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Inflation, Interest Rates and the Amount of Money Supply, Their Impact on Fluctuations of Rupiah Exchange Rate to the Us Dollar During the Pandemic of Covid-19

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Abstract

This study aims to determine and analyze the effect of inflation, interest rates and money supply on fluctuations of rupiah exchange rate to the United States dollar during the pandemic of Covid-19. The inflation variable is analyzed using purchasing power parity theory based on differences in inflation of two countries, while the interest rate variable uses the International Fisher Effect Theory. The money supply variable is represented by M2 or the total money in circulation or in banks. The data used is secondary data for the period of January 2020 – December 2022, totaling of 36 months. Multiple linear regression, t test and F test is used to test the effect of dependent variables on independent variables simultaneously and partially, provided by Smart PLS 4.0 Software. The results showed that partially the inflation had a positive and insignificant effect on fluctuations of the rupiah exchange rate to the US dollar, the interest rate had a significant negative effect on fluctuations of the rupiah exchange rate to the US dollar, and the money supply had an insignificant negative effect on fluctuations of the rupiah exchange rate on US dollars. Simultaneously, the variables inflation, interest rates and money supply have a significant effect on fluctuations of the rupiah exchange rate to the US dollar.

keywords: inflation, interest rates, impact on fluctuations

INTRODUCTION

At the beginning of 2020, the world was shocked by the emergence of Corona Virus Disease 2019 or COVID-19, a new virus variant that infects the human respiratory system. This virus first appeared in Wuhan, China at the end of 2019 with a very fast transmission intensity. Infection

cases and death rates due to Covid-19 continue to increase every day. Many people lost their jobs due to layoffs and many companies went bankrupt due to a large-scale decline in consumer purchasing power. This condition is the impact of government policy in breaking the chain of Covid-19 spread. In Indonesia, the government issued social distance, lockdown and Large-Scale Social Restrictions policies such as not activating community activities and foreign tourist visits. Restrictions on local and foreign community activities have an impact on the national economy and also influence the rupiah exchange rate on the foreign exchange market.

The exchange rate is the price of one country's currency to another country's currency (PRATIWI, 2014). This means that in the transaction process between countries with different currencies, currency units need to have convertibility. In general, currencies with strong characteristics are more easily accepted as a means of international payment because they have a relatively stable value and their value often strengthens to the currencies of other countries. Strong currencies are characterized by countries with advanced industries such as the United States dollar (US$), British pound sterling, Japanese yen, German deutsche mark (DM), Russian ruble and Chinese Yuan.

Indonesia implements a free floating exchange rate system, meaning the exchange rate can change at any time according to national economic conditions and the global economy. In this case, the international payment unit used is the United States (US) dollar. The US dollar is used as the reference currency for most developing countries. In addition, the United States is one of Indonesia's largest trading partners, so exchange rate instability can cause economic losses because trade is worth dollars. If there is a lot of demand for US dollars in Indonesia, the price will become more expensive and the rupiah will weaken (depreciate) to the dollar, while if a lot of US dollars are converted into rupiah, the rupiah will strengthen (appreciate) to the dollar.

Table 1. Exchange Rate Fluctuations, Inflation Rates, Indonesian Interest Rates and United States and Money Supply January 2017 – December 2022

Year	Exchange Rate Fluctuations		Inflation Rate			Interest Rates			Money Supply
	INA	Difference	INA	AS	Difference	INA	AS	Difference	
2017	13.384	-	3.81	2.12	1.69	4.56	1.1	3.46	5.163.213.92
2018	14.246	6.44	3.2	2.45	0.75	4.6	1.9	2.7	5.518.336.63
2019	14.146	-0.70	3.03	1.82	1.21	5.63	2.27	3.35	5.902.205.83
2020	14.572	3.01	2.04	1.23	0.8	4.25	0.58	3.67	6.520.382.73
2021	14.312	-1.79	1.56	4.7	-3.14	3.52	0.25	3.27	7.182.313.29
2022	14.871	3.90	4.21	8.02	-3.81	4	1.67	2.33	7.963.215.96

Source: Bank Indonesia and Investing.com, data processed

Table 1 uses the middle exchange rate, namely the difference between the bid rate and the ask rate. The above table shows that the rupiah tends to fluctuate to the US dollar with the highest depreciation of the rupiah exchange rate in year of 2018 at 6.44%. This condition was caused by

the Federal Reserve, the Central Bank of the United States, increasing interest rates. The increase in interest rates by the Fed caused many investors to flock to invest in the United States so that the rupiah exchange rate depreciated (CNBC Indonesia.com). Meanwhile, in year of 2019 the rupiah exchange rate to the US dollar strengthened by 0.07% and in year of 2020 it experienced another depreciation of 3.01% and the rupiah exchange rate to the US dollar appreciated by 1.79%. The depreciation of the Rupiah exchange rate to the US Dollar in 2020 began in March 2020 as the pandemic of Covid-19 spread to Indonesia and world economic conditions continued to decline. The increasing risk of global uncertainty encourages investors to shift their investment funds to more stable assets such as gold, developed country bonds and world currencies such as the US Dollar. This resulted in capital outflows from emerging market countries including Indonesia, where almost all developing country currencies also depreciated to the US Dollar (Suara.com).

The loss of foreign investors simultaneously hampers the operations of companies in Indonesia that depend on foreign investment. Apart from that, the company's dollar debt also swelled because the rupiah depreciated. Thus the exchange rate has a vital role for a country's economy so that the government strives for exchange rate stability. Bank Indonesia as the Central Bank plays an important role in maintaining the stability of the rupiah exchange rate on the foreign exchange market through domestic economic stability such as controlled inflation rates and reference interest rates.

Inflation causes prices to increase continuously over a certain period of time. This condition occurs when the level of consumer demand for a good or service increases while the level of supply in the market remains constant, causing scarcity and an increase in the price of the good or service. The implications of a large-scale increase in the price of goods in a country will lead to an increase in that country's imports of various goods and services from abroad, thereby requiring more foreign currency to pay for these transactions. As a result, demand for foreign currency in the foreign exchange market increases. Purchasing Power Parity shows that changes in currency exchange rates will be proportional to changes in the difference in inflation rates between the two countries (Ramadhan, 2019).

Inflation rates in Indonesia and the United States tend to fluctuate, Indonesia's inflation rate is lower than the United States as shown in the 2021-2022 period, namely 1.56% and 4.21% respectively. This shows that the prices of goods and services in the United States in year of 2021 will increase more than in Indonesia by 3.14% and 3.81% in year of 2022. In 2020 inflation in Indonesia was targeted at 3%, but experienced a decline due to the Covid-19 pandemic (Bacamalang.com). A decrease in the inflation rate reflects a decrease in people's purchasing power, often associated with a recession or economic downturn.

The policy carried out by the Central Bank was to reduce the interest rate (BI 7-Days Reverse Repo Rate) in the hope that the Indonesian economy could recover soon (www.bi.go.id). It is hoped that low interest rates will encourage people's interest in taking credit from banks, thus

increasing the amount of money circulating in society. With the hope that people's purchasing power will increase as a first step in stimulating the movement of the country's economy.

Interest rates in Indonesia continue to fluctuate and are higher than interest rates in the United States throughout the period January 2017 – December 2022. The highest interest rate occurred in 2019 at 5.63% while in the following years it decreased to 4.25%, 3.52% and 4%. Meanwhile, interest rates in the United States are lower than Indonesia with the highest interest rate in 2019 at 2.27% and the lowest interest rate in 2021 at 0.25%. In 2020, both Indonesia and the United States experienced a decrease in interest rates, this was done to stimulate the economy of their countries due to the pandemic of Covid-19. Basically, high interest rates will attract foreign investors to invest capital in Indonesia (Christiani, 2020). If foreign investors enter Indonesia, they must convert their currency into rupiah so that the more foreign investors invest capital in Indonesia, the greater the demand for rupiah in the foreign exchange market, thereby increasing the rupiah exchange rate. The theory that states the relationship between interest rates and exchange rates is the International Fisher Effect (IFE) theory. IFE explains that the exchange rate of one currency with another currency will adjust to the difference between the interest rates of the two countries. This theory sees that countries with high interest rates tend to have high inflation rates so that the country's currency can depreciate and vice versa.

The next macroeconomic indicator is the money supply, which is the amount of money circulating in an economy at a certain time. Data on the amount of money circulating in Indonesia (M2) increases every year. The amount of money in circulation in year of 2020 was 10.47%, an increase of 3.51% from 2019 of 6.96%. This shows that when the Covid-19 pandemic spread to Indonesia in year of 2020, the amount of money in circulation increased due to the increase in the government budget as a result of the high number of cases of Covid-19 sufferers. This indicates that every increase in the number of cases will increase the health costs that must be borne by the government. The more positive cases of Covid-19 means that more rupiah must be provided, so that the amount of money in circulation also increases (Junaedi et al., 2021).

The stability of the rupiah exchange rate on the foreign exchange market needs to be maintained to avoid uncertainty in the domestic economy. Research conducted by Haryadi, (2014) found that interest rates did not have a significant effect on the rupiah exchange rate to the United States dollar. In contrast to research Diana & Dewi, (2019) which states that interest rates have a positive and insignificant effect, inflation and the money supply have no effect on the rupiah exchange rate to the US dollar. Meanwhile Padmayoni & Jember, (2020) obtained results that inflation and the amount of money in circulation had a positive and significant effect on the rupiah exchange rate to the US dollar. Meanwhile, the results of research from (Herawati, 2021; Wahyuningsih et al., 2018) showed that interest rates and money supply had a negative and insignificant effect on the rupiah exchange rate to the US dollar. This shows that there is still a gap in results between previous studies so it is necessary to re-examine the variables of inflation, interest rates, and money supply to the rupiah exchange rate to the US dollar and to provide an

overview of the conditions of fluctuations in the rupiah exchange rate during the Covid-19 pandemic, so the research This is interesting to develop by paying attention to factors such as the inflation rate, interest rates and money supply, their influence on fluctuations in the rupiah exchange rate to the United States dollar during the Covid-19 pandemic, partially or simultaneously.

METHODS

Research Objects and Subjects

This research uses a type of causality research - a cause-and-effect relationship between the independent variable and the dependent variable. The research objects used in this study are time series data on the rupiah exchange rate to the US Dollar, as the dependent variable and the inflation rate (X1), interest rate (X2) and money supply (X3) in Indonesia as the independent variable, during the pandemic of Covid-19 period of January 2020 – December 2022. The research subjects used in this research were the Central Banks of Indonesia and the Federal Reserve Bank in America. That is Bank Indonesia on the site www.bi.go.id and The Federal Reserve on the site id.investing.com.

Type and Data Sources

The type of data used in this research is quantitative data using secondary data sources in the form of time series data as the data used has been processed first and published to the public. The following data is used in this research and its sources: (a) Data on the rupiah exchange rate to the US dollar, inflation rates and interest rates for the period January 2020 – December 2022 on the Bank Indonesia website at www.bi.go.id, (b) Data on the amount of money circulating in Indonesia for the period January 2020 – December 2022 on the Central Statistics Agency website at www.bps.go.id, (c) Data on the inflation rate and interest rates in the United States on the id.investing.com website.

Table 2 Operational Definition of Variables

Variable	Operational Definition	Indicator	Scale
X_1	Inflation rate is a continuous increase in price levels, affecting individuals, businesses and government (Meyer, 2012)	$e_f = \frac{(1+i_h)}{(1+i_f)}$-1 (Pangestuti et al., 2022)	Ratio
X_2	The interest rate is the cost that the borrower must pay for the loan received and is a reward for the lender the funds (Sugiharto et al., 2018)	$e_f = \frac{(1+i_h)}{(1+i_f)}$-1 (Prihatin et al., 2019)v	Ratio
X_3	The amount of money in circulation is all the money held by the public, without counting the amount of money in banks (Adhista, 2022)	M2 = M1+TD+SD	Ratio

		(Ansori, 2010)	
Y	The exchange rate is the amount of domestic money used to purchase one unit of foreign currency. (Pradika & Sukirno, 2017) in (Fortuna et al., 2021)	$\frac{Bid\ price + Ask\ price}{2}$ (Wahyuningsih et al., 2018)	Ratio

Data Analysis Method

The data analysis method for this study uses statistical methods, data processing is assisted by the Smart PLS 4.0 software program, including classical assumption tests consisting of normality, multicollinearity, autocorrelation and heteroscedasticity tests. Followed by hypothesis testing consisting of the t test, coefficient of determination and significance test (F-test) as well as the multiple linear regression equation formulated as.

$Y_i = a_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e_i$

Where:

Y = Exchange rate
a = Constant
$\beta_1, \beta_{2,\ldots,}\beta_n$ = Regression coefficient
X_1 = Inflation
X_2 = Interest rate
X_3 = Money Supply
e = Error term

RESULTS AND DISCUSSION

Classic Assumption Test

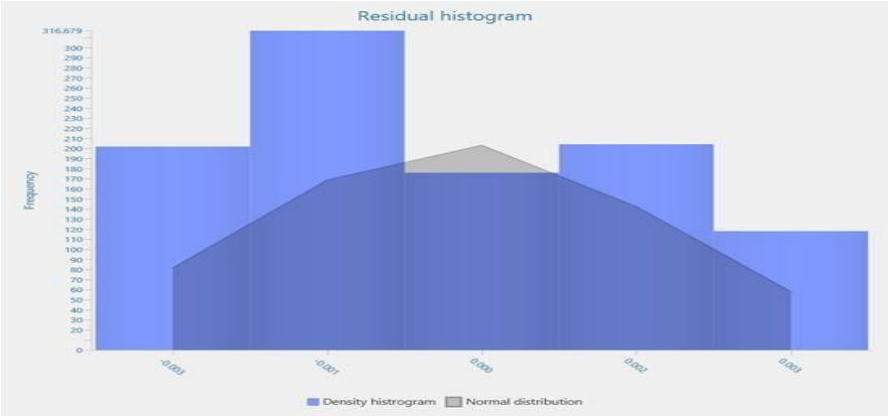

Figure 1. Histogram
Source: output of SmartPLS 4.0.96

Based on the histogram graphic image above, it shows that the graph is in the shape of a bell (not leaning to the left or right). So it can be concluded that the linear regression model used in this research has a normal distribution.

Table 3. Multicollinearity Test

Variable	VIF	Criterion	Decision
Inflation (X_1)	1.218	< 10	There is no multicollinearity
Interest rate (X_2)	1.107	< 10	There is no multicollinearity
Jumlah Uang Beredar (X3)	1.335	< 10	There is no multicollinearity

Source: output of SmartPLS 4.0.96

Table 3 shows the values of variance inflation factor (VIF) for inflation, interest rates and money supply respectively 1.218, 1.107 and 1.335, which values are <10 (less than 10). These results are in accordance with the basis for decision making for multicollinearity tests, so it can be concluded that in the regression model there are no symptoms of multicollinearity.

Table 4. Autocorrelation Test

Autocorrelation Test	D-W test	Decision	Conclusion
Durbin-Watson test	0,314	-2 > DW > 2	There is no autocorrelation

Source: output of SmartPLS 4.0.96

Based on the results of the autocorrelation test on Table 4 using the Durbin Watson test, the result was 0.314, so the Durbin Watson value is -2 > DW > 2 so that according to the autocorrelation test criteria it can be concluded that there are no symptoms of autocorrelation in the regression model of this research.

Table 5. Heteroscedasticity Test

Variable	t	*p-value*	Conclusion
Inflation (X_1)	0,00	1,00	There is no heteroscedasticity
Interest Rate (X_2)	0,00	1,00	There is no heteroscedasticity
Money Supply (X_3)	0,00	1,00	There is no heteroscedasticity

Source: output of SmartPLS 4.0.96

Table 5 above shows that each independent variable has a p-value = 1.00 in accordance with the heteroscedasticity test criteria, p-value > 0.05, then 1.00 > 0.05, so it can be concluded that in the regression model there are no heteroscedasticity.

Hypothesis Testing

Table 6. Multiple Linear Regression Test

Variable	Standardized coefficients	p-value	Conclusion
Intercept	0,000		
Inflation (X_1)	0.259	0.092	Positive insignificant
Interest Rate (X_2)	-0.464	0.003	Negative significant
Money Supply (X_3)	-0.179	0.262	Negative insignificant

Source: output of SmartPLS 4.0.96

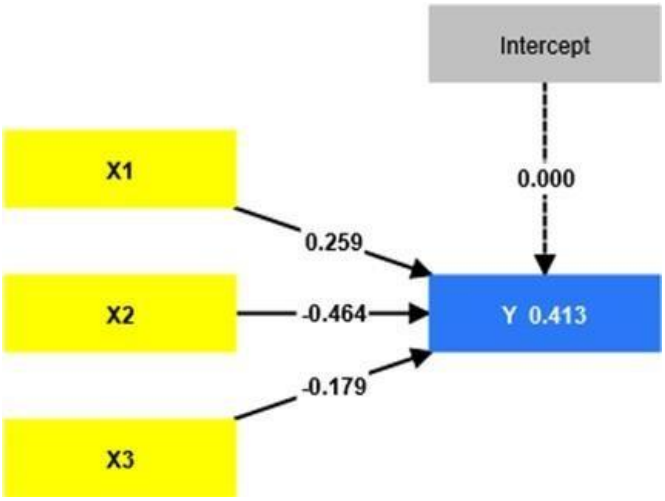

Figure 2 Regression Results of SmartPLS 4.0.96

Source: output of SmartPLS 4.0.96

Based on the Table 6 above, the multiple linear regression equation is obtained as follows:

$Y = 0{,}000 + 0{,}259X_1 – 0{,}464X_2 - 0{,}179X_3 + e_i$

Where:

Y = Exchange rate
a = Constant
X1 = Inflation
X2 = Interest rate
X3 = Money Supply
e = Error term

The coefficient of each of these variables can be interpreted as follows:

1) X_1 = inflation has a value of 0.259. It means that if the inflation difference between Indonesia and the United States increases by 1%, the rupiah exchange rate to the US dollar will increase or increase by 0.259%. This shows that inflation has a positive influence of

0.259 or it could be said that the inflation variable has a positive influence on the rupiah exchange rate to the US dollar.

2) X_2 = interest rate has a value of -0.464. It means that if the difference in interest rates increases by 1%, the rupiah exchange rate to the US dollar will decrease by 0.464%. This shows that the interest rate shows a negative influence of -0.464 or it could be said that there is a negative relationship between the interest rate variable and the rupiah exchange rate variable to the US dollar.
3) X_3 = money supply has a value of -0.179. It means that if the money supply increases by 1%, the rupiah exchange rate to the US dollar will decrease by 0.179%. This shows that the money supply has a negative influence of -0179 or it could be said that there is a negative relationship between the money supply variable and the rupiah exchange rate variable to the US dollar.

Table 7. t test

Variable	Standardized coefficients		
		p-value	t-value
Intercept	0,000	0,435	0.790
Inflation (X_1)	0.259	0.092	1.736
Interest Rate (X_2)	-0.464	0.003	3.256
Money Supply (X_3)	-0.179	0.262	1.142

Source: output of SmartPLS 4.0.96

1) Testing X_1 to Y

Based on table 7, the t-value for the inflation variable is 1.736 and the t-table can be searched in the statistical table with df = n-k (n = number of samples, k = independent variable) and a significance value of 5% = 0.025, so we get 36-3 = 33, then the t-table (0.05, 33) is 2.034. It is known that t-value (1.736) < t-table (2.034) or t-count is smaller than t-table, and the p-value is 0.092 so 0.092 > 0.05. So the researcher can make a decision to accept H_0 and reject H_1. Thus it can be concluded that fluctuations in the rupiah exchange rate to the US dollar are partially influenced by differences in inflation rates between Indonesia and the United States but are not significant.

2) Testing X_2 to Y

Based on table 7 on the interest rate variable, the t-count is 3.256 with a p-value of 0.003. The t-value (3.256) > t-table (2.034) and where the t-value is greater than the t-table. Furthermore, the p-value is 0.003 < 0.05 and the coefficient value of the interest rate variable is -464 which shows a relationship in the opposite direction or negative. So the researcher made the decision to accept H_0 and H_1 and rejected it because the difference in interest rates between Indonesia and the United States partially had a negative and significant effect on fluctuations in the rupiah exchange rate to the US dollar.

3) Testing X3 to Y

Based on table 7 on the money supply variable, the t-value is 1.142 < t-table (2.034) with p-value of 0.262 > 0.05 and the coefficient value of the money supply variable is -0.179. Then the researcher can make a decision to accept H_0 and reject H_1. So it can be concluded that the money supply partially has a negative and insignificant effect on fluctuations in the rupiah exchange rate to the US dollar.

Table 8. F Test

Variable	F-value	p-value	Conclusion
X_1, X_2, X_3 and Y	7,516	0,000	Significant

Source: output of SmartPLS 4.0.96

This study uses a significance level of 0.05. Where the F-table can be searched in statistical tables with a significance of 0.05 or 5% where dfl = (Number of variables – 1) or 4 – 1 = 3, and df 2 = (n – k – 1) or 36 – 2 – 1 = 32 (n = number of samples, k = number of independent variables) the results obtained for the F-table (0.05, 3, 32) are 2.901 and from table 8 the calculated F-value is 7.516. So F-value > F-table is 7.516 > 2.901 where $H1$ is accepted and $H0$ is rejected. Meanwhile, the p-value (0.000) > 0.05, so the results of this test show that differences in inflation rates, interest rates and money supply simultaneously had a significant effect on fluctuations in the rupiah exchange rate to the US dollar during the Covid-19 pandemic.

Table 9 Determination Coefficient Test

Variable	R Square	Criteria	Conclusion
X1, X2, X3 and Y	0.413	> 0,33	Moderate

Source: output of SmartPLS 4.0.96

Based on table 9 above, it shows that the R square value is 0.413 or 41.3%, which based on the R square classification criteria according to Chin, (1998) is classified as moderate. This shows that the percentage contribution of the effect of the independent variables (Inflation, interest rates and money supply) on the dependent variable (Rupiah exchange rate to the US dollar) is 41.3% or the variation of the independent variable on the dependent variable is able to explain 0.413%. Meanwhile, the rest is influenced by other variables that are not included in the regression model of this study.

The Effect of Inflation on Fluctuations in the Rupiah Exchange Rate to the US Dollar

Based on table 7, the t-value for the inflation variable is 1.736 and the t-table is 2.034. It is known that t-value (1.736) < t-table (2.034) or t-value is smaller than t-table, and the p-value is 0.092 so 0.092 > 0.05. Meanwhile, the coefficient value for inflation shows a positive 0.259 or shows a positive unidirectional relationship. So a decision can be made to accept $H0$ and reject $H1$. Thus, it can be concluded that fluctuations in the rupiah exchange rate to the US dollar are

partially influenced by differences in inflation rates between Indonesia and the United States but insignificant.

Based on the regression equation Y = 0.000 + 0.259X1 – 0.464X2 - 0.179X3 + ei, the result is that the inflation variable affects the rupiah exchange rate to the US dollar by 0.259%. This means that if the level of inflation difference between Indonesia and the United States increases by 1%, the rupiah exchange rate to the US dollar will also increase (depreciate) by 0.259% with other variables assumed to be constant or ceteris paribus. The high level of inflation reflects the increase in prices of domestic goods and services so that people's purchasing power will be the same as buying foreign goods. This condition causes demand for dollars to increase so that the rupiah weakens to the dollar. In accordance with Purchasing Power Parity Theory, changes in exchange rates will adjust to the magnitude of the difference in inflation rates between two countries because international trade patterns and exchange rates will change according to inflation in that country. This means that the higher a country's inflation rate will increase imports by that country of various goods and services from abroad, so that more foreign currency is needed to finance these import transactions.

During the Covid-19 pandemic, based on research results, the rupiah exchange rate increased to the US dollar, meaning that the value of the rupiah currency decreased according to (Diana & Dewi, 2019). This condition occurred because the US dollar was a strong currency, even all foreign currencies weakened to dollar. The results of this study strengthen the results of research by (Herawati, 2021; Ramadhan, (2019) which show that inflation has a positive but insignificant effect on the rupiah exchange rate to the US Dollar. This is contrary to research by (Pangestuti et al., 2022; Wahyuningsih et al., 2018) which obtained results that inflation had no effect on the rupiah exchange rate to the US Dollar.

The Effect of Interest Rates on Fluctuations in the Rupiah Exchange Rate to the US Dollar

Based on table 7 the interest rate variable, the t-value is 3.256 with a p-value of 0.003. The t- value (3.256) > t-table (2.034), where the t- value is greater than the t-table. Furthermore, the p-value is 0.003 < 0.05 and the coefficient value of the interest rate variable is –0.464, indicating a relationship in the opposite direction or negative. So a decision can be made to accept $H0$ and reject $H1$. It because the difference in interest rates between Indonesia and the United States partially has a negative and significant effect on fluctuations in the rupiah exchange rate to the US dollar.

Based on the regression equation Y = 0.000 + 0.259X1 – 0.464X2 - 0.179X3 + e the interest rate variable shows a negative relationship – 0.464. This means that if the difference in interest rates between two countries increases by 1%, the rupiah exchange rate to the US dollar (depreciates) / decreases by 0.464%.

The International Fisher Effect Theory (IFE) concept states that different interest rates between two countries are caused by differences in estimates of a country's inflation rate. High

interest rates do not provide a guarantee that a country's currency exchange rate will strengthen. The implication of the IFE theory is that investors cannot invest their funds in countries that have high interest rates in the hope of getting bigger profits. However, increasing interest rates is an effort by monetary policy to reduce the percentage of inflation in a country. From a domestic perspective, an increase in interest rates provides an opportunity for domestic people to save their funds in banks in rupiah. According to Ramdhan et al., (2017) changes in interest rates will cause changes in the expected return from financial investments. The higher the interest rate in a country, the expected return on financial investments in that country will increase and will cause an influx of funds from abroad, which will ultimately lead to a strengthening of the domestic currency exchange rate to foreign currencies (Noor, 2014). The results of this study are in line with research by Herawati, 2021; Pangestuti et al., (2022) that interest rates have a negative effect on the rupiah exchange rate to the US Dollar. However, this is contrary to research by (Diana & Dewi, 2019; Wahyuningsih et al., 2018)

Effect of Money Supply on the Rupiah Exchange Rate to the US Dollar

Based on table 7 on the money supply variable, the t-value is 1.142 < t-table (2.034) with a p-value of 0.262 > 0.05 and the coefficient value of the money supply variable is -0.179. Then a decision can be made to accept $H0$ and reject $H1$. So it can be concluded that the money supply partially has a negative and insignificant effect on fluctuations in the rupiah exchange rate to the US dollar.

Based on the regression equation Y = 0.000 + 0.259X1 – 0.464X2 - 0.179X3 + ei the money supply variable has a negative influence - 0.179. This means that if the money supply increases by 1%, the rupiah exchange rate to the US dollar will decrease by 0.179% with other variables assumed to be constant, ceteris paribus. However, when the Covid-19 pandemic spread to Indonesia in 2020, the amount of money in circulation increased due to the increase in the government budget due to the high number of cases of Covid-19 sufferers, which indicated that every increase in the number of cases would increase the health costs that had to be borne by the government. However, when the Covid-19 pandemic spread to Indonesia in 2020, the amount of money in circulation increased due to the increase in the government budget as a result of the high number of cases of Covid-19 sufferers, which indicated that every increase in the number of cases would increase the health costs that had to be borne by the government. The more positive cases of Covid-19 means that more rupiah must be provided, so the amount of money in circulation also increases (Junaedi et al., 2021). So that the increasing amount of money in circulation is not used for spending abroad but for use within the country. The results of this study also strengthen the research results from (Diana & Dewi, 2019). These results are in contrast to the research results of (Padmayoni & Jember, 2020; Yuliyanti, 2014). that the amount of money in circulation has a positive effect on the exchange rate of the rupiah to the US Dollar.

Effect of Inflation Rate, Interest Rate and Money Supply on the Rupiah Exchange Rate to the US Dollar

This study uses a significance value of 0.05. Where the F-table is 2.901 and from table 8 the F- value is 7.516. So F-value > F-table is 7.516 > 2.901 where $H1$ is accepted and $H0$ is rejected. Meanwhile, the p-value (0.000) > 0.05, so the results of this test show that differences in inflation rates, interest rates and money supply simultaneously had a significant effect on fluctuations in the rupiah exchange rate to the US dollar during the Covid-19 pandemic.

Central Bank (Bank Indonesia) must be able to maintain an appropriate balance between differences in inflation rates, interest rates and money supply towards the stability of the rupiah exchange rate with the United States dollar. The policies taken by the Central Bank of the United States regarding interest rates will also affect the rupiah exchange rate. Reducing the dependence on fluctuations in the value of the United States dollar on the rupiah exchange rate can be done by implementing a free floating exchange rate. This must be increased by careful, consistent and sustainable implementation.

Based on the results of the coefficient of determination (R2), the R value used is adjusted R square. Adjusted R square is an indicator used to determine the effect of adding an independent variable to a regression equation. Shows an R square value of 0.413 or 41.3%, which based on the R square classification criteria according to Chin, (1998) is classified as moderate. This shows that the percentage contribution of the effect of the independent variables (Inflation, interest rates and money supply) on the dependent variable (Rupiah exchange rate to the US dollar) is 41.3% or the variation of the independent variable on the dependent variable is able to explain 0.413%. Meanwhile, the remainder is influenced by other variables not included in the regression model of this study, such as other macroeconomic factors consisting of national income, exports and imports, foreign exchange reserves and economic growth. All of these factors must be kept in balance to maintain the stability of the rupiah exchange rate to the United States dollar. Other strategic factors that Central Bank (Bank Indonesia) needs to pay attention to but these are outside its authority and power, especially those related to outside macroeconomic factors. The most strategic thing that Indonesia needs to do is take a leap by: (1) Increasing the added value of Indonesia's superior commodities through a downstream program carried out carefully, boldly, consistently and sustainably, (2) Increasing the ability to master technology, (3) Increasing the competitiveness of Indonesian human resources, (4) Prevent collusion, corruption, nepotism effectively, efficiently and fairly.

CONCLUSION

Inflation has an insignificant positive effect on fluctuations in the Rupiah exchange rate to the United States Dollar during the Covid-19 pandemic. Interest rates have a negative and significant effect on fluctuations in the Rupiah exchange rate to the United States Dollar during the Covid-19 pandemic. The amount of money in circulation has an insignificant negative effect

on fluctuations in the rupiah exchange rate to the United States Dollar during the Covid-19 pandemic. Simultaneously, the variables inflation, interest rates and money supply have a significant effect on fluctuations in the rupiah exchange rate to the US dollar during the pandemic of Covid-19.

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