaneously influence ROA conventional commercial bank in Indonesia?". As for the hypothesis that proposed are:

1. CAR allegedly significant negative effect on ROA;
2. LDR allegedly not a significant positive effect on ROA;
3. Allegedly BOPO significant negative effect on ROA;
4. NIM allegedly positive and significant impact on ROA;
5. Allegedly CAR, LDR, ROA, and NIM simultaneously significant effect on ROA.

2. Research Method

This study uses a quantitative approach using secondary data, where the data that has been processed by the Financial Services Authority (FSA). Secondary data collection using the techniques of literature, with learn and retrieve data from the Indonesian Banking Statistitik accessible from www.ojk.go.id. The scope of the study includes data ratio of Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), Operating Expenses to Operating Income (ROA), Net Interest Margin (NIM) and Return on Total Assets (ROA) throughout the conventional

commercial banks recorded The FSA began in December 2014 until November 2019. The ratio of the 60-month time-series data as a sample research

Research variables consist of two types of independent variables, CAR, LDR, ROA, and NIM, and the dependent variable is ROA. CAR is the ratio to measure bank capital by dividing capital by risk-weighted assets. LDR is to measure the banks' liquidity ratio by dividing the loans with deposits. ROA is the ratio to measure the efficiency of the bank by dividing operating expenses by operating income. NIM is a ratio to measure the effectiveness of the bank by dividing net interest income by average earning assets. ROA is the ratio to measure the profitability of banks by dividing the profit before tax to total assets.

Tools of this research are multiple linear regression, t-test, F test and the coefficient of determination, which in its calculations using SPSS for Windows.

a. Multiple Linear Regression

Multiple linear regression to analyze mathematically the influence of the independent variable on the dependent variable. The design of the linear regression formula of this research as follows:

$$Y = a + b_1x_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$$

From the formula above can be seen that where the notation Y as the dependent variable ROA, and as a constant, b regression coefficients of each variable independent, X1 is CAR, X2 is LDR, X3 is ROA, and X4 is the NIM.

b. T-test

The t-test to analyze the significance of the effect of each independent variable (partially) on the dependent variable, with the following criteria:

- 1) If the value of Sig. ≥ 0.05 then the independent variables have a significant effect on the dependent variable.
- 2) If the value of Sig. <0.05 then the independent variable has no significant effect on the dependent variable.

c. Test F

F test to analyze the level of significance of the influence of all independent variables (simultaneously) on all dependent variables, with the following criteria:

- 1) If the value of Sig. ≥ 0.05 then the independent variables have a significant effect on the dependent variable.
- 2) If the value of Sig. <0.05 then all independent variables had no significant effect on the dependent variable.

d. The Coefficient of Determination

The coefficient of determination to analyze how much the independent variables can explain the effect on the dependent variable. The coefficient of determination (R²) in the form of a percentage, where the percentage figures referred to show the ability of independent variables on the dependent variable explained the effect. While the rest of 100% - R² is the ability of a variable outside the model in explaining the dependent variable.

3. Results and Discussion

This study analyzes the effect of CAR, LDR, ROA, and NIM both partially and simultaneously influence ROA conventional commercial bank in Indonesia. The research sample ratio of 60 the time series data listed in Indonesian Banking Statistics issued by the Authority Financial Jas starting in December 2014 until November 2019.

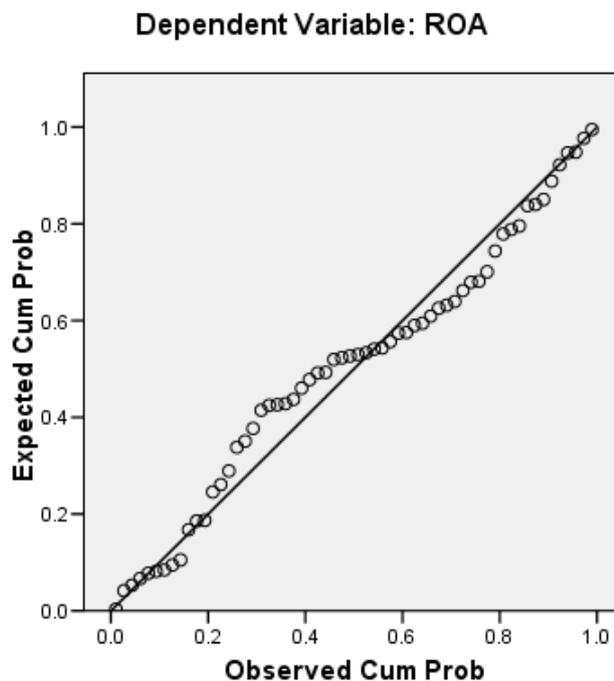
3.1 Research Result

This study using multiple linear regression analysis. The terms of the data that could be analyzed by linear regression are normally distributed, free of problems multicollinearity, heteroscedasticity, and autocorrelation. Therefore, before the regression analysis performed classical assumption.

a. Classic Assumption Test

1) Normality Test

Normality test to determine whether the research data follow a normal distribution pattern or not. Testing normality in studies using P-Plot Normal test with SPSS data obtained though the graph as follows:



Picture 1

The graph above shows that the research data points form a pattern that follows a diagonal line from lower left to upper right so that it can be stated that the research data is normally distributed so that it meets the requirements used in multiple linear regression models.

2) Multicollinearity Test

Multicollinearity test to determine whether there is a perfect correlation among the independent variables. Results obtained the data with SPSS table as follows:

Table 1

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	6,304	,959		6,573	,000		
	CAR	-,017	,014	-,108	-1,192	,239	,425	2,353
	LDR	,000	,008	-,003	-,042	,967	,907	1,103
	BOPO	-,025	,007	-,249	-3,288	,002	,610	1,638
	NIM	-,279	,044	-,647	-6,295	,000	,331	3,023

a. Dependent Variable: ROA

From the table above is known Tolerance value of each variable is greater than 0.1 so an independent variable data multicollinearity does not happen, then the linear regression model can be used to analyze the data.

3) Heteroscedasticity Test

This test aims to determine differences in the variance of the residual value at an observation period to other periods of observation. Results obtained the data with SPSS scatterplot graph as follows:

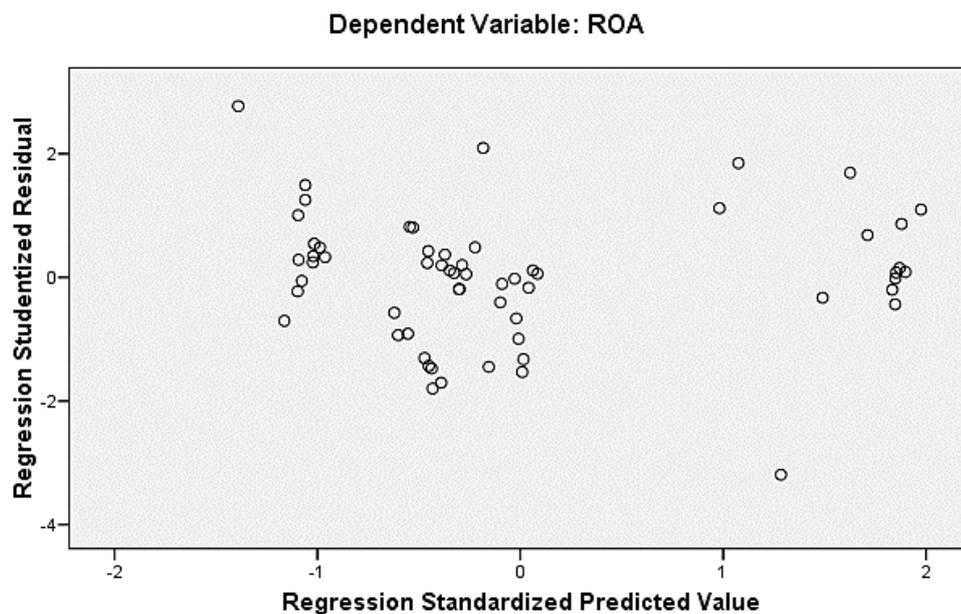


Figure 2

The above graph indicating the points in the scatterplot chart spread out and do not form a particular pattern, it can be determined that the data of this study no symptoms heteroskedastisity making it eligible for a linear regression model.

4) Autocorrelation Test

Autocorrelation test occurs between the relationship or correlation between the values of a series of observations that are arranged in a series of times (time series data). Testing autocorrelation using the Durbin Watson formula. Results obtained if using the SPSS Durbin Watson values as follows:

Table 2

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,899 ^a	,808	,794	,09956	1,775

a. Predictors: (Constant), NIM, LDR, BOPO, CAR

b. Dependent Variable: ROA

From the table above can be seen that value of Durbin Watson (d) of 1.755 is between dU (4; 60) = 1.7274 and 4 - dU = 2.2726, it can be determined that the data of this study does not happen autocorrelation problem making it eligible for a linear regression model.

b. Hypothesis Testing

1) T-test

The t-test to test the significance of partial, CAR, LDR, ROA or ROA NIM to the variable. The results of the calculation of the value of t by using SPSS as follows:

Table 3

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6,304	,959		6,573	,000
	CAR	-,017	,014	-,108	-1,192	,239
	LDR	,000	,008	-,003	-,042	,967
	BOPO	-,025	,007	-,249	-3,288	,002
	NIM	-,279	,044	-,647	-6,295	,000

a. Dependent Variable: ROA

Based on the results of Table 3, it can do a partial significance testing each variable:

- Coefficient Sig. CAR variable of 0.239, this value is greater than 0.05 so that it can be concluded CAR does not significantly influence ROA conventional banks in Indonesia.
- Coefficient Sig. LDR variable of 0.967, this value is greater than 0.05 so that it can be concluded LDR has no significant effect on ROA conventional banks in Indonesia.
- Coefficient Sig. BOPO variable of 0.002, this value is smaller than 0.05 so that it can be concluded BOPO's significant effect on ROA conventional banks in Indonesia.
- Coefficient Sig. NIM variable of 0.000, this value is smaller than 0.05 so that we can conclude a significant effect on ROA NIM conventional banks in Indonesia.

2) Test F

F test simultaneous test the significance of all independent variables such as CAR, LDR, ROA, ROA and NIM against. F value calculation results using SPSS as follows:

Table 4

ANOVA^b

Mdel		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2,290	4	,573	57,762	,000 ^a
	Residual	,545	55	,010		
	Total	2,835	59			

a. Predictors: (Constant), NIM, LDR, BOPO, CAR

b. Dependent Variable: ROA

Based on the results of Table 4 show that the coefficients Sig. Simultaneous 0,000 so it can be concluded CAR, LDR, ROA, and NIM simultaneously significant effect on ROA conventional banks in Indonesia.

3) The coefficient of determination

The coefficient of determination illustrates the contributions of all the variable CAR, LDR, ROA, ROA, and NIM against. SPSS processing results obtained coefficient of determination as follows:

Table 5

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,899 ^a	,808	,794	,09956

a. Predictors: (Constant), NIM, LDR, BOPO, CAR

Table 5 shows the Adjusted R Square of 0.794, meaning CAR, LDR, ROA, and NIM to simultaneously deliver a contribution of 79.4% in affecting the level of ROA, while the remaining 20.6% is no other outside factors that affect ROA research model.

3.2 Discussion

a. CAR influence on ROA.

Results of linear regression are listed in Table 4 Beta column CAR note that the regression coefficient is negative, and the t-test results are known the effect is not significant. So CAR significantly negative effect on ROA. These results prove the hypothesis.

The results of this study strengthen the results Bilian & Purwanto (2017), and Sudarmawanti & Pramod (2017) CAR enhanced sense if it will have an impact on ROA decline but the decline was not a significant impact, on the contrary, if the CAR lowered the ROA will increase but not significantly.

b. LDR's influence on ROA.

Table 4 Beta column indicates that the LDR regression coefficient is negative, and the t-test, the effect is not significant. So LDR significantly negative effect on ROA. This result is contrary to the second hypothesis because of the positive effect hypothesis states.

The implications of these results if the LDR is increased then it will not affect significantly the decline in ROA, otherwise, if LDR lowered the ROA will increase but not significantly.

The results of this study is also inconsistent with research Bilian & Purwanto (2017), Setyarini (2020), Goddess (2017) and Sudarmawanti & Pramod (2017).

c. BOPO influence on ROA.

In Table 4 Beta column BOPO unknown regression coefficient is negative, and the t-test results concluded a significant influence. So BOPO significant negative effect on ROA. These results prove the third hypothesis.

The results of this study strengthen the results Bilian & Purwanto (2017), Setyarini (2020), Goddess (2017) and Sudarmawanti & Pramod (2017). The implication of this result is that if BOPO increases, will have an impact on ROA decline significantly, otherwise if BOPO down the ROA will increase significantly.

d. NIM influence on ROA.

Table 4 Beta column indicates that the NIM regression coefficient is negative, and the

t-test results conclude a significant influence. So NIM significant negative effect on ROA. These results contradict the fourth hypothesis because of the positive effect hypothesis states.

The implications of these results when NIM increased the ROA would have decreased significantly, whereas if NIM declining, ROA will increase significantly. The results of this study are also inconsistent with research Bilian & Purwanto (2017), Setyarini (2020), Goddess (2017) and Sudarmawanti & Pramod (2017).

- e. Simultaneous effect CAR, LDR, ROA, and NIM to ROA.

F test results conclude a simultaneous significant influence. So CAR, LDR, ROA and NIM and significant impact on ROA. These results prove the hypothesis fifth and simultaneously strengthen the research results Bilian & Purwanto (2017).

4. Conclusion

The conclusion of this study are:

- a. CAR significantly negative effect on ROA in conventional banks in Indonesia and the results of this study reinforce previous research.
- b. LDR significantly negative effect on ROA in conventional banks in Indonesia, the result is in contrast to the results of previous studies.
- c. BOPO's significant negative effect on ROA and the results of this study reinforce previous research.
- d. NIM significantly negative effect on ROA in conventional banks in Indonesia, the result is in contrast to the results of previous studies.
- e. CAR, LDR, ROA and NIM simultaneous and significant impact on ROA, and the results of this study reinforce previous research.
- f. This result there are two different conclusions from previous studies, but it is also still a lot of factors that affect the company's ROA of banking, the author's suggestion needs to be further research so that the results can reinforce previous research or find something new.

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