DETERMINANTS OF CUSTOMER DEPOSITS IN THE BANKING SECTOR LISTED ON INDONESIA STOCK EXCHANGE

Jacinta Winarto[1]
Marcellia Susan[2]
Herlina[3]
[1,2,3]Universitas Kristen Maranatha
e-mail: jacinta.win@gmail.com
[1]corresponding author

ABSTRACT

The customer deposits are a matter to be considered by the bank. With the tendency of this declining customer deposits raised the question, what factors have influenced the declining of the customer deposits. Looking at the previous research and facts in the field, it is assumed that the influencing factors are the income, the state debt securities, the interest rates and the company size. This study aims to examine and analyze the effect of income, state debt securities, interest rates and company size on customer deposits. This research method is a quantitative method. Further, the data are analyzed by using a multiple linear regression model. The population in this study is all the banks listed on the Indonesian Stock Exchange during the period of 2013-2019. Samples are taken by using purposive sampling, obtaining 33 companies. The result of this research showed that income, interest rates, state debt securities and company size have effects on customer deposits, so it is useful for banks to see the influence of each of the above factors that can affect changes in deposit funds in banks and to take policies based on the factors above.

Keywords: income; state debt securities; interest rate; company size; customer deposits.

ABSTRAK

Simpanan nasabah merupakan hal yang harus diperhatikan oleh bank. Dengan kecenderungan menurunnya simpanan nasabah tersebut menimbulkan pertanyaan, faktor apa saja yang mempengaruhi penurunan simpanan nasabah tersebut. Melihat penelitian-penelitian sebelumnya dan fakta-fakta di lapangan, diduga bahwa faktor-faktor yang mempengaruhinya adalah pendapatan masyarakat, surat utang negara, tingkat suku bunga dan ukuran perusahaan. Penelitian ini bertujuan untuk menguji dan menganalisis pengaruh pendapatan masyarakat, surat utang negara, suku bunga dan ukuran perusahaan terhadap simpanan nasabah. Metode penelitian ini adalah metode kuantitatif. Selanjutnya data dianalisis dengan menggunakan model regresi linier berganda. Populasi dalam penelitian ini adalah seluruh bank yang terdaftar di Bursa Efek Indonesia selama periode 2013-2019. Sampel diambil dengan menggunakan *purposive sampling*, diperoleh 33 perusahaan. Hasil penelitian

menunjukkan bahwa pendapatan masyarakat, suku bunga, surat utang negara dan ukuran perusahaan berpengaruh terhadap simpanan nasabah, sehingga berguna bagi bank untuk melihat pengaruh dari masing-masing faktor di atas yang dapat mempengaruhi perubahan dana simpanan pada bank, dan mengambil kebijakan berdasarkan faktor-faktor di atas.

Kata kunci: pendapatan masyarakat; surat utang negara; tingkat bunga; ukuran perusahaan; simpanan pelanggan.

1. INTRODUCTION

Banking is a financial institution that bridges between parties who have excess funds and those who need funds. The parties who have excess funds save their funds in the form of current accounts, savings, and deposits at the bank and the bank will give interest to them. The parties who need funds can contact the bank and can borrow the required amount of funds.

From the bank side, current accounts, savings, and time deposits are customers' deposits. Customer deposits in banking are important to be considered because they can influence the distribution of fund for the public. According to Gunawan (2019), since the year 2015, customers deposits at the bank showed a slowdown with a growth of 7.3%, approximately half of the growth rate of 2014. Between the year 2015 and the year 2019, the growth of customers never reached 2 digits being the lowest in the year 2018, that is as much as 6.4%.

There are several factors being assumed to influence the customers deposits decrease, one of the factors is the interest rate of state debt securities issued by the government. The aim of issuing these securities was in fact to absorb fund to finance the state budget. Many from the banking side accused that the customer deposits less because of the interest rate of the state debt securities is higher than the interest rate of the time deposits (one of the customers deposits). Therefore, the interest rate of the state debt securities is presumably to be influential towards the customer deposits at the Indonesian banking. Furthermore, the decrease of customer deposits will result in the bank problems to distribute credit.

Customer deposits are influenced by income because the higher the income, the people can choose various investments besides saving in the bank. They can invest from liquid assets to illiquid assets, thus they reduce their deposits in the bank

Other than the above factors, the deposit interest rate is considered as a factor which influence on the customer deposits. The deposit interest rate rises because there is an increase in the BI rate. If the BI rate rises, the interest rate on government bonds will also increase which is higher than the deposit interest and with less risk due to being issued by the government, thus they choose to invest in the government bonds

Other factor to be considered have influenced on the customers deposits is the company size. The company size marked by growth in total assets can affect customer deposits. The increase in total assets indicates that the bank is increasingly able to develop its business. Thus, the public is increasingly convinced to save their funds in the bank.

Based on the above background, several problems were formulated in the research. The formulation of the problems is: are there any influences of income, state debt securities, interest rates and company size on customers' deposits.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The above several factors had been examined thoroughly before, like income and interest rates, but the influence of the income and interest rate showed different results.

Referring to the research result of influence on income towards customers deposits, the research result of Ojeaga and Odejimi (2019); Morina and Osmani (2019); Boadi et. al. (2015), Rachmawati and Syamsulhakim (2004), Fetrian and Herianingrum (2017), Kochaniak (2015), Malkina (2019), Finger and Hesse (2009) showed a positive influence of income towards customer deposits, while the research result of Masson et. al. (1998), Pradhan and Paneru (2017), Pitonakova (2016) showed that income had a negative influence on the customers' deposits.

Relating to the research result of the influence on the interest rates towards customers deposits, the research result of Mushtaq and Siddiqui (2017) showed that the interest rate did not have influence on the customers deposits in Islamic countries while in non-Islamic countries, interest have positive influence on customer deposits. Masson et. al. (1998), Ojeaga and Odejimi (2019), Boadi et. al. (2015), Ferrouhi (2017), Morina and Osmani, (2019), Eriemo (2014), Pitonakova (2016) showed that interest rates has positive influence on customers deposits. On the other hand, research from Rachmawati and Syamsulhakim (2004), Haron and Ahmad (2000), Habib and Masih (2020), Kasri and Kassim (2009) shows that interest rates have a negative effect on customer deposits. Research by Siaw and Lawer (2000) shows that there is a negative effect of interest on customer deposits in the long term but no effect in the short term.

Other research of Raza et.al. (2017) was more detailed, showed that the interest rate had a positive effect on deposits and had a negative effect on savings.

Other than income and interest rates, this research also includes states debt securities based on the existing phenomenon and the company size based on the previous research. Previous research that shows the effect of states debt securities and the company size on customer deposits is not much because most previous studies link states debt securities and company size with profitability. The studies that have been carried out by previous studies still show inconsistencies in their research results.

Research conducted by Boadi et. al. (2015) shows that state debt securities have a positive effect on customer deposits, while research from Grediani et. al. (2018) shows that the risk-free interest rate has a negative effect on customer deposits.

According to Ferrouhi (2017), company size has a positive effect on customer deposits, while the results of research by Islam et. al. (2019), company size has a negative effect on customer deposits. Finger and Hesse (2009) show that size has a negative effect on customer deposits at small banks, while at large banks, size has a positive effect.

This research is carried out on banking sector listed on the Indonesian Stock Exchange. The banking sector is chosen because recently the customers' deposits in the banking sector decreases.

In order to be tested, the research hypothesis needs to be converted into a statistical hypothesis consisting of a null and alternative hypothesis for each of the proposed research hypothesis.

Income = Gross Domestic Value
H01: $\beta 1 = 0$: Income has no effect on customer deposits
Ha1: $\beta 1 \neq 0$: Income affects customer deposits

State debt securities = The percentage of interest rate for government bond
H02: $\beta 2 = 0$: State debt securities have no effect on customer deposits.
Ha2: $\beta 2 \neq 0$: State debt securities affect customer deposits

The interest rate = The percentage of average bank interest rate
H03: $\beta 3 = 0$: Interest rate has no effect on customer deposits
Ha3: $\beta 3 \neq 0$: Interest rate affects customer deposits

Size = Growth in total assets
H04: $\beta 4 = 0$: Company size has no effect on customer deposits
Ha4: $\beta 4 \neq 0$: Company size affects customer deposits

3. RESEARCH METHOD

The population in this study is 45 banks listed on the Indonesia Stock Exchange. Sampling was done by using purposive sampling method. The samples of companies with complete financial reports were 33 companies.

The operationalization of the variables of income, state debt securities, interest rates, and company size refers to previous research and data. The operational definition of the variables for the five research variables can be seen in Table 1.

Table 1. Operationalization of Research Variables

No	Research Variable	Indicator	Measurement Scale
1	Customer deposits (DEPG)	Growth in the amount of customer deposits	Ratio
2	Income (GDP)	Gross Domestic Value	Ratio
3	State debt securities (SUN)	The percentage of interest rate for government bond	Ratio
4	Interest Rate (INT)	The percentage of	Ratio

		average bank interest rate	
5	Company size (SIZEG)	Growth in total assets	Ratio

In this study, data were analyzed using multiple linear regression equation models. This model can be seen in equation (3.2) below.

$$DEPGt = \beta_0 + \beta_1. GDPt + \beta_2. SUNt + \beta_3.INTt + \beta_4.SIZEGt + \varepsilon t$$

The use of multiple linear regression equation models requires a classical assumption test.

4. RESULTS AND DISCUSSIONS

Data processing of each variable shows the results as in table 2 below. Panel data analysis involved one response variable Y: DEPG, with four predictor variables X1: GDP, X2: SUN, X3: INT, and X4: SIZEG. The total number of companies analyzed was 33 companies with each variable measured for five years from 2015 to 2019.

Table 2. The Average of Each Research Variable per Year

Year	Average				
	DEPG (Y)	GDP (X1)	SUN (X2)	INT (X3)	SIZEG (X4)
2015	0.113	11526332.800	0.083	0.083	0.098
2016	0.110	12401728.500	0.083	0.075	0.268
2017	0.091	13589825.700	0.069	0.067	0.119
2018	-0.003	14838311.500	0.059	0.062	0.041
2019	0.081	15833943.400	0.081	0.066	0.153

In panel data modeling, there are three models that can be applied to data, namely (1) the common effect model (pooled model), (2) fixed effect model, and (3) random effect model. Panel data analysis must also fulfill assumptions including normality assumptions, non-multicollinearity, non-heteroscedasticity and non-time dependence (temporal autocorrelation). Furthermore, assumptions were tested covering normality, non-multicollinearity, non-heteroscedasticity, and non-time dependence (temporal autocorrelation). The tests performed can be seen in Appendix I.

The results of the analysis found that there were violations of the assumptions of normality, non-multicollinearity, non-heteroscedasticity, and non-autocorrelation. So it is necessary to approach the Robust model, namely a model that is consistent with violating assumptions and outliers. Robust model uses the Estimated generalized least square (EGLS) model approach. The analysis results in Appendix II find that the robust fixed effect model is best compared to other models.

The results of capitalization with the Robust Fixed Effect can be seen in the table below.

Table 3. Fixed Effect Panel EGLS (Cross-section Weights)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.213355	0.033683	6.334127	0.0000
X1	-1.62E-08	1.49E-09	-10.89713	0.0000
X2	2.441069	0.299529	8.149704	0.0000
X3	-1.720531	0.251051	-6.853310	0.0000
X4	0.185297	0.073782	2.511427	0.0133

Effects Specification				
Cross-section fixed (dummy variables)				

Weighted Statistics			
R-squared	0.650073	Mean dependent var	0.135576
Adjusted R-squared	0.551656	S.D. dependent var	0.199095
S.E. of regression	0.115838	Sum squared resid	1.717574
F-statistic	6.605284	Durbin-Watson stat	2.361266
Prob(F-statistic)	0.000000		

Robust fixed effect model modeling provides the following estimation models:

DEPG = 0.213355 −1.62E-08×GDP + 2.441069×SUN −1.720531×INT + 0.185297×(SIZEG) + Ui

The intercept value of 0.213355 represents the average of DEPG from all companies. Furthermore, the coefficient value of GDP of −1.62E-08 states that an increase in GDP of 1 million will reduce DEPG by an average of 0.0162. The coefficient value of SUN is positive with a magnitude of 2.441069. This value states that if there is an increase in the value of SUN by one unit, there will be an increase in DEPG by an average of 2.44 units. The coefficient value of INT is −1.720531 which indicates that an increase in one INT unit will

decrease the average DEPG value by 1.72 units and the SIZEG coefficient value of 0.185297 indicates that there will be an increase in the DEPG value of 0.185 if the SIZEG value increases by one unit.

The coefficient of determination for the robust fixed effect model is 0.6500. This indicates that 65% of the phenomena can be explained by the fixed effect model. The analysis also found that all independent variables were significant with the Prob value <0.05.

Furthermore, the value of Ui states the individual effect of each company. If the value is negative, it means that the average DEPG of the company is less than the combined average (intercept). If it is positive, it indicates that the average DEPG of the company is higher than the combined average. The grouping of companies with negative and positive individual effects is shown in Appendix III.

The first hypothesis states that income has an effect on customers deposits. The result of hypothesis testing statistically shows the rejection of the null hypothesis which states that income has no effect on the decision to invest that is accepted. This is indicated by the probability value of the t-statistic of 0.0000 in Table 3 which is smaller than α of 5% with a coefficient of -1.62E-08. Thus, the alternative hypothesis is accepted, which means that income has a negative effect on customer deposits.

The second hypothesis states that state debt securities have an effect on customer deposits. The result of hypothesis testing statistically shows that the null hypothesis which states that state debt securities have no effect on customer deposits is rejected. This is shown from the probability value of the t-statistic of 0.0000 in Table 3 which is smaller than α of 5% with a coefficient of 2.441069. Thus, the alternative hypothesis is accepted, which means that state debt securities have a negative effect on customer deposits.

The third hypothesis states that the interest rate affects customer deposits. The results of statistical hypothesis testing indicate rejection of the null hypothesis which states that the interest rate has no effect on customer deposits. This is indicated by the probability value of the t-statistic of 0.0000 in Table 3 which is smaller than α of 5%. Thus, the alternative hypothesis is accepted, which means that the interest rate has a positive effect on customer deposits.

The fourth hypothesis states that company size affects customer deposits. The results of statistical hypothesis testing indicate rejection of the null hypothesis which states that company size has no effect on customer deposits. This is indicated by the probability value of the t-statistic of 0.0133 in Table 3 which is smaller than α of 5%. Thus, the alternative hypothesis is accepted, which means company size has a positive effect on customers deposits.

Based on the results of the first hypothesis test, it can be stated that income has a negative effect on customer deposits. The results of this research are in line with the research results of Masson et. al. (1998), Pitonakova (2016), Pradhan and Paneru (2017) which show that income has a negative effect on customer deposits. If we examine it, nowadays people are faced with various investment options such as securities, gold and property besides investing in banks. A lot of education has been provided by the Indonesia Stock Exchange in the form of seminars on securities education. In addition, there are also many securities companies that educate the public to invest in securities such as state debt securities, private bonds, stocks, and others. These securities companies can easily be found in various places.

For gold investment, besides buying in gold shops, at gold sales representative offices, or you can also save gold at a pawnshop. For investors with excess funds, investment can be directed at property. Investments in this field are assisted by easy-to-find property sales agents.

Based on the results of the second hypothesis test, it can be stated that state debt securities have a positive effect on customer deposits. The results of this research are in line with the research results of Boadi et. al. (2015) who show that state debt securities have a positive effect on customers deposits. When examined, the increase in the interest rate for state debt securities was caused by the increase in the Bank of Indonesia (BI) rate so that the Bank interest rate also increased. People who are educated about other investment alternatives can save their funds in savings or deposits before buying state debt securities because the sale of state debt securities is not done all the time, only a few times a year.

Based on the results of the third hypothesis test, it can be stated that the interest rate has a negative effect on customer deposits. The results of this research are in line with the research results of Rachmawati and Syamsulhakim (2004), Haron & Ahmad (2000), Habib and Masih (2020), Siaw and Lawer (2000), Kasri and Kassim (2009) which show that the interest rate has a negative effect on customers deposits. If examined further, the cause is the increase in deposit interest due to the increase in the BI rate which also causes an increase in the interest rate for state debt securities. Usually, the interest rate for state debt securities is above the deposit rate, approximately 2% above the deposit interest with an interest tax of 15% less than the deposit interest tax. Apart from the above, investors are interested in investing in state debt securities because of the small risk, they can invest with a small value and are guaranteed by the government. State debt securities can be purchased at many banks, making it easy for potential investors to buy them. So even though the Bank's interest increases, investors also make a portfolio of their investment. If the risks are equally small, then most of the funds will be deposited in other instruments that provide higher yields, namely in state debt securities.

Based on the results of the fourth hypothesis test, it can be stated that the company size has a positive effect on customer deposits. The results of this research are in line with the research results of Ferrouhi (2017) and Finger and Hesse (2009) which show that company size has a positive effect on customers' deposits. If examined further, the cause is that the public feels happy and comfortable to save at a large bank because it shows the solidity of a bank. The solidity of a bank, one of which is shown by the increasing growth of a bank's assets which reflects the growth of the bank's business. Healthy asset growth should result from profit growth. If the bank can survive for several periods with the increase in asset growth, the public will be sure to save their funds in the bank.

5. CONCLUSIONS

The results on average show that there is a decrease in the interest rate on state debt securities and the bank's interest rate from 2015-2018 and an increase again in 2019, the number of income is increasing every year, while the change in company size is not stable, shown in 2015-2016 increased, then in 2016-2018 it decreased, while in 2019 it rose again. Based on the results of data processing, it is seen that there is a decrease in changes in deposit funds in banks from 2015-2018 and an increase in changes in deposits in banks.

From the results of the research that has been carried out, the conclusion is that all the independent variables studied are significant because of the probability value < 0.05 those are: Income has a negative effect, this means that the higher the income of the people, the less increase in depositing funds in the bank, state debt securities have a positive effect which means that the cause of the less increase in deposits in banks is not caused by the issuance of state debt securities, bank interest rates have a negative effect which means that the higher the bank's interest rate is not matched by the higher increase in the deposit of funds in the bank, company size has a positive effect on customers deposits which means the amount of assets attracts people to save their funds in the bank.

Thus, banks need to pay attention to the amount of income, state debt securities, bank interest rates, and changes in company size because they affect customer deposits. It is necessary for the banks to pay attention to changes in deposit funds because it will affect the amount of credit to be disbursed.

This study uses variables based on existing phenomena so that a new model is obtained. The coefficient of determination for the robust fixed effect model is 0.6500. This explains that 65% of the phenomena can be explained by the models.

Based on the results of the research above, further research can add variables that can affect deposits in banks. Further research can also multiply the sample, and be tested again in different periods.

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APPENDIX

Appendix I. Classic Assumption Test

Normality

Furthermore, what is no less important is to test the normality of mistakes.

Hypothesis

H_0 : The errors are normally distributed

H_1 : The errors are not normally distributed

Test statistic: Jarque Bera

Test results

Series: Residuals	
Sample 1 165	
Observations 165	
Mean	-2.86e-17
Median	-0.005892
Maximum	0.477614
Minimum	-0.529422
Std. Dev.	0.133058
Skewness	0.263217
Kurtosis	6.432950
Jarque-Bera	82.92818
Probability	0.000000
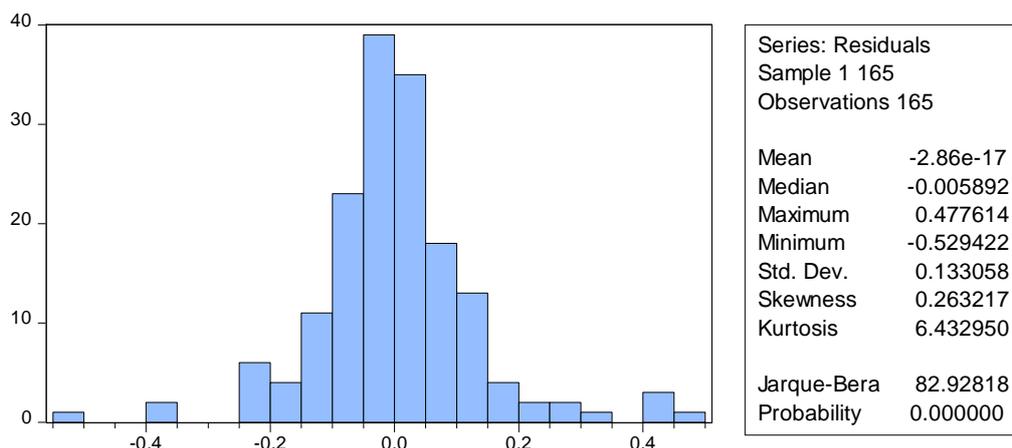
It can be seen from the test results obtained that the value of p.value (0.00000) <0.05, so it can be concluded that the error was not normally distributed. This abnormality is related to the presence of several outlier observations, as shown in the figure, some are not far from the mean value

Non-Multicollinearity

For non-multicollinearity, check whether the value of variance inflation factors (VIF) for each independent variable is more than 5 or vice versa. If the VIF value is more than five, then there is an indication that there is a violation of the Non Multicollinearity assumption. The results are presented in Table 1 below:

Table 1. Variance Inflation Factors

Variable	Coefficient Variance	Centered VIF
X1	6.27E-17	1.396086
X2	1.642879	1.321391
X3	0.638728	1.293459
X4	0.000841	1.022167

The results show that there is no indication of multicollinearity between the independent variables with a VIF value of less than 5 for all independent variables included in the model.

Non-Heteroscedasticity

Furthermore, non-heteroscedasticity testing was carried out using Breusch-Pagan-Godfrey.

Hypothesis:

$H_0 : \sigma_i^2 = \sigma^2$ Errors with identical distribution (Homoscedasticity)

$H_1 : \sigma_i^2 \neq \sigma_j^2$ Errors are not identical in distribution (Heteroscedasticity)

Test Statistics: Breusch-Pagan-Godfrey

The test results are shown in Table 4.

Table 2. Heteroscedasticity Test: Breusch-Pagan-Godfrey

F-statistic	19.13206	Prob. F(4,160)	0.0000
Obs*R-squared	53.38542	Prob. Chi-Square(4)	0.0000
Scaled explained SS	136.3642	Prob. Chi-Square(4)	0.0000

The test results show the p.value for all tests (0.000) <0.05, so it can be concluded that the null hypothesis is rejected, which means that Errors are not identical (heteroscedasticity).

Non-Temporal Autocorrelation

Furthermore, the autocorrelation test between time series units is carried out.

Hypothesis:

$H_0 : \rho = 0$ errors between time series units are independent of each other

$H_1 : \rho \neq 0$ error between time series analysis units is mutually dependent

Test Statistics: Breusch-Godfrey Serial Correlation LM Test

Table 3. Breusch-Godfrey Serial Correlation LM Test:

F-statistic	5.492219	Prob. F(2,158)	0.0049
Obs*R-squared	10.72544	Prob. Chi-Square(2)	0.0047

The results of the analysis found that the test statistic gives a p.value less than 0.05, so it can be concluded that there is a non-autocorrelation violation between time series units or in other words, errors between time series analysis units are mutually dependent.

Appendix II. The Best Model Selection Analysis

1) Robust Common Effect Model

Table 4. Robust Common Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.104056	0.052255	1.991320	0.0481
X1	-1.18E-08	2.06E-09	-5.753910	0.0000
X2	2.276747	0.291665	7.806028	0.0000
X3	-0.998600	0.386313	-2.584952	0.0106
X4	0.251577	0.080176	3.137835	0.0020

Weighted Statistics			
R-squared	0.452527	Mean dependent var	0.133200
Adjusted R-squared	0.438840	S.D. dependent var	0.196279
S.E. of regression	0.123559	Sum squared resid	2.442677
F-statistic	33.06290	Durbin-Watson stat	1.781631

Prob(F-statistic)	0.000000

The model shows that the value of R^2 becomes 0.4525 with all significant independent variables marked by the Prob value. <0.05.

However, this model is certainly not the final model because this model involves a panel data structure, so it is necessary to check other alternative models, namely the fixed effect model and the random effect model for robust estimation.

(2) Robust Fixed Effect Model

Table 5. Fixed Effect Panel EGLS (Cross-section Weights)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.213355	0.033683	6.334127	0.0000
X1	-1.62E-08	1.49E-09	-10.89713	0.0000
X2	2.441069	0.299529	8.149704	0.0000
X3	-1.720531	0.251051	-6.853310	0.0000
X4	0.185297	0.073782	2.511427	0.0133

Effects Specification				

Cross-section fixed (dummy variables)

Weighted Statistics			

R-squared	0.650073	Mean dependent var	0.135576
Adjusted R-squared	0.551656	S.D. dependent var	0.199095
S.E. of regression	0.115838	Sum squared resid	1.717574
F-statistic	6.605284	Durbin-Watson stat	2.361266
Prob(F-statistic)	0.000000		

Robust fixed effect model modeling provides the following estimation models:

DEPG = 0.213355 −1.62E-08×GDP + 2.441069×SUN −1.720531×INT + 0.185297×(SIZEG) + Ui

Based on the coefficient of determination, there is a very significant improvement in the model from the robust common effect model to the robust fixed effect model with the coefficient of determination increasing from 0.4525 to 0.6500. This indicates that 65% of the phenomena can be explained by the fixed effect model. The results of the analysis also found that all the independent variables were significant with a Prob value. <0.05. Furthermore, modeling with the random effect model approach is carried out.

(3) Robust Random Effect Model
Table 6. Panel EGLS (Cross-section Random Effects)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.028477	0.121133	-0.235091	0.8144
X1	-8.42E-09	3.74E-09	-2.253570	0.0256
X2	2.960510	0.763960	3.875215	0.0002
X3	-0.163838	0.645354	-0.253874	0.7999
X4	0.087766	0.053127	1.651990	0.1005

Effects Specification		S.D.	Rho
Cross-section random		0.051552	0.1478
Idiosyncratic random		0.123794	0.8522

Weighted Statistics			
R-squared	0.141615	Mean dependent var	0.057417
Adjusted R-squared	0.120155	S.D. dependent var	0.132460
S.E. of regression	0.124247	Sum squared resid	2.469983
F-statistic	6.599129	Durbin-Watson stat	1.848943
Prob(F-statistic)	0.000061		

Robust random effect model modeling provides the following estimation models:

DEPG = −0.028477 −8.42E-09×GDP + 2.960510×SUN −0.163838×INT + 0.087766×(SIZEG)

When compared with the robust common effect and robust fixed effect, the random effect model has the worst performance because the coefficient of determination is very small, only 0.141615 and not all independent variables are significant. Furthermore, the best model is selected, whether the robust fixed effect or the robust common effect model.

(4) Common Effect versus Fixed Effects Models
Chow Test

Chow test is used to select a common effect model or fixed effect model with the null hypothesis as follows:

$H_0: \mu_1 = \cdots = \mu_n$: Common effect model

$H_1: minimum\ one\ pair\ \mu_i \neq \mu_j$: Fixed effect model.

With statistical test [3].

$$F_0 = \frac{(RRSS - URSS)/(n-1)}{URSS/(nT - n - K)} \sim F_{n-1, n(T-1)-K}$$ (1)

Fixed effect model is chosen if the hypothesis test rejects H_0

Table 7. Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.694807	(32,128)	0.0000

The results of the Chow test found that the p-value (Prob) is less than 0.05, so it can be concluded that the null hypothesis is rejected, which means that the fixed effect model is more in accordance with the research data.

(5) Fixed Effects Model versus Random Effect Model
Generally, after the Chow test is carried out to choose between a common effect model or a fixed effect model, then the Hausman test is carried out to select a fixed effect model or random effect model. However, the Hausman test cannot be applied to compare the robust model. So that the comparison of the model is carried out based on (1) the coefficient of determination R^2 and adjusted R^2, (2) the sum-squared residual

The results of these statistics are summarized in the table below:

Table 8.   The Coefficient of Determination R^2 and Adjusted R^2 and Sum-squared Residual for Fixed Effect and Random Effect Model

	Fixed Effect	Random effect
R-squared	0.650073	0.141615
Adjusted R-squared	0.551656	0.120155

Sum squared residual	1.717574	2.469983

The analysis results found that the fixed effect model is much better than the random effect model seen from the coefficient of determination R^2 and adjusted R^2 and the sum-squared residual. The fixed effect model has a higher coefficient of determination R^2 and adjusted R^2 than the random effect model with a smaller sum-squared residual value.

In addition, it can be seen from the partial test results for each variable, the robust fixed effect model provides significant test results for all independent variables.

Appendix III. Individual Effect

In the robust fixed effect model with Ui, it is an individual effect with the values in Table 9 below:

Table 9. Individual Effects of the Fixed Effect Model

	COMPANY	Effect
1	ARTHA GRAHA	-0.159001
2	BUKOPIN	-0.035423
3	CAPITAL INDONESIA	0.074214
4	BCA	-0.021526
5	CIMB NIAGA	-0.049436
6	DANAMON	-0.070332
7	B INA PERDANA	0.155476
8	B MAYBANK INDONESIA	-0.065292
9	B MANDIRI	-0.011114
10	B MASPION INDONESIA	0.010640
11	B MAYAPADA INTERNAS	0.102503
12	B MEGA	-0.038832
13	B MESTIKA DHARMA	-0.009158
14	B MNC INTERNAS	-0.027758
15	B NATIONALNOBU	0.088413
16	BNI	0.021454
17	OCBC NISP	0.046114
18	BANK OF INDIA INDONESIA	-0.080383

19	B PAN INDONESIA	-0.065528
20	BPD JABAR & BANTEN	0.012222
21	B QNB INDONESIA	-0.045826
22	BRI	0.014116
23	BRI AGRONIAGA	0.210643
24	BTN	-0.067620
25	B TABUNGAN PENSIUNAN NAS	0.007753
26	B VICTORIA INTERNAS	0.021447
27	B CHINA CONSTRUCTION BANK INDONESIA	0.025958
28	B ARTOS IND	-0.148355
29	B HARDA INTERNAS	-0.006542
30	B GANESHA	0.090475
31	B YUDHA BHAKTI	0.037797
32	B JTRUST INDONESIA	-0.014241
33	N BUMI ARTA	-0.002860