

# Analysis of the Effect of Loan to Deposit Ratio, Non Performing Loan & Capital Adequacy Ratio in Profitability (Empirical study of conventional banking companies listed in IDX period 2014–2017)

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## Abstract

This study aims to analyze the effect of the Loan to Deposit Ratio (LDR), Non-Performing Loans (NPL) and Capital Adequacy Ratio (CAR) on Profitability in conventional banking companies listed on the Indonesia Stock Exchange 2013-2017 observation period. The data used in this study is obtained from the annual financial statements of banking companies on the Indonesia Stock Exchange through the official website on the Indonesia Stock Exchange website. Period of data under study from 2013 to 2017 (5 years). The sample collection using Purposive Sampling method and data analysis using multiple regression analysis with SPSS 23.0 program. From the results of hypothesis test simultaneously (F test) shows that LDR, NPL and CAR simultaneously have a significant effect on profitability, with a significance level of 0.000. While based on partial hypothesis test result (t test) shows that LDR variable does not affect to Profitability with significance level 0,767, NPL have negative and significant effect to Profitability with level of significance 0.000 and CAR have positive and significant effect to Profitability with level signifikan signifikan 0.000.

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## I. INTRODUCTION

Today's economic development cannot be separated from the banking sector, because banking has an important role in economic growth. Banks must be able to maintain public trust, so they must maintain their financial performance. The financial performance of a bank can be seen with various indicators, one of which is the accountability report presented in the bank's financial statements.

The performance of a bank is very important, because public trust in banks is greatly influenced by the performance achieved. So the bank must be able to show its credibility in order to increase public trust. If the bank's performance decreases, it will cause a decline in public trust and vice versa, public trust will increase if the bank's performance increases.

## II. RELATED WORKS/LITERATURE REVIEW (OPTIONAL)

### Loan Deposit Ratio (LDR)

Liquidity is the ability of a company to meet short-term obligations (debt). This means that if the company is billed, the company will be able to repay the debt, especially debt that has matured. If the level of liquidity of a bank is high, then the level of profitability will decrease

According to (Puteh & Malikussaleh) the Loan to Deposit Ratio (LDR) reflects the ability of banks to repay funds withdrawals made by depositors by relying on loans given as a source of liquidity, in other words how far credit is extended to credit customers. fulfill the request of depositors who want to withdraw the money that has been used by the bank to provide credit, by comparing the amount of credit provided with total third party funds.

H1 Loan to Deposit Ratio has a significant positive effect on profitability.

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### Non Performing Loan (NPL)

Bank Indonesia Circular Letter No.13/24/DPNP/2011 states that credit risk is a risk due to the failure of the debtor and / or other parties to fulfill obligations to the Bank. One of the risks that arise to the bank is the risk of default that has been given to the debtor or called credit risk.

According to (Kasmir, 2014) Credit Non Performing Loans (NPL) in which there are obstacles caused by 2 elements, namely from the bank in analyzing and from the customer who intentionally or unintentionally does not make payments.

H2: Non Performing Loans have a significant negative effect on profitability.

### Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio (CAR) is a ratio that shows the banking ability of activities from its activities with capital owned to support risk-bearing assets (investment credit, securities, bills on other banks) to be financed from own capital funds.

According to (Fahmi, 2015 ) Capital Adequacy Ratio (CAR) or often referred to as capital adequacy ratio, which is how a bank is able to finance its activities with its capital ownership in other words Capital Adequacy Ratio is a bank performance ratio that measures capital adequacy. owned to support assets that contain or produce risks, for example, loans given (Irham, 2013).

H3: Capital Adequacy Ratio has a significant positive effect on profitability.

## III. METHODS

This study uses a quantitative approach which is a process of finding knowledge that uses numerical data as a tool to analyze information about what you want to know. The object of the research carried out in this study is a banking company registered on the Indonesia Stock Exchange, issuing consecutive annual financial statements during 2014-2017 starting from January 1 and ending on December 31.

This research uses secondary and quantitative data types, secondary data is the source of research data obtained by researchers indirectly through intermediary media (obtained and recorded by other parties). In the sense that the data obtained by researchers is obtained by looking for references from various books concerned with the research title and data obtained from the Indonesia Stock Exchange which has been processed in the form of financial statements. While quantitative data means data in the form of numbers or presented in the form of numbers. This data is the result of observations taken from a certain period (Budisantoso & Nuritomo, 2013).

Secondary data sources in this study were obtained from the general description of banking companies listed on the Indonesia Stock Exchange (IDX), the relevant financial statements for the period 2014-2017 and supporting theories. The population in this study are banking companies listed on the Indonesia Stock Exchange. In this study, the authors used a purposive sampling technique, namely the technique of taking samples with certain considerations in accordance with the required requirements. Of the 40 (forty) banking companies listed on the Indonesia Stock Exchange in 2014-2017 only 28 (twenty eight) companies fulfilled the research qualifications that will be used as samples.

In this study the dependent variable is profitability that uses a measure of Return on Assets (ROA), mathematically formulated as follows:

Formula:

$$ROA = \frac{\text{Net income before tax}}{\text{Average business volume}} \times 100\%$$

### Independent variable

In this study the independent variable is the Loan to Deposit Ratio, Non Performing Loan, and Capital Adequacy Ratio. Loan to Deposit Ratio or LDR is calculated using the following formula:

$$LDR = \frac{\text{Credit}}{\text{Third party funds}} \times 100\%$$

Non-Performing Loans are credit or NPL risks because NPLs are used to measure bank performance in terms of loans given to third parties. Non-Performing Loans or NPLs are calculated as follows: Formula:

$$NPL = \frac{\text{Non Performing loan}}{\text{Total credit}} \times 100\%$$

Capital Adequacy Ratio or CAR is a measure or appraisal of bank performance, CAR can also be a capital appraiser in a bank because capital is an important factor for banks to develop their businesses so CAR can be used as an assessment tool for investment decision making for banks that issue shares through conditions and bank financial achievements reflected in their financial statements. this ratio compares the amount of bank capital with a number of assets owned. Capital Adequacy Ratio or CAR is calculated by the formula as follows:

$$CAR = \frac{\text{Equity}}{\text{ATMR}} \times 100\%$$

#### IV. RESULTS

This study uses multiple linear regression methods. After performing the SPSS test found and obtained results as the following:

##### Data Normality Test Results

Table 1. One-Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			112
Normal Parameters <sup>a,b</sup>	Mean		.0000000
	Std. Deviation		.45077578
Most Extreme Differences	Absolute		.051
	Positive		.051
	Negative		-.047
Test Statistic			.051
Asymp. Sig. (2-tailed)			.200 <sup>c,d</sup>

- a. Test distribution is Normal.
- b. Calculated from data.
- c. Lilliefors Significance Correction.
- d. This is a lower bound of the true significance.

From the results of the SPSS 23 data above, it can be seen that the value of Asymp. Sig. (2-tailed) of 0.200. The requirement to pass the normality test is the value of Asymp. Sig. (2-tailed) > 0.05. So the data in this study has been normally distributed because of Asymp. Sig. (2tailed) 0.200 > 0.05. Data that is said to be normally distributed is properly used for the regression model and can be processed to the next stage.

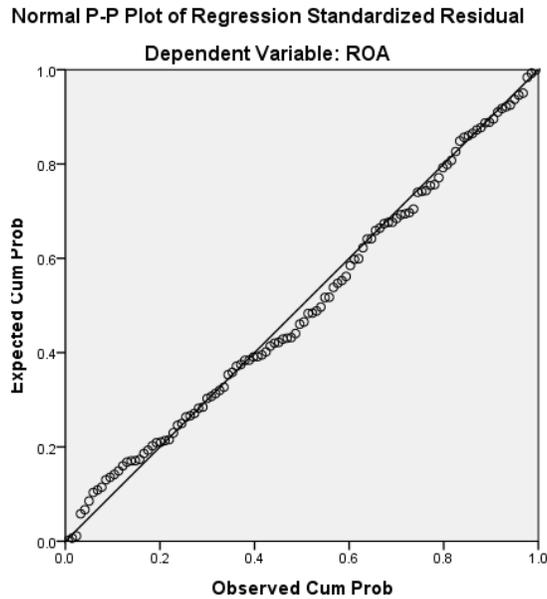


Fig 1. Normalitas Normal Probability Plot (P-Plot)

The picture above is the result of testing the normality of the graph method, which is the Normal Probability Plot (P-Plot) method. It can be seen that the data spreads around the diagonal line, this indicates that the data is normally distributed, then the regression model is feasible to use.

Table 2. Autocorrelation Test Results

Score D	Score $d_u$	Analysis $d_u < d < 4 \cdot d_u$	Conclusion
1,784	1,7472	$1,7472 < 1,784 < 2,2528$	There is no autocorrelation

The Durbin-Watson (DW) value can be seen from the output model summary, and obtained a value of 1.784. Then this value is compared with the value of  $d_u$  from the Durbin-Watson statistical table. In the Durbin-Watson statistical table, it can be seen that the number 1.7472 comes from the line number of observations (n), namely 112 and the column for the number of independent variables (k) is 3. So it can be concluded that there is no autocorrelation in this study.

Table 3. Multicollinearity Test Results

Coefficients <sup>a</sup>		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	LDR	.148	6.742
	NPL	.145	6.891
	CAR	.412	2.426

a. Dependent Variable: ROA

In the table above, it can be seen that the TOL values for the independent variables are 0.148, 0.145, 0.412 greater than 0.10 and the VIF value for the independent variables is 6.742, 6.891, 2.426 is smaller than 10.00 then It can be concluded that there is no multicollinearity.

Tabel 4. Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.907 <sup>a</sup>	.824	.819	.45699	1.784

a. Predictors: (Constant), CAR, LDR, NPL

b. Dependent Variable: ROA

Table 5. Heteroscedasticity Test Results (Glejser Test)

**Coefficients<sup>a</sup>**

Model		t	Sig.
1	(Constant)	.789	.432
	LDR	-.522	.603
	NPL	-.971	.334
	CAR	2.291	.024

a. Dependent Variable: Absut

The heteroscedasticity test carried out in this study is the Glesjer Test. If the significance value (sig.) > 0.05, there will be no symptoms of heterocedasticity. In the table above it can be seen that the Sig values for the independent variables are 0.603, 0.334, 0.024 greater than 0.05, so it can be concluded that there are no symptoms of heteroscedasticity.

#### Determination Coefficient Test Results (R2)

Table 6. Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.907 <sup>a</sup>	.824	.819	.45699	1.784

a. Predictors: (Constant), CAR, LDR, NPL

b. Dependent Variable: ROA

Based on the SPSS output in the table above, it can be seen that from the calculation results, the adjusted R2 value is 0.819 or 81.9%. This shows that 81.9% of the Return of Asset variable is influenced by the Non Performing Loan, Loan to Deposit Ratio, and Capital Adequacy Ratio simultaneously to the dependent variable Return of Assets (ROA) while the rest is (100% - 81.9%) = 18.1% is influenced by other factors, for example the operational cost factor for operating income, interest rates and net interest margin in other words are influenced by other variables that have not been examined in this study.

Table 7. Multiple Linear Regression Test Results

Model		Coefficients <sup>a</sup>				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.872	.872		2.147	.034
	LDR	-.002	.008	-.031	-.297	.767
	NPL	-.511	.090	-.601	-5.661	.000
	CAR	.064	.010	.395	6.281	.000

a. Dependent Variable: ROA

Based on the data from multiple regression analysis in the table above, the regression equation model can be made as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

$$Y = 1.872 - 0.002 LDR - 0.511 NPL + 0.064 CAR + e$$

The interpretation of the author's statistics on the regression equation model above is as follows:

1. The constant value of 1.872 states that if all independent variables, namely Loan to Deposit Ratio (LDR), Non Performing Loans (NPL), and Capital Adequacy Ratio (CAR), are zero, then the dependent variable, Return on Assets (ROA) is worth 1,872.
2. Loan to Deposit Ratio (LDR) has a coefficient of -0.002 which means if the percentage of Loan to Deposit Ratio (LDR) increases by one unit then Return on Assets (ROA) will also decrease by -0.002, and vice versa if Loan to Deposit Ratio (LDR) ratio decreases by one unit, then return on assets will increase by 0.002.
3. Non Performing Loans (NPL) has a coefficient of -0.511 which means that if the percentage of Non Performing Loans (NPL) increases by one unit then Return on Assets (ROA) will also decrease by -0.511, and vice versa if Non Performing Loans (NPL) ratio decreases by one unit, then return on assets will increase by 0.511.
4. Capital Adequacy Ratio (CAR) has a coefficient of 0.064 which means if the percentage of Capital Adequacy Ratio (CAR) increases by one unit then Return on Assets (ROA) will also increase by 0.064, and vice versa if the Capital Adequacy Ratio (CAR) ratio decreases one unit, then return on assets will decrease by 0.064.

Table 8. T test result

Model		Coefficients <sup>a</sup>				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.872	.872		2.147	.034
	LDR	-.002	.008	-.031	-.297	.767
	NPL	-.511	.090	-.601	-5.661	.000
	CAR	.064	.010	.395	6.281	.000

a. Dependent Variable: ROA

#### Effect of Loan to Deposit Ratio (LDR) Against Return On Assets

Based on the results of testing, the variable Loan to Deposit Ratio (LDR) with a ratio of Return on Assets (ROA) has a significance level of  $0.767 > 0.05$  indicating that the Loan to Deposit Ratio (LDR) has no significant effect on and Return on Assets (ROA). From the results of the t-test the statistical value of  $0.297 < t$  table is 1.66. Thus the hypothesis proposed in this study ( $H_1$ ) is rejected, so it can be concluded that the fluctuation of the variable Loan to Deposit Ratio (LDR) cannot have a significant effect on Return On Assets (ROA). Due to the credit given does not give much contribution and the LDR ratio tends to be unstable and below 85% and not exceeding 110% this is

because the bank is active in channeling credit but this can pose a risk that is the possibility of withdrawing funds that have been kept by third party and high LDR at the bank so that it shows that the ability of the liquidity is low at the bank so that it is not able to channel credit according to demand, so the loss of the bank's opportunity to make a profit.

#### Effect of Loan to Deposit Ratio (LDR) Against Return On Assets

Based on the results of testing, the variable Loan to Deposit Ratio (LDR) with a ratio of Return on Assets (ROA) has a significance level of  $0.767 > 0.05$  indicating that the Loan to Deposit Ratio (LDR) has no significant effect on and Return on Assets (ROA). From the results of the t-test the statistical value of  $0.297 < t$  table is 1.66. Thus the hypothesis proposed in this study ( $H_1$ ) is rejected, so it can be concluded that the fluctuation of the variable Loan to Deposit Ratio (LDR) cannot have a significant effect on Return On Assets (ROA). Due to the credit given does not give much contribution and the LDR ratio tends to be unstable and below 85% and not exceeding 110% this is because the bank is active in channeling credit but this can pose a risk that is the possibility of withdrawing funds that have been kept by third party and high LDR at the bank so that it shows that the ability of the liquidity is low at the bank so that it is not able to channel credit according to demand, so the loss of the bank's opportunity to make a profit.

#### F test result

**ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	105.268	3	35.089	168.017	.000 <sup>b</sup>
Residual	22.555	108	.209		
Total	127.823	111			

a. Dependent Variable: ROA

b. Predictors: (Constant), CAR, LDR, NPL

Based on the Non Performing Loan (NPL) test results, the Non Performing Loan (NPL) variable has a significance level of  $0,000 < 0,05$  and the results of the statistical t test value are  $5,661 > t$  table is 1,66 so it can be concluded that hypothesis 2 is proven so it was concluded that Non Performing Loans (NPL) would have a negative influence on Return On Assets. The lower the NPL, the better the credit quality of a bank and vice versa if the NPL is high then the bank credit is problematic. The higher the ratio, the worse is the quality of bank credit which causes the number of problem loans to increase and cause losses. Conversely, if the lower NPL, the profit or profitability of the bank (ROA) will increase.

#### Effect of Capital Adequacy Ratio on Return On Assets

Based on the results of testing, the Capital Adequacy Ratio variable has a significance level of  $0,000 < 0,05$  and the results of the statistical t test value of  $6,281 > t$  table of 1,66 indicate that the Capital Adequacy Ratio has a positive significant effect on firm value. Thus the hypothesis proposed in this study ( $H_3$ ) is accepted, so it can be concluded that the greater the Capital Adequacy Ratio will give greater return on Asset. The higher capital adequacy ratio indicates that the bank has sufficient capital to carry out its operational activities, so that it can increase profits for the bank and can increase the return on assets. According to Bank Indonesia regulation Number 101/15 / PBI / 2008, the percentage in calculating the minimum capital Adequacy Ratio (CAR) ratio that banks must have is 8%. Shows that the bank's business is increasingly stable, because of a great sense of public trust. This is because the bank will be able to bear the risk of risky assets (Amelia, 2011).

The F test can be analyzed with the "ANOVA" table. obtained is 0.000 which is seen from the sig column. F count is smaller than alpha (0.05). so that  $H_0$  is rejected and  $H_a$  is accepted. That is, the variable Loan to Deposit Ratio (LDR), Non Performing Loans (NPL) and Capital Adequacy Ratio (CAR) simultaneously influence the Variable Return on Assets.

The F test can also be analyzed with table F. The obtained is 168,017 which can be seen from the sig column. F count is greater than table F 3.08. That is, the Loan to Deposit Ratio (LDR), Non Performing Loans (NPL) and Capital Adequacy Ratio (CAR) simultaneously influence the Variable Return on Assets.

## V. CONCLUSIONS

Based on the results of the analysis and discussion described in the previous chapter, it can be summarized as follows:

1. There is no significant effect of Loan to Deposit Ratio (LDR) on Return On Assets (ROA) in Banking Companies listed on the Stock Exchange for the period 2014-2017. This is indicated by a statistical t value of -297 and a significance value of 0.767 above 0.05 (significance level = 5%), so it can be concluded that hypothesis 1 is not proven. So that the fluctuation of the variable Loan to Deposit Ratio (LDR) cannot have a significant effect on Return On Assets (ROA).
2. There is a significant negative effect of Non Performing Loans (NPL) on Return On Assets (ROA) in Banking Companies listed on the Stock Exchange for the period 2014-2017. This is indicated by a statistical t value of 5.661 and a significance value of 0,000 which is below 0, 05 (significance level = 5%), so it can be concluded that hypothesis 2 is proven. This study finds that the smaller the increase in Non Performing Loans (NPL) will give a greater influence on Return On Assets (ROA).
3. There is a positive influence of Capital Adequacy Ratio (CAR) on Return On Assets (ROA) in Banking Companies listed on the Stock Exchange for the period 2014 - 2017. This is indicated by a statistical t value of 6,281 and a significance value of 0,000 which is below 0.05 (significance level = 5%), so it can be concluded that hypothesis 3 is proven. So that the rise and fall of the value of Capital Adequacy Ratio (CAR) can provide a significant influence on Return On Assets (ROA).
4. There is a significant influence variable Effect of Loan to Deposit Ratio (LDR), Non Performing Loans (NPL), and Capital Adequacy Ratio (CAR) together (simultaneous) to Return On Assets (ROA). For Banking Companies listed on the Stock Exchange for the period 2014-2017. This is indicated by a statistical F value of 168,017 with a probability of 0,000. Probabilities are smaller than the significance level used, which is 5%.

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