**Jurnal Nominal**
**Barometer Riset Akuntansi dan Manajemen**
URL: https://journal.uny.ac.id/index.php/nominal

# Rupiah Exchange Rate Fluctuations in The US Dollar Purchasing Power Parity Theory and Fisher Effect Theory Testing

Dewi Cahyani Pangetui [a,1,*], Ardhiani Fadila [a,2] ;Siwi Nugraheni [a,3]

[a]Faculty of Economics, Universitas Pembangunan Nasional Veteran Jakarta. Jakarta
[1] dewichepe@upnvj.ac.id*; [2] fadilaardhiani@upnvj.ac.id; [3] siwinugraheni@upnvj.ac.id
* corresponding author

## ARTICLE INFO

## ABSTRACT

**Rupiah Exchange Rate Fluctuations in The US Dollar, Purchasing Power Parity Theory and Fisher Effect Theory Testing.** To test the accuracy of the power purchasing parity theory and the international fisher effect theory on fluctuations in the Rupiah exchange rate against the United States Dollar. The goal of this study is to examine if the power purchasing parity theory and the international fisher effect theory are valid when it comes to Rupiah-US Dollar exchange rate movements. The purpose of this research is to figure out the rate of inflation, interest rate, and movement of the rupiah against the US dollar. This research examined historical data on the rupiah exchange rate against the US dollar, interest rates, and inflation rates in Indonesia and the United States from January 2015 through December 2020. In this research, multiple linear regression analysis was used. Research proved that the theory of power purchasing parity applies to changes in the Indonesian rupiah exchange rate on the US dollar. The international fisher effect does not apply to changes in the Indonesian Rupiah currency rate against the US dollar, which proves the existence of theoretical deviations that result in the invalidity of this theory.

ABSTRAK
**Fluktuasi Nilai Tukar Rupiah dalam Dollar US, Pengujian Teori Paritas Daya Beli dan Teori Fisher Efek.** Tujuan dari penelitian ini adalah untuk menguji keakuratan volatilitas nilai tukar rupiah terhadap dolar AS dalam teori paritas daya beli (PPP) dan teori dampak fisher internasional. Variabel dalam penelitian ini adalah inflasi, suku bunga, dan pergerakan nilai tukar rupiah terhadap dolar AS. Data yang digunakan dalam penelitian adalah data historis nilai tukar Rupiah terhadap dolar Amerika Serikat dan tingkat suku bunga Indonesia dan Amerika Serikat serta tingkat inflasi dari bulan Januari 2015 sampai dengan Desember 2020. Metode dalam penelitian adalah: Analisis regresi linier berganda. Penelitian membuktikan bahwa teori power purchasing parity berlaku pada perubahan kurs mata uang Rupiah Indonesia pada Dollar Amerika Serikat.  Teori internasional fisher effect tidak berlaku berlaku pada perubahan kurs mata uang Rupiah Indonesia pada Dollar Amerika Serikat, yang membuktikan adanya penyimpangan teori yang mengakibatkan tidak berlakunya teori ini.

## 1. Introduction

In industry 4.0, with the rapid development of digitalization, the foreign exchange (forex) market has become one of the trading markets that many investors are interested in. In the forex market, forex investors buy currencies from a particular country and exchange them for other currencies, taking advantage of fluctuations in currency prices, (Karyani & Darmawan, 2020). The era of digitalization makes it easy to transact in the forex market, which has resulted in the forex market being much in demand by investors. When compared to capital markets and capital markets, the foreign exchange market is very liquid with very rapid market movements, (Malik, 2017). In addition, foreign exchange has a rate of return that tends to be large, and variations spread when compared to capital markets and money markets. Considering that the forex market involves trading between currencies from several different countries, before making a forex transaction, investors need to consider the main causes that exert an influence on the movement of the exchange rate or currency rate of a particular country, (Setiawan, 2009). The main causes that affect the movement of a particular country's currency are the inflation rate and interest rates. In the world of forex trading, one of the currencies that are the reference in looking at the value of the currency rate of a country is to compare it with the USD rate. The USD rate itself is used by other countries as a foreign exchange reserve rate, (Saputra & Santoso, 2017). Similarly, rupiah, if we want to see how strong the rupiah currency rate, then it is enough to compare it with the rupiah rate against the US dollar rate.

In foreign exchange trading, foreign exchange rates will continue to fluctuate following market prices. If the demand for a single currency increases with its supply, then the currency will be valuable in value, to market movements, (Setiawan, 2009). Demand for a currency is closely related to other aspects of the economy, such as Gross Domestic Product (GDP) and employment demand levels. With the high demand for a currency, there is a risk of speculative demand for money resulting in rising interest rates, (Luwihadi & Arka, 2017).

Therefore, the central bank will adjust the level of demand from foreign currency rates by adjusting interest rates. If the central bank raises interest rates, then the level of public demand for loans becomes low, resulting in a lot of money supply in the market (Karyani & Darmawan, 2020). The amount of money circulating in the market results in inflation conditions, where commodity prices in the market rise. Conversely, if the bank lowers the interest rate, then the level of public demand for loans becomes high. When many people take out loans, then the amount of money circulating in the market will decrease, and automatically the inflation rate will fall, (Halin, 2016). Inflation itself does not describe bad economic conditions, but if it is well controlled, inflation does not affect economic stability in a country. Conversely, when the inflation rate in a country is too low, it will result in the low purchasing power of the people. Therefore, the central bank is obliged to control interest rates with inflation rates well in achieving economic stability in a country, (Hermawan & Purwohandoko, 2020).

Investing in other countries tends to be more complicated when compared to investing in the country, due to differences in economic conditions, such as interest rates and exchange rates. To predict the rate of return received in an investment, investors usually have to compare different investments on the basis of their risk and potential return to make a choice among different alternatives, (Umam & Isabela, 2018). When it comes to its decisions about international investment opportunities, the comparison of investment returns becomes much more complicated. In addition to risk and return comparisons, investors should also pay attention to the potential changes they expect to occur in the exchange rate between foreign currencies and domestic currencies. In such cases, the theory of the determination and interaction of interest rates and exchange rates becomes an important reference for investors, (Pangestuti, 2020).

There are some of the most popular and controversial theories that discuss the relationship between the rate of inflation and interest rates to changes in the exchange rate of a country's currency, namely the theory of purchasing power parity, and the International Fisher Effect theory, (Santosa, 2008). According to the purchasing power parity theory, fluctuations in the currency rates of two nations will be compared in balance with changes in the inflation rates of the two countries when establishing the exchange rate. Thus, the decrease in purchasing power of a country will be followed by a decrease in the country's currency in other countries. Conversely, if the purchasing power of the people of a country is high, it will be followed by an increase in the currency in other countries. The International

Theory of Fisher Effect (IFE) states that fluctuations in the currencies of one country are caused by differences in interest rates between two countries. IFE theory is closely related to the theory of purchasing power parity (PPP), considering that interest rates and inflation are closely related to each other, (Pangestuti, 2020). Given both the IFE theory and the very popular and controversial PPP theory, the study tested both theories that were debated among economists, looking at the influence of the value of inflation and interest rates on the movement of the rupiah at USD.

Indonesia in conducting international trade requires foreign exchange in the form of a hard currency which is a currency that can be widely accepted as proof of international payments and used as a medium of exchange in international transactions (Pangestuti, 2020). The currency that belongs to the hard currency category is the United States Dollar. Indonesia, which is a partner of trade activities (exports and imports) with the United States, automatically assesses its trade activities with the USD currency. The role of the USD becomes very important because international trade activities are carried out by Indonesia using the USD currency. If the exchange rate of the Rupiah (IDR) against the US Dollar (USD) is unstable, it will tend to interfere with trading activity because it can cause economic losses because its trading activities are assessed with the US Dollar (USD). Madura (2020) explained that there are several factors that can affect the rate of change in exchange rates, one of which is the inflation rate. The high inflation rate affects the number of exchange rates. Another factor that affects a country's currency exchange rate is the difference in interest rates between countries. Changes in interest rates affect investments in foreign securities, which will affect the supply and demand of money thus affecting the exchange rate (Durmaz et al., n.d.). There are at least two theories that explain the relationship between inflation, interest rates, and exchange rates, notably purchasing power parity and the international fisher effect. Forex rates will react to changes in inflation and interest rates (Amadeo, 2020).

Purchasing power parity theory is a mathematical approach to understanding the relationship between inflation and currency rates in international finance (Parsley & Wei, 2007). Purchasing Power Parity theory is divided into two types: absolute and relative. Fisher Effect International Theory is a theory that uses interest rates instead of inflation differences, where foreign currencies will appreciate when foreign interest rates are smaller compared to the interest rates of the country of origin (Adawiyah, 2017).

The importance of the exchange rate as one of the economic indicators makes it an interesting thing to discuss and see changes or fluctuations that can be influenced by various factors. This research tried to find out the influence of inflation using purchasing power parity theory and find out the influence of interest rates using the international fisher effect theory between two countries on the rupiah exchange rate. The foreign currency as the chosen comparison is the United States Dollar. The USD foreign currency was chosen because the USD is a currency that is often traded or liquid and is a hard currency.

## 2. Literature Review

### 2.1. Exchange Rate Change

According to Modigliani & Modigliani, (1997) The accumulation of a currency that may be traded for other currencies, or the "price" that must be paid to obtain currency from another country, is the exchange rate, (Yanita, 2010). An exchange rate is a form of exchange of two currencies, which is compared to the "price" of two currencies. The exchange rate itself consists of two types, namely the real rate, or the rate that describes the commodity price of a country, and the nominal rate, which is used in exchange for the currency of another country, (Karyani & Darmawan, 2020). In the movement of exchange rates, there are two conditions, namely appreciation, and depreciation. Appreciation is a condition where there is an increase in the price of the domestic currency. Meanwhile, depreciation is a condition where the price of the domestic currency against the price of a foreign currency decreases, (Ovinda et al., 2014).

### 2.2. Inflation

Inflation is a condition when there is a price increase in the market, (Halin, 2016). Inflation is a condition in which the fall in the value of a currency results in a decrease in the purchasing power of people in a country. Inflation can also occur when there is a state of imbalance between aggregate

demand and supply, where aggregate supply is lower than aggregate demand. This explains the situation where the flow of commodities and services in a country is lower when compared to the flow of money in the country so that the purchasing power of the community becomes low. Conversely, when the flow of commodities and services in a country is higher when compared to the flow of money in that country, there will be deflation, (Perlambang, 2017). If in one country, there are the following three characteristics, then the country has experienced inflation. Specifically, 1) there is an increase in prices; 2) commodity prices have increased in general; and 3) they are occurring sustainably, (Nurina, 2016).

### 2.3. Interest Rate

The interest rate is a proportion of the amount lent that the lender charges as interest to the borrower, expressed as an annual percentage, (Hermawan & Purwohandoko, 2020). If the central bank raises interest rates, then the level of public demand for loans becomes low, resulting in a lot of money circulating in the market. The amount of money circulating in the market results in inflation conditions, where commodity prices in the market rise. Conversely, if the bank lowers the interest rate, then the level of public demand for loans becomes high. When many people take out loans, then the amount of money circulating in the market will decrease, and automatically the inflation rate will fall, (Karyani & Darmawan, 2020). According to (Pangestuti & Tindangen, 2020) if the interest rate is high, it will lower the desire of an entrepreneur to invest, because spending on investment will increase along with the increase in interest rates that must be paid as use of capital (cost of capital).

### 2.4. Purchasing Power Parity

Gustav Cassel, a Swedish economist, proposed the purchasing power parity theory in 1918. According to Cassel, if the rate is not in parity, it will be in a state of imbalance (disequilibrium), and the exchange rate and purchasing power will adjust until parity is achieved due to arbitrage. If wheat is sold for four dollars in the United States but 600 yen in Japan, the arbitrator can buy the wheat in the United States and sell it in Japan until the price disparity disappears, (Durmaz et al., n.d.). According to this hypothesis, achieving purchasing power parity will result in a balance of exchange rates between two countries' currencies. To maintain purchasing power parity, it continues to fluctuate to adjust purchasing power parity and is inconsistent. (Umam & Isabela, 2018).

The purchasing power parity theory applies if and when exchange rates fluctuate to offset the difference in inflation rates between the two countries. According to buying power parity theory, rising prices in one nation drive exchange rates to depreciate relative to other countries, ensuring that the relative costs of comparable items remain constant across countries. This level of weakness in the currency was offset by the effect of lower inflation on foreign goods, (Pangestuti, 2020).

If the real exchange rate returns to its average level over time, it indicates that it is constant for the long term. However, if the real exchange rate fluctuates, it means that it moves in a non-contoured manner without a predictable pattern. That is, it does not tend to return to some average level and therefore is not constant for the long term. Under these conditions, this theory is rejected because fluctuations in the real exchange rate appear to be more than just a temporary deviation from the equilibrium value, (Santosa, 2008). The following is a common equation for estimating purchasing power parity:

$$e_f = \frac{(1+i_h)}{(1+i_f)} - 1 \qquad\qquad (1)$$

$e_f$ = Exchange rate

$i_h$ = Domestic Inflation Rate

$i_f$ = Foreign Inflation Rate

Quantity theory states that fluctuating prices are due to the rise and fall of the money supply in the economy. According to Irving Fisher "in fact, a change in the money supply will cause an equally rapid price change", this means that when the percentage of money in circulation increases it will be

as much as the percentage at the inflation rate (Ifionu & Ibe, 2015). Therefore the money supply has a positive relationship with inflation. If the money supply increases excessively, it will trigger price increases beyond the price level that can be estimated by the economy, because the high rate of inflation can potentially disrupt economic growth in the long run. Therefore, the hypotheses in this study are:

H1 = Indonesia's inflation rate and the United States partially exerts the effect of the change in the Indonesian Rupiah exchange rate on the US Dollar.

## 2.5. International Fisher Effect

Irving Fisher, an American economist, created the international fisher effect theory (IFE). Fisher's international effect theory is a derivative theory of the Fisher Effect theory, which is positive that changes in inflation in a country will affect interest rates in that country. This IFE theory proposes that changes in the rate of a currency can be estimated using interest rates, and this theory is closely related to the theory of purchasing power parity, considering that interest rates are closely related to the inflation rate (Madura, 2020). Fisher's international securities theory states that the difference between the interest rates of the two countries, as well as the existence of arbitrage in the form of capital flow, is an unbiased predictor of future changes in spot rates.

Fisher claims that real interest rates will be the same across countries due to potential arbitrage opportunities across financial markets, which often take the form of capital flows. The equivalent of real interest rates suggests that a country with higher interest rates will have higher inflation, causing the real worth of its currency to depreciate over time (Herawati, 2021). It's vital to highlight that the IFE's survival was predicated on two key assumptions. For starters, investors consider international and domestic assets to be substitutes, therefore no risk premium is assumed. Second, the integrated capital market is devoid of all regulatory and psychological barriers, allowing for unfettered money flow between countries (Hermawan & Purwohandoko, 2020).

The formula for actual returns on foreign bank deposits (or any money market securities) is where the effective return on deposits in a foreign country and the interest rate on deposits in domestic countries. We can determine the extent to which foreign currencies are so that investment in both countries generates comparable returns. The general equations of the International Fisher Effect are:

$$e_f = \frac{(1+i_h)}{(1+i_f)} - 1 \qquad\qquad (2)$$

$e_f$    = Exchange rate

$i_h$    = Domestic Interest Rates

$i_f$    = Foreign Interest Rates

The IFE theory explains that the movement of the value of a country's currency when compared to other countries is caused because the interest rates between the two countries are different. This theory implies that investors who invest in countries that have high-interest rates will not get high profits because when a country has high-interest rates then the value of its currency will depreciate by the difference in interest with countries whose nominal interest rates are lower (Breliastiti, 2009). According to Pangestuti & Riantiarno (2021) when a country's interest rate decreases, it will cause the exchange rate of its country's currency to depreciate or weaken while if the interest rate in a country increases it will cause the exchange rate of the country's currency to appreciate or strengthen. The hypotheses in this study are:

H2 = Interest rates Indonesia and the United States partially exert the effect of the change in the Indonesian Rupiah exchange rate on the USD.

The third hypothesis in this study is:

H3 = The inflation rate and interest rates between Indonesia and the United States jointly exert the effect of the change in the Indonesian Rupiah exchange rate on the US Dollar.

## 3. Research Methods

This research is a quantitative study with descriptive analysis and uses secondary data, namely inflation rates and interest rates in Indonesia and the US, obtained from the BI website at www.bi.go.id and www.blvs.gov, the Berau Labor Statistics website. The study took the population in the form of historical data from the rupiah to USD, interest rates, and inflation rates in Indonesia and the United States. Because the theory of purchasing power parity and the international Fisher effect is more accurate when taken in historical data over a long period, the number of samples taken from the population is historical data from the rupiah exchange rate to the USD, interest rates, and inflation rates in Indonesia and the United States, in the period January 2015 to December 2020. The study applied multiple linear regression analysis techniques.

This research variable is the inflation rate as an independent variable (X1), the interest rate as an independent variable (X2), and the Indonesian Rupiah rate at USD as a dependent variable (Y).

**Table 1.** Variable, Concepts, and Measurements

| Variable | Concept | Indicators | Scale |
|---|---|---|---|
| Exchange rate (Y) | The exchange rate of one country's currency against another country's currency. (Moffett et al., 2009) | Middle Rate = $$\frac{selling\ rate - buy\ rate}{2}$$ | Ratio |
| Inflation Rate (X₁) | The increased price of a group of goods in a country (Mankiw, 2006) | Inflasi = $\frac{IHKn - IHKn-1}{IHKn-1}$ x 100% | Inflation rate $$\frac{1 - Ih}{1 + If} - 1$$ |
| Interest rate (X₂) | Interest rates consist of pure interest rates, risk premiums, transaction costs in credit payments, and inflation premiums ((Madura, 2020) | | Interest rate ratio $$\frac{1 - ih}{1 + if} - 1$$ |

The steps of variable measurement are as follows: To begin, tabulate research data in the form of inflation, interest rate, and the exchange rate of the Indonesian Rupiah against the US dollar from January 2015 to December 2020. The number of samples tested was as high as 72. In addition, the second step involves performing the classical assumption test with the first stage of the Normality Test, which is used to quantify the confounding variable or residual in the regression model that has a normal distribution. The regression model is considered to be normal distribution if the plotting data, which describes the real data, is accompanied by its diagonal line, (Ghozali & Ratmono, 2013). Then the second stage of the Multicollinearity Test is a test of the absence of correlation or interrelationship between independent variables. In detecting the presence of symptoms of multicollinearity in a regression model, the resulting $R^2$ value is very high, and if the matrix of correlation between independent variables is greater than 0.90, it can be concluded that there is a symptom of multicollinearity. Multicollinearity can also be demonstrated by tolerance and VIF values, (Ghozali & Ratmono, 2013). Then the third test is heteroskedasticity, which is used in measuring the systematic change in the residual spread above the range of values measured. If one observation is different from another observation, then there is a state of heteroskedasticity. The fourth test, the Autocorrelation Test, is used to measure the correlation between error terms in the past, in linear regression models, (Ghozali & Ratmono, 2013).

Perform a multiple linear regression analysis with the inflation rate (X1) as an independent variable, the interest rate (X2) as an independent variable, and the Indonesian Rupiah rate in USD as a dependent variable (Y). The accuracy of sample-based regression models in estimating actual values can be measured with goodness-of-fit, including the t-test (partial significance test), which measures the influence of independent variables individually on variable dependents.

The partial significance test is done with a quick look, and with a comparison between the t value of count with t table. Continued Test F (Simultaneous significance test). Simultaneous Significance tests are applied by making comparisons to the statistical value F with the critical point value on the F distribution table. There is no co-influence of X1 and X2 on Y. Then the three coefficients of determination (0,1) show the ability of the model to explain the variation of its dependent variables.

## 4. Results and Discussion

The results of the analysis of data using SPSS software, namely as follows:

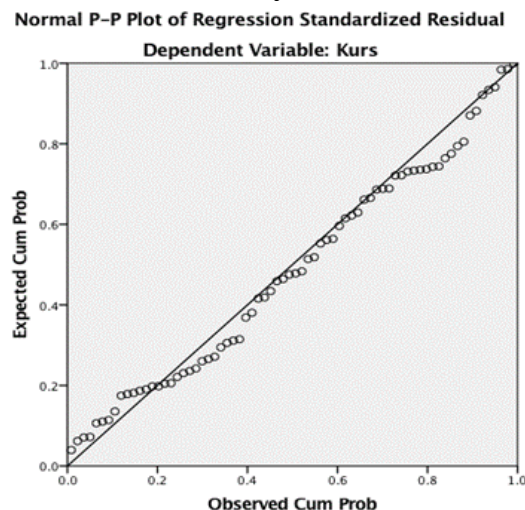### 4.1. Classic Assumption Test Results of Normality Test



**Figure 1**. Normality Test Results

In the normality test, if the plotted data shows data that corresponds to the reality of diagonal lines, then the regression model of the data is said to be normal. If we look at the results of the normality test above, which describe the plotted data that spreads by following diagonal lines, we can say that this regression model has a normal distribution.

### 4.2. Multicollinearity Test

In the multicollinearity test, to measure the correlation between independent variables in regression models. If the tolerance value >0.100 and the VIF value <10.00, then in the regression model there are no symptoms of multicollinearity. From table 1, it is seen that the tolerance value for variable X1 is 0.442, which means greater than 0.1, and for VIF values it shows the number 2.262, which means it is smaller when compared to the required VIF value, which is 10.00. And for variable X2, the tolerance value is 0.689, which means it is greater than 0.1, and the VIF value shows a number of 1.014, which is smaller than the required VIF value, which is 10.00. Therefore, it can be said that there is no multicollinearity in the regression model.

**Table 2.** Multicollinary Test Results

| Multicollinearity | | | | |
|---|---|---|---|---|
| **Model** | **t** | **Sig.** | **Collinearity Statistics** | |
| | | | **Tolerance** | **VIF** |
| 1  (Constant) | 42.629 | .000 | | |
| Inflation | -2.136 | .036 | .442 | 2.262 |
| Interest rate | .195 | .846 | .689 | 1,014 |

From figure 2, it is seen that scatterplots show unclear and irregular patterns. In the heteroskedasticity test, if in the scatterplots image, there are irregular patterns and scattered points with absurd patterns, therefore, there is no heteroskedasticity or homoscedasticity. That is, in the regression model, the absence of heteroskedasticity.
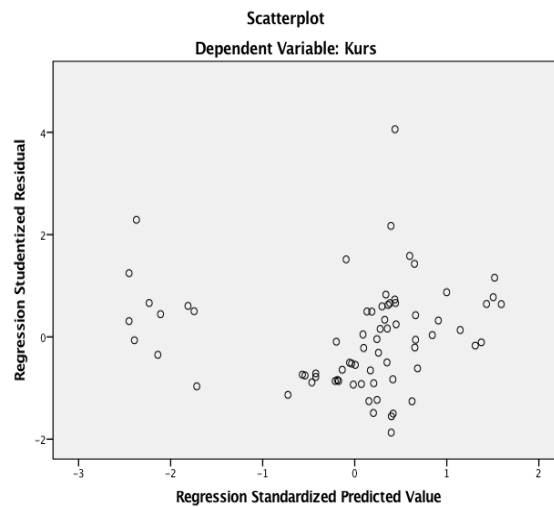
### 4.3. Test Heteroskedasticity



**Figure 2.** Scatterplots Results for Heteroskedasticity Test

### 4.4. Autocorrelation Test

In the autocorrelation test, if Durbin Watson's value is between du to (4-du), then the symptoms of autocorrelation are not detected. Du values are estimated using the Durbin Watson value distribution table based on the values k and n. From the results of statistical data processing, it is known that the du value for this linear regression model is 0.567. Du values are sought by Durbin Watson's table value distribution, from k (2) and n (72) with a significance of 5%. From Watson's Durbin table for the value k (number of independent variables = 2) and the value n (Sample number = 72), it was found that the du value was 1.6751. Therefore, the value of du (1.6751) Durbin Watson (1.867) (2.3249). This shows that between variable X1 (inflation) and variable X2 (interest rate), there is none.

**Table 3.** Autocorrelation Test Results

| Model Summary | | | | | |
|---|---|---|---|---|---|
| **Model** | **R** | **R Square** | **Adjusted R Square** | **Std. An error in the Estimate** | **Durbin-Watson** |
| 1 | .340[a] | .115 | .090 | 584.537 | 1.867 |

**Table 4.** Partical Significance Test Result Coefficients

| | Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | **B** | **Std. Error** | **Beta** | | |
| 1 | (Constant) | 14.328.408 | 336.120 | | 42.629 | .000 |
| | Inflation | -151.590 | 70.968 | -.364 | -1.136 | .176 |
| | Interest rate | 16.814 | 86.189 | .033 | .195 | .846 |

### 4.5. Multiple Linear Regression Analysis Results

### t-Test (Partial Significance Test)

From table 3, it can be seen that the significance value for variable X1 is 0.036, which means less than the required significance, which is 0.05. Meanwhile, the significance value for variable X2 shows the number 0.846, which means greater than 0.05. The values on the t table for the values k=2 and n=72 indicate the value 1.994945415. That is when compared to the coefficient tcount X1, which is -2,136, and the coefficient tcount X2, which is 0.195. Therefore, if the tcount of the variables X1 and X2 is compared to the ttable, then the only area that gives effect is the variable X1. Therefore, it can

be said that variable X2 does not have a partial effect on variable Y, and variable X1 gives a partial effect on variable.

**Inflation to Exchange Rates**

According to the findings of the analysis, the ratio of Indonesia's inflation rate to that of the United States has no effect on the Rupiah/Dollar exchange rate in 2015-2020. so that Indonesia's H1 inflation rate and the United States partly give the effect of the change in the Exchange Rate of the Indonesian Rupiah to the US Dollar, based on the parity of purchasing power is rejected. This indicates that the purchasing power parity model cannot be used as the main reference for predicting exchange rates. Purchasing power parity theory can only apply if the result of the coefficient of domestic to foreign inflation ratio is significant, not zero, and has a positive direction. Based on the results of statistical calculations, it can be concluded that the theory of purchasing power parity does not apply to the exchange rate of the Rupiah against the US Dollar.

The results of this study are in line with research conducted by (Adam et al., 2018; Semuel & Nurina, 2014) which indicates that there are other factors beyond the inflation difference that affect exchange rates such as interest rate differences, public income levels, and government control. The results of this study were also reinforced by Hutomo (2020) who stated that the difference in the inflation rate based on the purchasing power parity model has no effect on the change in the actual exchange rate of the Rupiah against the US Dollar. However, the results of this study do not support the results of research (Nurina, 2016) which showed that the theory of purchasing power parity proved to apply to the Exchange Rate of the Rupiah / Us Dollar. The fact that test findings vary depending on the base period chosen is a shortcoming of purchasing power parity testing. Because the following period will be evaluated in contrast to the base period, the base period should reflect an equilibrium position. Choosing a baseline period, on the other hand, is challenging. The difficulty in establishing equilibrium exchange rates is even one of the key reasons for the fixed exchange rate system's abolition or rejection, (Madura, 2020). According to Nurina (2016), two reasons that result in PPP theory do not apply, namely: 1). In this case, in addition to the difference in inflation, among others, the difference in interest rates, the level of public income, and community control. 2). The absence of substitute products. The idea behind the PPP theory is that as soon as prices in a country become relatively high, other countries will reduce imports from that country and switch to domestic products. However, if there are no substitute or substitute goods, then how expensive imported goods other countries will still import into that country.

According to Madura (2020) things that allow the theory of parity of purchasing power can not be significant can occur due to other factors that affect the exchange rate such as 1). Relative interest rate: if the interest rate in the country of origin is higher than that of a foreign country, resulting in the demand for the currency of the country of origin becomes increased so that the currency of the country of origin appreciates against the foreign country, even though the inflation of the country of origin is higher than that of the foreign country. 2). Relative national income level: the high low national income of a country will affect the high low currency of that Country in assessing foreign currency. 3). Government control: the existence of government policies in controlling the exchange rate of its currency resulted in high inflation in the country has little effect on the exchange rate of its currency with foreign countries. The theory of purchasing power parity, according to Madura(2020) focuses on the relationship between inflation and the exchange rate, stating that the exchange rate of a currency would alter in response to the difference in inflation between the two countries. Inflation is a problem that arises for several reasons, one of which is the desire of people to consume excessively.

**Interest Rate to exchange rate**

From the results of the analysis test, it can be concluded that the ratio of interest rates between Indonesia and the United States has no effect on the Rupiah / Dollar exchange rate in 2015-2020 so that H2 (interest rate affects the exchange rate) based on fisher effect theory is rejected. This indicates that the interest rate parity model cannot be used as the main reference for predicting exchange rates. The findings of this study contradict the findings of Adam investigation which states that variable interest rate ratios have a positive influence on the Exchange Rate of Rupiah / Us Dollar. In reality the condition of interest rate parity may not apply completely because there are transaction costs, political

risks such as restrictions on the flow of funds, different tax government can effectively degrade the arbitration process and as a result deviations from the IFE can last a long time.

treatment between domestic and foreign investors, however, if the transaction is carried out between the world's financial centers, then the restriction or risk of transactions becomes smaller so that deviations from the conditions of interest rate parity become smaller. If irregularities exist, then they will not be long-lived because they will be utilized quickly by the arbitral. According to Ginting et al. (2018) although IFE tends to apply quite well, IFE does not always apply appropriately all the time for two reasons, namely: 1). The interest rate at the time the arbitrage makes a loan will tend to be higher than the interest rate on lending, reflecting the difference in the buy-sell rate. Similarly, there is a difference in the buy-sell rate in the foreign exchange market. Arbitrage actors must buy foreign exchange at a higher selling rate and sell it at a lower buy rate. 2). Another major reason for deviations from the IFE theory is the control of capital imposed by the government. For various macroeconomic reasons, governments sometimes restrict capital flows in and out. The government achieved this goal through the enactment of taxes or even prohibiting the movement of capital across countries at that time. These control measures imposed by the:

**Test F (Simultaneous Significance Test)**

In a simultaneous significance test, if the significance value is less than 0.05, the independent variable has an influence on the dependent variable at the same time. When the significance level is greater than 0.05, the independent variable does not affect the dependent variable. And if F count > F table, the independent variables have a combined influence on the dependent variable, but the contrary is true. In a simultaneous significance test, if the significance value is less than 0.05, the independent variable has an influence on the dependent variable at the same time. When the significance level is greater than 0.05, the independent variable does not affect the dependent variable. And if F count > F table, the independent variables have a combined influence on the dependent variable, but the contrary is true. From the output of SPSS in table 4, the significance value of F for both variables is 0.015. And for the value of the F table with a degree of freedom of 69, the value is 3.129643983, while the F count is 4.500 because the significance value indicates that $0.015 < 0.05$, and the value of the F table on F calculate is $3.1296 < 4.500$ Therefore, it can be concluded that the independent variables (X1 and X2) together influence the dependent variable (Y). Therefore, it can be concluded that the inflation rate and interest rates of Indonesia and the United States jointly exert the effect of the change in the Indonesian Rupiah exchange rate on the US Dollar, so H1 is accepted.

**Coefficient of Determination**

Table 5 shows the coefficient of determination in this regression model, which shows a value of 0.115. That shows that 11.5% of dependent variables (Y) are affected by their independent variables, namely X1 and X2. Therefore, it can be concluded that the 11.5% movement of the Indonesian Rupiah exchange rate on the US Dollar affects the inflation rate and interest rates. Meanwhile, 88.5% was due to other factors.

**Table 5.** Simultaneous Significance Test Results

**ANOVA[a]**

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 3.075.189.923 | 2 | 1.537.594.962 | 4.500 | .015[b] |
| Residual | 23.576.131.577 | 69 | 341.683.066 | | |
| Total | 26.651.321.500 | 71 | | | |

**Table 6.** Coefficient of Determination Result

| | | Model Summary[b] | | | |
|---|---|---|---|---|---|
| **Model** | **R** | **R Square** | **Adjusted R Square** | **Std. Error of the Estimate** | **Durbin-Watson** |
| 1 | .340[a] | .115 | .090 | 584.537 | 1,.867 |

**A Multiple Linear Regression Model**

From the results of the SPSS output shown in table 6, it can be seen the results of the equation of the multiple linear regression model from this study, $Y = 14{,}328{,}408 - 151{,}590\, X1 - 16.814\, X2$ showing that if there is no change in the inflation rate and interest rate (variables X1 and X2), then the Indonesian Rupiah exchange rate against the US dollar (variable Y) will increase by 14,328,408 points.

**Table 7.** Multiple Linear Regression Model Result

| | | Coefficients | | |
|---|---|---|---|---|
| **Model** | | **Unstandardized Coefficients** | | **Standardized Coefficients** |
| | | **B** | **Std. Error** | **Beta** |
| 1 | (Constant) | 14.328.408 | 336.120 | |
| | Inflation | -151.590 | 70.968 | -.364 |
| | Interest Rate | 16.814 | 86.189 | .033 |

## 5. Conclusion

Based on the findings of experiments conducted on the impact of inflation and interest rates on the currency rate throughout the period 2015-2020: (1) The rate of inflation in Indonesia and the United States has no bearing on the rupiah's exchange rate against the US dollar.

Because the purchasing power parity variable based on the inflation ratio between Indonesia and the United States has a negative direction, it had no effect on the change in the Rupiah / US Dollar exchange rate. As a result, the purchasing power parity (PPP) theory, which states that the exchange rate will adjust over time to reflect the difference in inflation between the two countries, did not apply to the Rupiah / US Dollar exchange rate. (2) The fluctuation in the rupiah exchange rate against the US dollar is unaffected by the interest rates in Indonesia and the United States.

The international fisher effect variable based on the interest rate ratio between Indonesia and the United States had no effect on the Rupiah/US Dollar exchange rate during the observation period, proving the validity of the international fisher effect theory (IFE), which states that the exchange rate is determined by the difference in real interest rates between the two countries. (3) The fluctuation in the exchange rate of the Indonesian Rupiah against the US is influenced by the combined inflation and interest rates of Indonesia and the United States.

This means that the purchasing power parity (PPP) theory does not apply to changes in the Indonesian Rupiah's USD exchange rate. The international fisher effect (IFE) theory likewise does not apply to changes in the exchange rate of the Indonesian Rupiah in US Dollars, indicating an inconsistency in the theory that renders it incorrect.

Advice for economic actors and researchers: For economic actors in Indonesia, for the central bank to take appropriate policies in maintaining national economic stability, and for investors to be able to make the theory of purchasing power parity as a reference in investing in foreign exchange and for investors to consider the use of international fisheries securities theory for the short term. For further researchers, to add other variables to be tested, and expand the range of data to minimize deviations so as to get more accurate results.

## References

Adam, M., Hadi, I., & Wahyuni, Y. (2018). Effect of Spot Rate, Forward Rate, Inflation Rate And Interest Rate Against the Future Spot on the FX Market of Southeast Asia Region. Jurnal Manajemen. https://jurnal.unpal.ac.id/index.php/jm/article/view/178

Adawiyah, R. (2017). Pengaruh paritas daya beli, paritas suku bunga, dan efek fisher internasional pada nilai tukar rupiah terhadap dollar Amerika Serikat. etheses.uin-malang.ac.id. http://etheses.uin-malang.ac.id/11576/

Amadeo, K. (2020). How to Calculate and Use Purchasing Power Parity - PPP. The Balance.

Breliastiti, R. (2009). Analisis Pergerakan Nilai Tukar Mata Uang USD atas Rupiah Menggunakan Pendekatan Purchasing Power Parity (PPP) dan International Fisher Effect (IFE). core.ac.uk. https://core.ac.uk/download/pdf/49316418.pdf

Durmaz, A., Düşün, Z. D., & Alsu, E. (n.d.). The Effect Of Interest And Foreign Exhange Rate On Macroeconomic Performance And Banking Sector. In core.ac.uk. https://core.ac.uk/download/pdf/322472580.pdf

Ghozali, I., & Ratmono, D. (2013). Analisis multivariat dan ekonometrika: Teori, konsep, dan aplikasi dengan EVIEWS 8. Semarang: Badan Penerbit Universitas Diponegoro.

Ginting, A., Ruslan, D., & ... (2018). Analysis The Determination of The Stability of Exchange Rates In Indonesia. In … and Business International …. atlantis-press.com. https://www.atlantis-press.com/article/25891457.pdf

Halin, H. (2016). Analisis Pengaruh Inlasi, Kurs Mata Uang Dan Suku Bunga Terhadap Perubahan Harga Saham Perusahaan Di Bursa Efek Indonesia. Jurnal Ilmiah Ekonomi Global Masa Kini. http://ejournal.uigm.ac.id/index.php/EGMK/article/view/98

Herawati, M. (2021). Analisis Perubahan Nilai Tukar Rupiah Akibat Peningkatan Inflasi, Tingkat Suku Bunga SBI dan Pertumbuhan Ekonomi (Studi Pada Bank Indonesia Periode 2008 …. Jurnal Ekonomi. https://ejournal.borobudur.ac.id/index.php/1/article/view/759

Hermawan, T. W., & Purwohandoko, P. (2020). Analisis Pengaruh Inflasi, Nilai Tukar Rupiah, BI Rate, Jumlah Uang Beredar, dan Indeks Shanghai Stock Exchange terhadap Indeks Sri Kehati di Bursa Efek …. Jurnal Ilmu Manajemen. https://journal.unesa.ac.id/index.php/jim/article/view/9435

Hutomo, K. (2020). Inflation Effect, Interest Rate of Bank Indonesia Certificates (SBI) and Economic Growth on Rupiah Exchange Rate in Indonesia. Pertanika Journal of Social Sciences http://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authty

Ifionu, & Ibe. (2015). Inflation, Interest Rate, Real Gross Domestic Product and Stock Prices on the Nigerian Stock Exchange: A Post SAP Impact Analysis. Research Journal of Finance and AccountingOnline).

Karyani, S. S., & Darmawan, A. (2020). Pengaruh Risiko Suku Bunga Bi, Risiko Inflasi, Dan Risiko Nilai Mata Uang Terhadap Profitabilitas (Studi Pada Bank Umum Swasta Nasional Devisa Yang Tercatat Di …. Jurnal …. http://administrasibisnis.studentjournal.ub.ac.id/index.php/jab/article/view/2991

Luwihadi, N., & Arka, S. (2017). Determinan Jumlah Uang Beredar dan Tingkat Inflasi di Indonesia Periode 1984-2014. In E-Jurnal Ekonomi Pembangunan …. ojs.unud.ac.id. https://ojs.unud.ac.id/index.php/eep/article/download/28323/17834

Madura, J. (2020). International financial management. Cengage Learning.

Malik, N. (2017). Ekonomi Internasional. books.google.com. https://books.google.com/books?hl=en&lr=&id=gytjDwAAQBAJ&oi=fnd&pg=PA65&dq=power+purchasing+parity+teori+internasional+fisher+effect&ots=IyBRtZ38ii&sig=qUTUsRV

PNC3fc6Lyy2hJkIxURW4

Mankiw, N. G. (2006). The macroeconomist as scientist and engineer. Journal of Economic Perspectives, 20(4), 29–46.

Modigliani, F., & Modigliani, L. (1997). Risk-adjusted performance. In Journal of portfolio management. spauldinggrp.com. https://spauldinggrp.com/wp-content/uploads/2020/11/modigliani-modigliani.pdf

Moffett, M., Stonehill, A., & Eiteman, D. (2009). Multinational FInance. Pearson Prentice Hall.

Nurina, S. (2016). Analisis Pengaruh Inflation, Interest Rate, dan Exchange Rate Terhadap Gross Domestic Product (GDP) di Indonesia. Petra Business and Management Review. http://publication.petra.ac.id/index.php/breview/article/view/9188

Ovinda, G., Suhel, S., & Yusuf, M. K. (2014). Analisis Penawaran Uang: Studi Perbandingan Antara Indonesia Dengan Malaysia. repository.unsri.ac.id. https://repository.unsri.ac.id/21076/

Pangestuti, D. C. (2020). Manajemen Keuangan Internasional. Deepublish.

Pangestuti, D. C., & Riantiarno, R. F. (2021). Pembuktian Konsep Law Of One Price (LOOP) Dalam Absolute Purchasing Power Parity Menggunakan The Big Mac Index Antar Negara The Six Cheapest (Indonesia--Malaysia) Per Juli 2021. Jurnal Nusantara Aplikasi Manajemen Bisnis, 6(2), 184–198.

Pangestuti, D. C., & Tindangen, A. M. L. (2020). The Influence of Internal and External Factors on Firm Value. European Journal of Business and Management Research, 5(5).

Parsley, D. C., & Wei, S.-J. (2007). A prism into the PPP puzzles: the micro-foundations of Big Mac real exchange rates. The Economic Journal, 117(523), 1336–1356.

Perlambang, H. (2017). Analisis pengaruh jumlah uang beredar, suku bunga sbi, nilai tukar terhadap tingkat inflasi. In Media Ekonomi. trijurnal.lemlit.trisakti.ac.id. https://trijurnal.lemlit.trisakti.ac.id/medek/article/download/2251/1937

Santosa, A. B. (2008). Kemampuan Inflasi Padamodel Purchasing Power Parity dalam Menjelaskan Nilai Tukar Rupiah terhadap Dollar Amerika Serikat. In Jurnal Bisnis dan Ekonomi. unisbank.ac.id. https://unisbank.ac.id/ojs/index.php/fe3/article/view/300/185

Saputra, E., & Santoso, B. H. (2017). Pengaruh Nilai Tukar Mata Uang, Inflasi, dan Suku Bunga Terhadap Harga Saham Sektor Properti. In Jurnal Ilmu dan Riset …. jurnalmahasiswa.stiesia.ac.id. http://jurnalmahasiswa.stiesia.ac.id/index.php/jirm/article/download/1559/1576

Semuel, H., & Nurina, S. (2014). Analysis of the effect of inflation, interest rates, and exchange rates on Gross Domestic Product (GDP) in Indonesia. repository.petra.ac.id. http://repository.petra.ac.id/17008/

Setiawan, P. (2009). Faktor-Faktor Yang Mempengaruhi Kurs Mata Uang Suatu NegarA. eprints.ums.ac.id. http://eprints.ums.ac.id/id/eprint/5268

Umam, M., & Isabela, I. (2018). Analisis Pengaruh Suku Bunga dan Nilai Kurs Terhadap Tingkat Inflasi di Indonesia. KABILAH: Journal of Social …. http://ejournal.kopertais4.or.id/madura/index.php/kabilah/article/view/3409

Yanita, W. (2010). Pengaruh Inflasi, Kurs Rupiah-dollar, dan Tingkat Suku Bunga Deposito terhadap indeks LQ45 di Bursa Efek Indonesia. In Jurnal Universitas Muhammadiyah. publikasiilmiah.ums.ac.id. https://publikasiilmiah.ums.ac.id/bitstream/handle/11617/2873/5.YANITA.pdf?sequence=1&isAllowed=y