



Effect of DNDF and Macro Variables on Exchange Rate

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Abstract

The purpose of this study was to determine the effect of DNDF (Domestic Non Deliverable Forward) policy, interest rates, money supply and IHSG on the IDR/ USD exchange rate. This type of research uses a quantitative approach. The type of data used in this research is secondary data from 2014 to 2019. The variables used in this study are 4 variables with based on the theory of determining foreign currency. Data analysis method used Ordinary Least Square method with hypothesis testing t test and F test. The results of this study indicate that DNDF has a significant negative effect on the IDR / dollar exchange rate, while the IHSG has no significant negative effect on the IDR / dollar exchange rate. Conversely, interest rates and the money supply have a significant positive effect on the IDR / dollar exchange rate. Overall DNDF, interest rates, money supply and IHSG together influence the IDR / dollar exchange rate. Suggestions from this study are (1) business actors can participate in hedging the IDR which can maintain the stability of the exchange rate. (2) holders of monetary authorities intervene and be more careful in setting interest rates and need to be well coordinated. (3) holders of monetary authority can intervene by suppressing the money supply which will have an impact on depreciation. (4) Improving stock performance starts with competitive interest rates in Indonesia and several policy innovations in the derivative market such as DNDF policy.

INTRODUCTION

The foreign exchange market is the world's financial markets are where all currencies are traded by market players and bring the needy and those who offer the currency in Kuncoro book (2001: 123). The foreign exchange market players such as central bank, investors, exporters, importers and others who do the same work and in need of currencies country another to process the transaction.

Exchange rates are generated from the balance of demand and supply of domestic currencies against other countries currencies. Demand for foreign currencies is all payment processes such as importers and purchases of foreign assets that require foreign currencies. Meanwhile, the supply side of the currency is set by the central bank or financial institution that is authorized for each country so that each country have different money supply conditions depending on the policy or the central bank's decision country itself. Differences in decisions and different conditions of course a country produces exchange rates that fluctuate because the exchange rate conditions will adjust towards the balance of demand and supply of new money.

Exchange rates will experience fluctuations in adjusting changes in existing conditions. These changes both from the supply side through Supply Money and/ or the demand side of the currency through factors that affect the demand side. In the theory of determining foreign exchange that explains the fundamental factors that can affect the exchange rate. In the book Kuncoro (2001: 1690) factors that affect the exchange rate include differences in the conditions of the money supply, real income, relative prices, inflation, interest rates, demand and supply of assets between countries that are summarized in the theory of determining foreign exchange.

Differences in conditions between countries produce exchange rates. The stability of

the exchange rate will always fluctuate to adjust for changes in the turmoil that affects it. The stability of the exchange rates received by each country over the economic turmoil on the forex market is certainly different. Countries that are classified as hard currency have a higher exchange rate stability compared to soft currencies. The thing that most distinguishes between hard currency and soft currency is that hard currency is widely accepted as a medium of international financial transactions than soft currency because it has a higher level of stability over the fluctuation of problems that can affect the stability of the exchange rate in the book Kuncoro (2001: 20). Currencies classified as hard currencies include Dollars (\$), Yen (¥), Sterling (£) and Deutche Mark (DM). Meanwhile, currencies classified as soft currencies are IDR, Bath, Rupe and so on.

Developed countries have a higher level of stability compared to developing countries because the owners of hard currents are developed countries that have a wide, free and active market so that developed countries are used as the basis for developing monetary systems and can control the economies of developing countries for dependence on developed countries. In addition to the factors of dependence and sentiment on developed country policies, soft currency owners, namely developing country currencies, are not yet widely accepted in making payment transactions and thus require hard currencies for the payment process in Kuncoro's book (2001: 21). This makes the position of the hard currency will increase its existence and experience appreciation.

This case is reflected in the exchange rate conditions in 2018 where instability occurs in several countries that have currencies soft currency for policy changes in the United States. Changes in policy by raising US interest rates, the Fed Rate, has led to a number of countries depreciating in the value of the currency shown in Figure 1

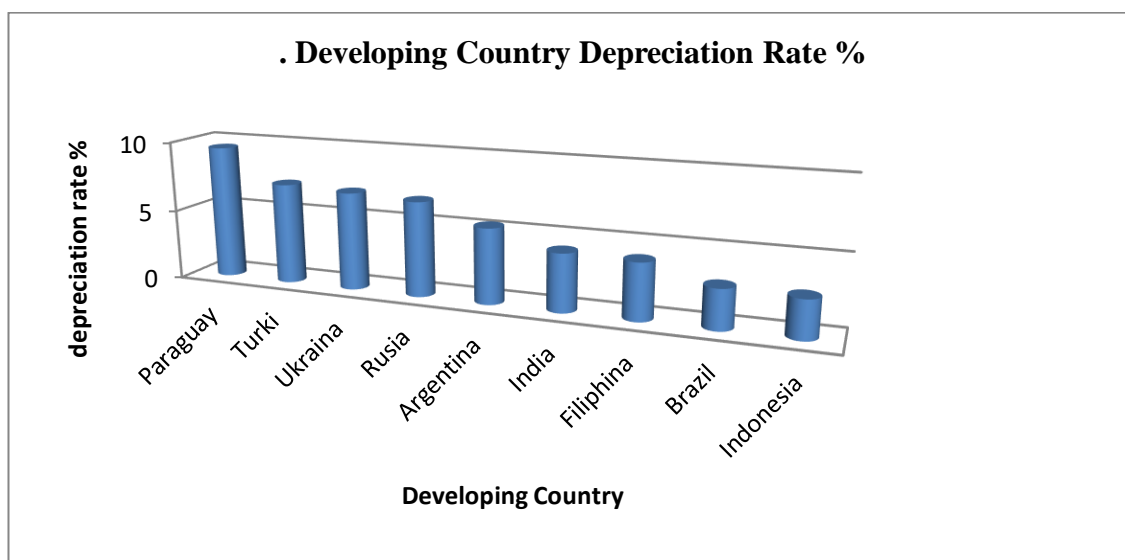


Figure 1. Developing Country Exchange Rate Depreciation

Source : Bank Indonesia

In mid-2018 precisely in April, Indonesia ranked 9th depreciated against the sentiment of changes in US interest rates. The depreciation of the IDR began with an increase in the Fed's interest rates, which made investors interested in the offered interest rates resulting in *capital outflows* and decreased demand for the domestic currency. An increase in interest rates can certainly affect the exchange rate conditions where an increase in interest rates investors are more interested in investing in high interest rates and reducing investment in low interest rates .

The Fed's interest rate increasing is a stage of recovery from the 2008 crisis that hit America. In 2018 American interest rates have increased four times on a regular basis and in the last five years American interest rates have risen 9 times periodically from 0.25 bps (basis points) to 2.5 bps (source: databooks). According to research Sihono (2008) crisis 2008 financial year in the United States due to bad loans stemming from the financial institutions simply poured money so that the money supply is increasing and causing inflation. However, the interest rate that was set too high reached 5.25 bps and there was bad credit due to difficulties in paying credit which impacted on global stock prices plummeted due to declining

investor confidence in the United States financial crisis which at that time resulting in a large capital outflow. When the United States was experiencing a financial crisis at that time it was Indonesia's opportunity to increase capital inflow. Reflected in table 1, Indonesia experienced a drastic increase in the acquisition of IHSG over the past 10 years after one year of the 2008 crisis hit the United States and a drop in global stocks.

Table 1. IHSG Acquisition 2009 till 2019

| Year | Increase in IHSG (%) |
|------|----------------------|
| 2009 | 86,98 |
| 2010 | 46,13 |
| 2011 | 3,20 |
| 2012 | 12,94 |
| 2013 | 0,98 |
| 2014 | 22,29 |
| 2015 | -12,13 |
| 2016 | 15,32 |
| 2017 | 19,99 |
| 2018 | -2,54 |
| 2019 | 1,70 |

Source : IDX

The United States quickly cut interest rates to reduce the risks that will arise and make

interest rates as a tool to stabilize the economy which is expected to restore investor confidence in the condition of the United States economy.

In the case of the 2008 crisis in the United States concluded that the instability of the exchange rate was influenced by the amount of money in circulation increasing. Strengthened in previous research by Oktavia, AL, et al (2013), Ardiyanto and Ahmad (2014), Aimon (2013) & Muchlas, (2015) that Money Supply or the money supply has a significant and positive influence on the exchange rate through power parity purchases that cause inflation and capital outflows occur because they prefer to import from abroad which have lower prices and lead to bad credit due to setting irrelevant interest rates and causing asset wealth to decline. Investor confidence is declining and the need to set interest rates as a tool for future economic

improvement in increasing the stability of the exchange rate. This case is in accordance with the theory of foreign exchange determination in three approaches where the exchange rate is influenced by interest rates, the money supply and also the wealth of assets .

After going through various processes of periodic rate cuts and the condition of the United States began to stabilize, the United States raised interest rates again for the recovery process and attracted investors. An increase in the Fed Rate (US interest rates) periodically shown in Figure 2 results in the value of the dollar appreciating against other currencies. The strengthening of the USD impact on the weakening of currencies in various n egera as in the Asian region is shown in Figure 2 and also in some developing countries that have been shown in Figure 1.

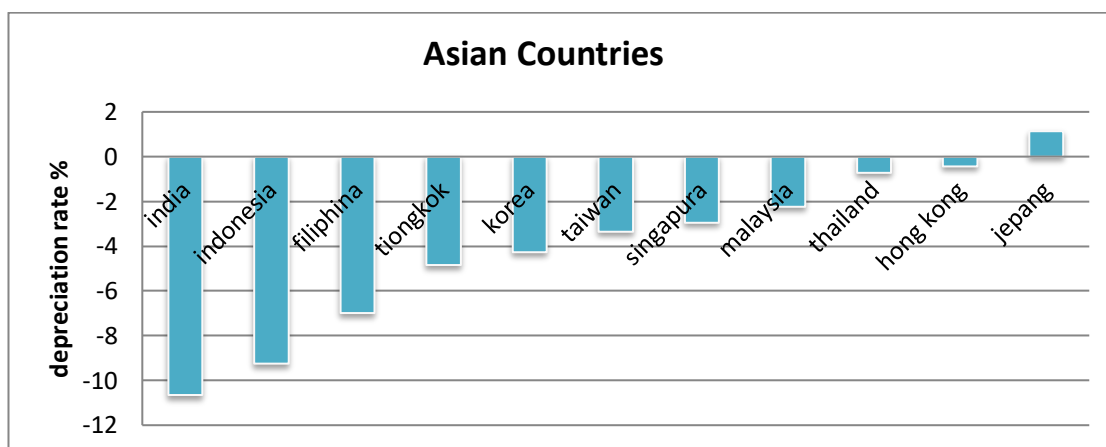


Figure 2. Asian Country Exchange Rate Depreciation

Source: Bloomberg.com

Figure 2 shows the currency weakening as a result of recovery in the United States. Acceptable impact each state different because many factors such as differences in the characteristics and economic conditions in each country. Indonesia ranks second in the value of depreciated currencies throughout Asia.

The instability of the exchange rate in various countries , of course, varied in response to changes in US policy in order to restore economic conditions. Indonesia took one step by raising Indonesia's interest rates to adjust the contractive policies of the Fed Rate shown in

Figure 3. Indonesia seeks to adapt to the changing Fed Rate for me minimize capital outflow in Indonesia because the interests of businesses on the increase in US interest rates offered. Indonesia interest rate adjustment is higher than the interest rate the Fed aims to retain and attract investors to invest in Indonesia that could reduce demand for the currency value dollar and maintain the existence of the currency value of IDR against dollar. Indonesian interest rate adjustments are higher than the Fed's interest rates usually when currency conditions

are depreciating supported by the results of Arianty's research (2019).

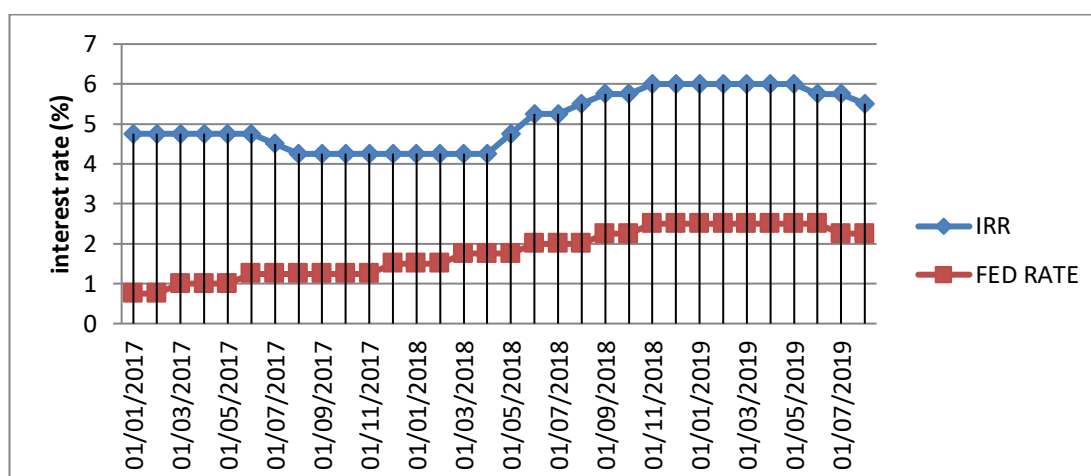


Figure 3. Indonesian-American Interest Rate Differences (data processed)

Source : St. Louis and Bank Indonesia

One of the instrument is monetary policy conducted by Bank Indonesia to stabilize the IDR value is through the interest rate channel of Indonesia. Strengthened in several previous studies by Aimon (2013), Muchlas (2015) & Arianty (2019) stated that interest rates have a significant effect on the exchange rate. However, what happens in the field is just an instrument of monetary policy does not affect the stability of the IDR seen in Figure 4 high-low interest rates do not affect the IDR fluctuates wildly. Policy through interest rates only affect the exchange rate in the short term and does not significantly influence the long term stated in several previous studies by Nuryadin and Santoso (2004), Shindy (2018) & Azidah (2019). The results of several previous studies can be concluded that the need for other solutions to overcome exchange rate instability both in the short and long term that can affect the activities of economic actors and cause multiplayer effects because they cannot overcome the root causes.

The policy by raising interest rates is primarily to attract investors through a portfolio of stocks and bonds. Therefore, the policy of the Fed by raising the Fed Rate is a new challenge in the investment world to maintain investment into the country. Thus, the change in the Fed Rate

increase makes Indonesia raise interest rates to adjust interest rate differences between Indonesia and America so that the difference is not greater and can withstand capital outflows.

Since the United States recovered through the Fed's interest rate channel, the IHSG has been threatened because the increase in the Fed Rate is an attempt by the United States to restore investor confidence that fell during the 2008 crisis, as shown in table 1 (page 5). A drastic reduction reached -12.13% and -2.54% in contrast to the condition in 2009 reaching an increase of 86.98%. For that reason, the recovery of the United States crisis poses a threat to the condition of the IHSG because the demand for the IHSG could affect the condition of the exchange rate on the basis of the portfolio approach theory through asset wealth Strengthened by several previous studies according to Syaputra and Melti R. A (2019) suggested that the Composite Stock Price Index affects financial stability.

Hence it is , this study takes one variable IHSG to see the effect of the movement of the stock price on the exchange rate. If the policy of raising interest rates, and many investors pulled their money out so Strengthened by several previous studies according to Syaputra and Melti R. A (2019) suggested that the Composite Stock

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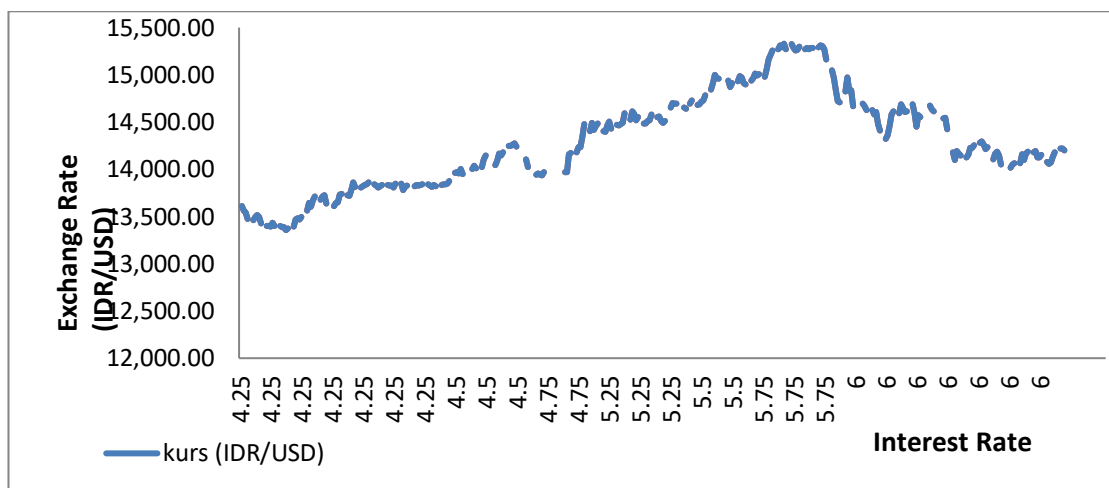


Figure 4. Indonesian Interest Rate on Exchange Rate (data processed)

Source: Bank Indonesia

Composite Stock Price Index Combined downhill it can be said investors are more interested in the offer Fed Rate. Conversely, if stock price movements are higher, it will cause the IDR to appreciate in the results of M.

Yunanto's research (2011). Also supported by previous research, Djulius and Yudi (2014) suggested that IHSG was influential in both the short term and in the long term, the increase will be followed by apresiasiation of the IDR.

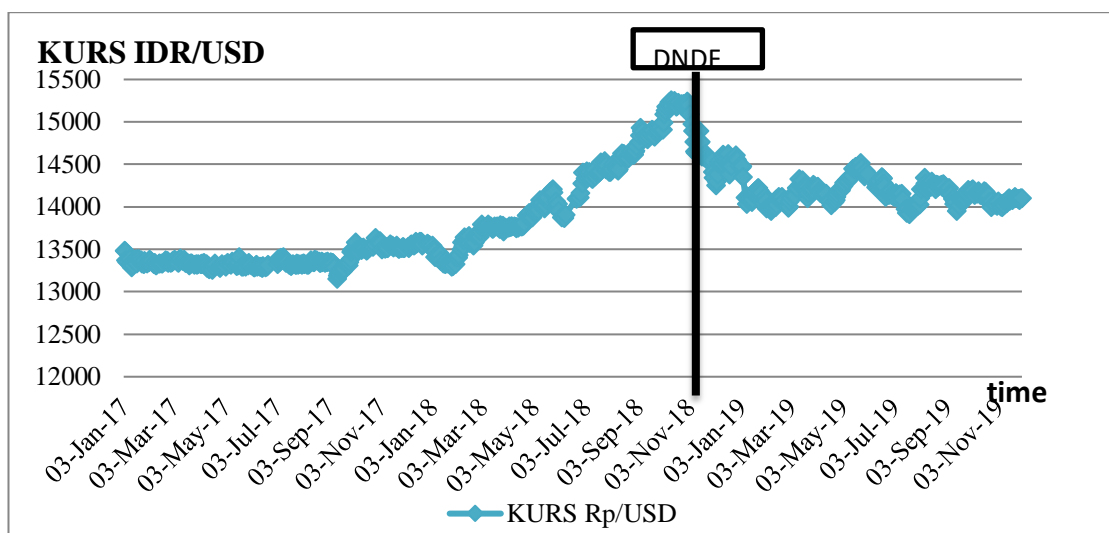


Figure 5. Exchange Rate Fluctuations 2017 to 2019 (data processed)

Source: Bank Indonesia

Instability exchange rate in 2018 is shown in Figure 5 and ineffective it in Indonesia interest rate increases, so bring an update for policy makers is policy Domestic Non Deliverable

Forward (DNDF). In the results of research from Hasanah (2018) that Indonesia almost never mitigates the risk of the IDR. Therefore, DNDF is something that could be considered new as a

form of policy governing the payment transaction using the system fixes that are set at the rate agreed upon in the contract agreement the cooperation between partner companies and transactions denominated in domestic so that it can increasing demand for the currency domestic to dollar. The purpose of DNDF's policy is to provide certainty and minimize risk for investors and business actors with the problem of the instability of the exchange rate of Rp/ USD because of the fixed exchange rate system and the time of payment made in Forward. According to Maciulis (2008) companies in developing countries are reluctant to hedge against their exposure to currency fluctuations because they have an uncommon speculative. Policies DNDF be a new thing for Indonesia because policies more enforceable in state forward due to a higher risk of foreign exchange reserves, on the other hand has a high profitability if IDR depreciate. It is also supported by previous research according to Bartram, et al. (2009) is usually in middle-income countries or n developing countries are, tend not to hedge.

Bank Indonesia expects businesses to take advantage of the policy support DNDF in the transaction process and is expected to the point that it can stabilize the exchange rate r upiah against dollar. Supported by previous research according to Ahmed, (2019) suggested that the application of an appropriate currency hedge strategy to reduce the risk of depreciation. DNDF policy is one of the new strategies in increasing confidence by providing certainty of the value of the IDR for investors because of the instability of the IDR exchange rate and tend to depreciation of the dollar.

The main problem in this study is that the IDR exchange rate fluctuates wildly in 2018 and the solution to raise Indonesian interest rates that is commonly used in handling exchange rates does not stabilize the value of the IDR and instead depreciate the IDR further.

To the authors wanted to determine the effect of the new policy strategy that is DNDF to overcome the instability of the exchange rate in 2018. This study uses variable exchange rate as

the dependent variable and DNDF, Indonesia interest rate, Fed Rate, money supply in Indonesia, money supply in United States, and the IHSG as an independent variable by looking at the comparison of conditions before and after the DNDF policy set in Indonesia as shown in figure 5 in the past six years.

RESEARCH METHODS

This type of research is a descriptive study with a quantitative approach in the form of numbers which are processed using Eviews 9 tools and analyzed statistically through t test and F test . The output results will be explained using descriptive analysis summarizing the results of research to be able to draw simple conclusions both in accordance with the theory and deviate from the existing theory.

This study uses annual time series data, from 2014 to 2019. Exchange rate data, DND, Indonesian interest rates use data released by Bank Indonesia through the publication of Bank Indonesia Information . Meanwhile, the money supply using data released by Trading Economics, Fed Rate using data released by St Louis, and IHSG used data issued by Investing. Analysis methods used in the study is to describe and summarize the results of research to be in take the simple conclusion of the factors that affect the exchange rate.

The object under study is in this study the variables used consist of the dependent variable and the independent variable. The dependent variable (Y) exchange rate IDR/ USD and the independent variable (X) consists of DNDF policy, the Indonesia-US interest rate, the Indonesia-US money supply, and the IHSG. The variable interest rates and the money supply result from differences in value or compare conditions between Indonesia and America. The type of data used is secondary data which is time series data.

The model used to determine the effect of independent variables on the dependent variable in this study uses the logarithmic model (Log). This research model before using the logarithmic (Log) model was tested through the Mackinnon, White and Davidson (MWD test) tests. MWD

test to produce data behavior in this study in the selection of the best model using logarithms. According to Gujarati (2010: 334) logarithmic (log) has the advantage that is, to equalize units and minimize the possibility of heterocedasticity because the transformation that places the measurement scale of variables and the slope coefficient β_i can directly show the elasticity of Y to X i.e the %age change in Y due to the %age of change in X i (Gujarati 2010: 335). After going through the MWD test and the results using the logarithmic model (Log), the model in this study is as follows:

$$\text{Exchange rate (IDR)} = \beta_0 + \beta_1 (\text{DNDF}) + \beta_2 (r-r^*) + \beta_3(m-m^*) + \beta_4 (\text{IHSG}) + \beta_5 (\text{HAC}) + \varepsilon \dots \dots \dots (1)$$

Kurs (IDR) is Kurs idr/usd, β_0 is constant, β_1 is DNDF Policy Coefficient Dummy Variable (0 & 1), β_2 is Compare the interest rate coefficient (r-r*), β_3 is Compare the money supply coefficient (m-m*), β_4 is IHSG coefficient, β_5 is Heterocedasticity and autocorrelation- consistent (HAC) coefficient, DNDF is DNDF Policy Dummy Variable (0 & 1), r-r* is Compare interest rate, m-m* is Compare the money supply, IHSG is IHSG, HAC is Heterocedasticity and autocorrelation consistent (HAC), ε is Error

Data in this study resulted from normality test, multicollinearity test, test heterocedasticity and autocorrelation test. Although it requires Heterocedasticity and autocorrelation - consistent (HAC) to improve the data of this study because it is exposed to heterokedasticity and autocorrelation in order to be free. In this research data uses a logarithmic model to estimate the effect of DNDF policy, interest rates, money supply and IHSG on the exchange rate through classical assumption tests, statistical tests (t test and F test) and determination tests to be able to produce conclusions on hypotheses determined in research this is .

Considering the research data used are secondary data, then to meet the requirements determined before the hypothesis test through the t test and F test The hypothesis test aims at

test whether the hypothesis in this study is accepted or rejected. The expected significance level of this study is 5%, or the interval coefficient is 95%. Degree of freedom is (nk) with (k-1), where k is the number of variables.

The hypothesis in this study on the basis of the theory that supports is (a) HA_1 = There is a significant negative influence between *DNDF* policies. (b) HA_2 = There is the influence of negative significant correlation between interest rate Indonesia and the United States on the exchange rate partially. (c) HA_3 = There is a significant positive influence between the amount of money circulating Indonesia and the United States on the exchange rate partially (d) HA_4 = There is a significant negative effect between the IHSG on the exchange rate partially. (e) HA_5 = There is a significant influence between *DNDF*, Interest Rates, Money Supply, and IHSG policies on the exchange rate together . The test results from the statistical test and the determination test are as follows.

RESULTS AND DISCUSSION

For the results of the estimated influence of *DNDF* policy, interest rates, money supply and IHSG on the 2014-2019 exchange rate, as follows: Statistical Test (t test and F test), Hypothesis testing consists of the t test and the F test. T test is used to test whether each independent variable partially influences the dependent variable assuming the other dependent variables are fixed. While the F Test is used to test whether all the independent variables jointly influence the dependent variable. DNDF, based table at the top of the variable DNDF if the value of t-statistic > t-table and prob value < $\alpha = 5\%$, then H_0 rejected and accepted Ha_1 . The results show the t-statistic is $2.232737 > t$ table is 1.671 and the prob value is $0.0290 < \alpha = 5\%$, it can be concluded that H_0 is rejected and accepts Ha_1 . Thus, the DNDF variable has a significant negative effect on the exchange rate variable.

Interest rate, based table at the top of the variable interest rate if the value of t-statistic > t-table and prob value < $\alpha = 5\%$, then H_0 rejected

and accepted H_{a2} . Results showed a t-statistic of $3.002539 > t$ table amounted to 1,671 and the value $prob\ 0:00\ 38 < \alpha = 5\%$, we can conclude

that H_{02} rejected and accepted H_{a2} . Thus, the interest rate has a significant positive effect on the exchange rate variable.

Table 3. t Test

| Variable | Coefficient | t-statistic | Prob. ($\alpha = 5\%$) | t-table ($\alpha = 5\%$) | conclusion |
|-------------|-------------|-------------|--------------------------|----------------------------|-----------------|
| <i>DNDF</i> | -0.018962 | -2.232737 | 0.0290 | 1.671 | Significant |
| R | 0.011428 | 3.002539 | 0.0038 | 1.671 | Significant |
| M | 0.347684 | 4.439767 | 0.0001 | 1.671 | Significant |
| IHSG | -0.061744 | -1.431804 | 0.1570 | 1.671 | Not significant |
| kurs (-1) | 0.639558 | 7.688177 | 0.0000 | 1.671 | Significant |

Source : The results of data processing using E-Views 9

Money Supply, based on the table above the variable in the money supply if the value of t-statistic $> t$ -table and prob value $< \alpha = 5\%$, then H_{03} rejected and accepted H_{a3} . Results showed a t-statistic of $4.439767 > t$ table amounted to 1,671 and the value $prob\ 0.0001 < \alpha = 5\%$, we can conclude that H_{03} rejected and accepted H_{a3} . By thus, the variables in the money supply affect positively significant to the variable rate.

IHSG, based on the table above the IHSG variable if the value of t-statistic $> t$ -table and prob value $< \alpha = 5\%$, then H_{04} rejected and accepted H_{a4} . Results showed a t-statistic of $1.431804 < t$ table amounted to 1,671 and the value of $0.1570 > \alpha = 5\%$, we can conclude that H_{04} accepted and refused H_{a4} . Thus, the IHSG

Table 4. F- test

| | | | |
|---------------------|-----------------|--------------------|----------|
| R-squared | 0.935982 | Mean dependen var | 9.502137 |
| Adjusted R-squared | 0.931058 | S.D. Dependen var | 0.065723 |
| S.E. of regression | 0.017257 | Sum squared resid | 0.019357 |
| F-statistic | 190.0693 | Durbin-watson stat | 1.951197 |
| Prob. (F-statistic) | 0.000000 | | |

Source : The results of data processing using E-Views 9

Based on the table result output over the F-statistic obtained at 190.0693 by the F-table at 2:37 (F-count $>$ F-table then the independent variables affect simultaneously). In addition, the F-statistic 0.0000 value is much smaller than $\alpha = 5\%$, so it can be concluded that the independent variables together have a significant effect on the dependent variable.

Determination Test, The coefficient of determination (R^2) is used to determine how much funds or ability to explain the variable independent to variations of the rise dependent variable. In Gujarati (2010: 94) use values of

R^2 are between 0 to 1 ($0 < R^2 < 1$). The closer to 1, the more precise the regression line is in predicting the actual value After processing Least Square regression data it produces an R-Square value of 93%. This refers to the independent variables (DNDF, interest rates, money supply, and IHSG) able to explain the dependent variable (exchange rate) by 93% and the rest is explained by other variables that are not contained in the model. Coefficient value by 93% to nearly 100%, which means independent variables give almost all the information in explaining the dependent variable

Table 5. Determination Test

| R-square | Adjusted R-square | S.E. of regression |
|----------|-------------------|--------------------|
| 0.935982 | 0.931058 | 0.017257 |

Source : Result processing *EViews 9*

Based on table 3 above shows the estimated results of the logarithmic model with the regression coefficient values obtained for each study variable are as follows:

$$\text{Exchange Rate} = (-1.449031 - 0.018962 \text{ DNDF} + 0.011428 \text{ R} + 0.347684 \text{ M} - 0.061744 \text{ IHSG} + 0.639558 \text{ HAC}) \dots\dots\dots(2)$$

The estimation results in variable *DNDF* that is when policies *DNDF* start to be set the exchange rate to appreciate 0.018962 % and before the stipulated exchange rate depreciates 0.018962%. The Dummy variable proves that there is an effect after the *DNDF* policy has been established, seen through the results of prob values and t-statistic values. The results showed a t-statistic of 2.232737 > t table of 1.671 and a prob value of 0.0290 < α = 5%, it can be concluded that H0 1 rejected and received Ha1.

Results showed policy *DNDF* impact negatively on the exchange rate conditions in Indonesia including n developing countries are much more even though the policy set out in developed countries because of the lack of illiquid markets in developing countries, based on research Batram, et.al (2009). It can be used *DNDF* as a positive thing is with *DNDF*, the value of the IDR strengthened against the dollar. In regulation 20/10 / PBI / 2018 issued by Bank Indonesia that *DNDF* policy is an effort to develop a more liquid market and increase the exchange rate from the supply side because the *DNDF* transaction provisions use the IDR currency. According to the governor of Bank Indonesia, Perry Warjiyo, to say that, "Instrument *DNDF* policy there are contributed to the strengthening of the IDR against the US dollar and supported by 30 banks to apply transaction execution *DNDF* in helping customers make *DNDF* and has accumulated 115 million USD in using the Hedging facility".

The current implementation of *DNDF* policy can affect the exchange rate appreciation by 0.018962%. Things become factors appreciation of the IDR is a transaction *DNDF*

using the exchange rate Forward and the mechanism of fixing so that when the exchange rate weakened against the dollar with the exchange rate fixing and system Forward will be able to help IDR to a predetermined value in futures contracts either contract Forward and Future. On the other side of futures contracts to help investors, importer and exporter in providing the necessary funds flow certainty and received against the risk of exchange rate fluctuations is not stable.

Increase company profitability because this hedging provides certainty of the value of the IDR in futures transactions. According Sulistyo (2014) with Hedging can reduce the state budget deficit on import payment which caused the IDR weakened. It is expected that the policy *DNDF* market players can participate in the implementation of hedging IDR or hedging. There are several studies (Herlinasari, 2018) PT Unilever, and (Artini, 2013) PT. SC Enterprises has proven micro hedging to further enhance the company's financial stability through the certainty of the transactions made.

Not only relying on one strategy, namely *DNDF*, Bank Indonesia of course keeps monitoring the interest rates set in controlling the exchange rate. Therefore, the next variable used is the interest rate that produces Output significant positive effect through the results prob value, the value of t and the coefficient Output is positive. The greater the difference between Indonesian and American interest rates, it can increase the value of the IDR exchange rate against the dollar or it can be said to depreciate the value of the IDR by 0.011428%. Variable interest rates on interest rate differentials showed significant positive effect on fluctuations seen through the results prob value and the value of t-statistic. The results show a t-statistic of 3.002539 > t table of 1.671 and a value of prob 0.0038 < α = 5%, it can be concluded that H02 is rejected and accepts Ha2.

According to Oktavia (2013) increasing domestic interest rate affect negatively significantly on the exchange rate or appreciate. increasing interest rate domestic has a direction negative would weaken the dollar exchange rate due to rising interest rates domestic, then investors are more interested in investing portfolio with high interest rates. If interest rate domestic increases, it happens capital inflow. The increase in capital inflow causes demand for the IDR to rise and strengthens the value of the IDR against the dollar. Investors will be more interested in the size of the interest rate offered and the condition state stable.

Unlike the case with this study where an increase in the interest rate difference between the Fed and the BI 7 Days rate if an increase in interest rates, it will have an impact on the weakening of the IDR exchange rate. From the results of the coefficient shows the impact of the increase in the difference between Indonesia-American interest rates will experience a weakening IDR/ USD exchange rate of 0.0 011428% indicated through the direction of the t-statistics and coefficients that produce positive output. Reinforced also on previous research by Aimon (2013) which has the same result. These results indicate a mismatch with the theoretical basis that supports the theory of determining the forex with the balance of payments approach and monetary approach that explains the relationship of interest rates to exchange rates.

The theory of the balance of payments approach and the monetary approach explains the relationship between Indonesia-American interest rate differences against the exchange rate through equations that have been explained in a theoretical study. the higher interest rate differentials cause capital inflow, thereby decreasing demand for foreign currency and causing appreciation of the domestic currency. This proves the incompatibility of this research with the Determination of Foreign Currency theory in the Payment approach and monetary approach that the difference in interest rates in the forex market will affect the demand and supply of foreign exchange through capital

flows, and cause changes in the exchange rate of the country's currency against foreign currencies in the market foreign exchange according to Madura (2009 : 101). In addition, incompatibility with the theory of another that supports the theory Interest Rate Parity (IRP) which explains that the difference in interest rates between countries into consideration to invest where higher interest rates will benefit the investors in the future. The results show that investors do not fully pay attention to higher interest rates based on the Interest Rate Parity theory because one of the factors is that investors prefer to invest in countries that have a high level of stability, namely America than Indonesia. Supported in previous studies that investors prefer a small risk even though returns or returns are small according to Pudjiastuti (2002).

Positive relationships in this study because there are factors influencing. First, the public's expectation of the IDR which views the IDR as a soft currency and tends to weaken in value from the USD from time to time as evidenced by the exchange rate data showing that for the past 6 years the IDR rate has been in the range of Rp. 11,000.00 and in 2019 in the range of Rp. 15,000.00-. The data prove that soft currency is weakening in value against hard currency. Secondly, speculation by economic actors on issues of increasing the Fed Rate in recent years due to the process of restoring the condition of the United States from the crisis in 2008 so as to maintain the dollar rather than the IDR.

Investors chose to invest in the value of the dollar with the issue of a Fed Rate increase in 2015 to 2019 from 0.25 bps to 2.5 bps as evidenced from the last five years the contribution of foreign investors to the Indonesian capital market has decreased from 40.58% in 2014; 36.89% in 2016 to decrease to 32.31% in 2018 (source : OJK data processed by *IPOTNEWS*). The contribution of foreign investors has dropped even though the interest rates offered by Indonesia have not been able to hold investors from becoming more interested. Therefore, investors have more confidence in

the interest rates of American countries with more stable economic conditions. The decline in foreign investors towards portfolio investment in the capital market has led to the depreciation of the IDR even though the 7 Days Rate has increased. The results of this study are supported by previous studies that produced a positive relationship between interest rates and exchange rates conducted by Yuniwati (2013) and Aimon (2013). In contrast to the results of research Nuryadin (2004) produces a coefficient of negative and significant value causing capital inflows accompanied by appreciation of the domestic currency .

Meanwhile, the interest rate policy set must be well coordinated with the money supply in order to achieve stability. Therefore, the money supply is used in the next variable and produces an estimate that Output has a significant positive effect through the results of the prob value, t value and the Output coefficient is positive. Results Output coefficient of money supply policy that is, when difference between the money supply increases, the rate of increase or depreciation of the IDR exchange rate of 0.347684%. The variable amount of money in circulation in the money supply showed differences significant positive effect on fluctuations seen through the results prob value and the value of t-statistic. Results showed a t-statistic of 4.439767 > t table amounted to 1.671 and 0.000 prob value of $0 < \alpha = 5\%$, we can conclude that H_0_3 rejected and accepted H_{a_3} .

The increase in money supply causes prices to rise due to the increase in people's ability to consume so that the currency depreciates. An increase in money supply causes depreciation because an increase in money supply can cause inflation which can reduce interest rates so that the exchange rate depreciates due to capital outflows from lower interest rates. If, Central Bank increase in the money supply , it will lower interest rates and stimulate the investment exit led to the depreciation of the currency as demand domestic decreases.

The results of this study are in accordance with the theoretical basis that supports, through a monetary approach that an increase in the difference in the money supply followed by an increase in prices through purchasing power parity will encourage the depreciation of the IDR. Conformity theory has the same direction that is positive slope to the dependent variable. If the difference in the money supply is higher then the rate will increase by 0.347684% due to the increase in the money supply domestic and followed by inflation then allow to change the behavior of consumers to choose to import goods at relatively lower prices there by increasing the outflow. Supported by Aimon's research (2013) that the money supply has a positive effect on the exchange rate. In addition, some of the results of previous studies can strengthen the output results in this study are the research of Oktavia (2013) and Ardiyanto and Ahmad (2014) states that the money supply has a positive effect on exchange rate movements.

These three variables affect the exchange rate even though they have different directions according to the estimation results that have been made. Unlike the case with the results of the IHSG variable estimation which does not have a negative effect on the exchange rate although it is in accordance with the theoretical basis that supports the determinants of foreign exchange using the portfolio approach. Output generate coefficients of IHSG ie, when stock index rose the exchange rate to appreciate by 0.061744%. Variable shows that IHSG has insignificant negative effect on exchange rate fluctuations seen through the results of prob and t-statistic values. Results showed a t-statistic of 1.431804 < t table amounted to 1,671 and the value of 0. prob 1570 > $\alpha = 5\%$, we can conclude that H_0_4 accepted and refused H_{a_4} .

The results of the study showed no significant negative effect on the dependent variable. However, these results have compatibility directions with basic theory used. Portfolio approach theory in which exchange rate fluctuations are influenced by wealth assets such as bonds, stocks and other types of portfolios. If there is an excess demand because the interest rates offered are high so the interest

rate will decrease, it will have an impact on the condition of the foreign exchange rate to depreciate. Conversely, an increase in interest rates will cause demand for portfolio wealth to rise due to high rates of return so that the exchange rate appreciates. The entry of foreign capital in the form of not driving direct investment can strengthen the exchange rate according to Suhendra (2003).

The movement of rising capital inflow in the form of a Composite Stock Price Index (IHSG) can increase the exchange rate or exchange rate appreciation through portfolio investment. If domestic stocks improve and attract investors, it can strengthen the value of the IDR against the dollar according to Djullius and Yudi (2014). However, the estimation results show that the IHSG variable does not significantly influence the exchange rate so that the IHSG relationship cannot affect the IDR exchange rate against the dollar.

The IHSG has no effect on the exchange rate due to the fact that part of the IHSG ownership is owned by domestic investors and the contribution of foreign investors decreases from year to year so that the IHSG transactions that occur do not affect the exchange rate because they do not need a medium of exchange to conduct transactions. A decline in the trend of foreign investor spending on the IHSG from year to year foreign investors transacted as much as Rp. 109.6 T in 2007 to 2011 decreased to Rp. 31.5 T in 2012 to 2016. In 2016 domestic investors were more dominant in conducting transactions IHSG and recorded a nominal break of Rp 1,164 T (source: IDX data processed by *avere investama*).

This causes the IHSG to have no effect on the exchange rate because the time period of ownership of domestic investors is more dominant in conducting IHSG transactions so that it does not require a medium of exchange to invest in the IHSG and does not cause the exchange rate to fluctuate because IHSG transactions that occur are still domestic. The trend of domestic investor ownership increased and was accompanied by a decrease in foreign investors so that the acquisition of IHSG

experienced a decline (in table 1 page 5) when America had recovered causing capital outflows and transactions made mostly were domestic. Therefore, IHSG demand does not affect the exchange rate because it does not require foreign exchange at the time of the transaction.

Results This output was also strengthened in a previous study by Yohana and Andrieta (2020) which confirmed there was no relationship between the IHSG and the exchange rate. Things to become factors IHSG does not significantly influence the exchange rate are the investors in the purchase of portfolio in foreign currency is not efficient because investors do not pay attention to factors fundamental prefers the small risk, but with returnnya little that such shares state usefully be put.

CONCLUSION

Based on the results of the discussion that has been explained it can be concluded that partially *DNDF* policy has a negative and significant effect on the exchange rate of the IDR/ dollar and is in accordance with Derivative market theory. There was an effect of appreciation in the value of the IDR after the *DNDF* policy began to be established. While interest rates have a positive and significant effect on the IDR/ dollar exchange rate partially. However, the results are not in accordance with the theory of foreign exchange determination which has a negative relationship between interest rates and exchange rates. The results showed the greater the difference in interest rates the more the depreciation of the value of the IDR against the dollar because there are factors that influence outside the theory. While the money supply partially has a positive and significant effect on the IDR/ dollar exchange rate and is in accordance with the monetary approach theory. The greater the difference in the money supply, the more depreciating the value of the IDR against the dollar. Meanwhile, IHSG partially has a negative and insignificant effect on the IDR/ dollar exchange rate and is in accordance with the portfolio approach theory which has a

negative relationship. The higher IHSG demand, the more appreciation of the IDR/USD exchange rate due to capital inflow. Together *DNDF*, interest rate, MONEY SUPPLY, and IHSG variables affect the IDR/dollar exchange rate

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