

# The Effect of Financial Ratios on Profitability of Commercial Bank Based on Business Activities (BUKU) IV Banks in Indonesia

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**ABSTRACT:** *This study aimed to test the effect of CAR, LDR, NIM, NPL, and OEOI on ROA. This study was in the form of associative research and used a quantitative approach. The sample selected from the population was banks that were included in the BUKU 4 category and were listed on the IDX for the 2015-2019 periods. The type of data used in this study was panel data (panel pooled data). The analysis technique used was panel regression. The results show that CAR, OEOI ratios have a significant negative effect on profitability with the proxy of ROA, NIM has a significant positive effect on ROA, while LDR and NPL do not have a significant effect on ROA at BUKU IV Banks in the 2016 – 2019 periods. Based on these results, the banks that are the research samples, especially BUKU IV Banks need to increase NIM and maintain the ability of CAR and OEOI in order to generate higher profits. Furthermore, it is also necessary to carry out further research with comparison between BUKU IV and III Banks.*

**KEYWORDS** - CAR, LDR, NIM, NPL, OEOI, ROA, Buku IV Banks

## I. INTRODUCTION

Banking performance can be seen from several indicators, where one of the important indicators used as a basis for assessment is the bank's financial performance, whose components are listed in the financial statements. Return on Asset (ROA) is one of ratio profitability that can measure the company's ability to generate profits from the assets used. ROA can measure the company's ability to generate profits in the past to (then) be projected in the future. ROA describes the extent to which the company's assets can generate profits (Tandelilin, 2010, p. 372). ROA is the ratio used to measure the ability of company management to gain overall profits. The greater the ROA of a company, the greater the level of profits achieved by the company and the better the position of the company in terms of asset use (Sawir, 2005, p. 18).

Based on the trend of realization of ROA for commercial banks during 2015 to 2019, it showed that the lowest performance was in 2019 – compared to the previous 2 periods (2017 and 2018) – which occurred in all bank groups (BUKU I to BUKU IV). The following is the realization of ROA for commercial banks based on the BUKU group in 2015-2019:

**Table 1 Realization of ROA for Commercial Banks by Business Activity (BUKU) Group  
Period 2015 - 2019**

ROA	2015	2016	2017	2018	2019
BUKU I	1,69%	1,43%	1,49%	1,39%	1,17%
BUKU II	1,62%	1,66%	1,57%	1,54%	1,42%
BUKU III	1,25%	1,41%	1,77%	1,82%	1,72%
BUKU IV	3,53%	3,10%	3,15%	3,29%	3,14%

**Source: Indonesian Banking Statistics, Volume 18 No. 01**

What is interesting is that the decline/decrease in ROA also occurred in the BUKU IV banks group, although this group has consistently recorded asset growth of over 2 digits for the last 4 years. In addition to the BUKU IV banks group, asset growth also consistently occurred in BUKU II banks but in the last 2 periods there was a decline in ROA as was the case with BUKU I banks. Whereas in BUKU III banks, it recorded a decrease in assets only in 2019 which was accompanied by a decrease in profits achievement only in that year.

Especially for banks in the BUKU IV group – other financial ratios that reflect the bank's performance during the 2015 to 2019 periods are as follows:

**Table 2 Financial Ratios by Business Activity (BUKU) Group IV Period 2015 - 2019**

Ratio	2015	2016	2017	2018	2019
CAR	19,26%	21,24%	21,43%	21,05%	22,37%
NIM	6,36%	6,50%	5,99%	5,78%	5,47%
LDR	85,63%	85,16%	85,96%	89,90%	91,74%
NPL	1,90%	2,55%	2,38%	2,16%	2,23%
OEOI	70,46%	75,05%	70,31%	69,18%	72,97%

Source: Indonesian Banking Statistics, Volume 18 No. 01

Seen from the data movement in 2016, there was a decrease in ROA of 0.43 points which indicates a decrease in the ability of banks to generate profits and is reflected in the decline in profits in 2016 which decreased by 2.94%. This seems in line with other conditions in the form of an LDR (Loan to Deposit Ratio) of 85.16% which decreased by 0.47 points compared to the previous period of 85.63%, OEOI (Operating Expenses to Operating Income) increased by 4.59 points from 70.46% to 75.05% and an increased NPL (Non Performing Loan) of 0.65 points. The opposite happened to the NIM (Net Interest Margin) which increased by 0, 14 points, but in reality it has not been able to increase profits. CAR (Capital Adequacy Ratio) showed an increase in 2017 of 21.43%, in which it shows the bank's ability to overcome risk of loss, even though there was a decrease of 0.38 points in 2018 but it was still above the minimum regulator requirement of 13% (Basel III).

The movement of financial ratio data in 2017 and 2018 showed an increase in ROA to 3.15% and 3.29% or an increase of 0.05 points and 0.19 points respectively compared to the achievement in 2016. This is in line with the increase in BUKU IV banks profits which also showed an increase in LDR to 85.96% (an increase of 0.80 points) and 89.90% (an increase of 4.74 points) compared to 2016; the realization of OEOI showed a decrease to 70.31% (decrease of 4. 74 points) and 69.18% (decrease of 5.87 points) as well as a decrease in NPL to 2.38% (decrease of 0.17 points) and 2.16% (decrease of 0.39 points) with the conclusion that banks are more efficient in managing activities operations. What is interesting to note is the trend of the NIM ratio which continues to show a decline/decrease compared to 2016, which is 5.99% (decrease of 0.51 points) and 5.78% (decrease of 0.72 points), thus means the decline in the ability of earning assets to earn interest income is not in line with the condition of the increasing ability of banks to generate profits.

Whereas in 2019 the ROA ratio decreased by 0. 15 points compared to 2018, namely to 3.14%. This appears to be due to a decrease in NIM by 0.31 points to 5.47% and an increase in the NPL and OEOI ratio to 2.23% and 72.97% (an increase of 0.07 points and 3.79 points), so even though the LDR showed an increase of 1.84 points to 91.74% – it did not increase the overall interest margin.

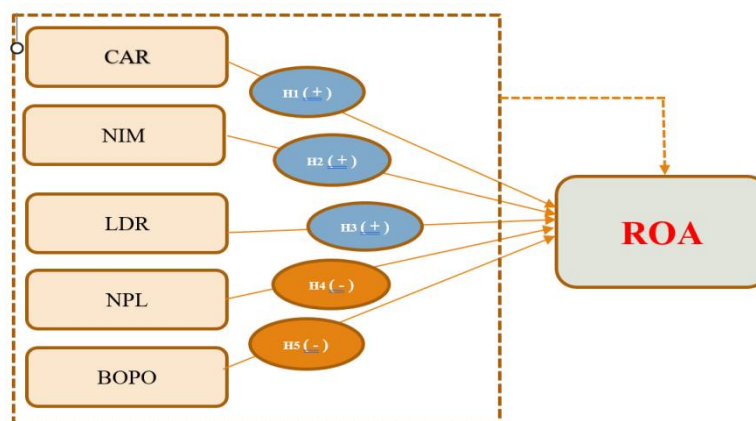
Referring to the ownership of commercial bank assets from 2015 to 2019 which were dominated by BUKU IV banks assets with annual growth which was also dominated by BUKU IV banks, the realization of profits growth in commercial banks in Indonesia is as follows:

**Table 3 Asset and Profit Growth for Commercial Banks in Indonesia 2016 - 2019**

Group	Asset Growth				Profit Growth			
	2016	2017	2018	2019	2016	2017	2018	2019
BUKU I	-24.93%	-29.45%	6.45%	-9,06%	-78.82%	-3.72%	102.68%	-14,24%
BUKU II	7.98%	2.07%	0.11%	9.72%	11.82%	-1.55%	1.01%	3,44%
BUKU III	7.48%	2.48%	11.33%	-3.93%	20.57%	30.40%	18.19%	-8,17%
BUKU IV	14.35%	19.53%	10.33%	12,50%	-2.94%	24.65%	14.33%	9,45%

Source: Indonesian Banking Statistics, Volume 18 No. 01

Considering that commercial banks in the BUKU IV group are the groups that consistently show the highest asset growth during 2015 to 2019 and are the only bank group that posted positive profits growth over the last 3 years, the researcher attempted to conduct a study entitled "The Effect of Financial Ratios on Bank Profitability of Commercial Banks (Empirical Study on Business Activity (BUKU) IV Banks in Indonesia for the 2015-2019 periods)."



Picture 1 Framework

## II. RESEARCH METHOD

This study was in the form of associative research and used a quantitative approach. The ratio used was: First, Return on Assets which formula is profits after tax divided by total assets. Then, the capital adequacy ratio is obtained from the capital divided by the Risk Weighted Asset (RWA) multiplied by 100%. Next, the net interest margin is obtained by dividing the Net Interest Margin (NIM) formula by the earning assets multiplied by 100%. After that, Loan to Deposit Ratio (LDR) which is obtained from credit given is divided by third party funds multiplied by 100%. Last, Operating Expenses to Operating Income (OEOI) is operating expenses divided by operating income multiplied by 100%. The sample selected from the population was banks that were included in the BUKU 4 category and were listed on the IDX for the 2015-2019 periods.

The regression model used in this study is as follows:

$$ROA_{it} = \alpha + \beta_1 CAR_{it} + \beta_2 NIM_{it} + \beta_3 LDR_{it} + \beta_4 NPL_{it} + \beta_5 OEOI_{it} + \epsilon_{it}$$

The regression analysis used was panel regression. Before doing so, it is necessary to determine which model is the most appropriate in estimating the panel data parameters. Tests that must be carried out to get the right model include the Chow and Hausman Test (Widarjono, 2015: 251).

## III. ANALYSIS OF RESEARCH RESULT

Banks which are included in the BUKU IV category are BCA, BNI, BRI, MANDIRI, CIMB NIAGA, and PANIN. The research year used was 5 years. Thus, the total of the observations are 30. The following is a description of the research data on all variables:

Table 4 Description of Banking Research Variables by Business Activity (BUKU) Group IV 2016 - 2019

	ROA	CAR	NIM	LDR	NPL	OEOI
Mean	2.69	20.79	5.91	90.96	0.94	73.58
Median	2.71	21.08	5.61	88.88	0.89	71.39
Maximum	4.19	23.80	8.00	115.26	2.16	97.38
Minimum	0.47	16.28	4.61	77.10	0.20	58.20
Std. Dev.	1.04	1.95	0.98	8.15	0.48	9.76
Observations	30	30	30	30	30	30

Source: Eviews Calculation Result

Table 4 indicates that the average ROA of 6 BUKU IV Banks is 2.69% + 1.04. Then, the CAR value is 20.79% + 1.95%. This CAR value is in accordance with Bank Indonesia regulations, which is at least 8%. Furthermore, the NIM obtains a value of 5.91% + 0.98%. The LDR is 90.96% + 8.15%. This shows that nearly 90% more deposits are channeled for credit. NPL or bad credit parameters obtain a value of 0.94% + 0.48%. This NPL value indicates that bad credit of the total credit channeled is 0.94%. This value is below the standard set by Bank Indonesia. Then, the OEOI value is 73.58% + 9.76%. This value indicates that BUKU IV Banks, which is the research samples, is relatively efficient in using operating income to finance operating expenses.

### 3.1. Selection of Panel Data Estimation Model

The first test that was carried out in this study is to choose the best model among the Pooled Least Square (PLS) models by estimating panel data using the Ordinary Least Square (OLS) and Fixed Effect Model (FEM) methods. If the results of the test obtained a significance value of <0.05, then H0 hypothesis which states the Pooled Least Square (PLS) technique model is the estimation of the Ordinary Least Square (OLS) model is

rejected, and H1 which states that we must use the Fixed Effect Model (FEM) model as an estimation technique in this study is accepted.

After that, the test was proceeded/continued with the Hausman Test model test to choose the best model between the Fixed Effect Model (FEM) and the Random Effect Model (REM). If the significance of the test obtained a significance value of  $<0.05$ , then the H0 hypothesis which states the REM model technique is rejected and H1 which uses the Fixed Effect Model (FEM) model is accepted.

**Table 5 Selection of Panel Data Regression Model Estimation Techniques Between PLS, FEM or REM**

Test	Probability Value	Conclusion the model used
Chow Test	0.0012	FEM
Hausman Test	0,0000	FEM

**Source: Eviews Calculation Result**

The results of the calculations in this study generate a significance value of the Chi-Square test results of the Chow Test count/calculation of 0.0012 which means that it has a FEM model. Then, the results of the Hausman Test, the probability value obtained is  $0.0000 < 0.05$ , therefore the H0 hypothesis is rejected and H1 is accepted, meaning that the selection of the Fixed Effect Model (FEM) is more precise when compared to the Random Effect Model (REM) – in this study.

### 3.2. Panel Data Regression Equation Estimation

The identification of the estimation results of the panel data regression equation in this study is intended to determine the effect of CAR, LDR, NIM, NPL, and OEOI on ROA. The estimation results of the panel data regression equation in this study can be seen in the following table:

**Table 6 Panel Data Regression Results with the FEM Method**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.04967	1.093811	9.187756	0.0000
CAR?	-0.069945	0.019834	-3.526536	0.0023
NIM?	0.185175	0.067470	2.744555	0.0129
LDR?	-0.000552	0.006727	-0.082008	0.9355
NPL?	0.121360	0.102532	1.183632	0.2512
BOPO?	-0.095892	0.007619	-12.58560	0.0000
Fixed Effects (Cross)				
BCA--C	0.000784			
BNI--C	-0.197170			
BRI--C	0.359530			
MANDIRI--C	-0.061446			
NIAGA--C	-0.299531			
PANIN--C	0.197834			
R-squared	0.990695			
Adjusted R-squared	0.985797			
F-statistic	202.2869			
Prob(F-statistic)	0.000000			

**Source: Eviews Calculation Result**

Based on Table 6, it explains that CAR, LDR and OEOI have a negative coefficient of influence, which means that the more the increase in CAR, LDR and OEOI, the lower the profitability of the bank. As for the NIM, NPL variables have a positive effect, which means that the more the increase in NIM and NPL, the higher the bank's ROA. The sign on the regression coefficient is in accordance with the existing theory. The regression equation from the regression model above is as follows:

$$ROA = 10.04967 - 0.069945CAR + 0.185175NIM - 0.000552 LDR + 0.121360 NPL - 0.095892 OEOI$$

The intercept value contained in the variables in the model explains the simultaneously intercept in the model, while the intercept value contained in each bank, explains the intercept for each bank. BRI has the highest intercept value – with value of 0.359530. This means that the ROA at BRI is relatively high compared to other banks. Then, for the negative intercept value, the lowest is in Niaga Bank – with the value of -0.299531.

The results of panel data regression analysis in this study obtained the coefficient of determination (R<sup>2</sup>) which shows the ability of all independent variables simultaneously be able to further explain the variation of changes in the dependent variable. The results of data processing obtained the coefficient of determination (R<sup>2</sup>)

of 0.990695. This shows that ROA as the dependent variable in this research model can be explained by 99.0695% by the independent variables in the research model, namely CAR, LDR, NIM, NPL, OEOI, while the rest is influenced by other variables outside the model in the study of 0, 9305%.

The proof/verification of the effect of the independent variables simultaneously on the dependent variable was done using the F test. Based on the results of the F test calculation, the F value obtained was amounting to 202.2869 with a probability value of 0.000. Therefore the significance value is less than 0.05, so H0 is rejected and H1 is accepted. This shows that simultaneously the independent variables have an effect on the ROA of BUKU IV banks.

Based on Table 6, it shows that the independent variables CAR, NIM and OEOI partially have a significant effect on ROA, while the LDR and NPL variables do not have a significant effect on ROA of BUKU IV banks.

## **IV. DISCUSSION**

### **4.1. Effect of CAR on ROA**

The results show that Capital Adequacy Ratio (CAR) has a significant negative effect on bank profitability. The results of this study differ from the hypothesized assumption that CAR has a positive effect on ROA. Bank capital must be able to be used to guard against possible risk of loss as a result of the movement of bank assets as a financial intermediary; while the movement of liabilities towards assets will cause various risks, the increasing role of bank assets as profits producers must be maintained. The amount of bank capital will affect the level of public confidence in bank performance (Sinungan, 2000). CAR is an indicator of a bank's ability to cover the decline/decrease in its assets as a result of bank losses caused by risky assets with the adequacy of capital it has (Dendawijaya, 2003). The higher the CAR, the stronger the bank's ability to bear the risk of any loans or risky earning assets is. However, at a certain point, the higher the CAR, the more it shows that the bank is less risk-taking and less confident in facing the economic situation. This condition makes the bank less able to take the opportunity to get more profits and in the end— it has an impact on less than optimal profits. This study contradicts the researches conducted by Andriyani (2018), Susanto and Kholis (2016).

### **4.2. Effect of NIM on ROA**

The results show that Net Interest Margin (NIM) has a significant positive effect on bank profitability. The results of this study are in line with the hypothesis which states that NIM has a positive effect on ROA. Net Interest Margin (NIM) is a ratio that shows the ability of bank management to manage its productive assets to generate net interest margin. Net interest margin is obtained from granting loans, while banks have an interest expense obligation to depositors. The greater this ratio, the higher the interest income on productive assets managed by the bank so that the possibility of a bank [to be] in a problematic condition is getting smaller. Thus it can be concluded that the greater the change in the Net Interest Margin (NIM) of a bank, the greater the bank's profitability, meaning that the financial performance is increasing. The greater this ratio, the higher the interest income on productive assets managed by the bank, so that the possibility of a bank [to be] in a problematic condition is getting smaller and the banking performance will be better (Almilia and Herdiningtyas, 2005). The results of this study are in line with the researches conducted by Susanto and Kholis (2016) and Yusuf (2017).

### **4.3. Effect of LDR on ROA**

The results show that the Loan to Deposit Ratio (LDR) has a negative and insignificant effect on bank profitability. The results of this study are different from the hypothesis which states that LDR has a positive effect on ROA. LDR shows the ability of a bank to provide funds to its borrowers with capital owned by the bank and funds that can be collected by the public. According to Achmad (2003) if the amount of credit given is smaller than the collected funds, then the excess funds can be placed in other useful things with less risk. The Loan to Deposit Ratio (LDR) reflects the bank's ability to provide credit to credit customers to offset the bank's obligation to immediately fulfill the request of depositors who want to withdraw their money that has been used by the bank to provide loans with total third party funds. The higher the value of the Loan to Deposit Ratio (LDR), the lower the liquidity capacity of the bank concerned so that the possibility of a bank [to be] in a problematic condition will be greater, on the contrary, the lower the Loan to Deposit Ratio (LDR) ratio indicates the lack of effectiveness of the bank in extending credit, resulting in the loss of opportunities for banks to make/gain a profit. The insignificant result reflects that banks with high or low LDR ratios do not always have an impact on ROA. Banks with high LDR ratios can generate profits because they get interest on the results of loans. However, a bank with a low LDR can also generate profits because of its ability to use productive assets and other non-interest income sources. The results of this study are in line with the researches conducted by Rundupadang et al. (2018) and Afriyeni (2017).

### **4.4. Effect of NPL on ROA**

The results show that Non Performing Loan (NPL) has a positive and insignificant effect on bank profitability. The results of this study differ from the initial hypothesis that NPL has a negative effect on ROA.



The NPL ratio shows the ability of bank management to manage non-performing loans provided by banks. If a bank is in high NPL conditions, it will increase other costs, thus potentially causing bank losses (Mawardi, 2005). The higher the NPL ratio, the worse the quality of credit, which causes the number of non-performing loans to increase, which can increase the likelihood of a bank to be in trouble. After the credit is granted, the bank is obliged to monitor the use of credit and the ability and compliance of the debtor in fulfilling obligations. The bank conducts assessment reviews and ties to collateral to minimize credit risk (Ali, 2004). With this insignificant result, it shows that the level of NPL does not determine the profit of the banks in this study. Although NPL reflects the ratio of non-performing loans of banks, but the banks being studied are banks in the BUKU IV category – in which they are relatively tidier and tighter in the management of credit extension, thus NPL does not have a significant effect on ROA. The test results also show that the sample average NPL is relatively low. In addition, the bank has set a loan loss provision if the loans are bad. These results are in line with the research conducted by Dasih (2014).

#### **4.5 Effect of OEIOI on ROA**

The results show that Operating Expenses to Operating Income (OEIOI) has a significant negative effect on bank profitability. The results of this study are in accordance with the initial hypothesis that OEIOI has a negative effect on ROA. OEIOI is the ratio between operating expenses to operating income. As an agent of trust, agent of development, and agent of services, then one of the activities of the bank is to provide services to the public and collect as well as channel funds. Operating expenses are used to measure the level of efficiency and ability of a bank to carry out its operational activities. Operating expenses are expenses incurred by the bank in carrying out its main business activities (such as interest costs, labor costs, marketing costs and other operating costs). Operating income is the main income of the bank namely interest income earned from placement of funds in the form of loans and other operating income. The smaller this ratio means the more efficient the operating expenses incurred by the bank concerned so that the possibility of a bank [to be] in a problematic condition is getting smaller. So it can be made a logic that the operating efficiency variable proxied by OEIOI has a negative effect on banking performance as proxied by Return on Assets (ROA). The results of this study are in line with the researches by Stephani et al (2017) and Rusiyati (2018).

### **V. CONCLUSIONS AND RECOMMENDATION**

CAR, OEIOI ratios have a significant negative effect on profitability with the proxy of ROA, NIM has a significant positive effect on ROA, while LDR and NPL do not have a significant effect on ROA at BUKU IV Banks in the 2016 – 2019 periods. Based on these results, the banks that are the research samples, especially BUKU IV Banks need to increase NIM and maintain the ability of CAR and OEIOI in order to generate higher profits. Furthermore, it is also necessary to carry out further research with comparison between BUKU IV and III Banks.

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