Effect of CAR, LDR, NPL, and NIM on ROA in Devisa National Public Private Banks Registered on the IDX 2013-2017 Period

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Abstract—The research on Foreign Exchange BUSN is aimed at knowing the effect of CAR, LDR, NPL and NIM on ROA in Devisa National Public Private Banks Registered On The IDX 2013-2017 Period. The type of research used is associative research . Using quantitative methods. The population in this study is BUSN consists of 26 Banks. The sampling technique for research uses a purposive sampling method. The number of recognized research samples is 7 bank sample. The data analysis method used is descriptive statistics, multiple linear regression analysis and classical assumption tests. Testing the hypothesis used is the statistical test t and F statistical test. The results showed that partially CAR had a non-significant negative effect on ROA, LDR has no significant positive effect on ROA, NPL has a significant negative effect on ROA, and NIM has a significant positive effect on ROA. In addition, the results of the CAR, LDR, NPL and NIM studies simultaneously influence ROA.

Keywords: CAR, LDR, NPL, NIM, ROA

I. INTRODUCTION

The disruption of the banking intermediation function after the banking crisis in Indonesia resulted in slow investment activities and economic growth. Profit is the main parameter in assessing the success of banking management. Because most of the funds come from public savings. So that it can be stated in the current year's net profit at the national private foreign exchange commercial banks in Indonesia. Because net income for the year is the main parameter in assessing the success of banking management in profitability. So most of the funds come from public savings, if the national private foreign exchange banks continue to get the decline, it can affect the confidence of their customers and vice versa.

Return On Assets (ROA) becomes a measurement tool in knowing the profitability of banking companies, because it is more representative in measuring the ability at the level of profitability.

Return on bank assets in the future will be depressed and the ratio will experience pressure. Bank ROA is depressed due to several factors, first is the world interest rates are still low. So that makes banks not easy to raise lending rates. Second, the regulatory burden is quite heavy because it makes banks have

to set aside a significant portion of liquid assets. Thus, it is expected to press Return on Assets. The third factor influencing bank ROA ratios is credit risk.

The purpose of this research is to find out how CAR, LDR, NPL, NIM and CAR influence ROA, both partially and simultaneously. The existence of research is expected to produce information that can be useful by various interested parties, as follows: Adding knowledge and can broaden researchers' insights about the effects of CAR, LDR, NPL, NIM and ROA on the National Private Foreign Exchange Commercial Banks listed on the Stock Exchange in the 2013-2017 period.

II. RESEARCH METHODS

This study uses quantitative research methods, because the purpose of this study is to determine the effect of CAR, LDR, NPL and NIM on ROA

In this study there are four independent variables namely CAR, LDR, NPL and NIM, and one dependent variable is ROA.

The population in this study is BUSN consists of 26 Banks. The sampling technique for research uses a purposive sampling method. The number of recognized research samples is 7 bank sample.

The data analysis method used is descriptive statistics, multiple linear regression analysis and classical assumption tests. Testing the hypothesis used is the statistical test t and F statistical test.

III. RESULTS

Based on the data normality test, by using a histogram chart it can be that the data are normally distributed as indicated by points spreading around the diagonal line.

Fig. 1. Histogram graph.
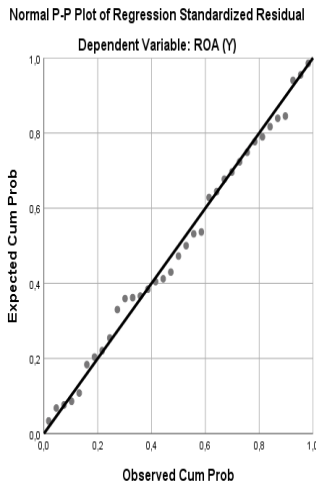
In the multicollinearity test, which is used to determine the regression model the results obtained are:

TABLE I. MULTICOLLINEARITY TEST RESULTS

Coefficient [a]							
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	St. Error	Beta			Tolerance	VIF
1 (Constatnt)	-,645	1,109		-,581	,565		
CAR (X1)	-,033	,029	-,166	-1,144	,262	,587	1,704
LDR (X2)	,017	,012	,177	1,497	,145	,881	1,135
NPL (X3)	-,090	,044	-,306	-2,064	,048	,563	1,776
NIM (X4)	,164	,045	,589	3,655	,001	,476	2,099
[a.] Dependent Variable : ROA (Y)							
[b.]							

Based on table about the results of multicollinearity test shows that no VIF value for each independent variable has a VIF value> 10. Because the VIF value on the CAR variable (X1) is 1.704, LDR (X2) is 1.135, NPL (X3) of 1,776 and NIM (X4) of 2,099.

In the autocorrelation test the following results were obtained:

TABLE II. WATSON-DURBIN AUTOCORRELATION TEST RESULTS

Model Summary Y [b]					
Model	R	R Square	Adjusted RSquare	Std. Error of the Estimate	Durbin-Watson
1	,793[a]	,629	,579	,33779	1,777
[a] Predictor: (Constant), NIM(X4), LDR (X2), (CAR) (X1), NPL (X3)					
[c.] Dependent Variable: ROA (Y)					

Based on the table of autocorrelation test results shows that the results of the durbin-watson value, when compared with the value of the durbin-watson table using a significance of 0.05 or 5% and with a total sample of 35 (n), and the number of independent variables 4 (k- 4), then in the Datsin Watson test table, the following values are obtained:

TABLE III. DURBIN WATSON BOUND TEST RESULTS

N	K=4	
	Dl	Du
35	1,222	1,726

Looking for autocorrelation using the Durbin-Watson test, with tables using a significance value of 0.05 or 5%, with a total sample of 35 (n), as well as a total of independent variables 4 (k = 4), then in the Durbin-Watson table get an upper bound value (du) which is 1,726.

Based on the table about the results of the durbin-watson test bound that the durbin-watson value of 1.777 is greater than the upper limit (du) of 1.726 smaller than 4-du (4-1,726) of 2,274, H_o is accepted and it is stated that there is no positive autocorrelation value or negative in the decision table (du <d <4 - du) = (1,726 <1,777 <2,274) so it can be concluded that no autocorrelation.

Multiple regression test results. These include CAR (X1), LDR (X2), NPL (X3), NIM (X4) to ROA (Y) as follows:

TABLE IV.   MULTIPLE REGRESSION TEST RESULTS

Coefficient ᵃ					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	St. Error	Beta		
1 (Constatnt)	-,645	1,109		-,581	,565
CAR (X1)	-,033	,029	-,166	-1,144	,262
LDR (X2)	,017	,012	,177	1,497	,145
NPL (X3)	-,090	,044	-,306	-2,064	,048
NIM (X4)	,164	,045	,589	3,655	,001
ᵃ. Dependent Variable : ROA (Y)					

The results of multiple regression tests, have a constant value α = -0.645 and the regression coefficient b_1 = -0.033, b_2 = 0.017, b_3 = -0.090, b_4 = 0.164. Then the values of constants and regression coefficients (α, b_1, b_2, b_3, b_4) are included in the multiple linear regression equation, as follows:

$$ROA = \alpha + b_1 X1 + b_2 X2 + b_3 X3 + b_4 X4 + e \qquad (1)$$

So, the regression equation is to be. As follows:

$$OA = -0{,}645 - 0{,}033\,X1 + 0{,}017\,X2 + -0{,}090\,X3 + 0{,}164\,X4 + e \qquad (2)$$

The coefficient of determination (R_2) is a measure of the closeness of the relationship between CAR, LDR, NPL and NIM to ROA. Meanwhile, the coefficient of multiple determination with the symbol R_2 is the suitability of multiple linear lines to one variable.

TABLE V.   DETERMINATION COEFFICIENT TEST RESULTS

Model Summary ᵇ				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,793ᵃ	,629	,579	,33779
ᵃ Predictor: (Constant), NIM(X4), LDR (X2), (CAR) (X1), NPL (X3)				
ᵇ Dependent Variable: ROA (Y)				

Adjusted R Square value is 0.579. So, it is known that the effect of CAR, LDR, NPL and NIM simultaneously (together) on ROA is relatively large at 57.9%. While the rest (100% - 57.9% = 42.1%) is shown in other independent variables not observed in the study.

Hypothesis testing uses the statistical test t (partial), to find out each independent variable on the dependent variable.

TABLE VI.   STATISTICAL TEST RESULTS T

Coefficient ᵃ					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	St. Error	Beta		
1 (Constatnt)	-,645	1,109		-,581	,565
CAR (X1)	-,033	,029	-,166	-1,144	,262
LDR (X2)	,017	,012	,177	1,497	,145
NPL (X3)	-,090	,044	-,306	-2,064	,048
NIM (X4)	,164	,045	,589	3,655	,001
ᵃ. Dependent Variable : ROA (Y)					

The results of the statistical t test showed that the CAR variable (X1) had an insignificant negative effect on ROA, because the sig value of 0.262 with a value of Pvalue> 0.05 so (0.262> 0.05) the meaning was not significant. Meanwhile, the value of t-count is -1,144 and t-table of the terms df = n - 4 or 35 - 4 = 31 is 2.0395, so that t_count <t_table (-1,144 <2.0395) means that the first hypothesis H1 is rejected.

LDR variable (X2) has no significant positive effect on ROA, because the sig value of 0.145 with a value of Pvalue> 0.05 so that (0.145> 0.05) means that it is not significant. Meanwhile, for the value of t_count of 1.497 and t_ (table) of the provisions df = n - 4 or 35 - 4 = 31 is 2.0395, so that t_count <t_table (1.497 <2.0395) means that the second hypothesis H2 is rejected.

NPL variable (X3) has a significant negative effect on ROA, because the sig value of 0.048 with a value of Pvalue> 0.05 so that (0.048 <0.05) means significant. Meanwhile, for the value of t_count of -2.064 and t_ (table) of the provisions df = n - 4 or 35 - 4 = 31 which is 2.0395, so that t_count <t_table (-2.064 <2.0395) means the third hypothesis and H3 is rejected.

NIM variable (X4) has a significant positive effect on ROA, because the sig value of 0.001 with a value of Pvalue> 0.05 so that (0.001> 0.05) means significant. Meanwhile, for the value of t_count of 3.655 and t_ (table) of the provisions df = n-4 or 35-4 = 31 i.e. 2.0395, so t_ (count)> t_table (3.655> 2.0395) means the fourth hypothesis H4 received.

F Statistical Test Results are as follows:

TABLE VII.   STATISTICAL TEST RESULTS F

ANOVAᵃ					
Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	5,796	4	1,449	12,700	,000ᵇ
Residual	3,423	30	,114		
Total	9,219	34			
ᵃ Dependent Variable: ROA (Y)					
ᵇ Predictors: (Constant), NIM (X4), LDR (X2), CAR (X1), NPL (X3)					

F statistical test results show that the value of sig (significant) is equal to 0,000. Because the sig value (significant) is 0,000 <0.05, it has a significant effect and the calculated F_ value is 12,700. F_tabel = (k; n - k), i.e. F_tabel = (4; 35 - 4 = 31). So F_tabel is 2.68. F_count 12,700> Ftable 2.68. The calculations on decision making in the F test can be concluded that the hypothesis is accepted (hypothesis H_5 is accepted). Then CAR (X1), LDR (X2), NPL (X3) and NIM (X4) simultaneously (together) affect ROA (Y).

IV. DISCUSSION

A. Effect of CAR on ROA

The results of the statistical t test showed that the CAR variable (X1) had a non-significant negative effect on ROA, This study is in line with the results of research on Heri Susanto and Nur Kholis [1], Mario Christiano, Parengkuan Tommy and Ivonne Saerang [2], showing that CAR (Capital Adequacy Ratio) has a significant effect on ROA (Return On Asset).

B. Effect of LDR on ROA

The results of the statistical t test showed that the LDR (X2) variable had a non-significant positive effect on ROA, The results of this study are not in line with the theory put forward by Taswan [3] that the higher level of LDR shows the worse the condition of bank liquidity, because the placement on credit is also financed from deposits which are withdrawn at any time. Therefore, it is recommended that the most appropriate LDR ratio between 89% to 115%. So that each bank tries to follow the maximum lending limit guidelines, because this limit is not intended to limit the expansion of the bank's credit in question, but rather on the distribution or distribution of credit. Then it can be concluded that the size of the LDR has no direct effect on ROA, but banks are allowed to expand credit, as long as it is able to offset the amount of funds received with a ratio between 89% to 115%.

C. Effect of NPL on ROA

The results of the statistical t test showed that the NPL variable (X3) had a significant negative effect on ROA, The results of this study are in line with the theory put forward by Taswan [4] that the higher the NPL ratio shows the worse the credit quality. According to Bank Indonesia Regulation Number 6/10 / PBI / 2004 dated 12 April 2004 concerning the Rating System for Commercial Banks, stipulates that the ratio of non-performing loans (NPL) is 5%, indicating that the higher the NPL value is above 5%, then the bank can said to be unhealthy. Then it can be concluded that the size of the NPL (Non Performing Loan) directly affects ROA (Return On Assets).

D. Effect of NIM on ROA

The results of the statistical t test showed that the NIM (X4) variable had a significant positive effect on ROA, The results of this study are in line with the theory put forward by Taswan [4] that the greater the NIM ratio the better the bank's performance in generating interest income. Therefore, banks can be said to be healthy if their NIMs are above 6%. Then it can be concluded that the size of the NIM directly affects ROA

E. Effect of CAR, LDR, NPL and NIM on ROA

Seen from the F test results shown in the ANOVA table, it can be found that together, the CAR, LDR, NPL and NIM variables influence ROA, This is in line with the results of research on Heri Susanto and Nur Kholis [1], Mario Christiano, Parengkuan Tommy and Ivonne Saerang [2], showing that CAR, LDR, NPL and NIM simultaneously have a significant influence on ROA. Based on this research, it shows that the CAR, LDR, NPL and NIM variables influence ROA, because it indicates that the smaller the CAR, LDR, NPL and NIM, the smaller the value of ROA or the greater the CAR, LDR, NPL and NIM, the greater the value ROA

V. CONCLUSION

Based on the results and discussion, it can be concluded that CAR has no significant negative effect, while LDR has no significant positive effect on ROA. while the NPL variable has a negative effect and the NIM has a positive effect and both have significant effects on ROA

This study still has limitations, namely The results of the study, only on one type of bank namely BUSN Foreign Exchange (National Private Foreign Exchange Commercial Bank) which is listed on the Indonesia Stock Exchange (IDX).

These limitations can be said not to give perfect results. Therefore, to further maximize research for further researchers in conducting research it is recommended to increase the number of banks that are more diverse in the types of banks to be studied.

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