

# Influence of Capital Adequacy Ratio, Net Interest Margin and liquidity Ratio against Profitability Ratio

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This study was conducted to determine the extent to which ROA can be measured by CAR, NIM and LDR. The selected sector is a bank listed on the Indonesia Stock Exchange during the period of 2013-2017, where sampling is carried out according to the purposive sampling method so that only 10 banks were sampled during the study period. From the processing of the data obtained, CAR, NIM and LDR together have an effect on ROA, while partially there are no influential variables.

**Key words:** *CAR, NIM, LDR and ROA.*

## Introduction

Banking in accordance with its function, namely institutions that mediate parties who need funds with parties who have excess funds, can help improve the economy of a country. Indonesia, which is a developing country, has good prospects going forward in the economy, one of the reasons for this is the good performance of Indonesian banks. This is proven by the ever increasing number of new bank offices during the period of 2010 to 2017.

**Table 1:** Number of Bank Offices the period 2010 to 2017

Rincian	2010	2011	2012	2013	2014	2015	2016	2017
<b>Bank-Bank Umum</b>								
<b>Bank Persero</b>								
Jumlah bank	4	4	4	4	4	4	4	4
Jumlah kantor bank	4 189	14 145	15 632 <sup>r</sup>	16 637	17 430 <sup>r</sup>	17 809	18 106	18 262
<b>Bank Pemerintah Daerah</b>								
Jumlah bank	26	26	26	26	26	26	26	27
Jumlah kantor bank	1 413	1 472	2 802 <sup>r</sup>	3 254 <sup>r</sup>	3 524 <sup>r</sup>	3 781	3 926	4 130
<b>Bank Swasta Nasional</b>								
Jumlah bank	57	56	56	56	56	55 <sup>r</sup>	52	50
Jumlah kantor bank	6 526	7 108	9 275 <sup>r</sup>	9 465 <sup>r</sup>	9 226 <sup>r</sup>	9 052	8 384	7 680
<b>Bank Umum Syariah</b>								
Jumlah bank	11	11	11	11	12	12	13	13
Jumlah kantor bank <sup>1</sup>	1 215	1 390	1 734	1 987	2 163	1 990	1 869	1 825
<b>Bank Asing dan Campuran</b>								
Jumlah bank	24	23	23	23	21	21 <sup>r</sup>	21	21
Jumlah kantor bank	494	465	502 <sup>r</sup>	504 <sup>r</sup>	396 <sup>r</sup>	331	445	388
<b>Jumlah</b>								
<b>Bank</b>	122	120	120	120	119	118	116	115
<b>Kantor bank</b>	13 837	24 580	29 945 <sup>r</sup>	31 847 <sup>r</sup>	32 739 <sup>r</sup>	32 963	32 730	32 285
Catatan : <sup>r</sup> Angka Diperbaiki								
<sup>1</sup> Tidak Termasuk Gerai Muamalat								
Sumber : Statistik Perbankan Indonesia, Vol.15 No.1 Desember 2016, Otoritas Jasa Keuangan								
Dikutip dari Publikasi Statistik Indonesia								

**Source:** Indonesian Banking Statistics, Vol. 15 No. December 1, 2016, the Financial Services Authority

Banking financial performance can also be seen from financial statements for a certain period. In the financial statements will be listed profits generated during one period, this is a reflection of the results of banking performance. Good banking performance will produce a good level of profit, where it is supported by sufficient capital owned by the bank, productive assets owned and how the bank is able to channel funds to the public, in other words if banks can channel funds to the public effectively then the profits that can be generated by the bank will be large. As of September 2018, or the third quarter, profitability has experienced a slowdown in almost all existing banks, but this does not apply to BRI banks, BCA and OCBC NISP banks. 33 bps (basis points) yoy while 2018 only increased by 5 bps yoy. While in the same period the capital adequacy ratio was 23.03%, net interest margin was at 5.14%, down from the previous 5.35% and loan to debt ratio of 93%, as compared to the following are the movements for each research variable:

**Table 2:** Development of Research Variables

	2015	2016	2017
CAR	19.57	21.39	23.80
NIM	4.23	5.39	5.32
LDR	89.42	92.11	90.04
ROA	2.85	2.32	2.45

**Source:** OJK Data Processed

The phenomenon that occurs is a decrease in profitability which is proxied by the ROA variable in 2015 towards 2016 where at the same time the capital adequacy ratio described by the CAR has increased, so also in the same period the movement between Asset Quality proxied with NIM has increased but has not been followed by an increase in profitability which is proxied by the ROA variable and finally still in the same period. It can be seen that the liquidity movement projected with the LDR increases but is not followed by the movement of profitability which is proxied by the ROA variable.

Based on the above explanation, then the problems in this study are formulated as follows:

1. CAR, NIM and LDR have a joint effect on ROA.
2. CAR, NIM and LDR partially affects ROA.

## Literature Review

### *Capital Adequacy Ratio (CAR)*

Capital adequacy is a very important thing for banks to carry out its operational activities or to develop the company. In this case the bank must believe that the capital owned is sufficient in quantity and quality. According to Kasmir (2012), this ratio can illustrate how the bank develops its business and also manages losses that may arise due to the banking operations themselves. In this case, it explains that the more capital collected by the bank, the smoother the bank's operations can run. According to Kuncoro and Suhardjono (2011) this ratio shows how banks manage capital adequately and manage their management capabilities in identifying, measuring, monitoring, and controlling risks that arise and it is possible to influence the amount of bank capital. So it can be concluded that the CAR ratio is a tool to measure the ability of banks to cover part of the losses experienced by banks in supporting risk-bearing assets. If the value of the CAR ratio gets higher, then a bank will be less likely to experience a risk of loss, but if the value of the CAR ratio is low then the risk of loss that is likely to be experienced by the bank is higher. Calculation of this ratio if referring to Bank Indonesia Circular Letter No.3 / 30 / DPNP dated December 14, 2001 is written as follows:

$$\text{CAR} = \frac{\text{Modal}}{\text{Aktiva Tertimbang Menurut Risiko (ATMR)}} \times 100\%$$

### ***Net Interest Margin (NIM)***

Talattov and Sugiyanto (2011) argues that the NIM is the difference in deposit interest (third party funds) with the loan interest. And according to Riyadi (2006), NIM is a comparison between Interest Income (bank interest income earned) minus Interest Expenses (bank interest costs that are a burden) divided by Average Interest Earning Assets (average earning assets used). This ratio describes the level of the amount of net interest income obtained using productive assets owned by the bank. So, it can be seen that the increase in NIM means that the interest income generated by the bank's earning assets also increases which means that the bank will be less likely to experience problematic conditions. Criteria that can measure this ratio by the standards set by the Bank of Indonesia for the NIM ratio are 6% and above. Calculation of this ratio can be written according to the Bank of Indonesia Circular Letter No.13 / 24 / DPNP dated October 25, 2011 as follows:

$$\text{Net Interest Margin} = \frac{\text{pendapatan Bunga Bersih}}{\text{Outstanding Credit}} \times 100\%$$

### ***Loan to Deposit Ratio (LDR)***

Loan to Deposit Ratio (LDR) is a ratio that measures the ability of banks to channel third party funds. In other words, if the bank can channel funds effectively and efficiently then the profits to be generated will be greater. While according to Pandia (2012), Loan to Deposit Ratio is a ratio that states how far the bank has used deposit money to provide loans to its customers. However, according to Rivai (2013) the Loan to Deposit Ratio measures the extent to which banks can repay funds withdrawals made by customers by utilizing loans given to the community so that they can help banks meet customer requests that will withdraw funds that have been channelled in the form of loans by banks. The LDR value is higher; it will give an indication of the low ability of the liquidity of the bank concerned. The LDR measures the extent of the bank's ability to repay funds withdrawals made by relying on loans provided as a source of liquidity. The criteria for this ratio is set according to the Bank of Indonesia Circular Letter No.17 / 17 / DKMP / 2015 that evaluates the criteria for healthy banks having a value above 78% and below 92%. If it exceeds the upper standard or lower standard, the bank is said to be unhealthy and the calculation can be formulated as follows:

$$\text{Loan to Deposit Ratio (LDR)} = \frac{\text{Kredit}}{\text{DPK} + \text{Surat Berharga yang Diterbitkan}} \times 100\%$$

### ***Return on Asset (ROA)***

This ratio measures the company's ability to generate profits, the company is considered successful if it has large profits, so profits become the main concern of investors. According to Kasmir (2008) this ratio describes the results of a number of assets that have been used by the company to get profits. Sudana (2011) argues that "Return on Assets (ROA) shows the ability of a company by using all assets owned to generate profit after tax". Calculation of Return on Assets (ROA) according to Syamsudin (2009) is:

$$\text{Return on Assets (ROA)} = \frac{\text{Net Profit After Tax}}{\text{Total Assets}}$$

### **Research Methods**

This study uses descriptive and verificative research methods, the definition of descriptive methods according to Sugiyono (2012) is a method used to describe or analyze a research result but is not used to make broader conclusions.

### **Population and Sample**

#### ***Population***

Population is all things that are related to researchers for further research. According to Sugiyono (2011) it is a description of the area both the subject and general objects that have certain qualities and characteristics used by researchers to be processed and produce conclusions. The population in this study are all financial statements of banking annuities listed on the Indonesia Stock Exchange (IDX) in 2013 to 2017 for 5 years.

#### ***Sample***

From the population in this study samples can be drawn. Understanding the sample according to Sugiyono (2011) states that: "The sample is a part or number of characteristics possessed by the population. If the population is large, and researchers are not likely to learn all that is in the population, for example due to limited data, energy and time, the researcher will take samples from that population. What is learned from the sample, the conclusions will be applied to the population. For this reason, samples taken from the population must be truly representative." The sampling technique in this study used the Non-Probability Sampling technique. According to Sugiyono (2012), Non Probability Sampling is sampling that does not provide equal opportunity or opportunity for each element or member of the population to be selected as a sample. In this study the Non-Probability Sampling technique used is Purposive Sampling. The criteria used by the author is banks that have the greatest

profitability measured through ROA until the third quarter of 2018 as quoted from [kontan.co.id](http://kontan.co.id), where data on only 10 banks was obtained, namely BRI, Bank Mandiri, BCA, BNI, BTN, CIMB Niaga Bank, Panin Bank, Bank OCBC NISP, Maybank Indonesia and Bank Permata are sorted by total bank assets only.

### ***Panel Data Regression Analysis***

The panel data is a combination of cross section data and time series data that will form the Winarno (2015) panel data and pool data. It can be concluded that the data analysis method used in this study is panel data regression; where previously the model selection was done through Chow Test, Hausman Test and Lagrange Multiplier test. After getting the best model, the hypothesis test is done through testing the model (Test F), testing the coefficient of determination (R<sup>2</sup>) and testing partially (Test t).

### **Discussion**

After selecting the model with the Chow test, and the Hausman test, the two tests shows the same results that the best model used to answer the hypothesis stated earlier is the Fixed Effect Model, so there is no need to re-test the Lagrange Multiplier. The next step is to ensure that the data is indeed feasible to do further research by testing the normality of the data where the results obtained indicate that the existing data has already passed the classical assumption test which means that the data is indeed feasible for further research to answer the hypothesis.

**Table 3:** Hypothesis Test based on Fixed Effect Model

Dependent Variable: ROA

Method: Panel Least Squares

Date: 06/23/19 Time: 23:48

Sample: 2013 2017

Periods included: 5

Cross-sections included: 10

Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAR	-0.079928	0.068547	-1.166025	0.2511
NIM	0.165376	0.435286	0.379924	0.7062
LDR	0.078302	0.059147	1.323841	0.1937
C	-4.387985	5.839311	-0.751456	0.4571
	Effects Specification			

Cross-section fixed (dummy variables)			
R-squared	0.698209	Mean dependent var	2.128800
Adjusted R-squared	0.600331	S.D. dependent var	1.503390
S.E. of regression	0.950434	Akaike info criterion	2.955099
Sum squared resid	33.42302	Schwarz criterion	3.452225
Log likelihood	-60.87747	Hannan-Quinn criter.	3.144407
F-statistic	7.133454	Durbin-Watson stat	2.479482
Prob(F-statistic)	0.000002		

**Source:** output eviews 9

Based on the data above, it can be seen that for the model test (F test) the significance results are 0.0000, which is still below the alpha level of 0.05, so it can be concluded the hypothesis that CAR, NIM and LDR have an effect on ROA is acceptable; where the ROA variable can be explained by the variables CAR, NIM and LDR of 60%, and the remaining 40% by variables not included in the variables studied. Meanwhile, for t-testing the results are as follows:

• ***Effect of CAR on ROA***

Based on the results of the t test on the regression model, the significance value of the CAR variable is  $0.2511 > 0.05$  (significance level). Besides that, it can also be seen from the results of the comparison between  $t_{count}$  and  $t_{table}$  which shows the value of  $t_{count}$  of -1.1660 while  $t_{table}$  is 2.010. From these results it can be seen that  $t_{count} < t_{table}$  is  $-1.1660 > -2.010$ . Then it can be concluded that  $H_1$  is rejected, meaning that the CAR variable does not significantly influence the ROA variable.

• ***Effect of NIM on ROA***

Based on the results of the t test on the regression model, the significance value of the NIM variable was  $0.7062 > 0.05$  (significance level). Besides that, it can also be seen from the results of the comparison between  $t_{count}$  and  $t_{table}$  which shows the value of  $t_{count}$  of 0.3799 while the  $t_{table}$  is 2.010. From these results it can be seen that  $t_{count} < t_{table}$  is  $0.293334 < 2.010$ . Then it can be concluded that  $H_2$  is rejected, meaning that the NIM variable does not significantly influence the ROA variable.

• *The Effect of LDR on ROA*

Based on the results of the t test on the regression model, the LDR variable significance value was  $0.1937 < 0.05$  (significance level). Besides that, it can also be seen from the results of the comparison between  $t_{\text{count}}$  and  $t_{\text{table}}$  which shows the value of  $t_{\text{count}}$  equal to 1.3238 while the table is 2.010. From these results it can be seen that  $t_{\text{count}} < t_{\text{table}}$  is  $1.3238 < 2.010$ . Then it can be concluded that  $H_3$  is rejected, meaning that the LDR variable does not significantly influence the ROA variable.

### Conclusions and Recommendations

Based on the results of hypothesis testing conducted by the authors, it can be concluded that together the CAR, NIM and LDR variables have a significant effect on ROA, on registered banks during the period of 2013 - 2017. While partially none of the independent variables have a significant effect on ROA in registered banks during the period of 2013 - 2017. Based on the results of the research and the conclusions that have been presented, the researcher tries to give suggestions that are expected to be useful, as follows (Kamarudin et al., 2019):

1) For Banking

Indicators that attract investors in addition to the rate of return must also be considered by banks. The level of CAR, NIM and LDR is not an absolute thing that can increase the level of income obtained through the bank's own capital. Banking must also improve its performance outside of these variables.

2) For Investors

Based on the conditions seen, even though the CAR, NIM and LDR variables have no effect, investors should consider these variables, because it is important to remember that the largest capital owned by banks is from the public through deposits, which means that the capital is used by banks to obtain profits.

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