

# The Impact of Financial Ratios, Operational Efficiency and Non-Performing Loan Towards Commercial Bank Profitability

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## ABSTRACT

**Objective** – The objective of this paper is to determine the impact of Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), Operational Efficiency proxies by Operational Expense to Operating Income Ratio (BOPO) and Non-Performing Loan (NPL) towards bank profitability proxies by Return on Assets (ROA).

**Methodology/Technique** – Purpose sampling is applied to gather samples of the banking sector that was listed on the Indonesia Stock Exchange for the period of 2012 - 2014. Multiple regression analysis was used to analyse data.

**Findings** – The F test result shows that CAR, LDR, BOPO, and NPL simultaneously, have a significant impact towards ROA. This means that the model can be used to predict bank profitability. It is also deduced that Operational Efficiency proxies by Operational Expense to Operating Income Ratio has a significant impact towards banking profitability.

**Novelty** – This paper suggests that banks perform lending selectively and banks maintain the level of non-performing loans to be low in order to manage the risks and to improve their profitability as a means of increasing public confidence level.

**Type of Paper:** Empirical

**Keywords:** Capital Adequacy Ratio; Loan to Deposit Ratio; Non-performing Loan; Operating Expense to Operating Income; Return on Assets.

**JEL Classification:** D81, G21.

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## 1. Introduction

Banks that engage in financial services play a significant role in the country's economy growth. This is because the banking institution, as one of the backbones of the economy, serves many intermediary functions between investors and the country's various industries. Banks are financial institutions that collect funds from the community, they grant loans to individuals and businesses and they provide other financial services to the various levels of people. In managing their operational activities, banks source their funds in various ways and such funds can be divided into three categories comprising funds from share capital, funds from the loan (bank loan or other financial institutions), and funds raised from the public (demand deposits, savings and time

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deposits).

In carrying out their duty to raise funds, banks must convince their customers and the investors to entrust their funds that are deposited in the banks. Banks have to manage their risks and keep profitability stable and increase public confidence level. This is linked to bank health assessment which is very important for all stakeholders such as the owners, the management, the customers and the government itself. In the Indonesian context, Bank Indonesia and the Indonesia Financial Service Authority (OJK) act as the banking supervisory authorities and both have important roles to play since any failure in the banking industry will have a negative impact on the Indonesian economy (Darmawi, 2011).

In the Indonesian context, Bank Indonesia is the authority that sets the bank's health assessment. Termed as the RGEC approach, it assesses a bank's Risk Profile, Good Corporate Governance, and Earnings and Capital (PBI no 13/1/PBI/2011). In this study, the bank's health assessment is done by analysing the Earnings factor which, when analysed, can show the ability of the bank to generate profits through its assets. The purpose of this study is to determine the impact of Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), Operational Efficiency proxies by Operational Expense to Operating Income Ratio (BOPO) and Non-Performing Loan (NPL) towards bank profitability proxies by Return On Assets (ROA).

## 2. Literature Review

The profitability of a bank is its ability to generate profits (Kasmir, 2014) and a bank's profitability can be measured by its Return On Assets (ROA) which measures a bank's ability to generate profit with its total assets (Sudiyanto, 2010). Regulation No. 13/24 / DPNP dated October 2, 2011, from Bank Indonesia states that a bank's minimum return on assets is 1.5 %. The higher the profits generated, the higher the ratio of Return On Assets. This means that the company is effective in using its assets to generate profits.

Capital Adequacy Ratio (CAR) is a ratio that is used to measure the capital adequacy which supports bank-owned assets that could have risks such as credits given (Prastiyaningtyas, 2010). The formula to calculate CAR is capital divided by risk weighted assets. According to regulation No. 15/12/PBI/2013 of Bank Indonesia, banks are obliged to provide a minimum capital of 8% of risk-weighted assets (RWA). The increasing ratio of CAR means that the amount of capital is increasing and this indicates that the banks can survive even if they suffer losses. This can increase customer's and investor's confidence level to deposit their money. Such an increase in the bank's deposits can serve as funds to be provided as bank loans and so it contributes to increasing the bank's ability to generate profit by using its assets and so the ROA will also be increasing. The hypothesis developed thus stands as:

**Ha<sub>1</sub>:** Capital Adequacy Ratio has positive impact towards Bank Profitability proxies by Return on Assets

Loan to Deposit Ratio (LDR) is a ratio that measures the liquidity of banks to repay funds withdrawn by customers in the form of savings, bank deposits, and demand deposit (Kasmir, 2014). The higher the ratio of LDR, the higher the funds given to third parties and this can increase bank returns on assets. However, credit risk is also increasing because the amount of funds required to finance credit is increasingly large (Alhaq et al., 2012). Regulation No. 15/41/DKMP dated October 1, 2013 of Bank Indonesia states that the limits of loan to deposit ratio of the bank is a minimum of 78% and a maximum of 92%. The formula to calculate LDR is credit granted divided by total deposit from third parties. The higher the LDR the higher the levels of corporate profits due to the placement of funds in the form of credits given thus, interest income will be increased. This can increase the ability of the bank to generate profit by using its assets, so the ROA will increase. The hypothesis thus developed stands as:

**Ha<sub>2</sub>:** Loan Deposit Ratio has positive impact towards Bank Profitability proxies by Return On Assets

The ratio used to measure the efficiency of banking operations is the ratio operational costs against operating income (BOPO). This ratio compares the operational costs and the operating incomes of banks.

According to the best standards of Bank Indonesia, BOPO No. 15/12/PBI/2013 is 92%. A smaller BOPO indicates that the bank is more efficient in conducting its business activities since the cost is smaller. In this way, the bank increases its ability to generate profit by using its assets and this means that the ROA will also be increasing. A BOPO ratio that is less than 1 indicates that it is a healthy bank and vice versa. The hypothesis thus developed stands as:

**Ha3:** Operational Efficiency proxies by Operational Expense to Operating Income Ratio has negative impact towards Bank Profitability proxies by Return On Assets

Non-Performing Loans (NPL) is the bank's bad debts level. The smaller the NPL ratio, the more prudent the bank is in granting credit to customers and this is with the purpose of achieving an appropriate target. This practice makes customers and investors believe that the money deposited in the bank will be well managed thereby, increasing the ability of the bank to generate profits by using its assets. This means that the bank profitability proxies by ROA will also increase. According to Regulation No. 15/2/PBI/2013 of Bank Indonesia, the ratio of bad debt (Non-Performing loan) should not be more than 5% of the total credit. (Haneef et al., 2012). Thus, the hypothesis developed stands as:

**Ha4:** Non-Performing Loan has negative impact towards Bank Profitability proxies by Return On Assets

### 3. Research Method and Data Analysis

The sample for this study was selected by using the purposive sampling approach. The criteria used in this study is that samples must come from the banking sector listed on the Indonesia Stock Exchange (IDX) for the period of 2012 – 2014. These samples must also publish their audited financial statements as of December 31, using the Rupiah currency. In total there are 27 samples selected through a 3 year observation period hence, the total is 81 observations. The data used for analysis is thus based on secondary data comprising financial statements published by the banks. Multiple regression analysis was used to analyse data.

Dependent variable: Return On Assets (ROA)

According to regulation No 13/24/DPNP dated 25 October 2011 extracted from the Bank Indonesia Circular Letter, formula ROA is as follows:

$$ROA = \frac{\text{Profit Before Tax}}{\text{Average Total Assets}}$$

Independent Variables

#### 1. Capital Adequacy Ratio

According to regulation No 13/24/DPNP dated 25 October 2011 extracted from the Bank Indonesia Circular Letter, formula CAR is as follows:

$$CAR = \frac{\text{Capital}}{RWA \text{ (Risk Weighted Asset)}}$$

#### 2. Loan Deposit Ratio

Based on regulation No. 15/41/DKMP October 1, 2013 extracted from the Bank Indonesia Circular Letter, the calculation of the ratio of LDR is as follows:

$$LDR = \frac{\text{Credit given to the customer}}{\text{Total Deposit from Third Party}}$$

3. Operational Efficiency

Based on regulation No. 3/30/DPNP 2011 extracted from the Bank Indonesia Circular Letter, the BOPO Ratio is calculated by using the formula:

$$BOPO = \frac{Operational\ Costs}{Operating\ Income}$$

4. Non-Performing Loan

Based on the regulation No. 13/24/2011 DPNP extracted from the Bank Indonesia Circular Letter, the calculation of the ratio of NPL is as follows:

$$NPL = \frac{Bad\ Debt}{Total\ Credit}$$

The hypotheses were tested by multiple regression with the following formula:

$$ROA = a + b_1CAR + b_2LDR + b_3BOPO + b_4NPL + e$$

Descriptions:

$a$  = Constanta

$ROA$  = Return on Asset

$CAR$  = Capital Adequacy Ratio

$LDR$  = Loan Deposit Ratio

$BOPO$  = Operating Cost to Operating Income

$NPL$  = Non-Performing Loan

$b_1, b_2, b_3, b_4$  = coefficient of  $CAR, LDR, BOPO, NPL$

$e$  = error term

Table 1. Descriptive Statistics

	N		Range	Minimum	Maximum	Mean	Std. Deviation
ROA		81	.0414	.0060	.0474	.022903	.0107894
CAR		81	.1748	.1044	.2791	.169077	.0314377
LDR		81	.8704	.5369	1.4072	.847897	.1165032
BOPO		81	.6249	.3273	.9522	.775440	.1110918
NPL		81	.0408	.0021	.0430	.019188	.0105561
Valid N (listwise)		81					

Table 2. Result of Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		81
Normal Parameters <sup>a,b</sup>	Mean	0E-7
	Std. Deviation	.00768475
Most Extreme Differences	Absolute	.111
	Positive	.086
	Negative	-.111
Kolmogorov-Smirnov Z		1.000
Asymp. Sig. (2-tailed)		.270

The results shown in Table 2 indicate that the Asymp. Sig. (2-tailed) is 0.270 which is greater than 0.05, hence data for the regression model are normally distributed.

Table 3. Result of Multicollinearity Test

Coefficients <sup>a</sup>			
Model		Collinearity Statistics	
		Tolerance	VIF
1	CAR	.806	1.240
	LDR	.898	1.113
	BOPO	.769	1.301
	NPL	.969	1.032
a. Dependent Variable: ROA			

As are indicated in the table, all the tolerance values are above 0.1 and the VIF is under 10. This result shows that there is no correlation between the independent variables.

Table 4. Result of Autocorrelation Test

Model Summary <sup>b</sup>	
Model	Durbin-Watson
1	2.081

Result of this test shows  $1.7438 < 2.081 < 2.2562$  (4-du) and this means that there is no positive or negative autocorrelation.

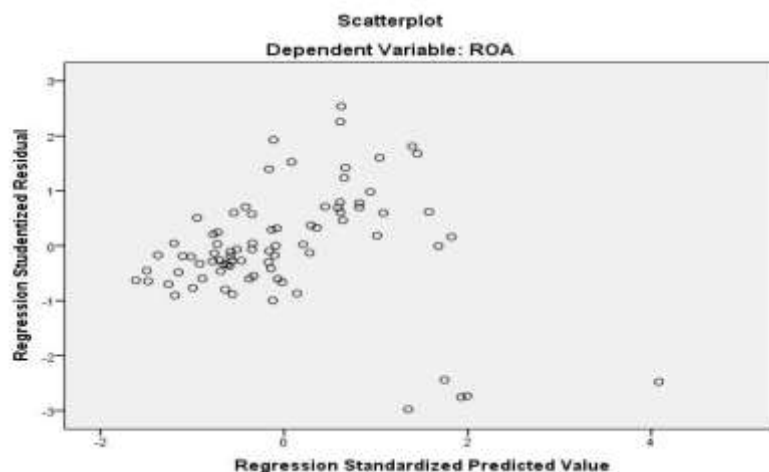


Figure 1. Result of Heteroskedasticity Test

Based on the scatterplot graph, it can be seen that the dots do not generate a specific pattern (such as wavy, or widened and then narrowed) and it does not spread above and below the number 0 on the Y axis. This shows that there is no heteroscedasticity.

Table 5. Determination of Coefficient Test Results (Adjusted R Square)

Model Summary <sup>b</sup>			
Model	R	R Square	Adjusted R Square
1	.702 <sup>a</sup>	.493	.466
a. Predictors: (Constant), the NPL, CAR, LDR, BOPO			
b. Dependent Variable: ROA			

Source: data processing SPSS 20

As can be seen in the table above, the R value is 0.702. This indicates that there is a strong correlation between the dependent variable (Return On Assets) with the independent variables Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), Operational efficiency proxies by BOPO, and Non-Performing Loan (NPL). The adjusted R-square value is 0.466. This means that 46.6% of Return On Assets can be explained by four independent variables while the remaining 53.4% can be explained by other variables outside the model.

Table 6. The Results of The Test Statistic F

ANOVA <sup>with</sup>						
Model		Sum of Squares	DF	Mean Square	F	SIG.
1	Regression	.005	4	16.371	18,453	.000 <sup>b</sup>
	Residual	.005	76	.000		
	Total	.009	80			
a. Dependent Variable: ROA						
b. Predictors: (Constant), the NPL, CAR, LDR, BOPO						

Source: data processing SPSS 20

From the results of the F test retrieved, as shown above, it appears that the F value of 18.453 has a significant value of 0.000 or smaller than 0.05. This shows that that Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), the operational efficiency of the proxies by a ratio of BOPO, and Non-Performing Loan (NPL) simultaneously, have a significant impact towards the profitability of the banking industry proxies by Return On Assets.

Table 7. The results of statistical tests t

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Component Coefficients	T	SIG.
		B	Std Error.	Beta		
1	(Constant)	.073	.013		5.734	.000
	CAR	.027	.031	.078	.860	.393
	LDR	-.004	.008	-.038	-.444	.659
	BOPO	-.064	.009	-.657	-7.052	.000
	NPL	-.093	.085	-.091	-1.102	.274
a. Dependent Variable: ROA						

Multiple regression equation are as follows:

$$ROA = 0.073 + 0.027CAR + 0.004LDR + 0.064BOPO + 0.093NPL$$

Results show that Capital Adequacy Ratio (CAR) has a coefficient regression which amounts to 0.027 with a significant level of 0.393 or greater than 0.05. This indicates that  $H_{a1}$  is rejected suggesting that Capital Adequacy Ratio (CAR) does not have a positive significant impact towards bank profitability proxies by Return On Assets (ROA).

Loan to Deposit Ratio (LDR) appears to carry a coefficient regression of 0.004 with a significant level of 0.659 or more than 0.05. This indicates that  $H_{a2}$  is rejected suggesting that Loan to Deposit Ratio (LDR) does not have a positive significant impact towards bank profitability proxies by Return On Assets (ROA).

Operating Cost to Operating Income (BOPO) carries a coefficient regression of -0.064 with a significant level of 0.000 or less than 0.05. This indicates that  $H_{a3}$  is accepted suggesting that a conclusion can be drawn to say that BOPO has a negative significant impact towards bank profitability proxies by Return On Assets (ROA).

Non-Performing Loan (NPL) has a coefficient regression of -0.093 with a significant level of 0.274 or more than 0.05. This indicates that  $H_{a4}$  is rejected suggesting that NPL does not have a negative significant impact towards bank profitability proxies by Return On Assets (ROA).

### 3. Conclusions

As can be noted, banks have a significant role to play in the country's national economy growth. Banks also have to manage their risks and keep their profitability so as to increase public confidence level. The bank's health assessment is done by analysing the Earnings factor which can show the bank's ability to generate profit by using its own assets.

The average ratio of ROA is 2.2903% and this shows that the banking sector listed on the Indonesia Stock Exchange are *profitable* (above 1.5%). The average ratio of CAR is 16.9077% and this shows that banks have adequate capital (above 8% criteria set by Bank of Indonesia). The average ratio of LDR is 85.5953% and this shows that banks have distributed their funds properly (LDR above 78% and below 92%). The average ratio of NPL is 1.9188% and this shows that banks have been selective in distributing credits (NPL below 5%).

The F test result shows that the variables of CAR, LDR, BOPO, and NPL simultaneously, have a significant effect towards ROA with the F value of 18.453 and the level is significant at 0.000. This shows that the model used here can be used to predict bank profitability. The T test result shows that variable Operational Efficiency proxies by Operational Expense to Operating Income Ratio (BOPO) has a significant impact towards Banking Profitability proxies by Return On Assets (ROA) whereas the other variables: Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), and Non- Performing Loan (NPL) have no significant impact towards Banking Profitability proxies by Return on Assets (ROA).

The average ratio of BOPO is 77.55% (below 92% criteria set by Bank Indonesia) and this indicates that the banking sector listed on the Indonesia Stock Exchange are in a healthy condition, suggesting that the banks have a good level of efficiency in running their operations. In brief, this means that Operational Expense is lower than Operating Income and so banks are getting the profits which will increase the Return On Asset of the bank. This indicates that the banks have the ability to improve their efficiency as well as their profitability. Banks also have to maximize their capital by performing their loans selectively and maintaining the level of the Non-Performing Loan at a low level in order to manage the risks and improve profitability, thereby increasing public confidence level.

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