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Analysis of The Impact of NIM, LDR and NPL on Bank Profitability With Variable Mediating Firm Size (Empirical Study on Public Banks Listed on IDX in 2015-2019

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Abstract

The reason of this think about to impact of NIM, LDR and NPL on the productivity of Commercial Banks Go Open with Variable Estimate control. Benefit is anticipated with ROE as a gage of the sum of benefit generated. The tests utilized in this think about were go open commercial banks recorded on IDX (IDX) amid the period 2015-2019. The number of tests utilized as numerous as 18 banks were taken by purposive inspecting strategy. The examination strategy of this ponder employments different direct relapses with spss 24 program that has already passed the classic presumption test. The comes about of this investigate appear that NIM incorporates a critical positive impact on ROE. NPL contains a noteworthy negative impact on ROE. Long remove relationship incorporates a positive but not noteworthy impact on ROE. On the other hand, the utilize of measure as a control variable appears that NIM features a critical positive impact on ROE.

INTRODUCTION

It is familiar, one of the important financial institutions in a country's economy is banking. Banks can affect a country's economic system both macro and micro. The existence of banks today is very influential to the surrounding life. Its function is now no longer only to receive deposits by customers, but the bank has made some changes to the functions and operations that change so diversely. From small things such as real-time transfer of funds between accounts, making transactions online, and even customers can make an investment through the bank.

Bank is an institution that includes a part in exchanges as a monetary intermediary that connects the owner of excess funds (surplus unit) with the party that needs funds (deficit unit). by law in Indonesia No. 10 of 1998 concerning banking article 1 paragraph (2) states that: "Banks are business entities that collect funds from the public in the form of deposits and distribute them to the public in the form of credit and or other forms in order to improve the standard of living of the people". Judging from the statement, it can be said that the bank has the main function of collecting and disbursing the funds in various forms where the main purpose is to move forward the standard of living of the individuals

Profitability in conventional banks can be projected with ROE (Return On Equity) as part of the profitability ratio as this ratio demonstrates management's success in maximizing returns on investors (shareholders). This demonstrates the company's capacity to create profit after tax by utilizing its possess capital owned by the Bank.

ROE can measure the good or bad performance of banks caused by several factors. The factors in question are the ability owned by the bank, an ability owned by the bank in terms of managing

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interest rates projected with NIM (Net Interest Margin), an ability owned by the bank in terms of maintaining its liquidity level that is projected with LDR (Loan to Deposit Ratio), and an ability owned by the bank in terms of reducing the existence of problematic loans that are projected with NPL (Non Performing Loan).

Research conducted by Eng (2013), Amalia and Chabachib (2017), Arimi and Mahfud (2012), Laryea et al. (2016), and Axel et al. (2017) showed that NIM has a significant positive impact on ROE, while research conducted by Alper and Anbar (2011) showed that NIM has no significant relationship to ROE. Research conducted by Prasajaya and Ramantha (2013) showed that LDR has a significant positive relationship to ROE. However, there are some studies also that show that LDR has an insignificant relationship to ROE, namely conducted by Alper and Anbar (2011), Menicucci and Paolucci (2016) and Septiana and Muharam (2016). Research conducted by Eng (2013), Krisnawati and Chabachib (2014), Dietrich and Wanzenried (2014), Petria et al. (2015), Menicucci and Paolucci (2016), and Axel et al. (2017) showed that NPL had a significant negative relationship with ROE. However, research conducted by Septiana &Muharam (2016). showed that NPL has an insignificant relationship to ROE.

This study uses variable control namely Size as measured by the total equity owned by the company. In general, companies that have a large amount of equity are certainly able to create a greater profit than companies that have smaller assets. But in reality, between Firm size and ROE is still not very clear relationship because large companies do not necessarily have a high ROE because equity management is not good. But on the other hand, companies that have a small amount of assets are actually able to produce a higher ROE than larger companies because small companies can manage all their assets well so that they can have a high chance of growth. According to Prasajaya and Ramantha (2013), Petria et al. (2015) and Laryea et al. (2016) the size of the industrial is measured by the natural logarithm of total equity.

The phenomenon of gap is about the ratio of banking finance that experienced fluctuations during the period 2015-2019 and the existence of research gap based on previous research that still shows inconsistencies in results, differences in sampling years and the use of FrimSize control variables to be the basis of research on factors that affect the performance of a bank needs to be done again

Dwiwiyanto (2007) The results of the analysis show that the WR, BOPO, NIM, and CAR data are partially significant to the ROE of banks listed on the IDX for the period 2004-2007, while NPL and GWM have no significant effect on ROE as indicated by a level of significance value greater than 5%. ROE is one of Bl's benchmarks in assessing banking health, and in this study the factors that significantly affect ROE are WR, BOPO, NIM, and CAR.

Martin (2021) The FIM focuses upon the banking part of financial intermediation and measures whether a financial system is successful in transforming (bank) deposits into loans subject to feasibility restrictions applied to both the banking and securities markets. Utilization of the FIM is demonstrated for 48 financial systems of the world using data from 1993 to 2016 under different classifications applied to financial systems.

The purpose of this study is to find out how NIM, LDR and NPL affect ROE by using FirmSize control variables on Public Banks Listed on the IDX in 2015-2019.

Hypotheses Development

Effect of Net Interest Margin (NIM) on Return On Equity (ROE)

This ratio compares net interest income with the number of productive assets. This ratio is used in measuring the bank's ability in how banks can manage their productive assets in order to generate net interest income. According to Axel, Chabachib, & Irene (2017) The biggest source of bank profits comes from credit. In this way, banks must utilize existing resources channeled in the form of credit to earn a large profit. net profit is derived from the difference in bank interest. If the bank's profits are more prominent than the installments, at that point the bank's productivity will increase.

H1: NIM ratio positively affects ROE

Simorangkir (2004) explained that loan interest is one element of bank revenue that can increase profitability, LDR ratio can show how much the allocation rate of funds obtained from third party funds. The higher LDR ratio can indicate good profitability because successful lending will be able to increase the bank's profitability.

H2: LDR ratio positively affects ROE

NPL (Non Performing Loan) is a comparison between the number of non-performing loans caused by the debtor and the amount of credit owned by the bank and then given to the debtor. The higher the NPL value, the worse it will be for banks due to the high number of non-performing loans that may lead to a decrease in ROA (Laryea et al., 2016).

H3: NPL ratio negatively affects ROE

METHODS

Dependent Variable used is Profitability as measured by using ROE, i.e. profit after tax divided by the average total assets. The Independent variables used are NIM, LDR, and NPL. NIM is measured using net interest income divided by average productive assets. The LDR is measured using the calculation of total credit divided by the total funds of third parties. NPL is measured using the calculation of total non-performing loans divided by total credit. In this study the control variable used was FirmSize which was measured by natural logarithm calculation of total assets.

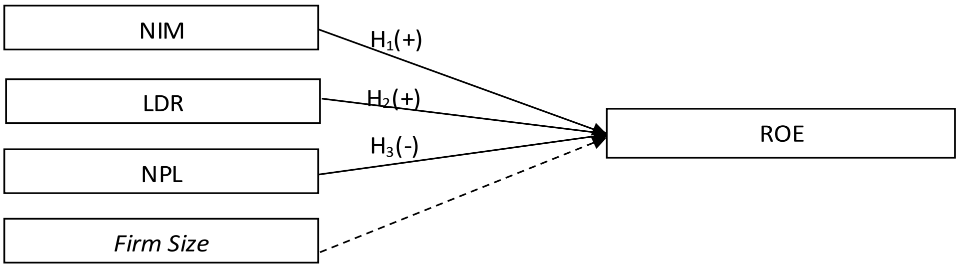

Figure 1. Theoretical Framework

Sample

In this study, the pupolasi amounted to 25 Commercial Banks that went public and listed on the IDX period 2015 - 2019. The number of banks registered with IDX in this study was 48 banks. The samples in this study were taken using Purposive Sampling method which is as many as 25 commercial banks from 2015 to 2019. The data in this study that passed in the elimination of outliers for the classic assumption test using SPSS 23 yaitiu amounted to 18 commercial banks.

Analysis Methods

In this study the method used to collect the required data is to use a library study method with multiple linear regression analysis. Multiple linear regressions are linear regression models whose bound variables or dependent variables are linear functions of several free variables or independent variables (Ghozali, 2018). Multiple linear analysis aims to measure the strength of relationships and show the direction of relationships between several independent variables namely NIM, LDR and NPL against variables bound to dependent variables i.e. ROA by using FirmSize control variables. The regression equation can be formulated as follows:

$$ROEit = \alpha + \beta1X1it + \beta2X2it + \beta3X3it + \varepsilon it$$
$$ROEit = \alpha + \beta1X1it + \beta2X2it + \beta3X3it + Size + \varepsilon it$$

ROE_{it} : *Return On Asset* Bank i year to t
α : Constants
$\beta 1 - \beta_4$: Coefficient of value change
X1 : *Net Interest Margin*
X2 : *Loan to Deposit Ratio*
X3 : *Non Performing Loan*
$_{it}$: At bank i year t
Size : Company size
ε_{it} : for bank i year to t

RESULTS AND DISCUSSION

Descriptive Statistics

Based on descriptive statistical test results using SPSS 25, Variable Return On Equity (ROE) has an average or mean of 1.8459% which is the amount of roe mean value in accordance with the rules that have been made by Bank Indonesia, na-

Table 1. Descriptive Statistics Results

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROE (%)	100	-0.0090	0.0503	0.018459	0.0115736
NIM (%)	100	0.0153	0.0855	0.054328	0.0142644
LDR (%)	100	0.5061	1.0886	0.839108	0.1131919
NPL (%)	100	0.0021	0.0657	0.025521	0.0133331
FirmSize	100	2509281	1076438066	180559705.76	267487707.822
Valid N (listwise)	100				

mely the ROE value of a healthy and good banking is above 1.5%.

The average value of Net Interest Margin (NIM) is 5.4328% which is the mean value of NIM is not in accordance with the rules made by Bank Indonesia, namely the NIM value of a healthy and good banking is above 6%. The average value of the Loan to Deposit Ratio (LDR) is 83.9108% which is the amount of LDR mean in accordance with the rules made by Bank Indonesia, namely the LDR value of a healthy and good banking is between 80% to 110%.

The average non-performing loan (NPL) value of 2.5521% which is the mean value of NPL in accordance with the rules of Bank Indonesia, namely the NPL value of a healthy and good banking is below 5%. The average value of FirmSize (SIZE) was 180,559,705.76 Rupiah.

Discussion of Research Results

In this study, classic presumption tests have in recent times conducted many direct relapse investigations, in particular ordinaris tests, multicolinearity tests, autocorrelation tests, and heteroskedastisity tests. The emergence of the classic suspicion test that is on all the information used is indicated for all passes on the classic presumption test.

Hypotheses Test Results

Test F

From the results of test F, the results of the impact simultaneously or together are shown by the variables used, namely NIM, LDR and NPL in table 2 below:

Table 2. F Statistical Test Results Without Using Control Variables

ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.008	4	0.002	38.804	.000[b]
Residual	0.006	100	0.000		
Total	0.014	104			

a. Dependent Variable: ROE

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

Table 3. Statistical Test Result F Using Control Variables

ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	.011	5	.002	66.757	.000[b]
Residual	.003	99	.000		
Total	.014	104			

a. Dependent Variable: ROE

b. Predictors: (Constant), *SIZE*, NPL, LDR, NIM

Based on table 2 the F value before using the control variable is 38.804 with a significance value of 0.000 and in table 3 by using the control variable the value F is 66,757 with a significance value of 0.000. This indicates a difference in the F value from before using a control variable using a control variable, and a significance value that is below 0.05 so that the regression model is feasible to use and all independent variables simultaneously affect ROE.

Determination Coefficient Test (R2)

The results of the Determination Coefficient Test are shown in tables 4 and 5 as follows:

Table 4. Determination Coefficient Test Result (R2) Without Using Control Variables

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.775[a]	0.601	0.687	0.0074586

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

Table 5. Determination Coefficient Test Result (R2) Using Control Variable

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.879[a]	0.685	0.785	0.0056572

a. Predictors: (Constant), *SIZE*, NPL, LDR, NIM

Table 4 shows the Value of Adjusted R Square without using a control variable of 0.687 or 68.7% and in table 5 shows the value of Adjusted R Square by using a control variable of 0.785 or 78.5%. This can mean that 78.5% of ROE variables can be explained with independent variables and control variables, while 21.5% is explained by other variables outside the research model. An R value of 0.785 explains the strong relationship between autonomous factors and subordinate variable exposed control variables of 78.5%. It can be concluded that variable size has a good function in controlling the impact of independent variables on dependent variables because it can increase the value of the coefficient of determination (R2).

Test t

From the results of the t test, the results of the partial impact shown by the variables used are NIM, LDR and NPL in table 6 below:

Table 6. Test t Statistics Using Control Variables

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.058	.008		-7.563	.000
NIM (+)	.359	.046	.442	7.835	.000
LDR (+)	.006	.006	.058	1.058	.293
NPL (-)	-.271	.044	-.313	-6.177	.000
SIZE	.004	.000	.496	8.650	.000

a. Dependent Variable: ROE

Fom table 6, a regression equation can be compiled as follows:

$$ROEit = \alpha + \beta1X1it + \beta2X2it + \beta3X3it + Size + \varepsilon it$$

$$ROEit = -0.058 + 0.359 NIM + 0.006 LDR - 0.271 NPL + 0.004 (Size)$$

From the results of multiple linear regression equations used in this study, it can be analyzed as follows:

Net Interest Margin (NIM)

Sourced from research results, obtained the results of regression coefficients of NIM with a positive direction to the variable bound roe namely 0.359 with a significance of less than 0.05 ie (0.000 < 0.05) displays that nim variables have a significant positive impact on roe variables. These results indicate a second hypothesis (H2) which states that the NIM variable positively affects roe accepted. This research is in accordance with previous research conducted by Eng (2013), Krisnawati &Chabachib (2014), Arimi &Mahfud (2012), Laryea et al. (2016), and Yudha, Chabachib, &Pangestuti (2017) which showed that NIM had a significant positive effect on ROE.

Loan to Deposit Ratio (LDR)

Based on the research, obtained coefficient of LDR regression with a positive direction to the roe-bound variable of 0.006 with a significance of more than 0.05 i.e. (0.293 > 0.05) thus indicating that the LDR variable has no significant effect on roa variables. The third hypothesis indicates (H3) that the LDR variable has a positive effect on rejected ROE. This research is in accordance with the results of previous research conducted by Menicucci &Paolucci (2016) and Alper &Anbar (2011), which showed that LDR (Loan to Deposit Ratio) has an insignificant positive effect on ROE (Return on Assets).

Non Performing Loan (NPL)

Based on the study, the NPL regression coefficient with negative direction to roe bound variable is -0.271 with a significance of less than 0.05 i.e. (0.000 < 0.05) thus indicating that NPL variable has a significant negative effect on ROE variable. the fourth hypothesis (H4) indicates that the npl variable negatively impacting roe received by this study matches previous research tried by Petria et al.. (2015), Eng (2013), Krisnawati &Chabachib (2014), Dietrich &Wanzenried (2014), Menicucci &Paolucci (2016), and Yudha, Chabachib, &Pangestuti (2017), which showed the results of the study that NPL significantly negatively affected ROE.

CONCLUSION AND RECOMMENDATION

This study analyzed the effect of NIM, LDR and NPL on ROE with FirmSize control variables. Hypothesis testing using SPSS 23 statistical tool with multiple regression analysis methods. The samples in this study were 18 conventional commercial banks registered with IDX during the period 2015-2019. The comes about of synchronous speculation testing (Test F) appeared that the esteem of F was 67,257 with a centrality rate of 0.000, so it can be said that all free factors at the same time influence subordinate factors specifically ROE. Whereas in part (T-Test) can be concluded as takes after:

Net Interest Margin has a positive and significant impact on Return On Equity so that any increase in NIM will have an impact on the increase in profitability (ROE).

Loan to Deposit Ratio has a positive and insignificant impact on Return On Equity in other words the increase in LDR has no effect on profitability (ROE). This is because there is a high gap between each bank that provides credit. There are banks that have a low LDR ratio that is due to the lack of optimal use of third party funds. While on the other hand there are banks that are excessive in providing credit so as to make the LDR ratio level is very high. This resulted in a fairly high gap between banking companies every year.

NPL have a negative and significant impact so that any increase in NPL will have an impact on the decrease in profitability (ROE).

Using Size as a control variable provides a difference in results between using a control variable and without using a control variable. With the control variable, the adjusted value of R2 increased from 68.7% to 78.5%. This suggests that there are still 21% affected by other factors beyond the variables used in this study. These other factors include bopo variables used in Herry (2015), Septiana &Muharam (2016).and Prasajaya &Ramantha (2013), Inflation and GDP Growth used in Petria et al. (2015).

From the results of the research that has been done, the suggestions submitted include:

From the results of the study, it is known that NIM has the positive and most dominant effect on ROA. Therefore, by further optimizing the management of productive assets will be able to increase net interest income so that profitability will increase. From the results of the study also known NPL negatively affect ROE, so banks should be able to reduce the level of non-performing loans because it will have an impact on the level of profitability of banks. So if the problem credit can be overcome then it will be able to improve the profitability of the bank. So that banks that have prepared their capital to overcome the risk of losses that will be faced will be better prepared and will be able to increase the profitability of the bank.

FurtherMore Researchers are expected to add other variables such as BOPO used in Herry (2015), Septiana and Muharam (2016). and Prasajaya and Ramantha (2013), Inflation and GDP Growth used in Petria et al. (2015) which can affect bank profitability.

The results showed that nim independent variables have the most impact compared to other variables in predicting the impact on ROE. But in addition to NIM and NPL, it also shows a significant impact on ROE. This is expected to be an input and consideration for investors in investing in the banking industry.

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