

# INTERVENING VARIABLE CAR IN THE ROA PROFITABILITY MODEL: BANKING COMPANY ON INDONESIA STOCK EXCHANGE (IDX)

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## INTERVENING VARIABLE CAR IN THE ROA PROFITABILITY MODEL: BANKING COMPANY ON INDONESIA STOCK EXCHANGE (IDX)

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### ABSTRACT

The purpose of this study is to explain the banking profitability model of its determinants either directly or indirectly through intervening variables by using the influence and relationship between financial ratios. Conventional banking companies listed on the Indonesia Stock Exchange (IDX) are the object of research with a cross-sectional sample of 29 companies in an eight-year time series. The results of the first research model with endogenous variable Capital Adequacy Ratio (CAR), exogenous variable NIM, NPL and INF partially have a significant effect on CAR, while BOPO, LDR have an insignificant effect. The results of the determinant coefficient in this model can be explained in Adjusted R-squared 67.52%. In the results of the second research model, the exogenous variables NIM, NPL, INF and CAR partially have a significant effect on ROA, while BOPO, LDR have an insignificant effect. The results of this second model, the level of the determinant coefficient that can be explained in Adjusted R-squared is 77.91%.

**Keywords:** Cost Ratio (BOPO), Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), Non Performing Loan (NPL), Inflation (INF), Capital Adequacy Ratio (CAR), Return on Assets (ROA)

### 1. Introduction

In continuation of the banking restructuring program that has been running since 1998 and in the national banking blue print, Bank Indonesia on January 9, 2004 released the Indonesian Banking Architecture (API) which is an overall framework for the direction of policy development for the Indonesian banking industry in the future come. In Bank Indonesia (2008), Athanoglou et al. (2009), Dwijayanthi, Naomi (2009) explained that banking performance is influenced by two factors, namely internal and external. Variables that are directly related to bank management are said to be internal factors, while those that have an indirect relationship are said to be external factors.

There are five aspects in assessing banking financial performance using financial statement analysis, namely CAMEL (Capital, Assets, Management, Earning, Liquidity) which technically can use financial ratios. The first aspect, Capital which is included in it is CAR (Capital Adequacy Ratio), the second aspect, the Assets in it are NPL (Net Performing Loans), the third aspect, Management, the fourth aspect, Earnings, which includes Return on Assets (ROA) and Return on Equity (ROE), the fifth aspect, in which there is LDR (Loan to Deposit Ratio).

This study is intended to explain the banking profitability model which can be



explained by its determinants either directly or indirectly through intervening variables. Conducting research on the influence and relationship between financial ratios is very important for assessing the performance and testing the level of influence and the relationship between financial ratios and banking financial performance. In reality, there have been many researchers who have conducted studies on banking financial performance using various financial ratios in their analysis, but many have also produced inconsistencies in their research results.

Research on the variable Cost Ratio (BOPO) in Ismaulina et al (2020) found that BOPO has a significant effect with a positive correlation to Capital Adequacy Ratio (CAR), but different from Fitrianto and Mawardi (2006), that BOPO has no significant effect on CAR. Research on LDR also yields the same inconsistent results as the previous variables, namely Ansary & Hafez (2015), Putri & Dana (2018), Yokoyama & Mahardika (2019) which are different from the results from Putri & Dana (2018). The effect of CAR on ROA in Pratama, Mubaroh, Afriansyah (2021) shows different results from Remmy Sari (2020).

## 2. Literature Review

In Aktas, et al (2015), that one of the macroeconomic factors resulted in inflation significantly affecting the Capital Adequacy Ratio (CAR) with a positive correlation. The findings show that high inflation caused the Capital Adequacy Ratio (CAR) to increase in 71 banking companies in 10 South Eastern European (SEE) countries with an observation period of 2007 to 2012. In line with Aktas' research, et al (2015), Dao & Nguyen, (2020) also showed the same results, where in his research it was found that inflation had a significant positive effect on the Capital Adequacy Ratio (CAR). Increased inflation was able to significantly increase the Capital Adequacy Ratio (CAR) in 16 Vietnamese commercial banks, 2010 - 2017. However, Aktas' research, et al (2015) and Dao & Nguyen's research, (2020) are controversial with Abiodun's research, et al (2020) , where it was found that the increase or decrease in inflation was not able to have a significant effect on the Capital Adequacy Ratio (CAR) in 10 banking companies in Nigeria during the observation period from 2007 to 2017 so that there was an inconsistency between the research results of Abiodun, et al (2020) with research by Aktas, et al (2015) and Dao & Nguyen, (2020).

Other researchers are Ansary & Hafez (2015), and Yokoyama & Mahardika's (2019) research on Loan to Deposit Ratio (LDR) to Capital Adequacy Ratio (CAR) with the result that LDR has a significant effect with a positive correlation to CAR in 36 Egyptian Commercial Banks observation period 2004 to 2013. These results can be explained that an increase in LDR will lead to a significant increase in CAR. Other research was also conducted by Yokoyama & Mahardika (2019) which used a sample of 12 Islamic Commercial Banks in Indonesia during the period 2013 to 2017, showing the results that an increase in the Loan to Deposit Ratio was also able to significantly increase the Capital Adequacy Ratio (CAR). or with a positive correlation. Another thing with different results was carried out by Putri & Dana (2018) using a research sample at National-scale Conventional Rural Banks in Indonesia for the period November 2014 - 2016. The results of her research were that LDR had no significant effect on CAR.

In Septiani & Lestari (2016), the resulting Non Performing Loan (NPL) has a significant effect with a negative correlation to the Capital Adequacy Ratio (CAR). But



different results are shown by Romdhane (2012) that NPL has a significant effect with a positive correlation to the Capital Adequacy Ratio (CAR). Other different results in Murtiyanti, et al. (2015), that NPL has no significant effect on CAR.

The Cost Ratio, which is also referred to as BOPO and is also often referred to as Bank Efficiency, in Ismaulina et al (2020) with the observation period 2012-2019, results that BOPO has a significant effect with a positive correlation to the Capital Adequacy Ratio (CAR). Other results in Bukian & Sudiarta (2016), yielded that BOPO has a significant effect but is negatively correlated with the 2012-2019 observation period. The results of a very different study were found in Fitrianto and Mawardi (2006), that BOPO had no significant effect on CAR in the 2000-2004 observation period.

Researcher Syah, Toufan Aldian (2018), BOPO, NPF (non-performing financing) and the BI Rate partially have a significant effect with a negative correlation to ROA. Different results are shown by the inflation variable with results that have no significant effect on ROA. Another study was conducted by Cahyani, Yutisa Tri (2018), that the interest rate has a significant effect with a negative correlation to ROA, but inflation has no significant effect on ROA. Another very different result was carried out by Alim, Syahirul (2014), namely that partially each Inflation and interest rate (BI Rate) both have an insignificant effect.

Pratama, Mubaroh, Afriansyah (2021), tested the determinants of Return On Assets (ROA) with the results of Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), partially each having a significant effect with a positive correlation, while Net Interest Margin (NIM), Operating Expenses to Operating Income or Cost Ratio (BOPO) has a significant effect with a negative correlation. The results of testing all of these exogenous variables show the dominant level of the NIM exogenous variable. In Remmy Sari (2020), the CAR variable does not have a significant effect on ROA but BOPO does have a significant effect on ROA. Another thing was done by Putri, Wiagustini, Abundanti, (2018), by conducting research on the determinants of ROA profitability as endogenous variables and NPL, CAR, BOPO as exogenous variables where the results each have a significant effect.

### Hypothesis

- [1] There is a partial effect of the Cost Ratio (BOPO) on the Capital Adequacy Ratio (CAR) of banking companies listed on the Indonesia Stock Exchange.
- [2] There is a partial influence of the Net Interest Margin (NIM) on the Capital Adequacy Ratio (CAR) of banking companies listed on the Indonesia Stock Exchange.
- [3] There is a partial influence of the Loan to Deposit Ratio (LDR) on the Capital Adequacy Ratio (CAR) of banking companies listed on the Indonesia Stock Exchange.
- [4] There is a partial influence of Non Performing Loans (NPL) on the Capital Adequacy Ratio (CAR) of banking companies listed on the Indonesia Stock Exchange.
- [5] There is a partial effect of inflation on the Capital Adequacy Ratio (CAR) of banking companies listed on the Indonesian Stock Exchange.
- [6] There is an influence of all exogenous variables together on the Capital Adequacy Ratio (CAR) of banking companies listed on the Indonesia Stock Exchange.
- [7] There is a partial effect of the Cost Ratio (BOPO) on the Return On Assets (ROA) of



- banking companies listed on the Indonesia Stock Exchange.
- [8] There is a partial effect of the Net Interest Margin (NIM) on the Return On Assets (ROA) of banking companies listed on the Indonesia Stock Exchange.
  - [9] There is a partial influence of the Loan to Deposit Ratio (LDR) on the Return On Assets (ROA) of banking companies listed on the Indonesia Stock Exchange.
  - [10] There is a partial effect of Non Performing Loans (NPL) on the Return On Assets (ROA) of banking companies listed on the Indonesia Stock Exchange.
  - [11] There is a partial effect of inflation on the Return On Assets (ROA) of banking companies listed on the Indonesia Stock Exchange.
  - [12] There is a partial influence of the Capital Adequacy Ratio (CAR) on the Return On Assets (ROA) of banking companies listed on the Indonesia Stock Exchange.
  - [13] There is an influence of all exogenous variables together on the Return On Assets (ROA) of banking companies listed on the Indonesia Stock Exchange

### 3. Research Methods

Qualitative and quantitative descriptive in this study used time series and cross-section data with the multiple regression panel data analysis method using a combination of time series data from 2011 to 2018 or for 8 years and cross-section data of public banking companies on the Indonesia Stock Exchange (IDX) with a population of 29 banking companies. The size of the population will be taken as a research sample using purposive sampling.

Conceptually, the research variables are used in two research models with a total of seven variables. Variable-1, Cost Ratio/BOPO which is the level of bank efficiency in managing costs and income. Variable-2, Net Interest Margin (NIM) as the ratio between interest income to the difference between Average Interest and Earning Assets. Variable-3, Loan to Deposit Ratio/LDR is how big the Total Credit Distribution is to the Total Third Party Funds. Variable-4, Non-Performing Loans/NPL is the extent to which non-performing loans occur in the total credit distribution. Variable-5, Rate of Inflation is an increase in the prices of goods and services in general and continuously within a certain period of time. An increase in the price of just one or two goods cannot be called inflation unless the increase is widespread or results in an increase in the price of other goods. Variable-6, Capital Adequacy Ratio/CAR which is a ratio that shows how much all bank assets that contain risk (loans, investments, securities, claims on other banks) are also financed from own capital funds in addition to obtaining funds from other sources outside the bank, such as funds from the public, loans, and others. CAR is an indicator of a bank's ability to cover the decline in its assets as a result of bank losses caused by risky assets. Variable-7, Return On Assets (ROA) is the ratio used to measure the ability of bank management to gain overall profits.

Among the seven variables above, variable-1 to variable-5 are Exogenous Variables (variable X) while Endogenous Variable (variable Y) functions as an intervening variable which is variable-6, Capital Adequacy Ratio (CAR). As for variable-7, Return On Assets (ROA) as variable Z which is the main variable of the research problem. By using purposive sampling as a research sampling method, 20 banking companies were produced to be used as research samples. The operational variables used in this study are



as shown in table 1 below.

Table 1  
 Operational Variables

1	Cost Ratio/BOPO (X <sub>1</sub> )	$\frac{\text{Bank Operational Costs}}{\text{Bank Operating Income}} \times 100\%$
2	Net Interest Margin/NIM (X <sub>2</sub> )	$\frac{\text{Interest Income}}{\text{Average Interest – Earning Assets}} \times 100\%$
3	Loan to Deposit Ratio/LDR (X <sub>3</sub> )	$\frac{\text{Total Credit Distribution}}{\text{Total Third Party Funds}} \times 100\%$
4	Non Performing Loan/NPL (X <sub>4</sub> )	$\frac{\text{Total Non – Performing Loans}}{\text{Total Credit Distribution}} \times 100\%$
5	Rate of Inflation (X <sub>5</sub> )	$\frac{\text{CPI}_{(t)} - \text{CPI}_{(t-1)}}{\text{CPI}_{(t-1)}} \times 100\%$
6	Capital Adequacy Ratio/CAR (Y)	$\frac{\text{Tier 1 Capital} + \text{Tier 2 Capital}}{\text{Risk Weighted Assets}} \times 100\%$
7	Return on Assets/ROA (Z)	$\frac{\text{Net Income}}{\text{Total Assets}} \times 100\%$

**Panel Data Regression Estimation**

Approaches that can be taken in conducting multiple regression analysis of panel data are:

- *Common Effect Model*, using structural equations which can be formulated as follows:

$$Y_{i,t} = \alpha + \beta X_{i,t} + \epsilon_{i,t}; i = 1, 2, \dots, N; t = 1, 2, \dots, T$$

- *Fixed Effect Model*, mathematically the structural equation can be formulated as follows:

$$Y_{it} = \alpha + \beta X_{it} + \dots + \gamma_2 W_{2t} + \gamma_3 W_{3t} + \dots + \gamma_N W_{NT} + \sigma_2 Z_{it} + \sigma_3 Z_{i3} + \dots + \sigma_T Z_{iT} + \epsilon_{it}$$

Where :

Y<sub>it</sub> : Endogenous variable for individual “i” and time “t”.

X<sub>it</sub> : Exogenous variable for individual “i” and time “t”.

W<sub>it</sub> : Is a dummy variable

Where, W<sub>it</sub> = 1 for individual “i”, i = 1, 2, ...N and a value of 0 for the others

Z<sub>it</sub> : Is a dummy variable, where Z<sub>it</sub> = 1 for period t, t = 1, 2, ...T and a value of 0 for the others

- *Random Effect Model*, The structural equation in this model approach can be formulated as follows:

$$Y_{it} = \alpha + \beta X_{it} + \epsilon_{it}; \epsilon_{it} = U_i + V_t + W_{it}$$

Where :

Y<sub>it</sub> : Endogenous variable for individual “i” and time “t”.

X<sub>it</sub> : Exogenous variable for individual “i” and time “t”.



- 42  $U_i$  : error cross section
- $V_t$  : error time series
- $W_{it}$  : combined error

### Model Selection Test

#### Chow Test

The Chow test (F-statistic) is used to choose between the Common Effect model or the Fixed Effect model. The basis for accepting or rejecting the null hypothesis between the two models above is to compare F-statistical calculations with F-tables. If the results of F count > from F table at level  $\alpha = 5\%$  then reject the null hypothesis ( $H_0$ ) and accept the alternative hypothesis ( $H_a$ ) which means that the correct model to use is the Fixed Effect Model, and vice versa and then formulated:

$$CHOW = \frac{(RRSS - URSS)/N - 1}{URSS/(NT - N - K)}$$

9  
Where :

- RRSS : restricted residual sum square
- URSS : unrestricted residual sum square
- N : number of cross-sectional data
- T : number of time series data
- K : number of explanatory variables

28  
Test Criteria : F count < F table  $H_0$  is accepted and  $H_a$  is rejected  
F count > F table  $H_0$  is rejected and  $H_a$  is accepted

#### 31 Hausman test

The Hausman test is used to choose between the Fixed Effect Model or the Random Effect Model. This Hausman test statistic follows the distribution of the Chi-Square statistic with a degree of freedom of k, where k is the number of independent variables. The test will use the Random Effect Model if the results accept the null hypothesis ( $H_0$ ) and reject the alternative hypothesis ( $H_a$ ), but instead use the Fixed Effect Model if it rejects the null hypothesis ( $H_0$ ) and accepts the alternative hypothesis ( $H_a$ ).

#### 23 Lagrange Multiplier Test (LM)

The Lagrange Multiplier Test (LM) is used to choose between the Common Effect Model or the Random Effect Model which is based on the Chi-Squares distribution with a degree of freedom equal to the number of independent variables. If the LM statistic > Chi-Squares statistic, the decision is Random Effect Model if it rejects the null hypothesis ( $H_0$ ) and accepts the alternative hypothesis ( $H_a$ ), otherwise it uses the Common Effect Model with a statistical LM value < Chi-Squares statistic so it will accept the null hypothesis ( $H_0$ ) and reject the alternative hypothesis ( $H_a$ ).

Statistical LM values can be calculated using the following formula:



$$LM = \frac{nT}{2(T-1)} \left[ \frac{\sum_{i=1}^n (\sum_{t=1}^T \bar{e}_{it})^2}{\sum_{i=1}^n \sum_{t=1}^T e_{it}^2} - 1 \right]^2$$

Where :

- n : Number of individuals or companies
- T : Number of time periods
- $\sum \bar{e}^2$  : Sum of mean squared residuals
- $\sum e^2$  : Sum of squared residuals

**Panel Data Regression Model**

Structural equation in the first model, CAR variable as intervening.

$$CAR_{it} = \beta_1 BOPO_{it} + \beta_2 NIM_{it} + \beta_3 LDR_{it} + \beta_4 NPL_{it} + \beta_5 INF_{it} + \epsilon_{it}; \dots\dots\dots(1)$$

$i = 1, 2, \dots, N ; \quad t = 1, 2, \dots, T$

Structural Equation in the Second Model, Its Implications for Return on Assets (ROA).

$$ROA_{it} = \alpha + \beta_1 BOPO_{it} + \beta_2 NIM_{it} + \beta_3 LDR_{it} + \beta_4 NPL_{it} + \beta_5 INF_{it} + \beta_6 CAR_{it} + \epsilon_{it}; \dots\dots(2)$$

$i = 1, 2, \dots, N ; \quad t = 1, 2, \dots, T$

Where:

- BOPO = Cost Ratio
- NIM = Net Interest Margin
- LDR = Loan to Deposit Ratio
- NPL = Non Performing Loan
- INF = Inflation
- CAR = Capital Adequacy Ratio (CAR)
- ROA = Return On Assets
- $\epsilon$  = Error component
- $\beta$  = Slope
- $\alpha$  = Intercept
- N = The number of observations
- T = The amount of time
- N x T = Number of panel data

**4. Research Results**

**A. Testing the Suitability of the First Research Model Capital Adequacy Ratio (CAR) as an Endogenous Variable**

*Chow Test: Common Effect vs Fixed Effect*

Table 2  
 Chow Test:  
*Common Effect vs Fixed Effect*  
 Endogenous Variable: Capital Adequacy Ratio (CAR)

Effects Test	Statistic	d.f.	Prob.
Cross-section F	17.561613	(28,198)	0.0000





	204.08798		
Cross-section Chi-square	4	28	0.0000

In table-2, we will accept alternative hypotheses ( $H_a$ ) and reject null hypotheses ( $H_0$ ) so that in the Chow-Test it would be better to use the Fixed Effect Model for use in estimating the panel data regression method.

**Hausman Test: Fixed Effect vs Random Effect**

**Table 3**  
**Hausman Test:**  
*Fixed Effect vs Random Effect*  
 Endogenous Variable: Capital Adequacy Ratio (CAR)

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	43.323495	5	0.0000

In table-3 will accept alternative hypotheses ( $H_a$ ) and reject null hypotheses ( $H_0$ ) so that the Hausman Test it would be better to use the Fixed Effect Model for use in estimating the panel data regression method.

Among the results of the Chow Test and Hausman Test hypotheses are the same results, the Fixed Effect Model, so that further testing of the Lagrange Multiplier Test (LM) does not need to be tested.

*Results of Paired Conformity Test of Research Model I*

Table 4

No	Method	Testing	Results
1	<i>Chow-Test</i>	Common Effect vs Fixed Effect	Fixed Effect
2	<i>Hausman Test</i>	Fixed Effect vs Random Effect	Fixed Effect

**B. Endogenous Variable Capital Adequacy Ratio (CAR) in the First Research Model**



Table 5  
 Fixed Effect Model

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	0.578807	0.052871	2.764551	0.0001
BOPO	-0.021248	0.034155	-0.213062	0.6644
NIM	0.017316	0.012210	4.326621	0.0000
LDR	0.005575	0.003576	1.025943	0.2193
NPL	-0.031861	0.001314	-7.643795	0.0000
INF	0.032825	0.005421	3.405678	0.0005

  

Weighted Statistics			
R-squared	0.658231	Mean dependent var	0.167913
Adjusted R-squared	0.675190	S.D. dependent var	0.189923
S.E. of regression	0.046570	Sum squared resid	0.656221
F-statistic	42.94582	Durbin-Watson stat	1.599214
Prob.(F-statistic)	0.000000		

**C. First Model Research Results**

- [1] The results of testing the first hypothesis partially using the t-test show that the Cost Ratio (BOPO) variable has no significant effect on the Capital Adequacy Ratio (CAR).
- [2] Partial testing of the second hypothesis using the t-test shows that the Net Interest Margin (NIM) variable has a significant effect with a positive correlation to the Capital Adequacy Ratio (CAR).
- [3] Partial testing of the third hypothesis using the t-test shows that the Loan to Deposit Ratio (LDR) variable has no significant effect on the Capital Adequacy Ratio (CAR).
- [4] Partial testing of the fourth hypothesis using the t-test shows that the Non Performing Loan (NPL) variable has a significant effect with a negative correlation to the Capital Adequacy Ratio (CAR).
- [5] Partial testing of the fifth hypothesis using the t-test shows that the inflation variable (INF) has a significant effect with a positive correlation to the Capital Adequacy Ratio (CAR).
- [6] Testing the sixth hypothesis together using the F-test shows that all exogenous variables have a significant effect on the Capital Adequacy Ratio (CAR) with Adjusted R-squared 67.5%.

**D. Testing the Conformity of the Second Research Model Return On Assets (ROA) as an Endogenous Variable**

*Chow Test: Common Effect vs Fixed Effect*

Table 6  
 Chow Test:  
*Common Effect vs Fixed Effect*  
 Endogenous Variable: Return On Assets (ROA)



Effects Test	Statistic	d.f.	Prob.
Cross-section F	16.921096	(28,197)	0.0000
Cross-section Chi-square	112.46576	4	28 0.0000

In table-6 will accept alternative hypotheses ( $H_a$ ) and reject null hypotheses ( $H_0$ ) so that in the Chow-Test it would be better to use the Fixed Effect Model for use in estimating the panel data regression method.

**Hausman Test: Fixed Effect vs Random Effect**

Table 7  
 Hausman Test:  
 Fixed Effect vs Random Effect  
 Endogenous Variable: Return On Assets (ROA)

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.250128	6	0.9013

In table-7 will accept the null hypotheses ( $H_0$ ) and reject the alternative hypotheses ( $H_a$ ) so that in the Chow-Test the second research model will be better off using the Random Effect Model in estimating the panel data regression method.

**Lagrange Multiplier (LM-test)**

Tabel 8  
 Lagrange Multiplier (LM-Test) Breusch-Pagan  
 Common Effect vs Random Effect  
 Endogenous Variable: Return On Assets (ROA)

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	693.6371 (0.0000)	0.018300 (0.8797)	691.6463 (0.0000)
*Mixed chi-square asymptotic critical values:			
	1%	7.289	
	5%	4.321	
	10%	2.952	

The results of the LM Breusch-pagan (BP) hypothesis test rejected the null hypothesis ( $H_0$ ) and accepted the alternative hypothesis ( $H_a$ ), so that this second research model would be better off using the Random Effect Model in estimating the panel data regression method.

**Results of the Paired Conformity Test of the Research Model II**



Table 9

No	Method	Testing	Result
1	Chow-Test	Common Effect vs Fixed Effect	Fixed Effect
2	Hausman Test	Fixed Effect vs Random Effect	Random Effect
3	Lagrange Multiplier	Common Effect vs Random Effect	Random Effect

**E. Endogenous Variable Return On Assets (ROA) in the Second Research Model**

Table 10  
 Random Effects Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.356123	0.059701	-5.354172	0.0000
BOPO	-0.009431	0.021100	-0.660195	0.4375
NIM	0.015104	0.006892	2.823071	0.0071
LDR	0.008331	0.004616	1.762591	0.0876
NPL	-0.004378	0.001037	-2.645435	0.0067
INF	0.014007	0.003482	5.317673	0.0000
CAR	0.381032	0.074803	5.557796	0.0000

  

Specifications Effects		S.D.	Rho
Cross-section random		0.046656	0.3714
Idiosyncratic random		0.060557	0.6286

  

Weighted Statistics			
R-squared	0.804104	Mean dependent var	0.212856
Adjusted R-squared	0.779104	S.D. dependent var	0.268987
S.E. of regression	0.001237	Sum squared resid	1.481496
F-statistic	153.8393	Durbin-Watson stat	1.426422
Prob(F-statistic)	0.000000		

**F. Second Model Research Results**

- [7] The results of testing the seventh hypothesis partially using the t-test show that the Cost Ratio (BOPO) variable has no significant effect on Return On Assets (ROA).
- [8] Partial testing of the eighth hypothesis using the t-test shows that the Net Interest Margin (NIM) variable has a significant effect with a positive correlation to Return On Assets (ROA).
- [9] results of testing the ninth hypothesis partially using the t-test show that the Loan to Deposit Ratio (LDR) variable has no significant effect on Return On Assets (ROA).
- [10] Partial testing of the tenth hypothesis using the t-test shows that the variable Non Performing Loans (NPL) has a significant effect with a negative correlation to Return On Assets (ROA).



- [11] Partial testing of the eleventh hypothesis using the t-test shows that the Inflation (INF) variable has a significant effect with a positive correlation to Return On Assets (ROA).
- [12] Testing the twelfth hypothesis partially by using the t-test shows that the variable Capital Adequacy Ratio (CAR) has a significant effect with a positive correlation to Return On Assets (ROA).
- [13] Testing the thirteenth hypothesis together using the F-test shows that all exogenous variables have a significant effect on Return On Assets (ROA) with Adjusted R-squared 77.9%.

## 5. Conclusion

Partially exogenous variables Net Interest Margin (NIM), Non Performing Loan (NPL), Inflation (INF) each have a significant effect on the Capital Adequacy Ratio (CAR) with the highest level of sensitivity on the variable inflation (INF), while the Cost Ratio (BOPO) and Loan to Deposit Ratio (LDR) have no significant effect on Capital Adequacy Ratio (CAR). The use of exogenous variables in the CAR determinant can explain 67.5% with the results of the F-test having a significant effect.

Return On Assets (ROA) as an endogenous variable, partially exogenous variables, Net Interest Margin (NIM), Non Performing Loans (NPL), Inflation (INF), and Capital Adequacy Ratio (CAR) each have a significant effect on Return On Assets (ROA) with the highest level of sensitivity to CAR and as an intervening variable can function to mediate the effect on Return on Assets (ROA). In the use of all exogenous variables and ROA as endogenous variables, the results of the effect can be explained by 77.9% and the results of the F-test have a significant effect.

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