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THE ANALYSIS OF THE EFFECT OF NPL ON ROA IN THE BANKING COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE

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Abstract

This research aims to analyze the effects of Return on Equity (ROE), Capital Adequacy Ratio (CAR), and Non Performing Loan (NPL) on Return on Asset (ROA) of the banking companies listed on the Indonesia Stock Exchange by using multiple regression model. This study used Balance Sheet and Ratio Report in the period of 2015-2017. Result of first hypothesis indicates that ROE affects ROA with the t-test value 5.711 and a 0,000. Result of second hypothesis indicates that CAR has no effect on ROA with the t-test value 0.975 and a 0.338. Results of third hypothesis indicates that NPL has no effect on ROA with the t-test value -1.642 and a 0,111. Result of the R test is 0.795 and the R square is 0.632.

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Introductions

Banking companies provide payment system services to support the continuity of economic activities of the society. Safe and efficient payment system ensure the economy to run well. The bank also serves as a media in transmitting monetary policy issued by the central bank aimed to maintain price stability and economic growth.

The analysis of bank financial statement is basically to determine the level of profitability, liquidity, and solvency in order to determine the health level of a bank. The availability of some computer programs, such as spreadsheets as well as accounting programs, will simplify the calculation of financial ratios conducted regularly. Thus, we can evaluate whether the level of bank health, based on the calculation of the bank ratio, has been in line with the standards of Bank Indonesia (BI).

Bank's operational activities have the main objective to achieve the maximum level of profitability. Profitability is a bank's ability to generate or earn profits effectively and efficiently. Profitability used is Return on Asset or ROA because it can take into account the ability of bank management in obtaining profit as a whole. The level of profitability with ROA approach aims to measure the ability of bank management in managing its own assets to generate income. If the ROA increases, the profitability of the bank will also be increased. A good bank is indicated by a good financial performance. One way to measure the bank financial performance is by analyzing the bank financial ratios. These ratios can be used to arrange the bank ratings, to predict bankruptcy, to assess the health level of the bank, and to assess the bank performance.



Previous research by Adriyanti (2011) has examined the effects of Non Performing Loan (NPL) and Liquid Debt Ratio (LDR) on ROA in the Government-Owned Banks. The results of her study proved that NPL has a significant effect on ROA. NPL is a ratio used to measure the ability of bank in measuring the risk of credit repayment failure by the debtor. NPL reflects the credit risk; the lower the NPL value, the less the credit risk borne by a bank. Results of a research by Adriyanti (2011) showed that NPL as an indicator of the financial ratios is important for the sustainability of bank performance. NPL is an acceptable credit risk limit. Referring to the previous explanations, the purpose from this research are to know how does the NPL affect ROA.

Literature Review

Bank Financial Ratio Analysis

To assess the achievement and the financial condition of a company, a financial analyst requires certain measurements. The most commonly used measure is ratio. According to Munawir (2010:64), "A ratio describes a relationship or a balance (mathematical relationship) between one number and another. The use of ratio as an analysis tool will provide a description of a condition (good or bad) to the analyst". Data source to calculate a company's financial ratio can be derived from internal data, i.e., corporate profit or loss report, balance sheet, and data related to debts, accounts receivable, inventory, etc., and also external data in the form of other published financial statements and the industry averages obtained from various sources.

According to Munawir (2010:238), there are 4 groups of financial ratios, i.e., liquidity ratio, activity ratio, profitability ratio, and solvency ratio.

- a. Liquidity ratio indicates the ability of the company to finance its operational activities and to pay off its financial obligations when they come due.
- b. Activity ratio indicates the ability of the company in performing daily activities or the ability of the company in the sale, collection of receivables, and utilization of the assets owned.
- c. Profitability ratio measures the ability of a company to earn profits from the implementation of its various policies and decisions.
- d. Solvency ratio is a ratio that measures to what extent the company's assets are financed by the debt.

In analyzing bank financial statements, the ratios used in this study are liquidity ratio, leverage (solvency) ratio, and profitability ratio to measure the level of bank's operational effectiveness and the degree of bank's profit. Liquidity ratio is a ratio that describes the ability of a company to pay off its short-term debts (Cashmere, 2008:110). The liquidity of the banking companies can be counted using cash ratio, loan to deposit ratio, loan to asset ratio, investing policy ratio, NPL, and banking ratio.

The bank leverage (solvency) ratio is a measure of the bank's ability to find sources of funds to finance its activities. This ratio is a measuring tool to assess the wealth of bank to evaluate the efficiency of the bank management (Kasmir, 2008: 229). This ratio can be calculated by Capital Adequacy Ratio or CAR, Risk Assets Ratio, and Primary Ratio.

Profitability ratio is a group of ratios as the combined effects of liquidity, asset management, and debt management from the operational activities. Profitability of the banking companies is known by using Net Profit Margin, ROE, ROA, Return on Investment, and Interest Expense Ratio.

The banking companies have several considerations in providing credit to its customers and the decisive factor is the ability of debtors to repay their debts. After the credit is given, the bank will review the use of credit and the ability and compliance of the debtors in paying off their financial obligations. The bank conducts a review, an assessment, and



a binding of the collateral to minimize credit risk. Referring to the previous arguments, then the first hypothesis of this research is formulated as follows.

H1: NPL has a significant effect on ROA

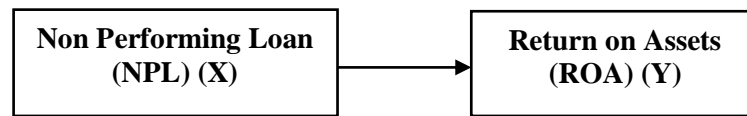


Figure 1 Conceptual framework

Method

Data Source

The data used is secondary data in the form of financial statement data of the *go public* banking companies listed on the Indonesia Stock Exchange for the period of 2011- 2013.

Table 1. Results of research data

No.	Code	Bank	Year	ROA (%) Y	NPL (%) X
1	BMRI	Bank Mandiri (Persero) Tbk	2011	4.13	0.42
			2012	4.72	0.93
			2013	2.83	1.11
2	BBNI	Bank Negara Indonesia (BNI) Tbk	2011	1.70	0.80
			2012	2.50	1.10
			2013	2.90	0.50
3	BBRI	Bank Rakyat Indonesia (Persero) Tbk	2011	3.73	1.08
			2012	4.64	0.74
			2013	4.93	0.42
4	BBKP	Bank Bukopin Tbk	2011	1.62	2.47
			2012	1.46	2.33
			2013	1.87	2.88
5	BBCA	Bank Central Asial Tbk	2011	3.40	0.12
			2012	3.51	0.24
			2013	3.82	0.22
6	BNGA	Bank CIMB Niaga Tbk	2011	1.40	1.70
			2012	1.30	2.50
			2013	1.40	2.60
7	BDMN	Bank Danamom Tbk	2011	0.70	4.50
			2012	3.87	2.45
			2013	3.59	3.02
8	MEGA	Bank Mega Tbk	2011	1.77	1.02
			2012	2.45	0.74
			2013	2.29	0.71
9	BNLI	Bank Permata Indonesia Tbk	2011	1.70	2.00
			2012	2.00	2.70
			2013	1.70	4.00
10	NISP	Bank OCBC NISP Tbk	2011	1.80	1.40
			2012	1.30	0.90
			2013	1.90	0.60
11	BII	Bank Internasional Indonesia	2011	0.07	1.58
			2012	1.14	1.74
			2013	1.13	1.10

Source: www.idx.com.



Population and Sample

The sample criteria are as follows:

1. The selected sample is the banking companies listed on the Indonesia Stock Exchange.
2. The companies have active stocks during the period of 2011-2013.
3. The companies have complete financial data for the last three years.

According to the determined criteria, the sample consisted of 11 banking companies listed on the Indonesia Stock Exchange having the active stocks during the year of 2011-2013 of the total banking companies. The sample companies selected in this study are presented in Table 1.

Research data were analyzed by multiple regression analysis. Multiple regression analysis was conducted to find out to what extent the independent variable affects the dependent variable. Multiple regression consists of one dependent variable and more than one independent variable. In this study, the dependent variable is the profitability (ROA), while the independent variable is the NPL.

The model of ROA relationship with the other variables can be arranged in the following function or equation:

$$Y = a + b_1 X_1 + e.$$

Result and Discussion

From the research data presented in Table 1, the data then processed to determine the statistical description of the mean and standard deviation of each variable as presented in Table 2. Referring to Table 2, the average value (mean) of the ROA variable is 2.402 with a standard deviation of 1.252. For the NPL variable, the average value is 1.533 with the standard deviation of 1.105.

Table 2. Descriptive Statistic

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
ROA	33	.07	4.93	79.27	2.4021	1.25246
NPL	33	.12	4.50	50.62	1.5339	1.10509
Valid N (listwise)	33					

Normality Test

Normality test is used to determine whether a sample data fits a standard normal distribution, both multivariate and univariate.

Table 3. Data Normality Test
 One-Sample Kolmogorov-Smirnov Test

		ROA	NPL
Normal Parameters ^a	N	33	33
	Mean	2.4021	1.5339
	Std. Deviation	1.25246	1.10509
Most Extreme Differences Absolute	Positive	.171	.195
	Negative	.171	.195
		-.094	-.100
Kolmogorov-Smirnov Z		.984	1.119
Asymp. Sig. (2-tailed)		.287	.163

a. Test distribution is normal



Ho: The population is normally distributed

Ha: The population is not normally distributed

The decision-making is based on probability. If the probability value > 0.05 , then Ho is accepted. If the probability value ≤ 0.05 , then Ho is rejected

- a. ROA: referring to the significance column (Asymp Sig., 2-tailed), the ROA is 0.287 or the probability is more than 0.05, then Ho is accepted which means that the population is normally distributed.
- b. NPL: referring to the significance column (Asymp Sig., 2-tailed), the NPL is 0.163 or the probability is more than 0.05, then Ho is accepted which means that the population is not normally distributed.

Multicollinearity Test

Multicollinearity test is used to determine whether there is a deviation of classical assumption of multicollinearity, which is the linear relationship between variables in the regression model. The research results are presented in Table 4.

Table 4. Results of Multicollinearity Test
Coefficients^a

Model	Collinearity Statistics	Coefficients ^a	
		Tolerance	VIF
1 (Constant)			
NPL		.837	1.194

a. Dependent variable: ROA

From the results presented in Table 4, it is found that the value of variance inflation factor (VIF) is smaller than 5. Thus, it can be assumed that there is no multicollinearity problem.

Autocorrelation Test

The autocorrelation test is used to determine whether is a deviation of classical autocorrelation assumption, which is the correlation between residual in one observation with other observation in the regression model. The results of the autocorrelation test can be seen in Table 5.

Table 5. Results of Autocorrelation Test
Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.795 ^a	.632	.593	1.9563	1.862

a. Predictors: (Constant), NPL

b. Dependent Variable: ROA

From the output results, the Durbin Watson (DW) value generated from the regression model is equal to 1.862. While from DW table with 0.05 significance and the number of data (n) = 33, and K = 3 (K is the number of variables), the DL value is equal to 1.2576 and dU is equal to 1.6511. Since d is positioned after dL and Du, then the null hypothesis is accepted which means that there is no negative autocorrelation.

Multiple Linear Regression Analysis

In this study, the variable used as predictor (X) or independent variable is NPL and the variable used as the dependent variable (Y) is ROA. To find out the effect of independent



variable on dependent variable, data of the independent variable used is from the period of 2010 to 2012, to determine the effect of these variables on the stock price after the financial statements were published by the company. The multiple regression analysis model is used to determine the effect of NPL (X) on ROA (Y) in the banking companies listed on the Indonesia Stock Exchange. To facilitate data processing, this study used Statistical Packages for Social Science or SPSS. The results of analysis can be seen in Table 6.

Table 6. Results of Multiple Linear Regression.
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std.	Beta		
1	(Constant)	.034	1.079		.032	.975
	NPL	-.229	.140	-.202	-1.642	.111

a. Dependent Variable: ROA

From the results of analysis, the equation of multiple linear regression is as follows:

$$Y' = a + b_1X_1 + e$$

$$Y' = 0,034 + (-0,229X_3) + e$$

The explanation of the above regression equation is as follows:

1. Constant of 0.034 means that if the NPL (X) value is 0, then the ROA (Y") value is 0.034.
2. Regression coefficient of the NPL (X) of -0.229 means that if other variables are fixed and the NPL has increased by 1 unit, then the ROA (Y") will decrease equal to -0.229. The negative value of the coefficient means that there is a negative relationship between NPL and ROA, the higher the value of NPL, the lower the value of ROA.

The results of the multiple linear regression equation show the direction of the effect of independent variable on dependent variable, as indicated by the regression coefficient of each variable. The positive regression coefficient has a direct effect on the ROA, whereas the negative regression coefficient has the opposite effect on ROA. Then, to determine the significant effect of independent variable on dependent variable, either simultaneously or partially, the hypothesis testing will be conducted by referring to the results of determination coefficient analysis (R square) and partial correlation coefficient (R) as presented in Table 7.

Table 7. Results of Coefficient Determination and Partial Coefficient Correlation T test
Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.795	.632	.593	.79856

a. Predictors (Constant): NPL

b. Dependent Variable: ROA

1. Determination Coefficient Analysis

Referring to Table 4, the value of R square (coefficient of determination) is 0.632 or 63.2%. This means that 63.2% of ROA (Y) is affected by NPL, while the remaining 36.8% is the contribution of other factors excluded from this study.

2. Correlation Coefficient Analysis (R)

Referring to Table 4, the relationship of ROA and NPL can be seen from the value of R (multiple correlation coefficient) which is 0.795 or 79.5%. This indicates a strong



relationship between NPL and ROA.

Simultaneous Regression Test (F-test)

F-test is used to test the significant effect of NPL as the independent variable NPL (X) on ROA (Y) as the dependent variable simultaneously. The results are presented in Table 8.

Table 8. Results of Simultaneous Regression Test (F Test)
ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.703	3	10.568	16.572	.000 ^a
	Residual	18.493	29	.638		
	Total	50.197	32			

a. Predictors: (Constant), NPL

b. Dependent Variable: ROA

The value of F Calculate > F Table (16.572 > 2.93), then Ho is rejected. Because F Calculate > F Table (16.572 > 2.93), then Ho is rejected, meaning that there is a simultaneous significant effect of NPL (X) on ROA (Y) in the banking companies listed on the Indonesia Stock Exchange for the period of 2011-2013.

Partial Regression Test (t-test)

Partial regression test (t-test) is conducted to figure out that, partially, the independent variable affects the dependent variable in the banking companies listed on the Indonesia Stock Exchange. The results of analysis are presented in Table 9.

Table 9. Results of Partial Regression Tests (t-test)
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.034	1.079		.032	.975
	NPL	-.229	.140	-.202	-1.642	.111

a. Dependent Variable: ROA

The result of t-test shows that the value of t-calculate of the NPL (-1.642) is smaller than the t-table value (2.045). This means that, partially, NPL has no significant effect on ROA by assuming that other variables are constant. This can also be seen from the SPSS results with the significance level of -0.299 which is greater than 0.05. The CAR regression coefficient is also positive. This means that NPL has an insignificant negative effect on the changes of the ROA in the banking companies listed on the Indonesia Stock Exchange.

From the results of analysis, the linear regression equation is as follows:

$$Y = 0,034 - 0,229X + e$$

The results of the R and R Square tests are the followings:

1. R Square Analysis (Determination)

Referring to Table 4, the value of R square (coefficient of determination) is 0.632 or 63.2%. This means that 63.2% of ROA (Y) is affected by NPL, while the remaining 36.8% is the contribution of other factors excluded from this study.

2. Correlation Coefficient Analysis (R)

Referring to Table 4, the relationship of independent variable and ROA, which can be seen from the value of R (multiple correlation coefficient), is 0.795 or 79.5%. This shows a strong relationship between NPL and ROA.



Based on the results of the t-test, it is found that the t-calculate of NPL (-1.642) is smaller than the t-table value (- 2.045) which means that partially, NPL has no significant effect on ROA. Therefore, the proposed hypothesis stating that NPL has a significant effect on ROA is rejected.

NPL can be interpreted as the loan on which the debtor finds difficulty in making the repayment due to intentional factors such as deviations or unintentional factor, or external factors that are beyond the ability of the debtor's control, such as poor economic condition (Francisca and Siregar, 2009:25).

In general, NPL is a crucial problem for the national banks. One of the important factors in the NPL problem is the multidimensional impact of the 1998 crisis that caused many bank debtors from the corporate, commercial, and consumer segments were incapable of paying off their NPLs. In addition, the more important factor is the lack of willingness and good faith of the debtors. The increase in interest rates also worsens the position of NPL due to the adjustment of BI regulation number 7/2/2005 that was implemented by BI, starting in 2005. The increased NPL will reduce the amount of bank equity because the income will be used to cover the high NPL. Furthermore, the increase in NPL value will affect the bank in distributing credit in the next period that will certainly reduce the dividends and profits or equity.

In order to avoid high NPL ratio and inefficient credit distribution, it is necessary to consider efficient allocation of funds such as credit distribution that can give high return where the NPL rate is not too high. Inefficient allocation of funds will result in decreased credit distribution. This happens because the amount of capital is reduced so that the funds distributed in the next period will be decreased. This situation will hamper the bank's operational activities and also lower the bank's income.

Referring to the existing data, some banks have above 2% NPL, i.e., Bank Danamon, Bank Bukopin, Bank CIMB Niaga, and Bank Permata. Due to the high NPL, these banks should be more selective in distributing credit to its targeted customers in order to increase profits for the bank itself.

Conclusion

According to the results of the analysis, it can be concluded that based on the t-test results, the NPL variable has no significant effect on the ROA variable in the banking companies listed on the Indonesia Stock Exchange for the period of 2011 to 2013.

Future research can use larger research objects such as companies engaged in manufacturing or state-owned enterprises, and increasing the number of research variables, such as Earning per Share (EPS), Debt to Equity Ratio (DER), Current Ratio (CR) Liquid Debt Ratio (LDR), Net Interest Margin (NIM) and others. This study also suggests future research to extend the time period of the research.

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