

Effect of Spot Rate, Forward Rate, Inflation Rate And Interest Rate Against the Future Spot  
on the FX Market of Southeast Asia Region

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### ABSTRACT

This study aims to analyze empirically the influence of spot rates, forward rates, inflation rate and bungaterhadap rates on the futures spot on the Forex market of Southeast Asia Region. This study used samples of Indonesia, Malaysia, Singapore, Thailand and the Philippines during 2007-2016. The data used are obtained from Bank Indonesia and forexpros. The method of analysis used in this study is multiple regression analysis. The research results show that spot rate does not affect the future spot in Indonesia and Singapore, spot rate negatively affect the futures spot in Malaysia and Thailand, spot rate positively affect the future spot in Philippine country. The forward rate has no effect on the future spot in the countries of Indonesia, Malaysia, Singapore and Philippines, the exchange rate positively influences the future spot in Thailand. Inflation rate positively affects the future spot in Indonesia, Inflation rate has no effect on the future spot in Malaysia, Singapore and the Philippines. Interest rates negatively affect the future spot in the countries of Indonesia, Malaysia, Singapore and the Philippines. The interest rate has no effect on the future spot in Thailand. The results of research can be used for investors as a consideration in making investment decisions, especially on the Foreign Exchange Market.

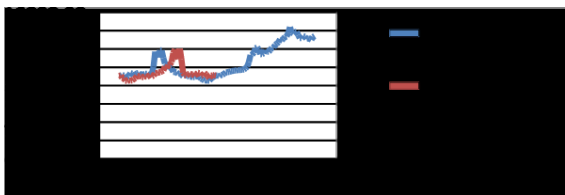
*Keywords: Foreign Exchange, Spot Rate, Forward Rate, Inflation Rate, Interest Rate, Future Spot 1.*

### INTRODUCTION

#### 1.1 Background

The development of information and communication technology has led to globalization in all aspects of life, including economic globalization. Companies that originally operate on a national scale are encouraged to enter the international market. Each country seeks to strengthen its position in the trade sector through involvement in various bilateral, regional and multilateral forums. Countries involved in international trade in theory will benefit because the country will specialize to produce commodities efficiently. The agreements of countries that exist in Southeast Asia through ASEAN, is one example of regional cooperation which includes discussing efforts to increase trade in intra and extra-ASEAN. The number of ASEAN member countries currently reaches ten countries, namely Indonesia, Singapore, Malaysia, Thailand, Philippines, Brunei Darussalam, Vietnam, Laos, Cambodia and Myanmar where each country has diverse economic conditions where there is great potential to be improved. Trade occurring in

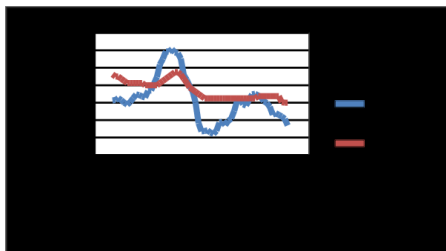
the international market has an impact on the diversity of currencies used in every transaction. Therefore, companies that compete in the international market are always faced with the risk of exchange rate / exchange rate fluctuations. Future exchange rate forecasting is also necessary for the company, because in a condition the company requires to think of ways to reduce the risk of foreign currency fluctuations, and one way of protecting the risk of the company should be able to predict the exchange rate that will occur in the future the futures can be used as a basis for consideration of hedging or hedging decision making, in order to minimize exposure risks from foreign currency fluctuations, especially the Southeast Asian currency against the US Dollar in the form of future spot forecasts.



Source: Bank Indonesia Figure

#### 1.1 Spot rate, forward rate, and future Spot Country of Indonesia

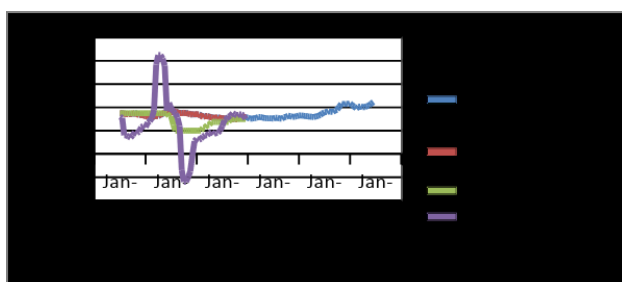
Figure 1.1 shows the fluctuation of the rupiah exchange rate (IDR) against USD, the rupiah exchange rate from year to year experienced turmoil. The lowest exchange rate is in 2007 and the highest exchange rate is 2016.



Source: Bank Indonesia Figure

#### 1.2 Inflation Rate and Interest Rate of Indonesian Country Rate

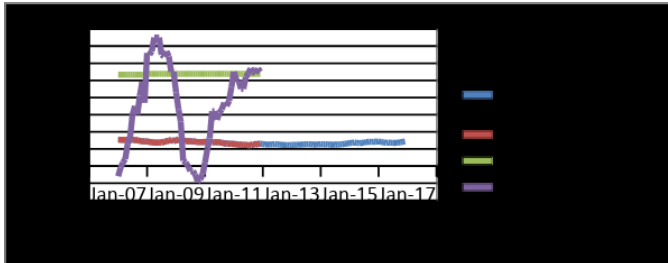
Figure 1.2 shows the inflation rate and the interest rate of the Indonesian state, the highest inflation rate in 2008 and the lowest inflation rate in 2009. The highest interest rate was 2008 and the lowest interest rate in 2011.



Source: Indonesia Bank

Figure 1.3 Spot rate, forward rate, inflation rate, interest rate and future Spot Country Malaysia.

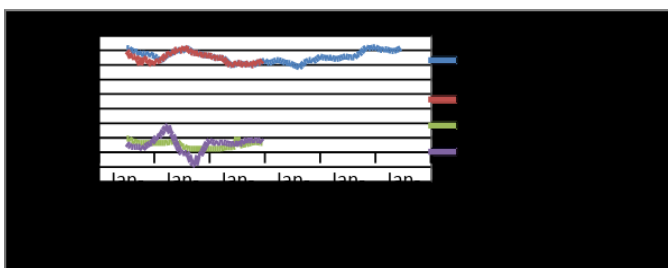
Figure 1.3 shows the value of spot rate, forward rate, inflation rate, interest rate and future Spot Country Malaysia. The highest rate of exchange is in 2016. The highest inflation rate is in 2008 and the lowest in 2009. The highest interest rate is the 2007 and the lowest in 2009.



Source: Bank Indonesia Figure

1.4 The value of spot rate, forward rate, inflation rate, interest rate and future Spot Country of Singapore

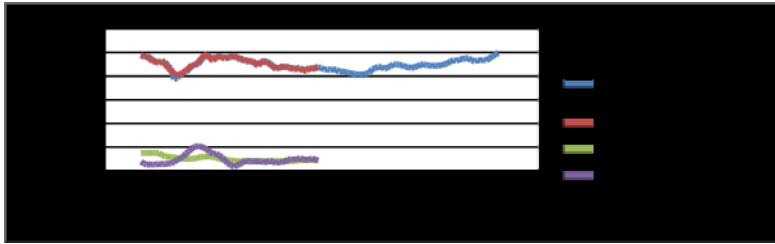
Figure 1.4 shows the value of spot rate, forward rate, inflation rate, interest rate and future Spot Country of Singapore. The highest exchange rate is in 2016. The highest inflation rate is in 2008 and the lowest in 2009. The highest interest rate is 2007 with 5.33% and 2008-2011 value is not changed by 5.38%.



Source: Indonesia Bank

Figure 1.5 The value of spot rate, forward rate, inflation rate, interest rate and Future Spot of Thailand

Figure 1.5 shows the value of spot rate, forward rate, inflation rate, interest rate and future Spot Country of Thailand. The highest rate of exchange is in 2016. The highest inflation rate is in 2008 and the lowest in 2009. The highest interest rate is the 2007 and the lowest in 2009.



Source: Indonesia Bank

Figure 1.6 Spot rate, forward rate, inflation rate, interest rate and future Spot Country of the Philippines.

Figure 1.6 shows the value of spot rate, forward rate, inflation rate, interest rate and future Spot Country of the Philippines. The highest rate of exchange is in 2016. The highest inflation rate is in 2008 and the lowest in 2009. The highest interest rate is the 2007 and the lowest in 2010.

In the previous research, there are differences in research results such as the research conducted by Noor (2011: 8), concluding that the inflation and interest rate variables have a partially insignificant positive effect that changes in inflation rate and interest rates will not affect the rise / fall in value Rupiah exchange while simultaneously all independent variables have a significant positive effect which means that if the price of goods abroad dropped while the price of domestic goods remain, then the imported goods relatively become cheaper, while demand will rise. These conditions will encourage the domestic currency to depreciate or foreign currency appreciated. In a study conducted by Puspitaningrum et al (2014: 1), with the result that the partial variable rate of inflation has a significant positive effect on exchange rate variables which concluded that the higher inflation rate in Indonesia will result in the rupiah exchange rate depreciating against the dollar American and partially variable SBI interest rate has a significant negative effect which means that high interest rates will not provide a guarantee of a country's currency exchange rate strengthened.

Investors, multinationals and governments need exchange forecasting to make decisions on debt and short-term debt, receivables and short term funding, capital budgeting and long-term funding. The process of forecasting from market indicators, known as market-based forecasting, is usually developed based on spot rates and forward rates. The current spot rate can be used as an estimate (forecasting) futures spot because this rate reflects the market forecast over the spot rate in the short term. The forward rate is used in the forecast (futures) futures forecast as this rate reflects the market forecast of the spot rate at the end of the forecast period. Based on the above description, the researcher decides to prepare a thesis entitled: Influence Spot Rate, Forward Rate, Inflation Rate and Interest Rate Against Future Spot on the Southeast Asian Markets Market.

## 1.2 Problem Formulation

1. What is the Spot Rate, Forward Rate, Inflation Rate And Buanga Rate affect the Future Spot in the forex market of Southeast Asia in 2007-2016?
2. Of the four variables Spot Rate, Forward Rate, Inflation Rate and Interest Rate. Which variable is most influential on the Future Spot in the forex market of Southeast Asia in

2007-2016?

## **2. LITERATURE REVIEW**

### **2.1 Theoretical Basis**

2.1.1 Foreign Exchange Market Foreign exchange (forex) or foreign exchange (forex) or foreign currencies are defined as foreign currency and other means of payment used to perform or finance international financial economic transactions and which have official rate records at the central bank. Currency is often used as a means of payment and unit count in international economic and financial transactions referred to as hard currency, the currency is relatively stable value and sometimes experience appreciation or increase in value compared with other currencies (Hady 2016: 67).

1.1.2 Spot Rate The spot exchange rate is the nominal exchange rate of the day / the exchange rate of a particular domestic currency in the event of a transaction. Spot transactions represent foreign exchange transactions with delivery (delivery) on the spot (theoretically, although in practice spot transactions are completed within two or three days) (Faisal, 2001). In the spot market, the currency is traded directly / immediately (direct delivery).

2.1.3 Forward Rate The forward rate is the current set rate at the time of the transaction to be completed / submitted at a later date. Because the economic actors do not know what the spot rate in 1 week, month, year or other future. A forward exchange rate for a particular future date is usually used as an estimated future spot rate. The forward rates are usually easily accessible so they can be used as easy predictors and free of cost. No one always believes that the forward rate provides a more accurate forecast of currency values than the spot rate (Madura, 2011).

2.1.4 Inflation Rate Inflation is an economic problem that can happen, either in developed countries or in developing countries like Indonesia. Dynamics and economic development have an impact on increasing demand for goods and services is one of the causes of inflation. In simple terms inflation can be interpreted as a process of raising the general prices of goods constantly (Nopirin 2000: 25). Inflation will be beneficial for groups with excess money, because the money can be invested in land, house and money allocated assets (Suparmono 2004: 138).

2.1.5 Interest Rate Sunariyah (2006: 80) defines the interest rate is the price of the loan. The interest rate is expressed as a percentage of basic money per unit. Interest is a measure of the price of resources used by the debtor paid to the creditor. "In general, when interest rates are low, more funds flow, resulting in increased economic growth. Similarly, when interest rates are high, a small amount of funds flow will result in low economic growth "(Sundjaja and Barlian, 2003: 57). The interest rate is divided into 2 ie the nominal and real interest rates. The nominal interest rate is the usual interest rate: that is the interest rate the investor pays to borrow money. The real interest rate is the nominal interest rate that is corrected to eliminate the effect of inflation. If the interest rate is 8% and the inflation rate is 3%, then the real

interest rate is 5% (Mankiw 2006: 61)

2.1.6 Future Spot Future Spot is the value of the spot rate that will apply in the future, in other words the exchange rate of foreign exchange rate against the domestic exchange rate in the next period. The purpose of predicting the future spot is to facilitate the anticipation of the risk of changes in foreign exchange rates (Salvatore, 1997). Future Spot is a reflection of the efficiency of the forex market. Market efficiency is a market where new information has been reflected in the price of traded securities. The efficiency of the foreign exchange market also affects forecasting. Thus, knowing today's prices is more informative from the point of view of forecasting as it knows all past prices (Faisal, 2001).

2.1.7 Keynesian Financial Theory The Keynesian financial theory explains the following three issues: the public's goal of asking for money, the factors that determine the interest rate and the effect of changing the money supply over the economic activities of the country. Regarding the purpose of asking for money, according to the Keynesian is used and asked the community for three purposes: to conduct trade transactions ie to buy and sell goods and services, in case of savings to deal with unforeseen circumstances in the future, and for speculation that is used to buy stock, bond and other financial treasures as a financial investment to earn revenue (Sukirno: 2010)

2.1.8 Monetary Theory Monetary theory is a variety of thoughts and concepts about various monetary variables, such as money, interest rates, money supply, and the like. In addition, the talks in monetary theory can not be separated from other economic variables such as inflation, national income and exchange rates. Just as in economics, monetary theory also uses a variety of models, in particular models of mathematical equations and graphs, to simplify phenomena in the field and facilitate explanations. The money quantity theory proposed by Irving Fisher that can be mathematically formulated as follows:  $MV = PT$  Where: M (money): the amount of money in circulation V (velocity): The speed of money circulation P (Price): Price level of goods T (Trade): The amount of goods traded.

2.1.9 Theory of Storage Two approach models introduced as perspectives on commodity price formation in the future (Jarvinen, 2004) are the theory of storage developed by Working (1948) and Kaldor (1939) that explain the difference between Spot and Futures Price on an interest basis, arising from storage costs and the convenience yield. Working (1948), states that expectations based on future price effects should always be equal to Spot Prices, except for a period when inventories of past and future production are not expected to exist.

2.1.10 Purchasing Power Parity Theory (PPP Theory) In principle, this PPP theory analyzes how the relationship between change and inflation rate difference with fluctuations in foreign exchange rates. The explanation of this theory is based on the law of one price (LOP), a law stating that the price of similar products in two different countries would be the same when valued in the same currency or currency (Hady 2016: 123). Purchasing Power Parity Theory (PPP) theory explains the perfect relationship between the relative inflation rate between the two countries with their exchange rate. Certainly the PPP theory states that the exchange rate

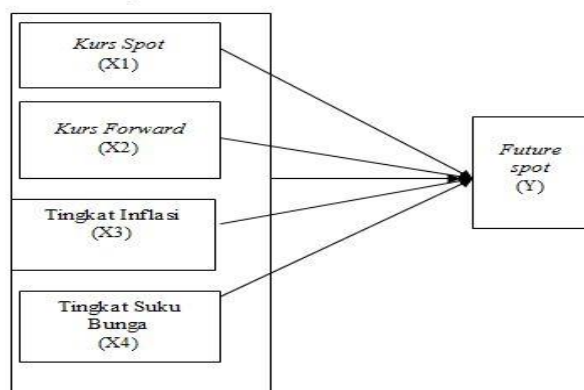
balance will adjust to the magnitude of the difference in the rate of inflation between the two countries. PPP theory looks at the relationship between inflation rate differentials and future exchange rate movements (Madura 2011: 322). Consumer purchasing power when buying products in their own country will be the same as purchasing power when importing goods from foreign countries (Madura 2011: 322)

2.1.11 Unbiased Forward Rate Hypothesis (UFR) The Hypothetical Non-Biased Forward Rate (UFR) or often referred to as Uncovered Interest Rate Parity is also used to analyze the exchange rate model. In the interest rate parity theory is not closed, it is assumed an efficient market occurs when the forward rate is an unbiased predictor of the future spot rate (Syafudin 1994: 53). The unbiased forward rate hypothesis (UFR) emphasizes the importance of using forward exchange information as effectively as possible to predict future spot rates. This hypothesis says that market expectations of the fundamental economic variables affecting exchange rates are reflected by forward rates.

2.1.12 International Fisher Effect Theory (IFE Theory) International Fisher Effect explains the relative interest rate and exchange rate relations between the two countries. This theory suggests that an investor who periodically invests in an interest-based securities on average will get the same return on domestic investment. This means that the exchange rate of the country's currency with high interest rates will depreciate to compensate the profitability of the interest rate received from foreign investment (Madura 2011: 322). IFE looks at interest rate differentials with future exchange rate movements.

2.1.13 Prediction of Foreign Exchange Predicting foreign exchange is an important strategy for the success of international business ventures. Inaccurate forecasting or projection of foreign exchange may eliminate the opportunity to profit from international transactions. Thus, forecasting foreign exchange is the key to decision-making involving the transfer of funds from one currency to another in a given period of time. By forecasting foreign exchange, the company or investor can hedge (hedge) to anticipate the risk due to foreign exchange fluctuations (Kuncoro, 2001).

#### 2.4 Kerangka Pemikiran



Gambar 2.2 Kerangka pemikiran

## 2.5 Research Hypothesis

H1: Spot exchange positively affects the Future Spot for each of Indonesian Rupiah exchange rate (IDR), Malaysian Ringgit (MYR), Baht Thai (THB), Singapore Dollar (SGD), Peso

(PHP), against US Dollar (USD).

H2: The Forward rate positively affects the Future Spot for each of the Rupiah (IDR), Malaysian Ringgit (MYR), Baht Thai (THB), Singapore Dollar (SGD), Peso (PHP), US Dollar (USD).

H3: Inflation rate negatively affects Future Spot for each country of Indonesia (IDR), Malaysia (MYR), Baht Thai (THB), Singapore Dollar (SGD), Peso (PHP).

H4: Interest Rates have positive effect on Future Spot for each country of Indonesia (IDR), Malaysia (MYR), Baht Thai (THB), Singapore Dollar (SGD), Peso (PHP).

## RESEARCH METHODS

### 3.1 Scope of Research

This study aims to examine the effect of spot rate, forward rate, inflation rate, and interest rate on the spot futures in Southeast Asian countries, namely Indonesia, Singapore, Malaysia, Thailand, Philippines, against US currency (USD) 2007-2016

### 3.2. Type and Data Sources

Data used in this research include spot rate, forward rate, inflation rate, interest rate and future spot data taken from Bank Indonesia and forexpros data.

### 3.3 Population and Sample

The population of this research is all monthly data including spot rate, forward rate, inflation rate, interest rate year 2007-2011 and future 2012-2016 futures in the forexpros market of Southeast Asia region. The exchange rate data is based on comparison with the United States of America (USD).

Sampling technique used in this research is purposive sampling method, sample criterion is as follows:

1. Country in Southeast Asia Region
2. Countries should have spot rate data, forward rates, inflation rates, interest rates and a complete future spot for 2007-2016.

Table 3.1 Selection of Research Sample

Criteria	total
Country in Southeast Asia Region	10
Countries that do not have the spot rate, forward rate, inflation rate, interest rate and full spot 2007-2016.	(5)
total	5

Table 3.1 shows the number of countries in Southeast Asia 10 Countries, 5 Countries do not have the complete data needed for research, so the sample in the study are 5 countries namely:

Table 3.2 Research sample



a	Kode Mata Uang
Indonesia	(IDR)
Malaysia	(MYR)
Singapore	(SGD)
Thailand	(THB)
philippines	(PHP)

### 3.4 Data Collection Method

This study is to predict the future spot by using the variables - the exchange rate spot rate, the forward rate, the inflation rate and the interest rate then to obtain the information the data collection is taken from the middle rate of Bank Indonesia and forexpros. The classification of data collection is time series. Researchers take time series data because time series data increases statistical power by adding degree of freedom based on the power of test criteria. The power of test shows the strength and accuracy of the data and statistical results obtained (Arikunto, 2010).

### 3.6 Data analysis method

Data analysis methods used are as follows:

#### 1. Descriptive Statistics Analysis

This analysis is used to analyze, describe or describe the characteristics of the Spot rate variable, the forward rate, the inflation rate, the SBI rate and the future spot to be used. According to Ghozali (2011: 19) descriptive statistics give descriptive or description of data seen from mean value, standard deviation, variance, maximum, minimum, sum, range, kurtosis, and skewness. In this study the description or descriptive of each variable is seen from the mean value (mean), standard deviation, variant, maximum, and minimum.

#### 2. Statistical Analysis

This analysis is a statistical method for drawing conclusions or generalizations for the entire population on the basis of samples or statistics under investigation. This analysis aims to measure the magnitude of the influence of spot rates, forward rates, inflation rates and interest rates on the futures. Implementation of this analysis using statistical tools, namely multiple linear regression analysis using classical assumption test.

#### 3.6.1 Data Feasibility Test

##### 3.6.1.1 Normality Test

Normality test aims to test whether in the regression model of dependent variables and independent variables both have a normal distribution or not (Ghozali, 2011: 160). Several methods of normality test that is by looking at the distribution of data on diagonal sources there is a Normal P-P chart Plot of regression standardized residual (graph method) or by One Sample Kolmogorov Smirnov test.

##### 3.6.1.2 Test Multicollinearity

According to Ghazali (2011: 105), multicollinearity test aims to test whether the regression model found a correlation between independent variables (independent). A good regression model should not have a correlation between independent variables. If the dependent variable is a correlation between variables, then this variable is not orthogonal. The orthogonal variable is the independent variable whose correlation value among the independent variables equals zero.

#### 3.6.1.2 Test Heteroscedasticity

Heteroscedasticity test is used to know whether or not there is a deviation of the classical assumption of homoscedasticity that is the existence of a constant variance of the residual for all observations in the regression model (Ghozali, 2011: 139). The requirement that must be fulfilled in the regression model is the absence of symptoms of heteroscedasticity and if otherwise called homoscedasticity. There are several testing methods that can be used including Park Test, Test Glesjer, Viewing regression chart patterns, and Spearman correlation coefficient test.

#### 6.6.1.4 Autocorrelation Test

The autocorrelation test aims to test whether in the linear regression model there is a correlation between the confounding error in period  $t$  with the intruder error in period  $t-1$  (previous) (Ghozali, 2011: 110). Autocorrelation arises because consecutive observations over time are related to each other. This problem arises because the residual is not free from one observation of another observation. The autocorrelation test used to detect the presence or absence of autocorrelation in this model will use Durbin-Watson (DW-Test) test. To detect the presence or absence of autocorrelation of this research using Durbin-Watson test method (DW test). The result of Durbin Watson's calculation ( $d$ ) is compared with the value of  $d$  table at  $\alpha = 0.05$ . Table  $d$  has two values, namely the limit value ( $d_U$ ) and the lower limit value ( $d_L$ ).

If  $d < d_L$ , then there is a positive autocorrelation.

If  $d_U - d < d < d_L$ , then there is no conclusion

When  $d_U > 4 - d_L$ , there is a negative autocorrelation.

If  $d_U < d < 4 - d_U$ , then there is no autocorrelation.

If  $d_L \leq d \leq d_U$  or  $4 - d_U \leq d \leq 4 - d_L$ , Testing is not convincing.

#### 3.6.2 Multiple Linear Regression Analysis

The model of multiple linear regression equation to be studied in the research is:  $Y = a + bX_1 + bX_2 + bX_3 + bX_4 + e$

Where:  $Y$ : Future spot

$X_1$ :  $\Delta$  Spot Rate

$X_2$ :  $\Delta$  Forward Rate

$X_3$ :  $\Delta$  Inflation rate

$X_4$ :  $\Delta$  Rate of Interest

$a$ : Constant (value  $Y$  if  $X = 0$ )

$b$ : Regression coefficient (value increase or decrease)

$e$ : error

Hypothesis testing

Further testing of hypotheses done systematically through several stages as follows:

#### 3.6.2.1 Model Feasibility Test

The model feasibility test basically shows whether all independent or independent variables included in the model have a mutual influence on the dependent or dependent variable. The null hypothesis ( $H_0$ ) to be tested is whether all parameters in the model are zero. The feasibility test of the model used in this research is to test the influence of independent variables i.e. spot rate (X1), exchange rate forwards (X2), inflation rate (X3) and interest rate (X4) collectively to the dependent variable i.e. futures spot (Y).

$$Y = a + bX_1 + bX_2 + bX_3 + bX_4 + e$$

Where: Y: Future spot

X1:  $\Delta$  Spot Rate

X2:  $\Delta$  Forward Rate

X3:  $\Delta$  Inflation rate

X4:  $\Delta$  Rate of Interest

a: Constant (value Y 'if X = 0)

b: Regression coefficient (value increase or decrease)

e: error

#### 3.6.2.2 Individual Parameter Significant Test (T-Test Statistic)

The significance test of individual parameters (t statistic test) is used to test the effect of free variables i.e. spot rate (X1), forward rate (X2), inflation rate (X3) and interest rate (X4) partially to dependent variable i.e. futures spot (Y). Hypothesis used in this research is as follows:

H1: There is significant influence of spot rate (X1) variable to dependent variable that is futures spot (Y).

H2: There is significant influence of forward rate (X2) variable to the future spot variable (Y).

H3: There is a significant influence of inflation rate variable (X3) to the future spot variable (Y).

H4: There is a significant influence of the interest rate variable (X4) on the future spot variable (Y).

#### 3.6.2.4 Determinant Coefficient Test

The determinant coefficient essentially measures the extent of the model's ability to explain the variation of the dependent variable. The value of the determinant coefficient is between 0 or 1. The small value of  $R^2$  means that the ability of the independent variables to explain the dependent variables is very limited. A value close to one means independent

variables give almost all the information needed to predict the dependent variable.

#### 4. RESEARCH AND DISCUSSION RESULT

##### 4.1 Research Results

##### 4.1.1 Multiple Linear Regression Test

Multiple regression tests in this research is intended to see how the influence of spot rate, forward rate, inflation rate toward future spot rate. By using multiple linear regression method obtained result as follows:

Table 4.21 Results of Multiple Regression of the Country of Indonesia  
*Coefficients<sup>a</sup>*

<i>Coefficients</i>		<i>Unstandardized</i>		Model
B	Sig.			
		(Constant)	20246.103	.000
		KURS SPOT IDR	.294	.087
		KURS FORWARD		
		IDR		
		INFLASION RATE IDR		
		RATE OF INTEREST IDR		
		Source: Secondary data		
.081	.657			
357.889	.000			
-1925.752	.000			

Based on the results of regression testing Table 4:21 can be formed equation as follows:

$$FS = 20246.103 + 0.294KS + 0.081KS + 357.889TI - 1925.752TSB + \epsilon$$

From the model equation and regression result Table 4:21 can be concluded as follows:

The four variables examined spot rate (KS), forward rate (KF), inflation rate (TI) and interest rate (TSB). The most influential variable on the Future Spot (FS) is the inflation rate variable (TI) with a value of 357,889.

Table 4.22 Multiple Regression Result of Malaysia Country

#### *Coefficients<sup>a</sup>*

<i>Unstandardized</i>		Sig.
<i>Coefficients</i>		
Model	B	
	(Constant)	10.588 .000

<i>Kurs Spot</i> MYR	-2.689	.011
<i>Kurs Forward</i> MYR	.827	.416
Inflation Rate MYR	.022	.248
Interest Rate MYR	-.329	.000

Source: Secondary data

Based on the results of regression testing Table 4:22 can be formed the following equation:  $FS = 10.588 - 2.689KS + 0.827KF + 0.022TI - 0.329TSB + \epsilon$

From the model equations and regression results Table 4:22, can be summarized as follows:

The four variables examined spot rate (KS), forward rate (KF), inflation rate (TI) and interest rate (TSB). The most influential variable on Future Spot (FS) is the Forward Rate (KF) variable with a value of 0.827.

Table 4.23 Results of Multiple Regions of Singapore Country  
*Coefficients<sup>a</sup>*

				Model
		<i>Unstandardized</i>	<i>Sig.</i>	
		<i>Coefficients</i>		
B	1	( <i>Constant</i> )	1.765	.353
		<i>KURS SPOT</i> SGD	-.651	.073
		<i>KURS FORWARD</i> SGD	.069	.841
		INFLATION LEVEL SGD		
		INTEREST RATE OF SGD		

Source: Secondary data

.070 .837

-.006 .013

Based on regression test result Table 4:23 can be formed the following equation:  $FS = 1.765 - 0.651KS + 0.069KF + 0.070TI - 0.006TSB + \epsilon$

From the model equation and regression result Table 4:23, can be concluded as follows:

The four variables examined spot rate (KS), forward rate (KF), inflation rate (TI) and interest rate (TSB). The most influential variable on the Future Spot (FS) is the Inflation Rate (TI) variable with a value of 0.070.

Table 4.24 Results of Thai Multiple Regressions  
*Coefficients<sup>a</sup>*

*Unstandardized*  
*Coefficients* Sig.

Model	B	
(Constant)	61.777	.000
KURS SPOT THB	-1.308	.000
KURS FORWARD	.452	.012
INFLATION RATE THB		
INTEREST RATE THB		

Source: Secondary data

-.320 .000

.093 .604

Based on regression test result Table 4:24 can be formed the following equation:  $FS = 61.777 - 1.308KS + 0.452KS - 0.320TI + 0.093TSB + \epsilon$

From the model equation and regression result Table 4:24, can be concluded as follows:

The four variables examined spot rate (KS), forward rate (KF), inflation rate (TI) and interest rate (TSB). The most influential variable on the Future Spot (FS) is the Forward Rate (KS) variable with a value of 0.452.

Table 4.25 Results of Multiple Regressions of Philippine Countries  
*Coefficients<sup>a</sup>*

Model	<i>Unstandardized</i>	
	<i>Coefficients</i>	<i>Sig.</i>
	B	
(Constant)	1.587	.000
SPOT EXCHANGE PHP		
FORWARD EXCHANGE		
INFLATION LEVEL		
PHP INTEREST RATE		

Source: Secondary data

.654 .033

-.583 .072

9.873 .928

-.011 .000

Based on the results of regression testing Table 4:25 can be formed the following equation:  $FS = 1.587 + 0.654KS - 0.583KF + 9.873TI - 0.011TSB + \epsilon$

From the model equation and regression result Table 4:25, can be concluded as follows:

The four variables examined spot rate (KS), forward rate (KF), inflation rate (TI) and interest

rate (TSB). The most influential variable on the Future Spot (FS) is the inflation rate variable (TI) with a value of 9.873.

#### 4.1.2 Hypothesis Testing

##### 4.1.2.1 Model Feasibility Test

Model feasibility test (F test) is a model used to explain the effect of independent variables on dependent variable simultaneously.

Table 4.26 Feasibility Result of Indonesian State Model

#### ANOVA<sup>b</sup>

	Sum of Squares	Df	Mean Square	F	Sig.	Model
Regression	1.220	4	3.049	41.197	.000 <sup>a</sup>	
Residual	4.071	55	7.401			
Total	1.627	59				

Source: Secondary data

From the ANOVA or F test above, the value of F arithmetic is 41.197 with probability 0.000. Probability has a value less than 0.05, then the regression model can be used to predict Future Spot or it can be said that the spot rate (KS), forward rate (KF), inflation rate (TI) and interest rate (TSB) simultaneous effect on Future Spot.

Table 4.27 Feasibility Result of Malaysia State Model

#### ANOVA<sup>b</sup>

Model	Sum of Squares	Df	Mean Square	F	Sig.	Regression
	8.630	4	2.157	29.91	.000 <sup>a</sup>	on
Residual	3.967	55	.072			
Total	12.597	59				

Source: Secondary data

From the ANOVA or F test above, we get the F value of 29,913 with probability 0.000. Probability has a value less than 0.05, then the regression model can be used to predict

Future Spot or it can be said that the spot rate (KS), forward rate (KF), inflation rate (TI) and interest rate (TSB) simultaneous effect on Future Spot.

Table 4.28 Feasibility Test Results Singapore State Model

**ANOVA<sup>b</sup>**

Model	Sum of Squares	Df	Mean Square	F	Sig.
-------	----------------	----	-------------	---	------

				.150	4	Regression on 20.217
						.038
						.000 <sup>a</sup>
Residual	.102	55	.002			
Total	.252	59				

Source: Secondary data

From the ANOVA test or F test above, we get the F value of 20.217 with probability 0.000. Probability has a value less than 0.05, then the regression model can be used to predict Future Spot or it can be said that the spot rate (KS), forward rate (KF), inflation rate (TI) and interest rate (TSB) together -sama (simultaneous) effect on Future Spot.

Table 4.29 Feasibility Test Result Thailand State Model

**ANOVA<sup>b</sup>**

Sum of Squares	Df	Mean Square	F	Sig.	Regression on
147.811	4	36.953	25.430	.000 <sup>a</sup>	Model
Residual	79.921	55	1.453		
Total	227.732	59			

Source: Secondary data

From the ANOVA or F test above, the calculated F value is 25.430 with probability 0.000. Probability has a value smaller than 0.05, then the regression model can be used to predict the Future Spot or it can be said that the spot rate (KS), forward rate (KF), inflation rate (TI) and interest rate (TSB) together (simultaneously) affect the Future Spot.

Table 4.30 Feasibility Test Result Model Philippines State

**ANOVA<sup>b</sup>**



Sum of Squares	Df	Mean Square	F	Sig.
Regression				
Residual				
.011	4	.003	8.651	.000 <sup>a</sup>
.018	55	.000		
Total		.029	59	

Source: Secondary data

From the ANOVA or F test above, we get the F value of 8,651 with probability 0.000. Probability has a value smaller than 0.05, then the regression model can be used to predict the Future Spot or it can be said that the spot rate (KS), forward rate (KF), inflation rate (TI) and interest rate (TSB) together (simultaneously) affect the Future Spot.

#### 4.1.2.2 Partial Effect Test (t test)

The statistical test t basically shows how far the influence of one independent variable individually in explaining the variation of the dependent variable. The criterion of decision making in statistical test t is by rejecting the null hypothesis when the value of significant value (P-value) t test <0,05. The results of tests t statistical can be seen in the table below.

Table 4:31 T-Test Statistical Results of Indonesia State

*tandardized Coefficients*

*ardized Coefficients*

erangan

Model	B	Beta	Sig.	
(Constant)	20246.103		.000	
Spot rate	.294	.141	.087	Ditolak
Forward rate	.081	.039	.657	Ditolak
Inflation rate	357.889	.557	.000	Diterima
Interest rate	-1925.752	-1.230	.000	Diterima

Source: Secondary data

Table 4.32 T-Test Statistical Results of Malaysia State

**Coefficients<sup>a</sup>**

*Unstandardized Coefficients*

Model	<i>Standardized Coefficients</i>			Keterangan
	B	Beta	Sig.	
(Constant)	10.588		.000	
Spot exchange	-2.689	-1.106	.011	Di terima
Forward rate	.827	.344	.416	Di tolak
Inflation rate	.022	.110	.248	Di Tolak
Interest rate	-.329	-.422	.000	Di Terima

Source: Secondary data

Table 4:33 T-Test Statistical Results of Singapore State

**Coefficients<sup>a</sup>**

*Unstandardized Coefficients*

*Standardized Coefficients*

Model	B	Beta	Sig.	Keterangan
(Constant)	1.765		.353	
Spot rate SGD	-.651	-.937	.073	Di tolak
Forward rate SGD				
Inflation rate SGD				
Interest rate SGD	.069	.102	.841	Di tolak
	.070	.022	.837	Di tolak
	-.006	-.246	.013	Di terima

Source: Secondary data of appendix 18

Table 4.34 T-Test Statistical Results of Thailand State

**Coefficients<sup>a</sup>**

*Unstandardized Coefficients*

*Standardized Coefficient*

	B	Beta	Sig.	
Keterangan				Model
		(Constant)	61.777	.000
		Currency exchange		
		Forward rate		
		Inflation rate		
		Interest rate		
	-1.308	-1.193	.000	Di terima
	.452	.401	.012	Di terima
	-.320	-.423	.000	Di terima
	.093	.052	.604	Di tolak

Source: Secondary data

Table 4:35 T-Test Statistical Results of Philippines  
**Coefficients<sup>a</sup>**

*Unstandardized Coefficients*

	B	Beta	Sig.	
Keterangan				Model
		(Constant)	1.587	.000
		Spot Rate	.654	.690 .033 Di terima
		Forward rate	-.583	-.582 .072 Di tolak
		Inflation Rate	9.873E-5	.010 .928 Ditolak
		Interest Rate	-.011	-.585 .000 Di terima

Source: Secondary data

#### 4.1.2.3 Coefficient of Determination Test (R<sup>2</sup>)

The coefficient of determination (R<sup>2</sup>) measures how far the model's ability to explain the variation of the dependent variable. The coefficient of determination is between zero and one. The small value of R<sup>2</sup> means that the ability of the independent variables to explain the dependent variables is very limited. A value close to one means the independent variables provide almost all the information needed to predict the dependent variable. (Ghozali, 2013: 97). The result of determination coefficient of this research model is described in table below:

Table 4.36 R<sup>2</sup> Determination Test Results of Indonesia

#### Model Summary<sup>b</sup>

	Model	R	R Square	Adjusted R Square
1	.866 <sup>a</sup>	.750	.732	

Source: Secondary data

Based on the test value of determination Table 4:36 note that the value of adjusted R square of 0.732 which can be interpreted that 73.2% variation Future Spot can be explained by Spot Rate, forward rate, Inflation Rate and Interest Rate, while 26.8% influenced by other variables.

Table 4.37 R<sup>2</sup> Determination Test Results of Malaysia

	Model	R	R Square	Adjusted R Square
1	.828 <sup>a</sup>	.685	.662	

Source: Secondary data

Based on the value of determination test Table 4:37 note that the value of adjusted R square of 0.662 which can be interpreted that 66.2% variation Future Spot can be explained by Spot Rate, forward rate, Inflation Rate and Interest Rate, while 33.8% influenced by other variables.

Table 4:38 R<sup>2</sup> Determination Test Results of Singapore

#### Model Summary<sup>b</sup>

	Model	R	R Square	Adjusted R Square
1				

1	.771 <sup>a</sup>	.595	.566
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Source: Secondary data

Based on test value of determination Table 4:38 note that the value of adjusted R square of 0.566 which can be interpreted that 56.6% variation Future Spot can be explained by Spot Rate, forward rate, Inflation Rate and Interest Rate, while 43.4% influenced by other variables.

Table 4:39 R<sup>2</sup> Determination Test Results of Thailand

**Model Summary<sup>b</sup>**

				Model	
R	Adjusted R Square			R	
		1	.806 <sup>a</sup>	.649	.624

Source: Secondary data

Based on the test value of determination Table 4:39 note that the value of adjusted R square of 0.624 which can be interpreted that 62.4% variation Future Spot can be explained by Spot Rate, forward rate, Inflation Rate and Level Interest rate, while 37.6% is influenced by other variables.

Table 4:40 R<sup>2</sup> Determination Test Results of Philippine

**Model Summary<sup>b</sup>**

			Adjusted R
Model	R	R Square	Square
1	.621 <sup>a</sup>	.386	.342

Source: Secondary data

Based on the value of determination test Table 4:40 note that the value adjusted R square of 0.342 which can be interpreted that 34.2% variation Future Spot can be explained by Spot Rate, forward rate, Inflation rate and Interest Rate, while 65.8% influenced by other variables.

## 4.2 Discussion

### 4.2.1 Effect of Spot Exchange Against Future Spot

The first hypothesis is that Spot Exchange positively affects the Future Spot for each

Southeast Asian country against US Dollar (USD). Based on the result of regression analysis test in Malaysia country, the significance value of t test is  $0.001 < 0.05$  which means the spot rate has an effect on the future spot. Thai country value significance test t of  $0.000 < 0.05$  which means the spot rate affects the future spot. State of Philippines value of significance test t of  $0.033 < 0.05$  which means Spot Exchange effect on Future Spot. Country of Indonesia t significance significance test of  $0.087 > 0.05$  which means the spot rate does not affect the future spot. Singapore State value significance test t of  $0.073 > 0.05$  which means the spot rate does not affect the future spot. The current spot rate can be used as an estimate of the spot rate in the future. The spot rate of a currency against another currency will change as a reaction of the difference in the inflation rate between the two countries. The purchasing power of consumers when buying products in their own country will be the same as the purchasing power when importing goods from foreign countries (Madura 2011: 322).

Research conducted by Yanthi and Artini (2013) and Ciang (1988) found that spot rates have a significant influence on the futures, a study conducted by Horick (2005) that the spot rate has no significant effect on the future spot.

#### 4.2.2 Influence of Forward Rate Against Future Spot

The second hypothesis is that the Forward Rate has a positive effect on the Future Spot for each Southeast Asian country against the US Dollar (USD). Based on the results of regression analysis testing in the State of Indonesia value of significance test t of  $0.657 > 0.05$  which means the exchange rate does not affect the future spot. Malaysia State significance value of t test of  $0.416 > 0.05$  which means the exchange rate does not affect the future spot. Singapore State value significance test t of  $0.841 > 0.05$  which means the exchange rate does not affect the future spot. The forward rate has no effect on the future spot, meaning that the forward exchange rate will be equal to the future spot rate. Thai country t test significance value of  $0.012 < 0.05$  which means the exchange rate affect the future spot. State of the Philippines value of significance test t of  $0.072 > 0.05$  which means the Forward Exchange effect on the Future Spot. The forward rate should reflect the expected future spot rate on the settlement date of the forward contract. Rational relationships are based on efficient market hypotheses. An efficient market assumes that relevant information is quickly reflected in both spot and forward markets, minimal transaction costs, it can be said to be no cost, instruments denominated in different currencies can replace each other. When the market is efficient then the process of predicting the foreign exchange rate becomes unprofitable. Because current price changes are independent of past price changes (Sartono 2014: 153)

Research conducted by Wesso (1999), Yanthi and Artini (2013) and Ciang (1988) in the results of his research mentioned that the forward rates have a significant influence on the future spot. However, research conducted by Horick (2005) which states that the forward rate does not significantly affect the future spot

#### 4.2.3 Inflation Rate Influence on Future Spot

The third hypothesis is the Inflation Rate positively affect the Future Spot for each Southeast Asian country against US Dollar (USD). Based on the results of regression analysis testing in Indonesia, the significance value of t test is  $0.000 < 0.05$ ,  $\beta$  357,889 which means the inflation rate positively affects the future spot. The result of the regression shows that the coefficient of price level has positive influence. Influence Positive Inflation corresponds to the

purchasing power parity theory. Rising prices of goods encourage inflation. Inflation causes money to lose its value, in the sense of reduced goods and services that can be bought and reduced amounts of other currencies that can be obtained. Therefore, this matter encourages rupiah and bath to continue depreciation due to inflation. If the price level (CPI) rises or inflation occurs then the value of rupiah / bath needed to get the US dollar will depreciate. This can worsen the stability of the rupiah, so the monetary authority needs to maintain price stability. Therefore, monetary policy with inflation control should be one of the main concerns of Indonesia and Thailand.

Thai state value significance of t test of  $0.000 < 0.05$   $\beta$  -0.320 which means the inflation rate negatively affect the futures spot, meaning that if inflation increases the purchasing power of a product will decrease, so the company must reduce production and the need for foreign exchange also decreased to cause the exchange rate in the future / futures decline. Malaysia Malaysia value significance test t of  $0.284 > 0.05$  which means the inflation rate does not affect the future spot. Singapore State value significance test t of  $0.837 > 0.05$  which means the inflation rate does not affect the future spot. Philippine state value significance of t test of  $0.928 > 0.05$  which means the rate of inflation has no effect on the Future Spot. The result of the regression shows that the coefficient of price level has no effect with the increase of inflation. Rising prices of goods encourage inflation. Inflation causes money to lose its value, in the sense of reduced goods and services that can be bought and reduced amounts of other currencies that can be obtained. But in Malaysia Malaysia's inflation rate has no effect on the future spot

#### 4.2.4 Effect of Interest Rate on Future Spot

The fourth hypothesis is that the interest rate has a positive effect on the Future Spot for each Southeast Asian country against the US Dollar (USD). Based on the results of regression analysis testing in Indonesia, the significance value of t test is  $0.000 < 0.05$  which means the interest rate does not affect the future spot. Malaysia State value significance test t of  $0.000 < 0.05$  which means interest rates affect the future spot. Singapore State value significance test t of  $0.013 < 0.05$  which means interest rates affect the future spot. Thai country value significance test t of  $0.604 > 0.05$  which means the interest rate affect the future spot. State of the Philippines value significance test t of  $0.000 < 0.05$  which means the interest rates affect the Future Spot.

The interest rate determines the value added of a country's currency. The higher the interest rate of a currency, the higher the demand for the country's currency. The interest rate is set by the central bank, and if in the long run the central bank always raises the interest rate then the trend of the country's currency exchange rate against other countries will tend to rise. This will continue until there are other factors that affect or the central bank back down interest rates.

## 5. CONCLUSIONS AND SUGGESTIONS

### 5.1 Conclusions

This study aims to test the spot rate, forward rate, inflation rate and interest rates on the futures spot in the forex market in Southeast Asia. Based on the results of research and the results of the analysis conducted it can be drawn conclusions as follows:

1. Spot rate variable based on statistical test partially to spot futures for each country: Spot rate has no effect on Future Spot in Indonesia and Singapore. Spot rates negatively affect the Future Spot in Malaysia and Thailand. Spot exchange positively affects the Future Spot in Philippine State.
2. Forward Rate Variables based on statistical test partially to Future Spot for each country: The forward exchange rate has no effect on Future Spot in Indonesia, Malaysia, Singapore and Philippine. The forward rate has a positive effect on the Future Spot in Thailand.
3. Inflation Rate Variables based on statistical test partially to future spot for each country: Inflation rate positively influence to Future Spot in Country of Indonesia and Thailand. Inflation rate has no effect on Future Spot in Malaysia, Singapore and Philippine Countries.
4. Interest Rate Variables based on statistical test partially to spot futures for each country: Interest rates negatively affect the Future Spot in the State of Indonesia, Malaysia, Singapore and the Philippines. The interest rate has no effect on the Future Spot in Thailand.
5. Form six variables of spot rate, forward rate, inflation rate and interest rate under study. In Indonesia, the variable inflation rate that can affect the futures, in Malaysia Malaysia the most influential exchange rate variables affect the futures spot, in the Singapore State the most influential inflation rate variable to the futures spot, in Thailand the most influential exchange rate variables affect the future spot, in the Philippines the variable rate of inflation is most influential on the spot futures.

## 5.2 Suggestions

Based on the discussion and conclusions obtained then the authors provide suggestions as follows:

1. For investors, if you want to invest in the form of shares or international mutual funds that are portfolios of stocks from various countries, or expand its business in various countries by utilizing the uniqueness and characteristics of the country. Investors need to forecast the foreign exchange rate in order to be able to choose the type of currency exchange rate to invest in obtaining maximum profit.
2. For the company, pay more attention to exchange rate fluctuations that occur within a country.
3. For further research:
  - a. Future research may involve other independent variables to see which variables have a significant effect on the Spot futures.
  - b. Future research can be done using samples from other countries besides Southeast Asia.
  - c. Subsequent research can increase the number of periods of observation so that the level of generalization will be higher.
  - d. Further research may include other variables as a moderating or intervening variable so that the results obtained will inform new knowledge.

## 5.3 Limitations of Research



Limitations of this study that can be considered further research is to add research objects from several countries in the World, in addition to Southeast Asia.

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