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Analysis of the Exchange Rate of the Rupiah Against the US Dollar and the Factors that Influence it

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ABSTRACT

This research aims to determine the effect of the Fed Interest Rate, Foreign Exchange Reserves and Antam Gold Prices on the USD/IDR Exchange Rate. Research data using secondary data obtained from the Bank Indonesia website, Trading Economics and Gold Prices.org with a time span of 2013 to 2023. The research uses the Multiple Linear Regression method (Ordinary Least Square) using Eviews 12 software. The results of Data Analysis based on the Simultaneous Test (F-Test) showed that the Fed Interest Rate, Foreign Exchange Reserves and Antam Gold Prices simultaneously had a significant effect on the USD/IDR Exchange Rate. Based on the results of the Regression Model Interpretation, only the Foreign Exchange Reserve variable has an unidirectional relationship with the USD/IDR Exchange Rate so that it can appreciate the Rupiah Exchange Rate with the US Dollar if the Foreign Exchange Reserve Value maintained by Bank Indonesia is added or increased. Based on the regression results, the contribution of the influence of the Independent Variable on the Dependent Variable is 86.41%. The remaining 13.59% is influenced by other variables not included in this research.

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INTRODUCTION

Talking about the exchange rate of the rupiah with the US dollar, ordinary people will associate it with the increase in prices of necessities and electronic goods in the market, because they remember the dark history of fluctuations in the exchange rate of the rupiah against the US dollar starting in July 1997, which initially the exchange rate of USD1.00 was equivalent to IDR 1,450 in a short time it turned into USD1.00 equivalent to IDR 15,200 which caused a very significant decline in people's purchasing power until the economic crisis in Indonesia.

According to Prof. Mohammad Sadli (1998) and Marshall (1998) in (Wijoyo, 2016), the contagion of the Thai currency crisis in early July 1997 resulted in the start of the crisis in Indonesia. The crisis that began with the Baht exchange rate crisis in Thailand on July 02, 1997, quickly developed into an economic crisis in 1998 even though at that time the Indonesian economy had reached a growth rate of more than 7% which was relatively good. In fact, Indonesia's economic competitiveness increased to 15th from 30th in the previous year. Nevertheless, the impact of the crisis in Indonesia was relatively more devastating compared to other ASEAN countries.

In addition, the 70-member international financial institution, the Institute of International Finance (IIF), forecasts that developing countries will experience net capital outflows in 2016. This may occur due to the

rise in US interest rates. The IIF claims that Brazil, Indonesia, and South Africa will feel the impact. These capital outflows represent pressure on local currency rates. The organization supports forecasts of currency pressures that will emerge in developing countries due to the Federal Reserve's interest rate hike (Kompas, January 3, 2016 in (Wijoyo, 2016)).

An increase in the US dollar exchange rate means a weakening of the Rupiah, meaning that more Rupiah currency is needed to obtain a certain amount of US dollars than in the previous period. In terms of the exchange rate of the rupiah against the US dollar, there are two types of conditions, namely: the value of the rupiah currency depreciates (weakens) or appreciates (strengthens) against the US dollar.

For Indonesian exporters who sell their products abroad (exports) using US dollar transactions, the weakening of the rupiah exchange rate (depreciation) against the US dollar is a favorable condition. On the contrary, for Indonesian importers who buy raw materials and finished goods from abroad (imports) using US dollar transactions, the depreciation of the rupiah against the US dollar will become a financial problem and disrupt business liquidity. Likewise, for bank debtors who have foreign currency loans to foreign exchange banks, the weakening of the rupiah against the US dollar causes debtors to experience liquidity problems and have the opportunity to become default debtors.

Export and import activities carried out by Indonesian exporters and importers play a major role in international trade. According to Deliarnov (2016) in (Daleno et al., 2023), mercantilism states that every country that wants to develop must trade with other countries. One form of economic cooperation is international trade, where countries trade with each other on the basis of mutual agreement. The benefits of international trade are as a source of foreign exchange, can increase employment, allows a country to obtain goods or services that cannot be produced alone, and is able to maintain market price stability.

One of the detailed tasks of Bank Indonesia as the Central Bank is to manage the country's foreign exchange reserves. The increase in foreign exchange reserves is influenced by tax & service revenues, and the withdrawal of government foreign loans. While the decline in foreign exchange reserves is influenced by the payment of government foreign debt and the need to stabilize the rupiah exchange rate. In addition to foreign banknotes and securities, monetary gold in the form of gold bars, pure gold and gold currency in the country and abroad is a form of foreign exchange reserves maintained by Bank Indonesia.

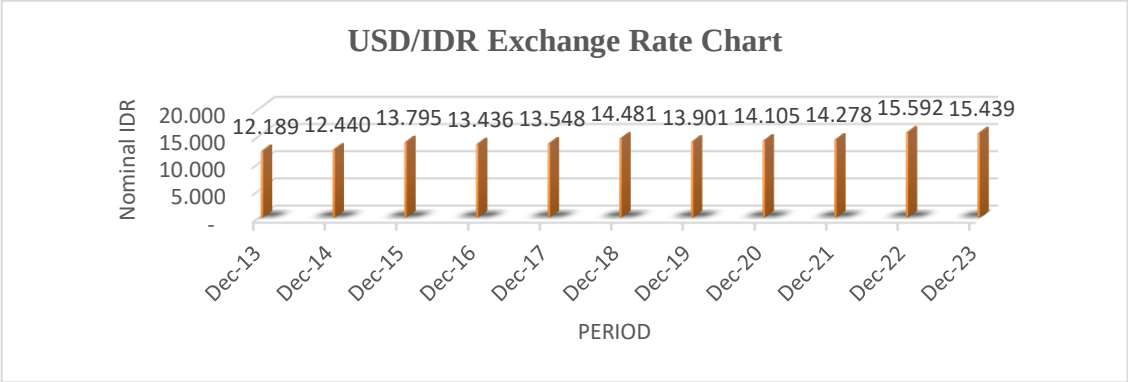

Figure-1. USD/IDR Exchange Rate based on JISDOR Rate
Data Source: Bank Indonesia Secondary Data

Based on Figure-1 above, it can be seen that the trend of the rupiah exchange rate with the US dollar tends to increase. This shows that in the last 10 years the rupiah exchange rate has depreciated (weakened) when converted to the US dollar.

The highest position of the rupiah exchange rate was in the December 2013 period at IDR12,189 per USD1.00, but always depreciated until the December 2015 period to IDR13,795 per USD1.00. The rupiah exchange rate appreciated (strengthened) worth 359 points or 2.60% only in the December 2016 period at IDR13,436 per USD1.00 compared to the same period the previous year at IDR13,795 per USD1.00. After the covid-19 pandemic that also hit the Indonesian economy, the rupiah exchange rate experienced the highest depreciation of 1,314 points or 9.20% at IDR15,592 per USD1.00 in the December 2022 period compared to the previous year's period in December 2021 at IDR14,278 per USD1.00.

Based on the above and the fluctuations that occur with the exchange rate of the Indonesian rupiah against the US dollar, the questions in this study are:

1. How does The Federal Reserve Interest Rate affect the USD/IDR exchange rate?
2. How does the Antam Gold Price in Indonesia affect the USD/IDR exchange rate?

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3. How does the Federal Reserve Interest Rate, Indonesian Foreign Exchange Reserves and Antam Gold Price in Indonesia simultaneously affect the USD/IDR exchange rate?

LITERATURE REVIEW

The Fed Interest Rate

The Central Bank of the United States, also referred to as the Federal Reserve System (FRS) known as the Fed. A central bank is a financial institution that has complete control over the amount of money and credit produced and distributed for a country or group of countries. One of the Fed's responsibilities is to conduct national monetary policy by influencing monetary and credit conditions in the United States economy to ensure maximum employment, stable prices, and moderate long-term interest rates. The Fed rate, also known as the federal funds rate, is the main benchmark for other interest rates in the economy. It is also the benchmark for interest rates on credit cards, car loans, and mortgages. When the Fed funds rate rises, it becomes harder for banks to lend money, which results in higher interest rates on loans and credit products for consumers. Conversely, when the Fed lowers its interest rates, it becomes cheaper for banks to lend money (Sedik, 2023).

Foreign Exchange Reserves

Foreign exchange reserves are foreign assets available and overseen by Bank Indonesia as the monetary authority. Foreign exchange reserves are used to finance balance of payments imbalances, intervene in the market to maintain exchange rate stability, and for other purposes, such as maintaining economic and exchange rate resilience and meeting Indonesia's net liabilities. Foreign exchange reserves consist of: a). Foreign currency reserves; b). Reserve positions at the International Monetary Fund (IMF), which are reserve positions held by IMF members; c). Special drawing rights, which are international reserves created by the IMF to increase the foreign exchange reserves of its member countries; d) Monetary gold, which is gold owned by the monetary authority; and e). Other foreign exchange reserves are all liquid assets to be used at any time by Bank Indonesia. These assets include the net market value of derivative financial positions with non-resident counterparties, short-term receivables that can be drawn down at any time, repossessed assets, and Indonesia's ownership position in the Asian Bond Fund (ABF) (Bareksa, 2024).

All foreign assets held by Bank Indonesia as the monetary authority are known as international reserves and foreign currency liquidity or official reserve assets. Foreign exchange reserves can be used for monetary stability, financing balance of payments imbalances, or for other purposes (Bank Indonesia, 2021).

Antam Gold Price

PT Aneka Tambang Tbk launched the ANTAM LM gold precious metal product, which is very popular as an investment instrument. ANTAM LM gold investment is also categorized as an investment with low or minimal risk. Although gold is a promising investment option in the long run, investing in gold is not always risk-free. One of the most common risks is the risk of buying counterfeit gold, which has a very low value or even unsalable. Ordinary people who want to invest in gold also complain about the difficulty of knowing whether gold is real. However, PT ANTAM Tbk UBPP Logam Mulia launched CertiCard to solve the LM gold problem. One of the advantages of ANTAM LM gold that no other gold has is CertiCard, PT. ANTAM Tbk UBPP Logam Mulia's latest gold technology that guarantees the authenticity and purity of ANTAM LM gold products. CertiCard uses a layered security system, from sturdy packaging to a certificate of authenticity attached to the gold body. PT ANTAM Tbk UBPP Logam Mulia provides pure gold bullion products with a grade of 999.9 with a shape and quality that is in accordance with the standard Because of its smaller size than ordinary gold bars, ANTAM LM gold is safer to carry and store. The grammage of ANTAM LM gold products is in the form of fractions ranging from 0.5 grams to 1,000 grams (Logam Mulia, 2023).

USD/IDR Exchange Rate (Kurs)

Another term for exchange rate is currency exchange rate. The exchange rate is a comparison of the price or value of a country's money in another country's currency. The exchange rate plays a very important role in foreign exchange because the exchange rate serves as a tool that translates various prices into foreign currencies. Transactions with two foreign currencies, export-import, and trading in the foreign exchange (forex) market are some examples of how the exchange rate plays an important and much-needed role (OCBC NISP, 2023).

JISDOR stands for Jakarta Interbank Spot Dollar Rate. JISDOR is intended to provide a representative market price reference for USD/IDR spot transactions in the Indonesian foreign exchange market. JISDOR is based on the transaction rates of USD/IDR against Rupiah conducted by banks in the Indonesian foreign exchange market in real time through the Foreign Exchange Transaction Monitoring System Against Rupiah (SISMONTAVAR). JISDOR was released on May 20, 2013 (Bank Indonesia, 2024c).

Conceptual Framework

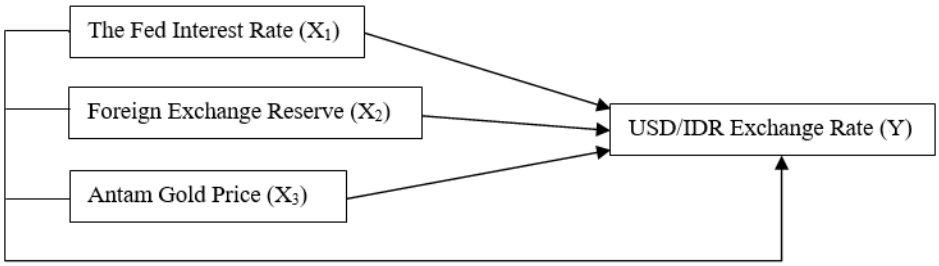

Figure-2. Framework of Independent Variables (X1, X2 and X3) affecting the Dependent Variable (Y)

RESEARCH METHODS

Data

This research uses secondary data consisting of: 3 (three) independent variables in the form of: Fed Interest Rate in percent (%), Foreign Exchange Reserves in Million USD, Antam Gold Price per 1 gram in rupiah currency and 1 (one) dependent variable in the form of USD/IDR Exchange Rate using JISDOR Rate in rupiah currency.

The data is time series data from 2013 - 2023 with a total of 44 observational data obtained from the Bank Indonesia website (Bank Indonesia, 2024a, 2024b), Trading Economics website (Trading Economics, 2024) and the Gold Price.org website (Pluang, 2024).

Methods

The research method uses quantitative methods in the form of Multiple Linear Regression Methods (Ordinary Least Square) to test the dependent variable that is affected and the independent variable as an influencing variable using E-views 12 software.

The Multiple Linear Regression Model is described by the following equation:

$$\textbf{USD/IDR Exchange Rate} = \alpha + \beta_1 \textbf{ The Fed} + \beta_2 \textbf{ Foreign Exchange Reserve} + \beta_3 \textbf{ Antam Gold Price} + e$$

Description:

α = Constant
$\beta 1$ = Coefficient Value of The Fed Interest Rate
$\beta 2$ = Coefficient Value of Foreign Exchange Reserve
$\beta 3$ = Coefficient Value of Antam Gold Price
Y = USD/IDR Exchange Rate (Dependent Variable)
e = Error (Confounding Variable)

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RESULTS

Table-1. The Data of Research Variables

NO	Periode	Exchange Rate (USD/IDR)	The Fed Interest Rate (%)	Foreign Exchange Reserve (Million USD)	Antam Gold Price (IDR/1 Gr)
1.	Dec-13	12,189	0.25	99,387	524,000
2.	Dec-14	12,440	0.25	111,862	520,000
3.	Dec-15	13,795	0.50	105,931	545,000
4.	Dec-16	13,436	0.75	116,362	588,000
5.	Dec-17	13,548	1.50	130,196	632,000
6.	Dec-18	14,481	2.50	120,654	667,000
7.	Dec-19	13,901	1.75	129,183	762,000
8.	Dec-20	14,105	0.25	135,897	965,000
9.	Dec-21	14,278	0.25	144,905	939,000
10.	Dec-22	15,592	4.50	137,233	1,026,000
11.	Dec-23	15,439	5.50	146,384	1,130,000

Source: Secondary Data, Processed

Dependent Variable: LOG(KURS)
Method: Least Squares
Date: 05/13/24 Time: 15:51
Sample: 2013 2023
Included observations: 11

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.364285	1.417242	5.196209	0.0013
LOG(THE_FED)	0.027554	0.009948	2.769935	0.0277
LOG(CAD_DEVISA)	-0.020136	0.203683	-0.098860	0.9240
LOG(EMAS_ANTAM)	0.178918	0.090541	1.976111	0.0887

R-squared	0.864072	Mean dependent var	9.538995
Adjusted R-squared	0.805818	S.D. dependent var	0.076331
S.E. of regression	0.033636	Akaike info criterion	-3.671133
Sum squared resid	0.007920	Schwarz criterion	-3.526443
Log likelihood	24.19123	Hannan-Quinn criter.	-3.762339
F-statistic	14.83266	Durbin-Watson stat	1.989024
Prob(F-statistic)	0.002038		

Figure-3. Estimate Equation after Data Transformation
Source: Eviews 12, data processed

Research Hypothesis:

1. Ho = There is no effect of the Fed Interest Rate variable on the USD/IDR Exchange Rate
   Ha = There is an influence of the Fed Interest Rate variable on the USD/IDR Exchange Rate
2. Ho = There is no effect of Foreign Exchange Reserves variable on USD/IDR Exchange Rate
   Ha = There is an influence of Foreign Exchange Reserves variable on USD/IDR Exchange Rate
3. Ho = There is no effect of the Antam Gold Price variable on the USD/IDR Exchange Rate
   Ha = There is an influence of the Antam Gold Price variable on the USD/IDR Exchange Rate
4. Ho = There is no effect of the Fed Interest Rate, Foreign Exchange Reserves, and Antam Gold Price variables on the USD/IDR Exchange Rate.
   Ha = There is an influence of the Fed Interest Rate, Foreign Exchange Reserves, and Antam Gold Price variables on the USD/IDR Exchange Rate.

1. Normality Test

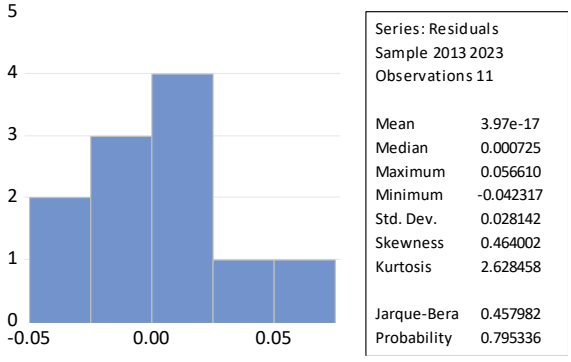

Figure-4. Normality Test Results after Data Transformation
Source: Eviews 12, data processed

Table-2. Hypothesis and Normality Test Criteria

Hypothesis		Criteria	Decision
Ho =	Residual Data is normally distributed	Jarque-Berra Prob. Value > Sign. Level (α) 5% or 0,05	Ho Accepted
Ha =	Residual Data is not normally distributed	Jarque-Berra Prob. Value < Sign. Level (α) 5% or 0,05	Ha Accepted

Based on the Normality Test Results above, the Jarque-Bera Probability Value is 0.7953 or > Significance Level (α) 5% or 0.05 so Ho is Accepted.

Decision: That the Residual Data in the Regression Model is Normally Distributed

2. Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	1.629997	Prob. F(2,5)	0.2851
Obs*R-squared	4.341400	Prob. Chi-Square(2)	0.1141

Figure-5. Autocorrelation Test Results
Source: Eviews 12, data processed

Table-3. Hypothesis and Autocorrelation Test Criteria

Hypothesis		Criteria – Breusch-Godfrey	Decision
Ho =	There is no autocorrelation problem in the regression model	Prob. Value of Chi-Square > 0,05	Ho Accepted
Ha =	There is an autocorrelation problem in the regression model	Prob. Value of Chi-Square < 0,05	Ha Accepted

Based on the Autocorrelation Test Results above, the Prob. Chi-Square value of 0.1141 or > 5% or 0.05 significance level (α) so Ho Accepted.

Decision: There is no Autocorrelation problem in the Research Data

3. Heteroscedasticity Test

Heteroskedasticity Test: Glejser
Null hypothesis: Homoskedasticity

F-statistic	1.908625	Prob. F(3,7)	0.2166
Obs*R-squared	4.949336	Prob. Chi-Square(3)	0.1755
Scaled explained SS	2.781129	Prob. Chi-Square(3)	0.4266

Figure-6. Heteroscedasticity Test Results
Source: Eviews 12, data processed

Table-4. Hypothesis and Heteroscedasticity Test Criteria

Hypothesis		Criteria – Model Glejser	Decision
Ho =	There is no heteroscedasticity problem in the regression model	Prob. Chi-Square Value on Obs*R-squared > sign. Level (α) 0,05	Ho Accepted
Ha =	There is a heteroscedasticity problem in the regression model	Prob. Chi-Square Value on Obs*R-squared < sign. Level (α) 0,05	Ha Accepted

Based on the results of the Glejser Heteroscedasticity Test above, the Prob Value. Chi-Square on Obs*R-Squared is 0.1755 or > Significance Level (α) 5% or 0.05 so Ho Accepted.

Decision: There is no Heteroscedasticity problem in the Regression Model.

ISSN: 2615-8019

4. Multicollinearity Test

	KURS	THE_FED	CAD_DEVISA	EMAS_ANTAM
KURS	1	0.79771608...	0.77376095...	0.84154697...
THE_FED	0.79771608...	1	0.53607454...	0.64949694...
CAD_...	0.77376095...	0.53607454...	1	0.90412602...
EMAS_...	0.84154697...	0.64949694...	0.90412602...	1

Figure-7. Multicollinearity Test Results

Source: Eviews 12, data processed

Table-5. Multicollinearity Test Hypothesis and Criteria

	Hipotesis	Kriteria	Keputusan
Ho =	There is no multicollinearity problem between independent variables in the regression model	The numbers outside the diagonal line are worth < 1	Ho Accepted
Ha =	There is a multicollinearity problem between independent variables in the regression model	The numbers outside the diagonal line are worth > 1	Ha Accepted

Based on the Multicollinearity Test Results above, all numbers outside the diagonal line are worth < 1, so Ho Accepted

Decision: There is no Multicollinearity problem between the independent variables in the Regression Model.

Preliminary Conclusion:

Observation/research data is free from Classical Assumption problems, Regression Model is acceptable, usable and can be continued.

5. Partial Hypothesis Test (t-test)

Dependent Variable: LOG(KURS)
Method: Least Squares
Date: 05/13/24 Time: 15:51
Sample: 2013 2023
Included observations: 11

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.364285	1.417242	5.196209	0.0013
LOG(THE_FED)	0.027554	0.009948	2.769935	0.0277
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LOG(EMAS_ANTAM)	0.178918	0.090541	1.976111	0.0887

R-squared	0.864072	Mean dependent var	9.538995
Adjusted R-squared	0.805818	S.D. dependent var	0.076331
S.E. of regression	0.033636	Akaike info criterion	-3.671133
Sum squared resid	0.007920	Schwarz criterion	-3.526443
Log likelihood	24.19123	Hannan-Quinn criter.	-3.762339
F-statistic	14.83266	Durbin-Watson stat	1.989024
Prob(F-statistic)	0.002038		

Figure-8. Regression Output Results (Estimate Equation)

Source: Eviews 12, data processed

Table-6. Hypothesis and T-test Criteria

Hypothesis	t-test Result Criteria	Decision
Ho_1 → The Fed has no significant effect on the USD/IDR Exchange Rate	t-Count Value < t-Table Value, or Negative t-Count Value > Negative t-Table Value, or Prob. Value > (α) 0,05	Ho_1 Accepted
Ha_1 → The Fed has a significant effect on the USD/IDR Exchange Rate	t-Count Value > t-Table Value, or Negative t-Count Value < Negative t-Table Value, or Prob. Value < (α) 0,05	Ha_1 Accepted
Ho_2 → Foreign Exchange Reserves have no significant effect on the USD/IDR Exchange Rate	t-Count Value < t-Table Value, or Negative t-Count Value > Negative t-Table Value, or Prob. Value > (α) 0,05	Ho_2 Accepted
Ha_2 → Foreign Exchange Reserves have a significant effect on the USD/IDR Exchange Rate	t-Count Value > t-Table Value, or Negative t-Count Value < Negative t-Table Value, or Prob. Value < (α) 0,05	Ha_2 Accepted
Ho_3 → Antam Gold Price has no significant effect on USD/IDR Exchange Rate	t-Count Value < t-Table Value, or Negative t-Count Value > Negative t-Table Value, or Prob. Value > (α) 0,05	Ho_3 Accepted
Ha_3 → Antam Gold Price has a significant effect on the USD/IDR Exchange Rate	t-Count Value > t-Table Value, or Negative t-Count Value < Negative t-Table Value, or Prob. Value < (α) 0,05	Ha_3 Accepted

a. Determining the t-Table Value
The t-Table value as a comparison criterion with the t-statistic value is obtained based on the criterion (α) = 0.05; and df (n - k - 1) = (11 - 3 - 1) = 7. By using MS-Excell using the formula =TINV(5%,7), the t-table value = 2.365 is obtained. The t-Table value can also be seen in Table-t.

b. Hypothesis Results from Testing t-Count with t-Table
- The Fed's Influence on USD/IDR Exchange Rate
  The t-Count value is 2.7699> t-Table 2.365. Based on the t-test decision criteria, Ha1 is accepted. It is concluded that the Fed Interest Rate has a positive effect on the USD/IDR Exchange Rate.
- The Influence of Foreign Exchange Reserves on the USD/IDR Exchange Rate
  The t-Count value is negative (-0.0989) > t-Table negative (-2.365). Based on the t-test decision criteria, Ho2 is accepted. It is concluded that Foreign Exchange Reserves have no negative effect on the USD/IDR Exchange Rate.
- The Influence of Antam Gold Price on USD/IDR Exchange Rate
  The t-Count value is 1.9761 < t-Table 2.365. Based on the t-test decision criteria, Ho3 is accepted. It is concluded that the Antam Gold Price has no positive effect on the USD/IDR Exchange Rate.

c. Hypothesis Results of the t-Statistic Probability Value with Significance Level (α)
- Probability t-statistic value of the Fed variable = 0.0277 < (α) 0.05. Based on the t-test decision criteria, Ha1 is accepted and it is concluded that the Fed has a significant effect on the USD/IDR Exchange Rate. In other words, the Fed's regression coefficient (Slope) is proven to have a significant effect in predicting the USD/IDR Exchange Rate.
- The probability t-statistic value of the Foreign Exchange Reserves variable = 0.9240 > (α) 0.05. Based on the t-test decision criteria, Ho2 is accepted and it is concluded that Foreign Exchange Reserves do not have a significant effect on the USD/IDR Exchange Rate. In other words, the regression coefficient (Slope) of Foreign Exchange Reserves proves to be insignificant in predicting the USD/IDR.
- Probability t-statistic value of Antam Gold Price variable = 0.0887 > (α) 0.05. Based on the t-test decision criteria, Ho3 is accepted and it is concluded that the Antam Gold Price has no significant effect on the USD/IDR Exchange Rate. In other words, the regression coefficient (Slope) of the Antam Gold Price is proven to have no significant effect in predicting the USD/IDR Exchange Rate.

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6. Simultaneous Hypothesis Test (F-test)

Table-7. Hypothesis and F-test Criteria

Hypothesis	Kriteria Hasil Uji-F	Decision
Ho → The Fed, Foreign Exchange Reserves and Antam Gold Prices simultaneously have no significant effect on the USD/IDR Exchange Rate (Kurs).	F-Count Value < F-Table Value or Prob value (F-Statistic) > (α) 0.05	Ho Accepted
Ha → The Fed, Foreign Exchange Reserves and Antam Gold Prices simultaneously have a significant effect on the USD/IDR Exchange Rate (Kurs).	F-Count Value > F-Table Value or Prob (F-Statistic) Value < (α) 0.05	Ha Accepted

a. Determining the F-Table Value
The F-Table value as a comparison criterion with the F-count (F-statistic) value is obtained based on the criteria (α) = 0.05; df1 (Total Variables - 1) = (4 -1) = 3; and df2 (n - k - 1) = (11 - 3 - 1) = 7. By using MS-Excell using the formula =FINV(5%,3,7) obtained F-table value = 4.347. F-Table values can also be seen in Table-F.
b. Hypothesis Results from Testing F-Count with F-Table
F-Count (F-Statistic) value = 14.83266 > F-Table 4.347. Based on the F-test decision criteria, Ha is accepted. It is concluded that the Fed Interest Rate, Foreign Exchange Reserves and Antam Gold Prices together (simultaneously) have a significant effect on the USD / IDR Exchange Rate.
c. Hypothesis Result of Probability Value of F-Statistic with Significance Level (α)
Based on Figure-8, the F-statistic Probability Value = 0.002038 < (α) 0.05 is obtained. Referring to the F-test decision criteria, Ha is accepted. It can be concluded that the Fed Interest Rate, Foreign Exchange Reserves and Antam Gold Prices together (simultaneously) have a significant effect on the USD/IDR Exchange Rate.

DISCUSSION

Regression Model Formation:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$$

USD/IDR Exch.Rate = 7,364 + 0,0276The Fed – 0,0201Foreign Exch.Reserve + 0,1789Antam Gold Price

Regression Model Interpretation:

The constant coefficient value (α) is positive 7.364 meaning: If the Fed Interest Rate (X1), Foreign Exchange Reserves (X2) and Antam Gold Price (X3) are 0 (Zero), then the average USD/IDR Exchange Rate (Y) is IDR 7.36 (Seven point three six Rupiah) to obtain USD1.00,oo (One American Dollar) (Note: the average amount of the Exchange Rate still exists because it comes from the influence of other variables that also affect the USD/IDR Exchange Rate, but are not included in the regression model).

The Fed Interest Rate Variable Regression Coefficient (β1) is positive at 0.02755. This means that there is a unidirectional relationship between the Fed Interest Rate variable and the USD/IDR Exchange Rate variable. Thus, if the Fed Interest Rate (X1) increases by 1%, the average USD/IDR Exchange Rate (Y) will increase by 2.755%. In other words, the increase in the Fed Interest Rate causes the US Dollar Exchange Rate against the Rupiah to rise, or the Rupiah Exchange Rate against the US Dollar to depreciate (weaken).

The results of this study are in accordance with research conducted by (Haq & Ananda, 2024) which states that the Fed Rate Increase has a positive effect on the Dollar Exchange Rate against the Rupiah which results in the Rupiah Exchange Rate depreciating (weakening) due to the Fed Rate increase. Likewise, the results of research (Ginting, 2020) reveal that the Fed interest rate variable has a positive effect on the rupiah exchange rate in Indonesia, so that if the Fed interest rate increases, the rupiah exchange rate per dollar depreciates (rupiah weakens). In addition, based on research (Hapsari & Adry, 2019) also states that the American Interest Rate has a positive and significant effect on the rupiah exchange rate per American dollar. If the American interest rate increases, the dollar exchange rate also increases or the rupiah per dollar exchange rate depreciates (weakens).

The Regression Coefficient of the Foreign Exchange Reserves variable (β2) has a negative value of -0.02014. This means that there is an unidirectional relationship between the Foreign Exchange Reserve variable and the USD/IDR Exchange Rate variable. Thus, if the Foreign Exchange Reserve (X2) increases by 1%, the average USD/IDR Exchange Rate (Y) will decrease by 2.014%. In other words, an increase in Indonesia's Foreign Exchange Reserve causes the US Dollar Exchange Rate against the Rupiah to decrease, or the Rupiah Exchange Rate against the US Dollar to appreciate (strengthen).

The results of this study are in accordance with research conducted by (Haq & Ananda, 2024) which states that the Foreign Exchange Reserve variable has a negative coefficient value on the Rupiah / USD Exchange Rate. This shows that the value of Rupiah / USD has appreciated (strengthened) which is influenced by the increase in Indonesia's Foreign Exchange Reserves. Likewise, the results of research (Yuliyanti, 2014) state that Foreign Exchange Reserves have a significant effect on changes in the Rupiah Exchange Rate against the US Dollar, both short and long term. This condition is in accordance with the theory where Foreign Exchange Reserves and Exchange Rates have a negative relationship. Slightly different from research (Qarina, 2023) states that Foreign Exchange Reserves have a positive and significant effect on the Exchange Rate. Increased foreign exchange reserves can appreciate the exchange rate because countries that increase their foreign exchange reserves are able to buy foreign exchange to stabilize the exchange rate of their domestic money.

The Regression Coefficient of the Antam Gold Price variable (β3) is positive at 0.17892. This means that there is a unidirectional relationship between the Antam Gold Price variable and the USD/IDR Exchange Rate variable. So that if the Antam Gold Price (X3) increases by 1%, the average USD/IDR Exchange Rate (Y) will increase by 17.89%. In other words, an increase in the price of Antam Gold (local gold) causes the US Dollar Exchange Rate against the Rupiah to rise, or the Rupiah against the US Dollar to depreciate (weaken). Conversely, a decrease in the price of Antam Gold (local gold) results in a decrease in the US Dollar Exchange Rate against the Rupiah or a strengthening (appreciation) of the Rupiah against the US Dollar.

The results of this study are in accordance with the article (Lakuemas.com, 2022) which states that exchange rate movements are one of the causes of gold prices up and down. The price of gold in the country refers to the international gold price converted from rupiah to US dollars. The movement of the rupiah against the US dollar greatly affects the price of gold, so if the rupiah exchange rate weakens, local gold prices will rise. Conversely, if the rupiah exchange rate strengthens, the local gold price will fall.

In addition, the review article (Logammulia.com, 2023) also reported, because the price of gold in the country refers to the international gold price converted into rupiah, the trend of rising and falling gold prices in the country is also influenced by the stability of the dollar value. Local gold prices, including ANTAM LM gold, rise or fall based on the movement of the Rupiah against the US dollar. For example, if the Rupiah depreciates against the US dollar, domestic gold prices will rise. Conversely, if the Rupiah strengthens against the US dollar, the price of domestic gold will fall.

Likewise, according to OJK's explanation in (Otoritas Jasa Keuangan (OJK), n.d.), one of the causes of gold prices going up and down is the US Dollar Exchange Rate. The domestic gold price refers to the international gold price converted from US dollars to rupiah. The movement of the rupiah against the US dollar greatly affects the local gold price; if the rupiah exchange rate weakens, the local gold price will increase or rise. Conversely, if the rupiah exchange rate rises, the local gold price will fall.

In Figure-8 Regression Results (Estimate Equation), the Coefficient of Determination (R-Squared) value is 0.864072. This figure shows the contribution of the influence of the Independent Variable (The Fed, Foreign Exchange Reserves and Antam Gold Price) on the Dependent Variable (USD / IDR Exchange Rate) is 86.41%. The remaining 13.59% is influenced by other variables not included in this study.

CONCLUSION

Based on the description, results and discussion in this study, several conclusions can be drawn as follows:

1. In the period of 2013 - 2023, the highest position of the Rupiah against the US Dollar was in December 2013 at USD1.00 = IDR 12,189.00. The rest tends to experience a depreciating (weakening) trend against the US Dollar.
2. Simultaneously, all Independent variables consisting of the Fed Interest Rate, Foreign Exchange Reserves and Antam Gold Prices were examined had a positive and significant effect on the USD/IDR Exchange Rate (Dependent Variable).
3. Of the three Independent variables researched, only the Foreign Exchange Reserve variable has an unidirectional relationship with the USD/IDR Exchange Rate so that it can appreciate (strengthen) the Rupiah Exchange Rate with the US Dollar if the State Foreign Exchange Reserve Value maintained by Bank Indonesia is added or increased.

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