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Determinants Factors of Interest Rates on Three-Month Deposits of Bank Persero

Tedy Kurniawan[1]✉ , Sucihatiningsih Dian Wisika Prajanti[2]

[1,2]Universitas Negeri Semarang

Abstract

This research aims at analyzing the influence of Capital Adequacy Ratio (CAR), Operating Expenses of Operating Income (BOPO), inflation, exchange rate, and the amount of money supply (M1) to the interest rate of three month deposits of the State-Owned Bank in Indonesia in 2007-2015. This research uses the error correction model analysis. The result obtained is the CAR that has a significant effect on the long term and has no effect on the short term, BOPO has a significant influence on the long term and short term, inflation has the significant effect on the long term and has no effect on the short term, the exchange rate has an influence on the short and long term, the money supply has no effects on the short and long-term on the interest rate on three month deposits of the State-Owned Bank.

Key words: State-Owned Bank, Deposits, Three Months.

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✉ Corresponding author :
Address: Kampus Unnes Sekaran, Semarang 50229
E-mail: Tedykukur@gmal.com

INTRODUCTION

Banking is a vital institution in influencing the economic development of a country. Through its intermediary function, the banking is capable of collecting the funds from the parties having surplus funds and then distributing them to those need the funding so that it can be used for the productive activities in the real sector. One aspect that is considered important in the intermediation activities is the interest rate. Interest rate is viewed as an indicator in influencing the people's decision to spend or deposit the money and also influencing the decisions in the business world to make loans for various purposes such as investment (Utami, 2012).

According to the Acts No. 21 of 2008 Article 1, paragraph 2, the Bank is a business entity that collects funds from the people in the form of savings and distributes them to the people in the form of loans or other forms in order to improve people's living standard. Another definition of the bank is a financial institution which main business is collecting the funds, distributing the funds back to the people in the form of credit, and providing the services in the traffic of payment and circulation of money. So in conducting the daily business activities, the bank must have the funds in order to distribute them to the people in the form of credit.

According to the ownership, there are several types of bank in Indonesia, one of which is the State-Owned Bank (Bank Persero) or the State-Owned Enterprises (SOEs). Those included in the State-Owned Bank are Bank Mandiri, Bank BRI, Bank BNI, and Bank BTN. The performance of a bank is closely related to the owner of the bank. The State-Owned Enterprises bank is expected to have a better performance for the sake of financial development, but the ownership of government that gets bigger in bank (State-Owned Enterprises Bank) tends to be related to the increased implementation of poor financial system, and also related to the increasing number of banks that have slow or poor progress. Empirical evidence shows a negative relationship between the level of ownership of banks by the governments and the financial developments (Muliaman D Hadad et al, 2003).

For a financial institution, the fund is the blood in the body of business entity and the main issue. Without funds, the bank cannot do anything, which means it cannot function at all. Bank funds are the cash owned by the bank or the current assets controlled by the bank that can be cashed at any time (Dendawijaya 2003). The cash owned by the bank is not only coming from the capital of the bank itself, but also from other parties who is deposited or entrusted to the bank that any time will be taken back, either all at once or gradually, one of which is from the third party's funds or the people's deposits in the form of checking accounts, savings, and deposits (Dendawijaya 2003). Here is the composition of the third party's funds collected by the Stated-Owned Bank in Indonesia from 2007 to 2015.

Figure 1. shows the number of the third party's funds that have been collected over the period of nine years from 2007 to 2015. Viewed from the development, the third party's funds have increased significantly. Of the total amount collected by the State-Owned Bank, most or more than 40 percent of the funding are from the deposits, while the rest are from the savings and the checking accounts. Therefore, the deposit funds are the very important source of funding for the banking. In relation with the importance of the deposit savings for the banking, then there are factors that need to be analyzed and considered by the banking sector related to the deposit funds.
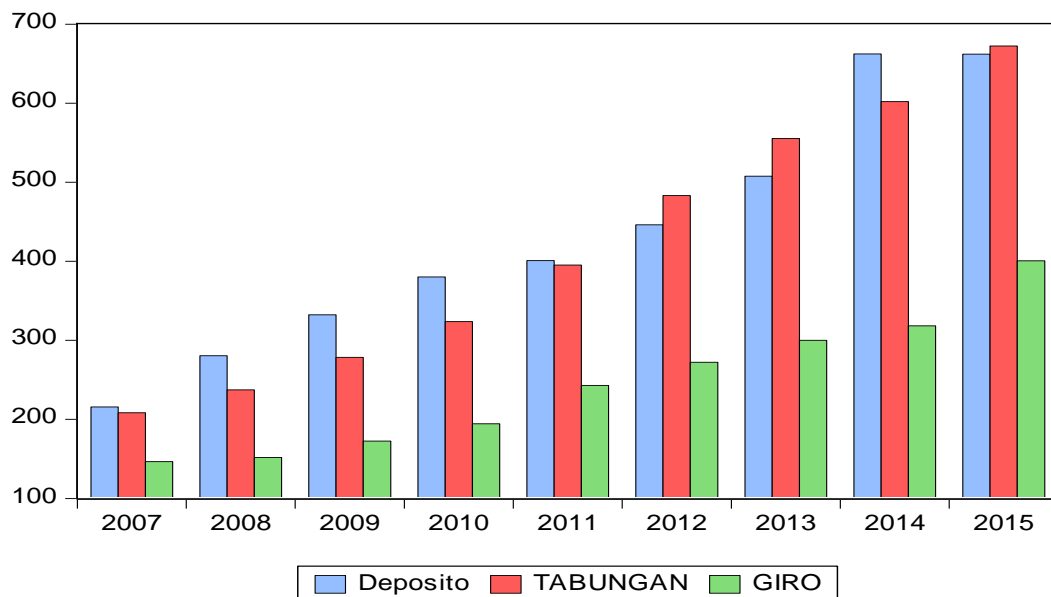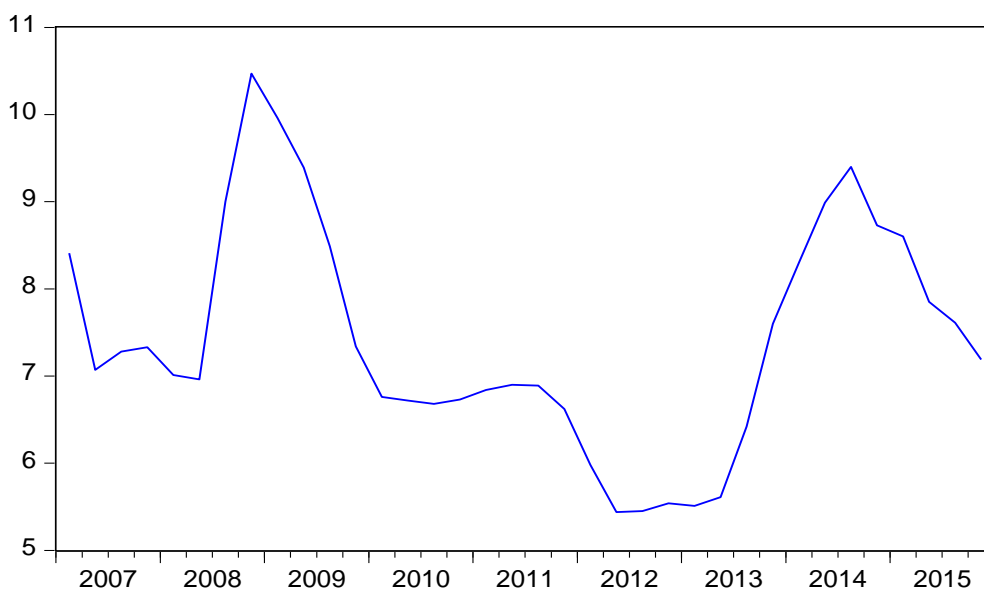
Source: Statistics of Indonesian Banking 2015

Figure 1. Composition of the third party's funds of State-Owned Bank (2007-2015)

Deposits (Time Deposit) is the deposits of the third party or the customer to the bank that may only be withdrawn within a certain period as dealt in the agreement between the third party and the bank (Dendawijaya, 2003). Deposits have a greater interest rate when compared to the interest rate of the checking accounts and the savings. This is because the deposits have a definite time limit and the withdrawal can be estimated based on the maturity date. The definite time limit provides an opportunity for the head of the bank to plan the credit distribution to the debtor.

Deposit Interest Rate 3-Month

Source: Statistics of Indonesian Banking

Figure 2. Interest rate on three month time deposits in 2007Q1-2015Q4

The development of the interest rate on deposits in Indonesia tends to follow the movement of the inflation. The interest rate on three month time deposits from the first quarter of 2007 until the fourth quarter of 2015 has a dynamic movement. Figure 2 shows that the interest rate on three month time deposits tends to have a dynamic movement, the interest rate on deposits soars high in the fourth quarter of 2008 to 2009 up to 10%,. The high soaring of the interest rate in 2008 is due to the shock from the global economic crisis that started from United States. The increase was due to the depreciation of the rupiah and the high increase in the inflation rate at that time. The interest rate on deposits experienced the lowest level in 2012 due to the low inflation rate during the year 2012 amounting to 4.3%.

Besides, at the end of 2013 to 2014 there was a high increase in the interest rate on deposit. The high increase was due to an issue of tapering off from the US central bank that will increase the benchmark interest rate (Fed rate). The global market assesses that the condition of US economy has recovered or improved from the crisis of 2009 crisis. Furthermore, the investors revoked their funds in the emerging market countries like Indonesia and moved the funds to the United States, because they considered that an investment in the developed country would be more secure than in the developing ones that are filled with the economic turmoil both internally and externally. The fund moving has an impact on the depreciating rupiah that helps push the interest rates on deposits that also increase during the year.

The high interest rate will encourage the investors to invest their funds in the banks rather than invest the funds in the production sectors or the industries that have a greater degree of risk. When there is the inflation or the money supply is too much and makes the price of goods expensive, Bank Indonesia will intervene in the higher benchmark interest rate to absorb the surplus, so that thereby the inflation rate can be controlled through the interest rate policy, or commonly called a tight monetary policy. The policy is a monetary policy issued by Bank Indonesia by raising the benchmark interest rate so that the conventional banks in Indonesia will also raise the level of interest.

The International Fisher Effect Theory (IFE Theory) describes the relationship between the interest rate and the changes in foreign exchange rates. This theory combines the PPP theory with the Fisher Effect theory discovered by Irving Fisher. According to the IFE theory, the difference of interest rate in the two countries is due to different expectations of the inflation rate. Fisher also explained that the inflation rate would determine the interest rate.

The Fisher Effect states that the nominal interest rate in any country will be equal to the real rate of return desired by the investors (the interest rate that will compensate the investors for the postponement of current consumption) plus the expected inflation rate. The interest rate is used to control the inflation through the tight monetary policy, but the policy of raising the interest rates is not always good. The tight monetary policy that encourages the high interest rate can make the cost of money expensive. Such things will weaken the economy on the real sector because a person tends to put his money in the bank in the form of deposits rather than play money to the production in the real sector, which can make the business world not excited to invest in the country, the production go down, and the economic growth become stagnated (Boediono, 1985).

The low deposit rate will also make the people unwilling to save their money in the bank and the impact is that the bank is less absorbing

the funds from the people in order to distribute the funds back to the people in the form of credit (Njeri, 2015). This is consistent with the opinion of the monetarists through Pigou effect, which stated that the decline in interest rate will encourage the investment and the decline in the price level will encourage the consumption (Fofack, 2016).

Such problems must be faced, so in this case the State-Owned Bank should be able to decide the right policy in determining the interest rate on deposit so as to maintain the economic stability. Bank Indonesia is also quite needed in terms of supervision and regulation. In accordance with Bank Indonesia Regulation (PBI) number 17/8 / PBI/ 2015, Bank Indonesia has the authority in terms of monetary arrangements, one of which is the authority to regulate the interest rate.

RESEARCH METHODS

This research uses a quantitative approach. The data used in this research is secondary data time series with the period of time the first quarter of the period 2007 to the fourth quarter of 2015. The data source is from Bank Indonesia and the Financial Services Authority (FSA) published through the Indonesian Financial Economic Statistics (SEKI) and the Indonesian Banking Statistics (SPI). The variables used are expressed in terms of percent as follows:

a. The interest rate on deposits (Y), which is the three-month interest rate on deposits stipulated by the bank in giving the reward of saving deposits to the depositors.

b. Capital adequacy ratio (X_1), which is a ratio that shows how much all of the assets of bank that contain risks financed by its own capital fund.

c. Operating Costs Operating Income (X_2), which is the result ratio of operating costs and operating income of Bank Persero.

d. Inflation (X_3), which is the inflation rate published in the form of quarterly.

e. Exchange rate (X_4) of the rupiah against the US dollar per quarter.

f. The amount of money supply (M1) (X_5), which is the amount of *kartal* money and *giral* money circulating in the community.

Variables of research above are written in the form of the model as follows:

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta X_{1t} + \alpha_2 \Delta X_{2t} + \alpha_3 \Delta X_{3t} + \alpha_4 \Delta \ln X_{4t} + \alpha_5 \Delta \ln X_{5t} + EC_{t-1} + \mu_t \quad \text{.....................(1)}$$

Explanations:

Y = three-month deposit interest rate

X_1 = Capital Adequacy Ratio

X_2 = BOPO

X_3 = Inflation

X_4 = Rupiah against USD

X_5 = Number of Circulating money (M1)

Ln = natural logarithm

$\alpha_0, \alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$ = Parameter

Δ = Delta

ECT = Error Correction Term

μ_t = error term

RESULTS AND DISCUSSION

This research uses a model of error correction (Engle Grangrer). Error Correction Model is the method used to correct the long-term balance. Error correction model is said to be suitable or not from the coefficient of Error Correction Term (ECT) that should be significant. If the coefficient is not significant, the model does not fit, so it needs further specification (Gujarati, 2012)

Stationary Test Results

At the time series analysis (time series), if the data used is not stationary, the regression model formed produces relatively high multiple coefficient of determination (R2) but the low Durbin-Watson statistic (Shocrul, 2011). The high R2 statistic and the low Durbin-Watson statistic of a model is a reminder that the estimation results are Spurious Regression resulting in estimation of inefficient regression coefficient. Testing the data stationary in this research uses Augmented Dickey-Fuller test (ADF). Based on the ADF test in this research, all the variables of stationary at the first different level, the stationary test results can be seen in Table 1.1.

In table 1 all variables are significant at the first different levels of trend and intercept because the results of each ADF variable test of the interest rate on deposits amounted -3.61952, BOPO variable -6.45645, CAR variable -8.64287, inflation variable -4.29210, exchange rate variable -4.75926 and JUB M1 variable -7.38182, which means that all variables are larger than ADF McKinnon on the degree of 1%, 5%, and 10%. Furthermore, the results of the probability of each variable of deposit interest rate amounted 0.0105, CAR variable 0.0000, BOPO variable 0.0000,

inflation variable inflation 0.0023, exchange rate variable 0.0005 and JUB M1 variable 0.0000 when compared with α 5% all the variables are smaller than α 5%, it can be concluded that all variables are stationary or significant at the first different of trend and intercept.

Classic Assumption Test

Multiple linear regression model can be called as a good model if it meets the assumptions of data normality, it is free from the statistic classical assumptions, whether multicollinearity, autocorrelation, and heteroscedasticity, or it is capable of being called BLUE (Best Linear Unbiased Estimator) (Gujarati 2012). Based on the results of the normality test, the results from the value of the Jarque-Bera and the probability of each is equal to 1.001190 and 0.606170, from these results it can be concluded that the residuals on the data are normally distributed because the value of the probability is near zero or away from one.

Multicollinearity Test

The results of table 2 and 3 can be seen that the entire R-Partial are smaller than R-compound. It can be concluded that among the variables of model in this research are free from multicollinearity.

Table 1. Stationary Test at the first different of trend and intercept

Variable	ADF test	ADF Mckinnon			Probability	Explanation
		1%	5%	10%		
Sb_Deposit	-3.6195	-3.6194	-2.9511	-2.6143	0.0105	Stationary
CAR	-8.6428	-3.6616	-2.9604	-2.6191	0.0000	Stationary
BOPO	-6.4564	-3.6394	-2.9511	-2.6143	0.0000	Stationary
Inflation	-4.2921	-3.6793	-2.96776	-2.6229	0.0023	Stationary
lnKurs	-4.7592	-3.6394	-2.9511	-2.6143	0.0005	Stationary
lnM1	-7.3818	-3.6394	-2.9511	-2.6143	0.0000	Stationary

Source: Processing Result of Eviews 8.0

Table 2. Long-term Multicollinearity Result Test

Variable	R-Partial
Sb_Deposito, BOPO	0.087409
Sb_Deposito, CAR	0.002403
Sb_Deposito, Inflation	0.136532
Sb_Deposito, ln_kurs	0.190424
Sb_Deposito, lnM1	0.018361
R-Compound = 0.749050	
Source: Processing Result of Eviews 8.0	

Table 3. Short-term Multicollinearity Test Result

Variable	R-Partial
Sb_Deposito, BOPO	0.070567
Sb_Deposito, CAR	0.001454
Sb_Deposito, inflation	0.008714
Sb_Deposito, In_kurs	0.195823
Sb_Deposit, lnM1	0.000345
R-Compound = 0.485016	

Source: Processing Result of *Eviews* 8.0

Autocorrelation Test

Assessment of the linear regression model contains the assumption that there is no autocorrelation between the disturbance terms. This generally occurs in the autocorrelation time series data. The consequence of autocorrelation in the model is that the adjuster is not efficient and the t test and the usual F test are invalid even if the estimation results are not biased (Gujarati, 2012).

Autocorrelation test will be conducted in this research using LM method or Bruesch-Godfrey method. The autocorrelation test criteria using LM (Bruesch-Godfrey) method is if the probability value Obs * R-squared <α 5% so there are symptoms of autocorrelation and if the probability value Obs * R-squared> α 5%, so there are no symptoms of autocorrelation. Based on the LM test results it is found that the probability value of Obs * R-Squared is 5.308293, which means it is

greater than α of 5% and it can be concluded that this model is free from interference autocorrelation.

Heteroscedasticity Test

Heteroscedacticity arises if the error or residual of the model observed has no constant variance from one observation to another observation (Gujarati, 2012). Heteroscedasticity symptoms are more common in time series data, and also frequently appear in the analysis using the average data. There are several methods to identify the presence of heteroscedasticity, among others: graphical method, park method, Spearman rank method, Lagrangian multiplier method (LM test), and white heteroscedasticity test.

Heteroscedasticity test is to use the White test by comparing the value of Prob-Chi Square with α 5%. If the value of Prob-Chi Square> α 5% so the model escapes the problem of heteroscedasticity. Based on the results data processing, if the value of Prob-Chi Square is

0.2147, which means greater than α 5%, from these results, it can be concluded that this model is free from the heteroscedasticityinterference.

The approach used in this research is the approach to error correction model (ECM), which is a technique for correcting the short term imbalances to the long-term balance. ECM model used in this research is EG-ECM (Engle Granger error correction model). The long-term results are as follows.

Long-Term Test Results

The long-term models are as follows:

$$Sb\_deposit = \alpha_0 + \alpha_1 BOPO_t + \alpha_2 CAR_t + \alpha_3 Inf_t + \alpha_4 lnKurs_t + \alpha_5 lnMi_t \ldots\ldots\ldots (2)$$

The model of results of long-term estimates (OLS) in table 1 can be written as follows:

$$Sb\_Deposit = -67.13787 - 0.118551\, CAR_t + 0.090024\, BOPO_t + 0.131388\, Inf_t + 8.429843\, lnKurs_t - 0.721453\, lnM_1 + \mu_t \ldots\ldots\ldots(3)$$

In Table 4, the value of F-statistic is 17.90912 and has a prob F-statistic of 0.00000. This shows that simultaneously (simultaneous test) all independent variables of CAR, ROA, inflation, exchange rate and M1 on the long term simultaneously have a significant influence on the Interest Rate on three month Time Deposit at Bank Persero.

In the long-term estimation results, CAR variable has a coefficient of -0.118551 and a probability of 0.0500, which means in the long term CAR significantly affects the interest rate on three month deposits of Bank Persero or Ha is received. It is supported by the value of t-statistic that is greater than t-table (2.041> 2.028). These results are consistent with a theory that CAR significantly affects the interest rates on deposits. CAR coefficient value of -0.118551 means that every 1% increase in CAR, the deposit rate will decrease by 12:11%, assuming ceteris paribus. These results are consistent with the research of Latumaerissa (1999) that if there is an increase in CAR of a bank, the interest rate on bank deposit tends to decrease (Latumaerissa: 1999). The Variables of Operating Costs Operating Income (BOPO) in the long-term have a coefficient of 0.090024 and probability of 0.0004, which means that any increase in BOPO of 1% will lead to an increase in the interest rate on three month time deposits in Bank Persero at 0:09%, ceteris paribus.

Table 4. Long Term Regression Results (ordinary least square)

Variable	Coefficient	t-statistic	Probability
C	-67.13787	-5.847180	0.0000*
CAR	-0.118551	-2.041920	0.0500*
BOPO	0.090024	4.007226	0.0004*
Inflation	0.131388	2.249775	0.0320*
LnKurs	8.429843	7.077672	0.0000*
LnM1	-0.721453	-0.947188	0.3511
R2	0.749050		
Adjusted R2	0.707225		
F-Statistic	17.90912		
Prob(F-Statistic)	0.00000		
T-table	2.028		

Source: Processing Result of Eviews 8.0

significant at level α = 5%

The long-term estimation of BOPO has a significant positive effect when viewed from the value of t-statistics that is greater than t-table, which is equal to (4.007> 2.028) or Ha is accepted, and the coefficient value of 0.0004 or less than 0.05. These results are similar to the results of short-term estimation of BOPO variable in the interest rate on deposits.

Inflation in the long-term has a coefficient of 0.131388 and a probability of 0.0320. Inflation in the long-term has a significant impact on the interest rate of three month time deposit. It is supported by a t-statistic of inflation amounted 2,249, which means greater than t-table (2.249> 2.028) or Ho is rejected and Ha is accepted. Furthermore, the coefficient value of inflation amounted 0.131388 has a meaning that the increase in inflation by 1% will make an increase in the interest rate on three month time deposits at 0:13%. It is in line with the theory of Fisher Effect saying that the increase in inflation of 1% will lead to an increase in interest rates of 1%, It is also in line with the research conducted by Dilek Teker, Elcin Aykac Alp and Oya Kent (2012) entitled "Long-Run Relation between Interest Rates and Inflation: Evidence from Turkey", which found that inflation has positive effect on the level of interest in Turkey, The statement is in line with a research conducted by Mishkin and Simons (1995), which examined the relationship between the inflation rate and the interest rate. The result obtained is a positive relationship between the level of inflation and the interest rate.

The exchange rate in the long term has a coefficient of 8.429843, which means that any increase in the exchange rate of 1% will make the interest rate on three month deposits increase by 8.4%, ceteris paribus.

The exchange rate has a probability of 0:00, which means that it is under 0.05, then the value of t-statistic of the exchange rate in the long term amounted 7,077 is bigger than t-table (7.077> 2.028), which means that the long-term exchange rate has a positive and significant impact on the interest rates on three month time deposits or Ho is rejected and Ha is accepted. This is consistent with the theory of Fisher that the relationship between the exchange rate and the deposit interest rate is positive.

The money supply (M1) in the long term has a coefficient of -0.721453 and a probability of 0.3511. M1 coefficient of -0.721453 means that a long-term change in M1 amounted 1% will make a decrease in the interest rate on time deposits amounted 0.72%. This is consistent with theories of Keynes, then the long-term estimation of M1 variable has no significant effect when tested partially, because variable M1 has a t-statistic that is smaller than t-table that is equal to -0.947 (-0.947 <2.028) or Ho is accepted. The results are not in accordance with the theory because the theory of M1 has significant negative effect on the interest rate on time deposits.

The ECM model is said to be valid if the sign of the coefficient error correction (ECT) is negative and statistically significant (Widarjono, 2009). Based on the results of short-term estimation in Table 1.5, the ECT value is significant at $\alpha = 5\%$ with the coefficient value of -0.465716 and the probability of 0.0097, which means that the ECM model is valid to be used and able to correct the short term imbalances into the long-term balance of 46.5%.

Short Term Test Results (ECM)

The short-term model (ECM-EG) is as follows:

$$\Delta sb\_deposit_t = \alpha_0 + \alpha_1 \Delta CAR_t + \alpha_2 \Delta BOPO_t + \alpha_3 \Delta Inf_t + \alpha_4 \Delta lnkurs_t + \alpha_5 \Delta lnM1_t + ECt_{-1} + \mu_t \dots\dots\dots\dots\dots\dots(4)$$

Table 5. Results of Short Term Regression of Error Correction Model – EG

Variable	Coefficient	t-statistic	Probability
C	-0.055712	-0.476387	0.6375
CAR,1	0.014367	-0.219944	0.8275
BOPO,1	0.055420	2.607303	0.0145*
Inflasi,1	0.017670	0.292520	0.7720
Lnkurs,1	6.611161	3.330682	0.0024*
Lnm1,1	-0.031681	-0.019852	0.9843
ECT	-0.465716	-2.773912	0.0097*
R²	0.422962		
Adjusted R²	0.299311		
F-Statistic	3.420610		
Prob(*F-Statistic*)	0,011665		
T-table	2.028		

Source: Processing Result of Eviews 8.0

*significant at level α = 5%

Based on table 5, the results of short term are obtained and the model can be written as follows:

ΔSb_deposito = −0.055712 − 0.014367 ΔCARt + 0.055420 ΔBOPOt + 0.017670 ΔInft + 6.611161 Δln_kurst − 0.031681 ΔlnM1t − 0.465716 ECt-1 + μt ....(5)

From the results of short-term regression (Error Correction Model) in table 5, the independent variables have simultaneously significant effect on variable Y with F-statistic values of 3.420610 and prob F-statistic of 0.011665, which means below 0.05. Thus, Ho is rejected and H1 is accepted, which means that in the short term the independent variables of CAR, BOPO, inflation, exchange rate, M1, and error correction term simultaneously have a significant influence on the Interest Rate on three month Deposits on Bank Persero.

CAR variable in the short term has a coefficient of -0.01436, which means that on a short-term a decrease of 1% in CAR will result in an increase in the interest rate on three month time deposits amounted 0.014%, ceteris paribus. Then the value of t-statistic CAR is -0.219 (-0.219 <2.028), so that it can be concluded that CAR variable in the short term has no effect on the interest rate on three month deposits on Bank Persero or Ha is rejected.

These results are consistent with the research of Luciana Spica Almilia and Wahyu Utomo (2006) and Dewi Ayu Prahastuti (2007), in which CAR does not affect the interest rates on deposits, but the short-term results are inconsistent with the theory. CAR should have an effect on the interest rates on deposits because to see the size of the interest banks must pay attention to the performance derived from the capital side that is to look at these ratios. According to the writer, the lack of effect of CAR on the interest rate on three month deposits happens because CAR is related to the amount of capital held by the bank while the bank's core capital actually only consists of paid-in capital, share premium, general reserves, and retained earnings, and not dominated by the large number of deposits of the people in the bank. So if there is a short term decrease of CAR it does not affect the determination of interest rates on three month time deposits.

BOPO variable in the short term has a coefficient of 0.055420 and a probability of 0.0145, which means that BOPO has a significant positive effect on the interest rates on three month time deposits. The increase in BOPO of 1% will lead to an increase in the interest rate on three month time deposits of 0.05% by assuming ceteris paribus. It is supported by the value of t-statistic BOPO that is greater than t-table (2.607> 2.028) or Ha is accepted. These results are consistent with the theory that BOPO affects the determination of the interest rates on deposits because to determine the amount of interest on deposits, the bank also needs to take into account the operating costs incurred and the operating income obtained. These results are also supported by previous research examined by Dewi Ayu Prihastuti (2007), which stated that BOPO has s significant influence on the Interest Rates on Time Deposits of Bank Persero.

Inflation variable in the short-term estimation has a coefficient value of 0.017670 and a probability of 0.7720. The probability of inflation on the interest rates on deposits in the short term is 0.017670, which means that in the short term any increase in the inflation by 1% will lead to an increase in the interest rate on three month time deposits in Bank Persero amounted 0.017% by assuming ceteris paribus. Partially inflation in the short term does not affect the interest rate on three month deposits because it has the lower value of t-statistic than t-table, which means that Ho is rejected. It does not fit the theory. The theory of Fisher or the Fisher Effect says that the increase in inflation of 1% will lead to an increase in the interest rate of 1%, but it happens because in the short term the bank is not exposed to the effects of inflation, and it is not the time for the bank to change the

deposit interest rates because changing the interest rates on deposits should have to go through a lot of consideration, one of which is from the bank's liquidity.

In the short-term estimation of inflation on the interest rate on three month time deposits of inflation has no effect, it is in line with a research of Johannes Peyavali Sheefeni Sheefeni entitled "Testing for the Fisher Hypothesis in Namibia", which found that the theory of Fisher stating that the inflation effects the interest rate is not valid in a case study in Namibia. A research using monthly data from the 1992-2011 got the results that inflation does not have an impact on the interest rates in Namibia.

Variable of exchange rate in the short term have a coefficient of 6.611161, which means that every increase in the exchange rate against the dollar by 1% will make the interest rate on three month time deposit of Bank Persero increased by 6.6% assuming ceteris paribus. This is consistent with Fisher's theory that the relationship between the exchange rate and the deposit interest rate is positive, so the value of t-statistic rate in the short term is 3.330 bigger than t-table (3.330> 2.028), which means that in the short-term the exchange rate has significant effect on the interest rate on three month time deposits or Ho is rejected and Ha is accepted. This is also in line with a research conducted by Maurice K. Shalishali (2012) entitled "A Test of the International Fisher Effect in Selected Asian Countries" that analyzed the exchange rate and the interest rate differentials in eight different countries in Asia those are China, India, Japan, South Korea, Malaysia, Thailand, Vietnam, and Indonesia.

The estimation results of the exchange rate in the short-term and long-term are that the exchange rate of rupiah against the US dollar positively affects the interest rate on three month time deposit. It is because when rupiah

has increased or depreciated, the expectations of the inflation rate will increase as well and will have impact on the increase in the interest rates on deposits. This is also in line with the case in the 4th quarter of 2008 until 2009, when the global economic crisis affects the depreciation of rupiah and has impact on increasing the interest rate on three month deposits. In Figure 3, there is an increase in the exchange rate at the beginning of 2014 caused by the issue to tapering off from the US central bank that will increase its benchmark interest rate (Fed Rate). The global market assessed that the condition happened because the US economy has recovered or improved from the crisis of 2009. Furthermore, the investors revoked their funds in emerging market countries like Indonesia and moved the funds to the United States, as it is considered that an investment in the developed country will be more secure than in the developing country that is filled with economic turmoil both internally and externally. The fund moving has impact on the depreciated rupiah due to the increased demand for the dollar.

M1 variable on a short-term estimation has a coefficient of -0.031681, which means that the short-term change in M1 is 1%, so it will make a decrease in the interest rate on three month time deposits of 0.03%, ceteris paribus. This is according to the theory of Keynes stating that the demand for money has a negative relationship with the interest rates, which means that when the interest rates rise, the money supply will drop because the investment is increased, and vice versa. M1 variable has a probability value of 0.9843, the probability value M1 is above 0.05. Partially M1 in the short term has no effect on the interest rate on three month time deposits, as it has a t-statistic of -0019 that is smaller than t-table (0.019 <2.028). The results do not fit the theory, because M1 should have a significant influence on the interest rate on deposits.

The results on the short-term and long-term estimation of M1 on the interest rate on three month time deposits of Bank Persero do not have significant influence or Ha is rejected and Ho is accepted and negative. These results occur because the banking prefers to consider the factor of inflation compared to the money supply. It is because based on theories and suggestions of the World Bank, the policy of high interest rate is actually done to reduce the rate of inflation and not to reduce the money supply itself.
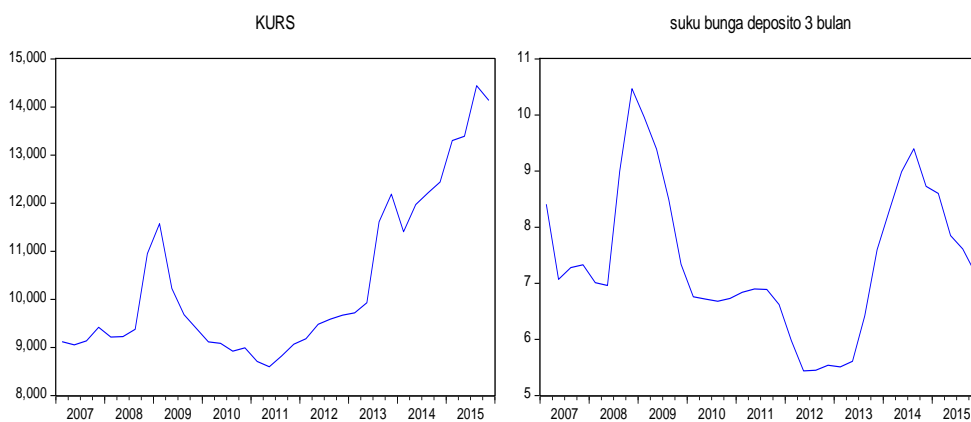

Figure 3. Comparison of the exchange rate and the interest rate on deposits of Bank Persero
Source: Bank Indonesia

To strengthen this, a research of Umi Yaumiddin and Rudi Purmono said that the inflation rate has a low leverage on the money supply so that the target to reduce the inflation rate itself is to maintain the stability of the Indonesian economy and to dampen the high inflation rate, not to reduce the money supply. Because without raising or lowering the interest rate on deposits, the money supply will always increase because the government (Bank Indonesia) always print the money.

CONCLUSION

The variables of CAR, BOPO, Inflation, Exchange Rate, and Money Supply simultaneously have the effect on the changes in the interest rate on three-month deposits of Bank Persero in the long term and short term. Partially, only the Money Supply that has no leverage on the interest rate on three month deposits of Bank Persero in the long-term, while the variables of CAR, BOPO, Inflation, and Exchange Rate has the leverage. In the short-term, the variables of BOPO, Inflation, and Exchange Rate have the leverage on the interest rate on deposits, while CAR and the Money Supply have no leverage.

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