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Bank Specific and Macroeconomic Determinants of Commercial Bank Profitability: Empirical Evidence from Indonesia

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Abstract		**Original Research Article**

The purpose of the study was to analyze the influence of bank specific factors consisting of; ratio of non-performing loans (NPL), net interest margin (NIM), capital adequacy ratio (CAR), loans deposit ratio (LDR), operating expenses and operating income (BOPO), and capital structure (DER), while macroeconomic variables consist from; inflation and interest rates. The research sample is 30 national private commercial banks that have been listed on the Indonesia Stock Exchange during the period 2010-2016 which were analyzed using the panel data regression method. The results showed that the NPL and BOPO variables had a negative effect on bank profitability, while the NIM, LDR, and DER variables had a positive effect. For the CAR variable, inflation and interest rates have no effect on bank profitability. Empirical findings of the study have implications that bank specific factors are important to be considered by bank management in improving the performance of bank profitability.

Keywords: Profitability, banking, bank specific, macroeconomic.

INTRODUCTION

The purpose of banking in Indonesia is to support the implementation of national development in order to improve equity, economic growth and national stability that lead to improving people's welfare. The importance of the role and presence of banks in a country makes public trust an important asset that needs to be maintained by banks, in order to improve the efficiency of bank use and intermediation efficiency and to prevent bank runs and panics. Public trust is also needed because the bank's operational activities are funded by the deposition of customer funds, and the bank does not have enough cash to pay obligations to all its customers simultaneously if they decide to withdraw all of their deposits in the bank [1].

Mediation of the financial sector is certainly also related to efficiency in the economy, the better the level of mediation of a bank in the collection and distribution of funds, the economy of a country will certainly develop faster. One indicator to assess the financial performance of a bank is to see the level of profitability. The higher the profitability of a bank, the better the bank's performance. The chaos in the banking world can have an impact on economic stability and cause a domino effect on other banks, therefore every bank must be healthy and bring in adequate profits so that the bank can grow and develop [2].

The banking industry in Indonesia has experienced various problems; if observed the root cause is weak and not implemented good corporate governance (good corporate governance). This causes the banking industry to not prudently absorb credit risk growth and rapidly changing domestic prices. Meanwhile, the lack of transparency in practices and management (practices and governance) of a bank makes the supervisory body difficult to detect fraud practices committed by bank management and officials [3].

Indonesian banking slowed in 2017, Return on Assets (ROA) of banks in the BOOK IV category fell from 3.11% in September 2016 to 3.04% in September 2017. The decline has continued to occur since the end of 2014. Problems that occur in Indonesia at present the value of banking profitability may nominally increase but the ratio may be depressed. the condition is driven by three factors namely; In terms of interest rates that continue to fall, regulatory burdens that burden banks and make banks have to set aside some assets, especially liquid ones, and the burden of unpaid credit risk which is still considered high.

Increased ROA is important for banks, because it illustrates the performance of banks. Predicted variables that affect changes in profitability (ROA) are CAR (Capital Adequacy Ratio) [4, 5], NIM (Net Interest Margin) [6], BOPO [4], LDR (Loan to Deposit Ratio) [7], NPL [8], DER (debt to equity ratio) [9], inflation [10], and interest rates [10].

The importance of positive performance in the banking sector makes analyzing the predictor variables very important to do, therefore analysis of the factors that affect profitability is a top priority. The purpose of this research is to analyze the effect of NPL, NIM, CAR, LDR, BOPO, DER, Inflation, and Interest Rates on the banking profitability (ROA) recorded on the Indonesia Stock Exchange 2011-2017 period either simultaneously or partially.

LITERATURE REVIEW

Profitability is the measure of percentage used to assess the extent to which a company is able to generate profits at an acceptable level. The only measure of profitability in the salas banking industry can use the Return on Assets (ROA) assessment. ROA focuses the company's ability to obtain profitability in its operations [11, 12]. The greater the ROA, the greater the level of profits achieved by the bank and show the company's performance is getting better by obtaining operating profit [13]. A good ROA standard is around 1.5%, and the measurement of ROA according to Husnan [14] can use the formula:

$$ROA = \frac{Net\ Earning}{Total\ Asset}\ x\ 100\%$$

Credit risk is the risk faced by banks because they channel funds in the form of loans to the public [15]. Non-fulfillment of customer obligations (third parties, not including banks), such as principal loan payments, interest payments and others to banks, causes banks to be insolvency. Risk measurement is closely related to measurement of return, therefore, management of receivables is very important for companies whose operations provide credit, because the greater the receivables the greater the risk [8]. The financial ratio used as a proxy for the value of a credit risk is the Non Performing Loan (NPL) ratio. High NPL conditions will increase the cost of both the cost of earning productive assets and other costs, so that the potential for bank losses [8]. The standard set by Bank Indonesia for NPLs is less than 5%, with a ratio below 5%, the Allowance for Earning Asset Losses (PPAP) that banks must provide to cover losses arising from non-current productive assets (in this case non-performing loans) become small. To find out the NPL that occurs in banking, the following formula will be used [16].

$$NPL = \frac{Total\ Non\ Performing\ Loans}{Total\ Credit}\ x\ 100\%$$

Net Interest Margin (NIM) is used to evaluate the ability of banks to manage risks to interest rates. When interest rates change, interest income and bank interest fees will change. For example when interest rates rise, both interest income and interest costs will rise because some assets and liabilities of the bank will be valued at a higher rate [17]. Net Interest Margin (NIM) is a ratio that shows the ability of bank management in managing their productive assets to generate net interest income. Net interest income is derived from interest income less interest expense. The greater this ratio, the increase in interest income on productive assets managed by banks so that the possibility of banks in problematic conditions is getting smaller [16]. The higher the NIM shows the more effective the bank is in placing productive assets in the form of credit. The standard set by Bank Indonesia for the NIM ratio is 6% and above. Following is the formula for calculating NIM [2].

$$NIM = \frac{Net\ Interest\ Income}{Earning\ Assets}\ x\ 100\%$$

Capital Adequacy Ratio is also called the capital adequacy ratio used to measure the adequacy of capital owned by banks to support assets that contain risk. This ratio is an indicator of the ability of banks to cover the decline in assets as a result of bank losses caused by risky assets [18]. Meanwhile, according to Bank Indonesia Regulation, CAR is a ratio that shows how much the total assets of banks that contain risks (loans, investments, securities, bills at other banks) are also financed from their own capital in addition to obtaining funds from sources outside the bank. A high capital ratio is needed if there is an increase in risk, a decrease in profitability and income, and an increase in revenue fluctuations. In accordance with SE BI No. 26/5 / BPPP dated May 29, 1993 the amount of CAR that must be achieved by a bank of at least 8% since the end of 1995, 10% until September 1999, 12% in 2001, then 8% until now. If the CAR ratio of a bank is below 8%, it means that the bank is unable to absorb losses that may arise from the bank's business activities, then if the CAR ratio is above 8%, it indicates that the bank is increasingly solvable, but a CAR that is too high indicates the existence of idle funds (idle) fund) or in other words the bank's own capital is not optimally operationalized so that the bank's burden increases by bearing the costs of large funds [19]. In the CAR formula, capital is compared with all types of assets that are considered to contain risk or commonly known as Risk Weighted Assets (RWA). Capital includes core capital and supplementary capital. Core capital includes: paid-up capital, retained earnings reserves, share capital, donated capital and current year's profits. RWA includes assets on the balance sheet and several items in the administrative account. The following is the CAR formula.

$$CAR = \frac{Capital}{ATMR} \times 100\%$$

Liquidity arrangements are intended so that the bank can at any time fulfill its obligations which must be paid immediately [20]. According to Bank Indonesia, the assessment of liquidity aspects reflects the ability of banks to manage adequate levels of liquidity to meet their obligations in a timely manner and to meet other needs. In addition, banks must also be able to guarantee that activities are managed efficiently in the sense that banks can reduce the high cost of liquidity management and at any time the bank can liquidate its assets quickly with minimal losses. One bank measure to calculate bank liquidity is to use a Loan to Deposit Ratio (LDR). LDR states how far the bank's ability to repay withdrawals of funds made by depositors by relying on loans provided as a source of liquidity. The higher the LDR number of a bank, means it is described as a bank that is less liquid compared to banks that have smaller ratio numbers [21]. Based on the Bank Indonesia Regulation (PBI) Number.12 / 19 / PBI / 2010 dated October 4, 2010 and effective March 1, 2011, the LDR level deemed healthy by Bank Indonesia ranges from 78% to 100%. This percentage shows the ability of banks to channel funds that have been collected. Calculate the ratio formulated as follows:

$$LDR = \frac{Total\ Credit}{Total\ Third\ Party\ Funds} \times 100\%$$

Operating efficiency is measured by comparing the total operating costs with the total operating income or often called BOPO. This BOPO ratio aims to measure the ability of operating income to cover operating costs. BOPO includes profitability ratios (earnings), bank success is based on a quantitative assessment of bank profitability can be measured using the ratio of operating costs to operating income [22]. Dendawijaya [18] explains that the ratio of operational costs is used to measure the level of efficiency and the ability of banks to carry out their operations. The smaller this ratio, means the more efficient operational costs incurred by the bank [16]. BOPO is stated in the following formula [16].

$$BOPO = \frac{Operating\ Cost}{Operating\ Income} \times 100\%$$

Capital structure that can maximize company value, or share price, is the best capital structure [14]. Capital structure based on the concept of trade off theory is a capital structure that optimizes the balance between risk and return thereby maximizing stock prices [9]. Capital structure according to Widyawati and Endri [23] is a balance or comparison between the amount of long-term debt with own capital. Therefore, the capital structure is proxy by Debt to equity ratio (DER) which is the ratio between total debt to own capital. The use of a proxy is intended to facilitate measurement because these factors cannot be measured directly. Following is the formula for calculating the capital structure proxied using the DER approach [23].

$$DER = \frac{Total\ Debt}{Total\ Equity} \times 100\%$$

Inflation is an economic phenomenon where there is an increase in the prices of goods continuously as a result of market mechanisms [24]. Inflation is an increase in prices in general and continuously. The indicator used to measure the inflation rate is the CPI (Consumer Price Index). Banking efforts in raising public funds are hampered when inflation rates are high and uncontrolled [25]. This is due to the high level of inflation resulting in a decrease in the real interest rate of savings. Therefore, the desire of the community to save also decreases, causing the growth of banking funds sourced from the community also declined [26].

Interest is important for a bank in withdrawing savings and lending. Interest for banks can be a cost (cost of funds) that must be paid to savers. But on the other hand, interest can also be a bank's income received from the debtor because of the credit given [10]. In a modern economy, the use of interest is always associated with the operation of the banking system with interest as its main instrument [27]. In Indonesia, information on monetary policy can be monitored through Bank Indonesia Certificate Interest Rates (SBI), this is because SBI interest rates can be controlled directly by Bank Indonesia. The increase in loan interest rates causes the cost of loan interest to increase, so that the income received by banks from loan interest rates will also increase. If bank interest income rises, it will increase the profit or profit of the bank concerned. In other words, an increase in SBI Interest Rates will increase ROA (assuming an increase in SBI Interest Rates is followed by an increase in lending rates so that interest costs go up and interest income received by banks will increase). The measurement of interest rates in this study is the reference rate for Bank Indonesia (BI).

RESEARCH METHODOLOGY

This research is a quantitative research. Sugiyono [28] suggested that quantitative research is research based on the philosophy of positivism, used to examine populations or specific samples, sampling techniques are generally carried out randomly, data collection uses research instruments, data analysis is quantitative statistical in order to test hypotheses which have been set. This research is exploratory research. Exploratory research is research aimed at finding new relationships for research problems [29]. The research is oriented to determine the factors that influence the profitability of banks listed on the Indonesia Stock Exchange for the period 2010 - 2016.

The population is the whole subject of research [30]. Population is a generalization area that consists of objects / subjects that have certain qualities and characteristics determined by researchers to be studied and then drawn conclusions [28]. The population in this study is the national private public banking industry registered on the Indonesia Stock Exchange in 2010-2016. The population listed on the Indonesian stock exchange (IDX) is 43 banks.

The sample is part of the number and characteristics possessed by the population [28]. The sample is a portion or representative of the population under study. The sampling technique uses purposive sampling, where the sample is used if it meets the following criteria:

- National private banking companies listed on the Indonesia Stock Exchange in 2010 - 2016.
- Financial report data available for the period of research in 2010 - 2016.
- Having complete data related to the variables used in research.

Companies that meet the criteria and are sampled in this study amounted to 30 banks.

This research uses secondary data types. Secondary data is a source of research data obtained indirectly through intermediary media (obtained and recorded by other parties). Secondary data in this study are in the form of annual financial reports from banking companies listed on the Indonesia Stock Exchange (IDX) from 2010 to 2016.

Data testing techniques in this study use classical assumption testing, but for data that is a combination of cross section and time series data (panel data), this test is not a priority so that even if one of these tests does not pass, then it is not too problematic. Testing classic assumption data consists of tests of normality, multicollinearity, heterosecdasticity and autocorrelation tests. Requirements to pass the normality test are skewness values <5, multicollinearity testing requires a correlation between the dependent variables <0.9, the requirements to pass the heteroscedasticity test are prob chi square values must be> 0.05, and the requirements to pass the autocorrelation test are Obs * R-squared probabilities Chi square must be> 0.05.

The data analysis technique used in this study is panel data regression analysis. Panel data is a combination of time series data and cross section data. By accommodating information both related to cross section variables and time series, panel data can substantially reduce the problem of omitted-variables, a model that ignores relevant variables [31].

There are three approaches in making panel data regression namely; Pooling Least Square (PLS), Fixed effect approach, and Random Effect approach.

Pooling Least Square (PLS) is the merging of cross section data and times series data. Then the OLS method is used for the panel data. This approach is the simplest approach compared to the other two approaches. With this approach we cannot see differences between individuals and differences between time because the intercept and slope of the same model. The equation for Pooling Least Square (PLS) is written with the following equation:

$$Y_{i,t} = \alpha + \beta X_{i,t} + \varepsilon_{i,t}; \ i = 1,2, ..., N; \ t = 1,2, ... T.$$

Fixed effect approach is a panel data model that has intercepts that may change for each individual and time, where each cross section unit is fixed in time series. Mathematically the panel data model that uses the fixed effect approach is as follows:

$$Y_{it} = \alpha + \beta X_{it} + \gamma_2 W_{2t} + \gamma_3 W_{3t} + ... + \gamma N W_{NT} + \sigma_2 Z_{it} + \sigma_3 Z_{i3} + ... + \sigma T Z_{iT} + \varepsilon_{it}$$

Where,

Y_{it}: dependent variable for individual i and time t

X_{it}: free variables for i-th individuals and t-time

W_{it}: is a dummy variable where $W_{it} = 1$ for individuals i, i = 1,2, ... N and 0 for others

Z_{it}: is a dummy variable where $Z_{it} = 1$ for periods t, t = 1.2, ... T and 0 for others.

Random Effect approach is the difference between time and between individuals accommodated through errors. This research uses the Generalized Least Square (GLS) method. The advantage of the random effect model over the fixed effect model is that in terms of the degree of freedom it is not necessary to estimate the cross-sectional N intercept. The equation of the random effect approach is as follows:

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it}; \ \varepsilon_{it} = U_i + V_t + W_{it}$$

Where,

U_i: cross section error

V_t: error time series

W_{it}: combined error

Testing the models in this study used three techniques namely chow, haussman and lagrange multiplier (LM) testing. Chow test is conducted to determine whether the model used is polled least square or fixed effect. The formula used in this test is:

$$CHOW = ((RRSS-URSS) / N-1) / (URSS / (NT-N-K))$$

Where,

RRSS: restricted residual sum square

URSS: unrestricted residual sum square

N: the number of cross section data

Q: the amount of time series data

K: number of explanatory variables

Hypothesis: H0: Pool Least Square model (F-count <F-table H0 is accepted)

    H1: Fixed effect model (F-count> F-table H0 is rejected)

If H0 is rejected, it means the model that is suitable to use is fixed effect. Conversely, if H0 is accepted, it means the right approach is Pool Least Square.

    Hussman test is a test conducted to find out whether the model used is the fixed effect model or the random effect model. The hypothesis in the Haussman test is as follows:
Hypothesis: H0: Random Effect Model
    H1: Fixed effect model

Test Criteria: prob.chi-square statistic <real level (α), then H0 is rejected
prob.chi-square statistics> real level (α), then H0 is accepted

If H0 is rejected, it means the model that is suitable to use is Fixed effect. Conversely, if H0 is accepted, then the right approach is Random Effect.

    Lagrange multiplier (LM) test is a test conducted to find out whether the model used is polled least square or random effect model. The hypothesis in testing Lagrange Multiplier (LM) is as follows:

Hypothesis:
    H0: Pool Least Square Model
    H1: Random Effect Model

LM statistical values can be calculated based on the following formula:

$$LM = \frac{nT}{2(T-1)} \left[\frac{\sum_{i=1}^{n}(\sum_{t=1}^{T} e_{it})^2}{\sum_{i=1}^{n}\sum_{t=1}^{T} e_{it}^2} - 1 \right]^2$$

Where,
    N: Number of individuals
    Q: number of time periods
    e: residuals from the OLS model

    The LM test is based on chi-squares with a degree of fredom (df) of the number of independent variables. If the LM calculated statistically is smaller than the value of the chi-squares table, then H0 is accepted. So the model used is ordinary least square. However, if LM calculated statistically is greater than the value of the chi-squares table, then H0 is rejected.

    After testing the assumptions of the panel data regression model, the next step is to test the hypothesis. Hypothesis test analysis does not test the truth, but the test can be accepted or rejected hypothesis formed. According to Nachrowi and Usman [32] hypothesis testing can be divided into F test, t test and R² test

(coefficient of determination). Simultaneous hypothesis testing uses the F test viz.
- If the probability (p-value)> real level (α) or F arithmetic <F table, then Ho is accepted, meaning that the NPL, NIM, CAR, LDR, BOPO, DER, Inflation and Interest variables simultaneously do not affect the profitability of RoA.
- If the probability (p-value) <real level (α) or F arithmetic> F table, then Ho is rejected, it means that the NPL, NIM, CAR, LDR, BOPO, DER, Inflation and Interest variables simultaneously affect ROA profitability.

    Test coefficient of determination R² test is used to determine the percentage of the effect of independent variables (NPL, NIM, CAR, LDR, BOPO, DER, Inflation and Interest) simultaneously on the dependent variable (profitability - ROA).

    T test aims to determine the effect of independent variables (NPL, NIM, CAR, LDR, BOPO, DER, Inflation and Interest) partially / separately on the dependent variable (profitability-ROA). Simultaneous hypothesis testing uses the t test viz.
- If the probability (p-value)> real level (α) or t arithmetic <t table, then Ho is accepted to mean certain independent variables (NPL, NIM, CAR, LDR, BOPO, DER, Inflation and Interest) partially / separately not affect ROA profitability.
- If the probability (p-value) <real level (α) or t arithmetic t F table, then Ho is rejected means that certain independent variables (NPL, NIM, CAR, LDR, BOPO, DER, Inflation and Interest) partially / separately influence on ROA profitability.

RESULTS AND DISCUSSION
    The results of testing the data in this study indicate that the data passed the normality test because the value of skewness in this research data was 3.46 or <5, the multicollinearity test in this study passed because the correlation value between the independent variables had the smallest value of -0,640 and the largest value of 0.735 so that all correlation values <0.9 means that the data passed the multicollinearity test, the heterosceddasticity test showed a prob chi square value of 0.6164, which means > 0.05, then the data was declared homogeneous or passed the heterosceddasticity test, whereas in the autocorrelation test the data was deemed not to pass auto correlation test because the value of Obs * R-squared prob. Chi square of 0.03 <0, 05 which means the data does not pass the autocorrelation test, but for this test can be ignored because the autocorrelation testing is generally devoted to time series type data.

    Panel data regression analysis begins by finding the regression value using the Pooling Least

Square (PLS) technique, Fixed effect approach, and Random Effect approach. Then do a comparison of the Pooling Least Square (PLS) regression value with the

Fixed effect approach with the chow test technique. The following are the results of the chow test.

```
Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects
```

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.943278	(29,172)	0.0049
Cross-section Chi-square	59.515531	29	0.0007

```
Cross-section fixed effects test equation:
Dependent Variable: Y_ROA
Method: Panel Least Squares
Sample: 2010 2016
Periods included: 7
Cross-sections included: 30
Total panel (balanced) observations: 210
```

Fig-1: Chow Test Results

If the probability chi square $<0.05\rightarrow$ fixed effect is considered better,
If probability chi square$> 0.05\rightarrow$ Pooling Least Square / PLS is considered better

The results of the chow test data indicate the value of prob chi square of 0.0007 or <0.05 then the

regression results using fixed effect techniques are considered better.

After the chow test is performed, the next step is to conduct a haussman test to compare the value of the regression results using the Fixed effect technique with the Random Effect. The following are the results of the haussman test.

```
Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects
```

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	8	1.0000

Fig-2: Haussman Test Results

If the probability chi square> 0.05 → Random Effect is considered better,
If the probability chi square <0.05 → fixed effect is considered better

Based on the above test, the prob chi square value of $1.00> 0.05$ → then the Random Effect is considered better. Based on the results of this analysis, the LM testing was not carried out, because the test results showed that the random effect was the best

method. This method is used if the common effect model decision is better than the fixed effect, and the Hausman test shows the best random effect. So the hypothesis test can be drawn using the values obtained through random effects regression analysis. Then the following is the result of random effects regression that will be used to withdraw the coefficient of determination, F test (simultaneous regression) for the simultaneous hypothesis test and t test (partial regression) for the partial hypothesis test.

```
Dependent Variable: Y_ROA
Method: Panel EGLS (Cross-section random effects)
Date: 02/15/18   Time: 19:38
Sample: 2010 2016
Periods included: 7
Cross-sections included: 30
Total panel (balanced) observations: 210
Swamy and Arora estimator of component variances
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Weighted Statistics			
R-squared	0.871433	Mean dependent var	0.015065
Adjusted R-squared	0.866316	S.D. dependent var	0.023429
S.E. of regression	0.008566	Sum squared resid	0.014750
F-statistic	170.2985	Durbin-Watson stat	1.563685
Prob(F-statistic)	0.000000		

Fig-3: Regression Random Effect Test F and Determination Coefficient

To find out the simultaneous hypothesis test used the F test, and based on Figure 3 above the calculated F value of 170, 298> F table (3.43) and prob (F-statistic) of 0,000 <α 5% (0.05) then H0 rejected, which means that simultaneously / groups of independent variables (NPL, NIM, CAR, LDR, BOPO, DER, Inflation, Interest) affect the change in ROA.

To determine the effect of simultaneous independent variables (NPL, NIM, CAR, LDR, BOPO, DER, Inflation and Interest) on profitability (ROA) can be seen from the magnitude of the R value in Figure 3 above. The R square value above is 0.8714, but because this regression has a dependent variable of more than 1, the R value used is the adjusted R square value of 0.866. Then to get the coefficient of determination is by: Kd = r2 (adjusted R-squared) x100%

Kd = 0.866 x 100% = 86.6%.

Based on the calculation results it can be seen that simultaneously, the independent variables of the study (NPL, NIM, CAR, LDR, BOPO, DER, Inflation, Interest) affect the change in ROA of 86.63%.

```
Dependent Variable: Y_ROA
Method: Panel EGLS (Cross-section random effects)
Date: 02/15/18   Time: 19:38
Sample: 2010 2016
Periods included: 7
Cross-sections included: 30
Total panel (balanced) observations: 210
Swamy and Arora estimator of component variances
```

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1_NPL	-0.121907	0.016121	-7.561808	0.0000
X2_NIM	0.067042	0.018230	3.677537	0.0003
X3_CAR	0.022081	0.016435	1.343541	0.1806
X4_LDR	0.009577	0.004462	2.146313	0.0330
X5_BOPO	-0.090154	0.003348	-26.93062	0.0000
X6_DER	0.000960	0.000298	3.228143	0.0015
X7_INFLATION	0.023654	0.073365	0.322415	0.7475
X8_INTEREST	-0.027796	0.131726	-0.211013	0.8331
C	0.074924	0.009317	8.041348	0.0000

Fig-4: Random Effect Regression t Test and Hypothesis Test

$$Y= 0.0749 -0.1219_{x1} +0.0671_{x2} +0.0221_{x3} +0.0096_{x4} -0.0901_{x5} +0.00096_{x6} +0.0236_{x7} -0.0278_{x8}$$

To find out the partial hypothesis test used the t test, using alpha α 5% (0.05) or an error rate received by 5%, it is known t two-way table of 1,978 (+ or -) and based on Figure 4 above it is known that:

- t count X1 Non Performing Loan = -7.561808 = h01 rejected, then NPL has a negative and significant effect on changes in ROA with alpha / research error rate of 5%
- t arithmetic X2 Net Interest Margin = 3.677537 = h02 is rejected, then NIM has a positive and significant effect on changes in ROA with alpha / research error rate of 5%
- t arithmetic X3 Capital Adequacy Ratio = 1.34354 = h03 accepted, then CAR does not have a significant effect on changes in ROA with an alpha / research error rate of 5%
- t count X4 Loan to Deposit Ratio = 2.146313 = h04 rejected, then the LDR has a positive and significant effect on changes in ROA with an alpha / research error rate of 5%

- t count X5 BOPO = -26.93062 = h05 rejected, then BOPO has a negative and significant effect on changes in RoA with alpha / research error rate of 5%
- t arithmetic X6 capital structure = 3.228143 = h06 rejected, then DER has a positive and significant effect on changes in ROA with alpha / research error rate of 5%
- t arithmetic X7 Inflation = 0.322415 = h07 accepted, then inflation has no significant effect on changes in RoA with alpha / 5% research error rate
- t arithmetic X8 Interest Rate = -0.211013 = h08 accepted, then the interest rate has no significant effect on changes in ROA with an alpha / research error rate of 5%

Based on the above model, in order to improve the profitability performance (ROA) of banks in Indonesia, it is necessary to decrease the NPL value, increase the NIM performance, increase the CAR value, increase the LDR value, decrease the BOPO value and perform efficiency, increase the DER value, take advantage of conditions to increase inflation and interest rate reduction policy to project an increase in profitability in the coming year.

CONCLUSIONS
After processing and analyzing data that refers to the theories discussed earlier, it can be concluded that:

- Non Performing Loans (NPL) have a negative effect on changes in ROA. This means that the lower the NPL, the higher the profitability ratio. The high NPL condition will increase the cost of the provision of productive assets and other costs so that it has the potential to cause bank losses.
- Net Interest Margin (NIM) has a positive effect on changes in ROA. This means that the higher the NIM, the higher the profitability ratio. Due to the higher income through interest income, it will increase bank profits, this shows the effectiveness of managing productive activities in the form of credit.
- Capital Adequacy Ratio does not affect the profitability of banks. This is because there is a regulation from the Financial Services Authority that banks have a high CAR level that is above 8%, meaning banks have high solvency values.
- Loan to Deposit Ratio (LDR) has a negative effect on changes in ROA. This means that the higher the LDR number means that it is depicted as a bank that is less liquid, it can be said that the bank does not have the ability to pay back withdrawals of funds made by customers by relying on loans provided as a source of liquidity.

- BOPO has a negative effect on changes in ROA. This means that the lower the BOPO, the higher the profitability ratio. The smaller this ratio means the more efficient operational costs incurred by the bank means it is able to increase revenue.
- Capital structure has a positive effect on changes in ROA. This means that the higher the capital structure, the higher the profitability ratio. The ability to cover part or all of its debt with funds that come from own capital. This shows the composition of funding in financing the company's operational activities or utilizing its debts.
- Inflation has no effect on changes in ROA. Even though the high level of inflation causes the real interest rate of savings to decrease, causing the growth of banking funds sourced from the public also declined.
- Interest rates have no effect on changes in ROA. Although the rise and fall of interest rates will have an impact on bank earnings.

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