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Analysis the Effect of Inflation, Gold Prices in Dollars, Rupiah Exchange to Bank Indonesia Monthly Rates After the COVID 19

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Abstract

The Covid-19 pandemic has caused economic turmoil to become uncertain, affecting all aspects of Indonesian society's lives. This research aims to determine the relationship between the inflation rate, the transaction price of the last issuer of gold and the rupiah exchange rate that occurred in the period after the Covid-19 pandemic on the monthly interest rate of Bank Indonesia, both together and each variable on the monthly interest rate of Bank Indonesia. This research details the research steps starting from classical assumption test analysis, multiple linear regression, coefficient of determination to hypothesis testing. The research results show that from the inflation rate, the price of gold in dollars together has a significant influence on the dependent variable, namely the Bank Indonesia monthly interest rate. Inflation and gold prices in dollars partially have a significant influence on Bank Indonesia's monthly interest rate, while the rupiah exchange rate variable partially does not have a significant influence on Bank Indonesia's monthly interest rate. Inflation is the most dominant variable in Bank Indonesia's monthly interest rate after the Covid-19 pandemic.

Keywords: Inflation Rate Gold Price in Dollars, Rupiah Exchange Rate, Interest Rates

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INTRODUCTION

The COVID-19 pandemic has had an impact significant in various economic sectors, including financial markets. One impact what is most noticeable is the change in ethnicity Bank Indonesia (BI) interest. BI responded crisis by lowering interest rates for encourage economic recovery. On the other hand, pandemic also triggered inflation and value fluctuations exchange rupiah. Gold price, as a safe asset haven, experienced a significant increase during this period. Journal "Analysis of the Effects of Inflation, Gold Price in Dollars, Rupiah Exchange Rate Regarding BI Monthly Interest Rates After The Covid 19 pandemic" is here to study as well prove the relationship between inflation rates and prices gold in dollars and the rupiah exchange rate occurred in the period after the Covid-19 pandemic against Bank Indonesia's monthly interest rate both jointly and individually on the Bank's monthly interest rates Indonesia, including variables dominant influence on interest rates Bank Indonesia monthly.

Bank Indonesia rate or abbreviated as BI rate is the base interest rate applied in Indonesia. The movement is used as reference for other interest rates, so that if BI As rates rise, so do interest rates on other debts will go up. Interest Rate (interest) is price/cost or remuneration that must be paid for the use of a sum of money by a party who borrows from the other party lend if there is an exchange between one rupiah now for one rupiah later. The interest rate (rate of interest) is the price of use of money expressed in % (percentage) for a certain period of time (Utami, 2018).

Inflation is a phenomenon where the level General prices have continued to increase continuously. An increase in the price of one or two goods alone cannot be called inflation, unless the increase extends to (or resulting in an increase) most of prices of other goods (Fadilla, 2021). Inflation, according to the author is a state in which increasing the amount of money circulating in society. This causes the prices of goods and services to rise, so that people's purchasing power decreases. This increase in the money supply is due to by several factors.

Gold is one option investment, where the risk tends to be more low compared to other investments. This is because the price of gold is rare decreased, so often gold investment is expected to gain high returns with a high level of risk certain (Yunita, 2018). Anisa (2018) said, found that rising gold prices will increase stock price index, so that returns earned will also increase. That matter due to the demand for gold in Indonesia

tends to be tall and is one of the countries with the highest demand for gold in Southeast Asia. This is in line with an increase in the price of gold which is also bought and sold in rupiah and other currencies one of them is dollars. However, gold is purchased and sold in US dollars to make gold becomes more expensive for investors using another currency because increase in the value of the US dollar.

Frequent or currency exchange rates what is called the exchange rate is the price of one currency unit foreign money in domestic currency or it can also be said to be the price of domestic currency against foreign currency. Exchange rate or exchange rate one currency against another currency is part of the foreign exchange process (Manurung, 2016). An increase in foreign exchange prices is called depreciation on domestic currency, meanwhile appreciation means the value of the domestic currency higher than the currency value. Calculation exchange rate used in this research is the middle exchange rate obtained from Bank Indonesia using exchange rate calculator via the site (www.bi.go.id.). The middle rate is one type of calculation the rupiah exchange rate against the US dollar, where the value is between the selling rate and the buying rate.

Research from Neny Rostiati and Ulum (2016) about Taylor Rule Analysis About the Effect of Inflation and Gross Domestic Product (GDP) on Real University Interest Rates Indo Global Mandir, Palembang. This research aims to determine the effect of inflation and GDP to real interest rates. Data research in the period 2014 to 2021. The data analysis technique is descriptive analysis, classical assumption test (normality test, test autocorrelation, multicollinearity test, test heteroscedasticity), as well as hypothesis testing, namely the t test (partial), F test (simultaneous test) and coefficient test determination.

The results of this research show that Inflation has a positive influence on the independent variable real interest rate, this indicates any nominal increase in variable inflation will cause rising real interest rates, meanwhile the independent variable GDP has a negative influence to the real interest rate, meaning every nominal increase in the GDP variable will causes real interest rates to fall. Previous research similarities with This research examines the inflation variable against the prevailing bank interest rates in Indonesia, while the difference lies on one of the independent variables, in Previous research using products Gross Domestic (GDP), while in This research uses transaction prices the last gold issuer and the rupiah exchange rate.

METHODS

The population in this study is data inflation, gold price in dollars, rupiah exchange rate and Bank Indonesia monthly interest rates start January 2020 to March 2024 with each variable as much as 51 data (time series). Sampling technique used in research is Non probability Sampling according to reference (Janah, 2021). Variables used in this research are the independent variable and the dependent variable using the classical assumption test. The steps in this test are:

1. **Classic Assumption Test Analysis**

   a. **Multicolinearity Test**

   The multicollinearity test is linear relationship between independent variables in multiple regression. Multicollinearity test intended to see the relationship/correlation between each variable. Regression model which is good there should be no correlation in between the independent variables. To detect whether or not there is multicollinearity within One of the regression models is with looking at the Variance Inflation Factor (VIF) value. In this case, the Variance Inflation Factor values A good (VIF) is > 10 (Effiyaldi, 2021).

   b. **Heteroscedastisity Test**

   The aim of the heteroscedasticity test is to test whether in the model regression occurs inequality of variance from residual one observation to other observations (Ghozali, 2018). In this observation for detect the presence of heteroscedasticity can be done using the Harvey test. Test Harvey is regressing absolute values residual on the independent variable. Test Harvey is regressing absolute values residual on the independent variable. Base decision making as follows:

   1) If the p value ≥ 0.05 then H_0 is rejected, which means there is no problem heteroscedasticity.

   2) If the p value <0.05 then H_0 is rejected, which means there is a problem heteroscedasticity.

c. Normality Test

The normality test aims to test whether in the regression model, variables confounders or residuals from the independent variables and bound to have a normal distribution (Juliandi, 2014). Wrong One way to test normality is with histogram and Normal PPlot graphic analysis. For histograms, if the graph is a histogram describes a distribution pattern that is not swerving right and left, but precise in the middle like a bell shape, the results show that the data is distributed normally.

d. Autocorrelation Test

The autocorrelation test is the relationship between residual one observation with residual other observations. Autocorrelation test aims to test whether in the regression model liner there is a correlation between errors confounder in period t with errors bully in period t-1 (previously). To detect its presence or absence Autocorrelation can be done by testing Durbin-Waston (DW test) (Winarno, 2015). In This research shows autocorrelation in the research data in time series form, then autocorrelation can be detected by indicating the coefficient value Durbin Watson is between -2 and +2 to show no symptoms there is autocorrelation between observations.

2. Multiple Linear Regression Analysis

Analysis that has independent variables more than one is called linear regression analysis multiple. Multiple linear regression technique used to determine whether it exists or not significant influence of two or more variables independent of the dependent variable (Y). Model multiple linear regression for populations can be shown as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n + \varepsilon$$

Multiple linear regression model for the population above can be estimated with the model multiple linear regression for the sample (Mona, 2015), ie:

$$\hat{Y} = b_0 + b_1 X_1 + b_2 X_2 + \ldots + b_k X_k$$

With:

$\hat{Y}$: estimator value for variable Y

b_0 : alleged constant parameters

$b_1, b_2, \ldots, b_k$: estimated coefficient parameters

$X_1, X_2, \ldots, X_k$: independent variable

3. Coefficient of Determination

The coefficient of determination is used in relation to the use of correlation analysis to see the extent of the contribution on the independent variable explains the variable bound. The value of the coefficient of determination itself is the value of $Adjusted\ R^2$. Coefficient determination is also called determining coefficient, because of the variance that occurs in the variables The dependent variable can be explained through the independent variable (Ulum, 2022).

RESULTS

1. Classic Assumption Test Analysis

a. Multicolinearity Test

Table 1. Multicolinearity Test Result

Variable	Tolerance	VIF
Inflation	0.740	1.351
Rupiah Exchange	0.599	1.669
Gold Issuer Price	0.745	1.343

Interpretation: Based on Table 1 shows that the calculation results of the tolerance value are more of 0.10 or 10% and variance inflation value factor (VIF) is less than 10. So you can concluded that the regression model used in this study did not occur symptoms of multicollinearity between variables free.

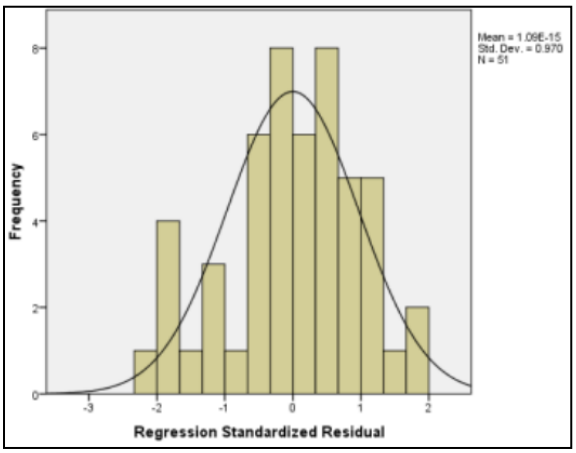
b. Heteroscedasticity Test

Table 2. Heteroscedasticity Test Result

Variable	p-value
Inflation	0.003
Rupiah Exchange	0.039
Gold Issuer Price	0.168

Interpretation: Based on Table 2 shows the value p-value of Inflation and Exchange Rates < 0.05 then It was concluded that heteroscedasticity occurred in regression model while the Gold p-value > 0.05 then it is concluded that this did not happen heteroscedasticity in the regression model.

c. Normallity Test



Picture 1. Normality Histogram

Interpretation: Based on the histogram graphic display and normal graph plots can be concluded that histogram graphs provide patterns distribution that is close to normal. Whereas on a normal plot graph you can see dots spread around the diagonal line, which is, distribution follows the direction of the diagonal line. Picture 1 shows that model regression is appropriate to use because it meets the assumptions normality.

d. Autocorrelation Test

Table 3. Durbin Watson Value

Model	Durbin Watson
1	0.206

Interpretation: The autocorrelation test is a test for detect whether there is autocorrelation or not in this research. Detection of autocorrelation occurs if the research data is in time form series, then symptoms of autocorrelation

can be detected with an indication of the Durbin Watson coefficient value between -2 and +2. In table above the Durbin Watson value of 0.206 indicates it is still greater than -2 and it is still smaller than +2, meaning it is deep In this study, there was no autocorrelation.

2. Multiple Linear Regression Test Results Before the Covid-19 Pandemic

This regression analysis is used for calculate the magnitude of the influence between variables free, namely Inflation ($X1$), Exchange Rate ($X2$) and Prices Gold ($X3$) to the dependent variable, namely Tribe Bank Indonesia Monthly Interest (Y) before Covid-19 The regression equation is used for understand the form of relationship between independent variable with dependent variable. With using SPSS for Windows server 21.0 in the regression model as in Table 4.

Table 4. Multiple Linear Regression Coefficients

Variable	B
Constant	3.860
Inflation	-0.539
Rupiah Exchange Rate	0.000
Gold Issuer Price	-0.002

Interpretation: Based on Table 4, you can get interpreted as follows:

a. The constant value is 3,860. Marks it states that the variable independent (Inflation, Rupiah Exchange Rate and Prices Gold) if considered constant then Tribe Bank Indonesia Monthly Interest after Covid-19 was 3,860

b. Bank Monthly Interest Rate (Y) after Covid-19 will increase if it exists addition of one Inflation unit ($X1$). This means that if there is an increase in inflation then the Bank Indonesia Monthly Interest Rate after Covid-19 it will decrease by 0.529 units assuming variables that are others are considered constant.

c. Bank Monthly Interest Rate (Y) after Covid-19 will increase for every additional Rupiah Exchange Rate ($X2$). This means if the rupiah exchange rate has increased or decrease, then the Monthly Interest Rate Bank Indonesia (Y) after

Covid-19 will increases by 0.00 units with Other variable assumptions are considered constant.

d. Bank Indonesia Monthly Interest Rate (Y) after Covid-19 will increase for each additional Gold Price ($X3$). This means if the price of gold has increased, then Bank Indonesia Monthly Interest Rate (Y) after Covid-19 it will decrease by 0.02 units assuming other variables considered constant.

3. Coefficient of Determination and Statistical Testing Hypothesis

This test aims to determine proportion or percentage of total variation in dependent variable that can be explained variable free together. The coefficient of determination is 0.456 stated that 45.6% of the variations occurred in Bank Indonesia's monthly interest rates caused by inflation, the rupiah exchange rate, and prices gold.

What are the results of linear regression analysis multiple simultaneous effects significant or not, in other words the model which is thought to be appropriate or not. If the result is significant, then Ho is rejected and $H1$ is accepted. Meanwhile, if the results are not is significant, then Ho is accepted and $H1$ is rejected. The results of the F test can be seen in table 5 below:

Table 5. F Test Coefficient (Simultaneous Test)

Model	Sig
1	**0.000**

Based on Table 5 it can be seen if the p-value is <0.05 then you can it is concluded that there is an independent variable which influences interest rates.

Table 6. T-Test

Variable	Sig.
Inflation	0.000
Rupiah Exchange	0.086
Gold Price	0.017

The t test is used to find out whether each variable is independent partially has an influence significant to the dependent variable. Based on table 6 above, it can be explained as follows:

a. T test results between Inflation ($X1$) and Tribe Bank Indonesia Monthly Interest (Y) after covid-19 shows p-value = 0.00, while α = 0.05 This means Ho rejected, so it can be concluded that Bank Indonesia Monthly Interest Rate (Y) after the Covid-19 pandemic, you can significantly influence by inflation or in other words that change Inflation rate then Monthly Interest Rate Bank Indonesia (Y) after the Covid19 pandemic will experience increasing changes significantly.

b. The t test results between the Rupiah Exchange Rate ($X2$) and Bank Indonesia Monthly Interest Rate (Y) after covid-19 shows p-value = 0.086, while α = 0.05 This means Ho failed to be rejected, so it can be concluded that the Bank Indonesia Monthly Interest Rate (Y) after the Covid-19 pandemic, no significantly influenced by the exchange rate rupiah.

c. T test results between Gold Price ($X3$) and Bank Indonesia Monthly Interest Rate (Y) after covid-19 shows p-value = 0.017, while α = 0.05 This means Ho rejected, so it can be concluded that Bank Indonesia Monthly Interest Rate (Y) after the Covid-19 pandemic, you can significantly influenced by price gold or in other words that changes in the level of gold prices then Tribe Bank Indonesia Monthly Interest (Y) after the covid-19 pandemic will experiencesignificant improvement changes.

DISCUSSION

After the Covid-19 Pandemic, sased on research findings that have been carried out, it can be generally known that the Inflation variable (X1), and the Gold Price variable (X3) has an effect on interest rates Bank Indonesia Monthly (Y) after covid-19 the results can be stated as good.

Inflation variable (X1), Rupiah exchange rate variable (X2), and the Gold Price variable (X3) respectively simultaneous significant influence on the Bank Indonesia Monthly Interest Rate (Y) after covid-19. The research findings prove that simultaneously there is an influence significant of the independent variable, namely variable Inflation, Rupiah

Exchange Rate, and Gold Prices against Bank Indonesia Monthly Interest Rate (Y) after covid-19, this is proven by the pvalue < α = 0.05. If the three variables If these freedoms experience change then Tribe Bank Indonesia Monthly Interest (Y) after Covid-19 is on the rise and so is it the opposite is true in its implementation increasingly inconsistent and increasingly weak then Bank Indonesia Monthly Interest Rate (Y) after Covid-19 it will also increase. These three variables have a role important in changes in Monthly Interest Rates Bank Indonesia (Y) after covid-19, because these three variables are taken into consideration in determining the Bank's Monthly Interest Rate Indonesia (Y) after covid-19.

Inflation (X1) and Gold Price (X2) respectively partial has a significant effect on Bank Indonesia Monthly Interest Rate (Y) after covid-19. Research findings show that Inflation (X1) is partially influential significant to the Bank's Monthly Interest Rate Indonesia (Y) after Covid-19. This matter proven by the low p-value of the T test from α with a smaller significance level 0.05. The results of this research show that Inflation has a negative influence on tribesreal interest, meaning every nominal increase in the independent variable will cause the level of interest real interest falls.

CONCLUSION

Based on the results of linear regression analysis multiple shows that most the research hypothesis is accepted, or in other words, there is influence significant between the independent variables and dependent variable. The results of the analysis areas follow:

1. Based on the calculation results, it is obtained that pvalue F test = 0.000 < α = 0.05 then H0 rejected, meaning that the independent variable consists from inflation, the rupiah exchange rate and the price of gold together have an influence which is significant for the dependent variable namely the monthly interest rate of Bank Indonesia. The coefficient of determination or R square is 0.456 meaning changes that occur in the tribe Bank Indonesia monthly interest is 45.6 percent caused by the independent variable consisting of inflation, rupiah exchange rate and prices gold together.

2. Based on the results of calculations using the pvalue T test, it is found that inflation and the price of gold partially has significant influence on ethnicity Bank Indonesia monthly

interest meanwhile the rupiah exchange rate variable is partially absent have a significant influence to the Bank's monthly interest rate Indonesia.

Based on the calculation results, it can be It is known that the most dominant variable namely the inflation variable which is capable explains the variation of Y by 61.7 percent.

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