Analysis of the Effect of Capital Adequacy Ratio (CAR) and Loan to Deposit Ratio (LDR) on the Profits of Go Public Banks in the Indonesia Stock Exchange (IDX) Period 2016 – 2021

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Abstract:
This study aims to determine the effect of the capital adequacy ratio (CAR) and loan to deposit ratio (LDR) on the profitability of banks that go public on the Indonesia Stock Exchange (IDX) for the period 2016 - 2021. The indicators used in this study are: Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), and Return On Assets (ROA). One of the Profitability Ratios used as an indicator in this study is Return On Assets (ROA). ROA is a financial ratio to measure the ability of bank management in obtaining overall profit (profit). In this study, ROA is used as the dependent variable, while the Capital Adequacy Ratio and Loan to Deposit Ratio are independent variables. The two independent variables will be analyzed either partially or simultaneously to see whether or not there is an effect on ROA. The data used in this study is the ratio of CAR, LDR and ROA of publicly listed banks on the Indonesia Stock Exchange (IDX) for the period 2016 – 2021 with the number of banks listed and meeting the characteristics of 28 banks. In data analysis using classical assumption test, multiple linear regression analysis, correlation coefficient, coefficient of determination, F test and T test. The results of the study using the F test together that CAR and LDR have an effect on ROA, while the T test shows that CAR has an effect on ROA and LDR has no effect on ROA.

Keywords:
capital adequacy ratio; loan to deposit ratio; bank profitability

I. Introduction

The principle of establishing a business in general is to seek profit or increase profits. This causes profit to be one measure of company performance that is often used as a basis for decision making. The income statement of a company is one of the important things in the annual report. Information about the company's financial position, company performance, company cash flow, and other information related to the financial statements can be obtained from the company's financial statements. Financial statements are one of the financial information sourced from internal companies. In addition to providing information about the company's current and past conditions, financial statements can also predict the company's prospects in the future (Ervani, 2010).

To be able to take advantage of financial statements, techniques are needed to interpret financial statements. Financial statement analysis aims to determine the level of profitability (profit) and the level of risk or the level of health of a company. One of the techniques in financial statement analysis is financial ratio analysis. Financial ratio analysis can
help business people, the government, and other users of financial statements in assessing the company's financial condition, banking companies are no exception.

The banking industry plays an important role for economic development as a financial intermediary. Bank is an institution or company whose activities are to collect funds in the form of demand deposits, savings deposits and other deposits from parties who have excess funds (surplus spending units) and then place them back to people who need funds (deficit spending units) through the sale of financial services which in turn can improve the welfare of the people at large (Damayanti & Savitri, 2018).

From year to year banking continues to show progress. One of the important results of the implementation of supervision in 2012 was that the banking system was able to maintain its positive performance despite facing difficult challenges (external and internal). Both conventional commercial banks, Islamic banks, and rural banks have successfully increased their intermediation role.

Banks are faced with a number of challenges, including the growth of national banking credit in 2012 which increased by 23.08%. With sufficiently high lending, banks were able to maintain good credit quality as reflected in the gross NPL ratio of 1.87%, which was the lowest level in the history of Indonesian banking. These things are a concern for the soundness of the bank (Pranata & Dwi, 2015).

The soundness of a bank is an assessment of the condition of a bank's financial statements at a certain period and time in accordance with Bank Indonesia standards. The main source of indicators that are used as the basis for evaluating company performance is financial statements. The bank's financial statements show the bank's overall financial condition. This report will read the actual condition of the bank including its weaknesses and strengths. This report also shows the performance of bank management over a period. The financial statements contain information about the amount of wealth (assets) and the types of wealth owned. Then it will also describe the short-term and long-term liabilities and equity (own capital) it has.

Then the financial statements also provide information about the results of operations obtained by the bank in a certain period and the costs or expenses incurred to obtain these results. Recognizing the importance of the health of a bank for customers, it is necessary to carry out bank health maintenance. One of the tools to measure bank health is the CAMEL method (Capital, Assets, Management, Earning, and Liquidity in accordance with Bank Indonesia Circular Letter No. 26/BPPP/1993 dated May 29, 1993 which regulates Procedures for Assessing Bank Soundness Level. CAMEL Method consisting of capital aspects including CAR (Capital Adequacy Ratio), assets aspects including NPL (Non Performing Loans), earning aspects including ROA (Return On Assets) and BOPO (Operating Costs to Operating Income), liquidity aspects including LDR (Loan to Deposit Ratio) These aspects are then assessed using financial ratios so that they can assess the financial condition of banking companies. However, currently CAMEL has added one more aspect to become CAMELS, namely the aspect of sensitivity to market risk which includes the ability of bank capital to cover the effects caused by changes in market risk (Purwana et al., 2009).

Analysis of bank performance can be measured from the analysis of the ratio of liquidity, solvency, and profitability. Of the three ratio analysis consists of several ratios. The ratios related to the health of the bank, from the liquidity ratio, namely the loan to deposit...
ratio (LDR), the solvency ratio, namely the capital adequacy ratio (CAR), and the profitability ratio, namely the return on assets (ROA). The loan to deposit ratio states how far the bank's ability to repay the withdrawal of funds made by depositors by relying on the credit provided as a source of liquidity. CAR (Capital Adequacy Ratio) is the ratio of the minimum capital requirement that must be owned by the bank. CAR reflects the bank's capital. CAR serves to accommodate the risk of loss that may be faced by the bank.

CAR has a relationship with ROA, the greater the CAR, the greater the ROA obtained by the bank. ROA is the most important indicator to measure the performance of a bank. Return on assets (ROA) as a performance measure is because ROA is used to measure the company's efficiency in generating profits by utilizing its assets. ROA is the ratio between profit before tax to total assets. The greater the ROA indicates the better financial performance. If ROA increases, it means that the company's profitability increases, so the final impact is an increase in profitability enjoyed by shareholders (Patni & Darma, 2017).

These ratios are interesting to study to find out how much influence financial ratios have on the level of profitability of Indonesian banking companies. Below is the calculation of the average LDR, CAR, and ROA as financial ratios to determine the performance of publicly traded banking companies from 2008 to 2012.

Table 1. Commercial Bank Indicators

| Year | Ratio (%) | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|-----------|------|------|------|------|------|
| CAR  |           | 16,2 | 17,4 | 17,2 | 16,1 | 17,3 |
| LDR  |           | 74,6 | 72,9 | 75,5 | 79,0 | 83,9 |
| ROA  |           | 2,3  | 2,6  | 2,8  | 3,0  | 3,1  |

Source: LPP BI 2011 and 2012 (Data Processed)

From the annual ratio comparison above, for CAR to ROA, in 2008 to 2009 CAR increased as well as ROA but in 2009 to 2010 CAR decreased but ROA increased the same as in 2011. As for LDR to ROA in 2008 to 2009 LDR decreased but ROA increased, and in 2009 to 2010 LDR and ROA increased. From these data, it is interesting to conduct this study regarding whether or not there is an influence between CAR or LDR on ROA. Based on the description of the background above, this study wants to find out how much ROA of Go Public Banks is influenced by CAR and LDR during the last five years period, namely the period 2008 - 2012. The period used is 2008-2012 because in the five year period it can be used to facilitate the prediction of bank profits in previous years.

II. Research Methods

This study used a descriptive and causal research design. The descriptive research design is used to describe and explain in detail each research variable, while the causal research design is to determine the possible cause and effect between the dependent (dependent) variable and the independent (independent) variable. The dependent variable used in this study is Return On Assets (ROA). While the independent variables used in this study consisted of several financial ratios, namely the capital adequacy ratio (CAR) and loan to deposit ratio (LDR). While the type of data used in this study is secondary data, for all variables, namely ROA, CAR and LDR of each bank. This secondary data was obtained by observing the financial ratios and financial statements of the banks that were used as objects in the study (Korri & Baskara, 2019).
Research variables that have been translated into indicators must be tested for validity and reliability. Each indicator has a measurement scale which is an agreement that is used as a reference in the measuring instrument that produces quantitative data. The data that has been obtained and collected is then processed using computer aids, namely with Microsoft Word and Microsoft Excel software and the SPSS 21 application.

### III. Discussion

#### 3.1 Data Analysis and Discussion

Tests in this study will use multiple linear regression analysis. This analysis is used to test the effect of the independent variables (CAR and LDR) on the dependent variable (ROA) using the SPSS 21 program. To find out whether the regression analysis really shows a significant and representative relationship, the analysis must meet the classical assumptions. The classical assumption test used in this study is the normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. However, previously this research will begin with a descriptive analysis (Fitrianingsih et al., 2020).

#### 3.2 Descriptive Statistical Analysis

Descriptive analysis is used to describe data statistics in the form of mean, sum, standard deviation, variance, range, etc. to measure whether the data distribution is normal or not with the size of skewness and kurtosis. This can be presented as follows:

| Table 3. Descriptive Statistics |
|---------------------------------|
| N | Minimum | Maximum | Mean | Std. Deviation | Skewness | Kurtosis |
|---|----------|----------|------|----------------|----------|----------|
|   | Statistic| Statistic| Statistic| Statistic | Statistic| Std. Error| Statistic| Std. Error |
| CAR | 140 | -22.29 | 46.49 | 16.595 | 7.17938 | .506 | .205 | 9.626 | .407 |
| LDR | 140 | 40.22 | 102.20 | 77.160 | 13.46285 | -.621 | .205 | -.218 | .407 |
| ROA | 140 | -52.09 | 5.15 | 1.3023 | 4.97131 | -9.245 | .205 | 97.504 | .407 |
| Valid N (listwise) | 140 | 40.22 | 102.20 | 77.160 | 13.46285 | -.621 | .205 | -.218 | .407 |

Source: SPSS 21 output
The table above shows the amount of data used in this study as many as 140 samples studied during the period 2008-2012 (Miadalyni & Dewi, 2013).

3.3 Normality Test

The normality test in the regression model is used to test whether the residual value resulting from the regression is normally distributed or not. A good regression model is one that has a normally distributed residual value. Some normality tests can be performed using the P-P Plot of regression normal graph method or the Kolmogorov Smirnov One Sample test. For original data or before outliers obtained as follows:

1). Graph method

![Normal P-P Plot of Regression Standardized Residual](image)

*Figure 1. Kolmogorov Smirnov One Sample Test Graph Method*

*Source: SPSS 21 output*

From the graphic above, it can be seen that the adjacent points do not spread and move away from the diagonal line.

2). Kolmogorov Smirnov One Sample Test Method

| Table 4. One-Sample Kolmogorov-Smirnov Test |
|---------------------------------------------|
| N                                           | 140 |
| Normal Parameters<sup>ab</sup>              |     |
| Mean                                        | .000000 |
| Std. Deviation                              | 4.58343920 |
| Absolute                                    | .256 |
| Most Extreme Differences                    | .195 |
| Positive                                    |     |
| Negative                                    | -.256 |
| Kolmogorov-Smirnov Z                        | 3.029 |
| Asymp. Sig. (2-tailed)                      | .000 |

a. Test distribution is Normal.
b. Calculated from data.

*Source: SPSS 21 output*
The residuals are normally distributed if the significance value is more than 0.05. From the output above, it can be seen that the significance value (Asymp. Sig. 2-tailed) is 0.00, so the residual value is not normally distributed (0.00 < 0.05). While the data after the outliers obtained the following results:

3). Graph method

![Graph method](image)

*Figure 2. Kolmogorov Smirnov. One Sample Test Graph Method*

*Source: SPSS 21 output*

From the graphic above, it can be seen that the points are around the line, following the diagonal line and have started to spread.

4). Kolmogorov Smirnov. One Sample Test Method

| Table 5. One-Sample Kolmogorov-Smirnov Test |
|--------------------------------------------|
| N | 95 |
| Normal Parameters<sup>a,b</sup> | Unstandardized Residual |
| Mean | .000000 |
| Std. Deviation | 1.1758957 |
| Most Extreme Differences | Absolute | .061 |
| | Positive | .061 |
| | Negative | -.051 |
| Kolmogorov-Smirnov Z | .598 |
| Asymp. Sig. (2-tailed) | .866 |

<sup>a</sup> Test distribution is Normal.

<sup>b</sup> Calculated from data.

*Source: SPSS 21 output*

The residuals are normally distributed if the significance value is more than 0.05. From the output above, it can be seen that the significance value (Asymp. Sig. 2-tailed) is 0.866, so the residual value is normally distributed (0.866 > 0.05) (Ambarawati & Abundanti, 2018).
3.4 Hypothesis Test

a. F test

The F test or Analysis of Variance (ANOVA) was jointly used to determine whether the independent variables together had a significant effect on the dependent variable. In this case, to find out whether the CAR and LDR variables have a significant effect or not on ROA. The test uses a significance level ($\alpha$) = 5%. The results of the F test calculation using SPSS 21 can be seen as follows:

| Model   | Sum of Squares | Df | Mean Square | F     | Sig. |
|---------|----------------|----|-------------|-------|------|
| Regression | 13.563        | 2  | 6.781       | 4.800 | .010 |
| Residual | 129.971        | 92 | 1.413       |       |      |
| Total   | 143.533        | 94 |             |       |      |

a. Dependent Variable: ROA
b. Predictors: (Constant), LDR, CAR

Source: SPSS 21 output

The tested hypotheses are as follows:

H0 : $\beta_1, \beta_2 = 0$, meaning that the CAR and LDR variables together have no effect on the ROA variable. Ha : $\beta_1, \beta_2 \neq 0$, meaning that the CAR and LDR variables simultaneously affect the ROA variable.

Based on the SPSS output above in the table, the calculated F is 4,800, at a significance level of 0.05 with df 1 (number of variables – 1) = 2 and df 2 (n – k – 1) = 95 – 2 – 1 = 92 (n: total data, k : the number of independent variables), then the F table is 3.10. (If F count < F table then H0 is accepted; If F count > F table then H1 is rejected). The calculated F value is 4,800 > F table is 3.10, so H0 is rejected. So it can be concluded that the CAR and LDR variables simultaneously affect the ROA variable.

b. T test (Partial)

The results of the t test or partial regression coefficient test are used to determine whether the independent variable partially has a significant effect or not on the dependent variable. In this case, to find out whether partially the CAR and LDR variables have a significant effect or not on the dependent variable.

Figure 3. The Area of Acceptance and Rejection of Ho
significant effect or not on ROA. The test uses a significant level ($\alpha$) = 5% and 2 sides. The results of the t-test calculation using SPSS 21 can be seen as follows:

The significant value used is $/2 = 0.05/2 = 0.025$ with degrees of freedom $df = n - k - 1$ or $95 - 2 - 1 = 92$. The results obtained for the t table are 1.98609. From the calculation results above, it can be seen that the effect of the independent variable on the dependent variable partially is as follows:

c. Effect of CAR (X1) on ROA (Y)

The tested hypotheses are as follows:

$H_0 : \beta_1 = 0$, meaning that there is no effect of CAR on ROA
$H_a : \beta_1 \neq 0$, meaning that there is an effect of CAR on ROA

The t-count value is 3.028 while the t-table is 1.986, so that $t_{count} > t_{table}$ (3.028 > 1.986) then $H_0$ is rejected, meaning that there is an effect of CAR on ROA. Decision making is based on the significance that, if significant < 0.05 then $H_0$ is rejected, and if significant > 0.05 then $H_0$ is accepted, because it is significant on the t test < 0.05 ($0.003 < 0.05$) then $H_0$ is rejected, meaning that the CAR is significantly partial significant effect on ROA. Looking at the results of the t-test of the effect of CAR on ROA, because the t-count obtained is 3.028, it is greater than the t-table of 1.986, the area of acceptance and rejection of $H_0$ can be described as Figure 4. below:

![Figure 4. Effect of LDR (X2) on ROA (Y)](image)

The tested hypotheses are as follows:

$H_0 : \beta_2 = 0$, meaning that there is no effect of LDR on ROA
$H_a : \beta_2 \neq 0$, meaning that there is an effect of LDR on ROA

### Table 7. Coefficients

| Model  | Unstandardized Coefficients | Standardized Coefficients | t     | Sig.  |
|--------|-----------------------------|---------------------------|-------|-------|
|        | B                       | Std. Error | Beta |       |       |
| (Constant) | .781 | 1.135      | .688 | .493  |
| 1     | CAR           | .121 | .040 | .301 | 3.028 | .003  |
|       | LDR           | -.009 | .012 | -.073 | -.733 | .465  |

*Dependent Variable: ROA*

Source: SPSS 21 output
The t-count value is -0.733 while the t-table is 1.986, so t-count < t-table (-0.733 < 1.986) then H0 is accepted, meaning that there is no effect of LDR on ROA (Saputra et al., 2018).

Decision making is based on the significance that, if significant < 0.05 then H0 is rejected, and if significant > 0.05 then H0 is accepted, because it is significant on the t test > 0.05 (0.465 > 0.05) then H0 is accepted, meaning that the LDR is significantly partial has no effect and is not significant to ROA. Looking at the results of the t-test of the effect of LDR on ROA, because the t-count obtained is -0.733, it is smaller than the t-table of 1.986, the area of acceptance and rejection of Ho can be described as shown below:

![Figure 5. Interpretation of Analysis Results](image)

**Table 8. Interpretation of the Effect of CAR and LDR on ROA on Go Public Banks on the IDX for the period 2008-2012**

| VARIABLE | T test | F test |
|----------|--------|--------|
|          | t      | Results| F      | Results |
| CAR      | t Count = 3,028 | + significant | F Count = 4,800 | + significant |
| LDR      | t Count = -0.733 | Not significant |        |         |

Source: F & t. test results

The F test results in the table above explain that together the Capital Adequacy Ratio (CAR) and Loan to Deposit Ratio (LDR) have a significant effect on Return On Assets (ROA). CAR has a more dominant influence on ROA than LDR, because CAR has a positive influence while LDR is negative. Based on the 2012 Banking Supervision Report (LPP), credit disbursement grew by 23.08%, most of which came from third party funds, which increased by 15.81%. Although lending is quite high, banks are able to maintain credit quality well, as reflected in the gross NPL ratio of 1.87% which is the lowest level in the history of Indonesian banking (Andini & Yunita, 2015).

In line with this, banking profitability grew by 23.65% compared to 2011. From the report above, it can be concluded that the LDR in terms of lending has increased and lending also shows the ability of banks to finance from their own capital funds in addition to funds outside the bank in this case. is the CAR, the bank can gain profitability supported by other factors as reflected in the NPL ratio. The results of the t-test to determine the effect of Loan to Deposit Ratio (LDR) on ROA from the table above states that the results are negative or have no effect and are not significant. This indicates that any increase in LDR has no effect on ROA. This situation is also described in the table below:
The table above is a table of indicators for the LDR and ROA ratios of commercial banks in Indonesia for the period 2008-2012. From the table above shows that there is no increase in LDR does not affect ROA, from 2008 to 2009 LDR has decreased but ROA has increased, in 2010 to 2012 LDR and ROA have increased, meaning that when LDR has increased, this situation gives an indication weakness of bank liquidity, banks can still gain profitability. LDR states how far the bank's ability to repay the withdrawal of funds made by depositors in relying on the credit provided as a source of liquidity. The higher the LDR ratio indicates the lower the liquidity capacity of the bank concerned, because the amount of funds needed to finance loans is getting bigger.

IV. Conclusion

This study tries to answer the research objectives, namely to determine the effect of the capital adequacy ratio (CAR) and loan to deposit ratio (LDR) on the profitability of banks that go public on the Indonesia Stock Exchange (IDX) for the period 2016 – 2021. The results of hypothesis testing using analysis descriptive statistics and multiple regression analysis with 2 independent variables (CAR and LDR) and one dependent variable, namely ROA, shows that the Capital Adequacy Ratio (CAR) variable partially has a significant positive effect on ROA of Go Public Banks on the IDX for the period 2016 - 2021. This proves that the role of bank capital adequacy in running its business affects ROA. Then the variable Loan to Deposit Ratio (LDR) partially has no significant effect on ROA of Go Public Banks on the IDX for the period 2016 - 2021. This proves that the role of credit provided by banks does not affect ROA. Furthermore, the variables Capital Adequacy Ratio (CAR) and Loan to Deposit Ratio (LDR) including the ratio to measure the financial performance of banks simultaneously have a significant effect on ROA of Go Public Banks on the IDX for the period 2016 - 2021.

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