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# EFFECTS OF EXPORTS, IMPORTS AND INVESTMENTS IN THE AGRICULTURAL SECTOR AND RUPIAH EXCHANGE RATE ON ECONOMIC GROWTH IN INDONESIA

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**ABSTRACT**

The economy of a country, especially Indonesia, is influenced by many factors which include exports, imports, investment in agriculture and changes in exchange rates. The purpose of this study was to examine the effect of the rupiah exchange rate, exports, imports and investment on economic growth in Indonesia and to test the effect of the shock of the rupiah exchange rate variables, exports, imports and investment on economic growth in Indonesia. The analytical method used is the VAR (Vector Autoregression) model. The basic form of the VAR model used treats all variables symmetrically regardless of the dependent variable or the independent variable. In this study using five variables. The variables used are the exchange rate (RER), exports (X), imports (M), investment (I) and economic growth (GDP). The results of the study concluded that there was a one-way relationship between exchange rate variables, exports and imports to economic growth. There is a two-way relationship in the exchange rate variable affecting exports and imports. While there is no significant relationship between the investment variable and economic growth and the exchange rate shock is responded negatively by economic growth at the beginning of the period, besides that the export shock is responded positively at the beginning of the period and the import shock is responded positively at the beginning of the period and the investment shock is responded positively by economic growth in first period.

Keywords: ***Financial Behavior, Ordinal Logistic Regression, Coconut***

## 1. INTRODUCTION

The globalization of world trade is currently causing the development of an economic system in a direction that is more open between countries, namely opening up to the international trading system. It is this open economy that brings an economic impact, namely the occurrence of international trade between countries in the world. In the context of an open economy, international trade in this case is export and import. International trade is a link between the domestic economy and the foreign economy. Trade relations arise from the fact that every country needs one another (Malik, N. 2017). The products of a country are exported to other countries, while some goods consumed domestically are produced and imported from other countries. This relationship causes a relationship of interdependence between the two countries in various economies. Trade can be an engine for growth. If international trade activities are exports and imports, then one of these components or both can be a driving force for economic growth, especially in the agricultural sector.

This international trade will lead to differences in the currencies used by the countries concerned. As a result of differences in the currency used in both exporting and importing countries, it creates a difference in currency exchange rates (exchange rates), therefore it is necessary to exchange currencies between countries. The difference in the exchange rate of a country's currency is principally determined by the amount of demand and supply of that currency that occurs in the market.

The exchange rate affects the amount of economic growth. The influence occurs, among others, through international trade (export-import) and investment. Economic growth is generally measured as a percentage of the increase in real Gross Domestic Product (GDP). Various factors driving economic growth include: trade liberalization, capital flows, investment, technological innovation and the role of human capital. In an open economy, the growth rate will also be affected by the exchange rate. The effect of the exchange rate on the growth rate can be seen both through the aggregate supply (AS) channel, namely through the formation of capital and knowledge, as well as through aggregate demand (AD), namely through international trade transactions (export-import) and investment (Nawati, N. 2019 ).

Investment in a country will indicate the level of economic growth in the country concerned. Meanwhile Faniyah, I. (2017) states that investment growth plays an important role in economic growth and investment is a component of expenditure that is quite large and variable, thus large changes in investment will greatly affect the aggregate demand for components through which the exchange rate passes. in influencing investment, namely through its influence on the marginal profitability of domestic and export sales, besides that it is also influenced by rising or falling prices of imported factors of production and the large ratio of the use of capital in the production process and the low ratio of capital to revenue.

When international trade occurs in the form of exports and imports, it will bring up the possibility to move the place of production. An increase in market size that is getting bigger which is marked by an increase in imports of certain types of goods in a country will raise the possibility of producing these goods in the importing country. This possibility is based on looking at the comparison between production costs in the exporting country plus transportation costs with the costs that arise if the goods are produced in the importing country. If the production costs in the exporting country plus transportation costs are greater than the production costs in the importing country, the investor will move his production location to the importing country.

Investment is a component of the second largest aggregate demand after consumption (Muhdar, M. 2018). Even though investment's contribution to Indonesia's GDP is still relatively small, investment still has an important role in determining aggregate demand. Investment is relatively difficult to calculate because it is volatile or more unstable. A recession in an economy can occur as a result of investment behavior. What's more, investment is very important for economic growth as well as improvements to work productivity. Without investment there will be no business expansion. The decline in economic growth in Indonesia was mainly due to a decrease in spending on investment. Therefore,

## 2. LITERATURE REVIEW

### 2.1. Exchange Rate

Currency exchange rates or often referred to as exchange rates are the price of one unit of foreign currency in domestic currency or can also be said to be the price of domestic currency against foreign currencies. The currency exchange rate is a comparison of the value of two different currencies and is determined by the intersection of the demand curve and the market supply curve of the foreign currency. The exchange rate that we use in everyday terms is the nominal value (nominal exchange rate). In analyzing the exchange rate we also know what is known as the exchange rate. The exchange rate is the nominal exchange rate that has been corrected with relative prices, namely domestic prices compared to foreign prices.

### 2.2 Agricultural Exports

PerformanceExports of Indonesian agricultural products are generally relatively weak. Almost all agricultural commodities have low competitiveness, except for plantation sub-sector products, especially rubber and palm oil which have high competitiveness, the rest are horticultural products, food crops, livestock products, and horticultural products have relatively low competitiveness in international commodity markets. In addition, the relationship between the rate of economic growth and several international trade performance measures does not show a significant relationship for food crops, horticulture, plantations and livestock products. Indonesia is approaching the stage of self-sufficiency, especially food crops, but for other agricultural sector commodities it still relies heavily on imports to meet domestic consumption needs (Parmadi, P., Emilia, E., and Zulgani, Z., 2018).

### 2.3 Agricultural Imports

Imports of agricultural products depend on the inflation rate so that if the inflation rate can be different between two countries then the country has a low inflation rate so that product demand will increase domestically and product imports can lead to an increase in agricultural productivity. If cheaper inputs for agriculture are imported because the demand for domestic products will decrease due to differences in inflation rates and as a net effect imports of agricultural products can have a positive impact on agricultural productivity (Gilani, SW, 2015).

### 2.4 Agricultural Investment

The GDP growth rate is one of the main macroeconomic indicators that is often used in analyzing a country's economic performance. This indicator reflects the potential in the country and the process of economic development of the country, especially very important for foreign investors, donor countries and international financial institutions. In measuring the overall economic performance of countries that receive financial assistance or loans from the World Bank. The World Bank uses the percentage of GDP growth and other macro variables such as the inflation rate, investment growth and trade balance developments as the main indicators (Malik, A., and Kurnia, D., 2017).

### 2.5 Economic Growth

One important indicator in analyzing the economic development that occurs in a country is economic growth. The economy is said to experience growth if the remuneration for the use of factors of production in a certain year is greater than the previous year. The definition of GDP itself is the amount of added value produced by all business units in a region in a certain period (Silitonga, D., 2021).

## 3. RESEARCH METHOD

### 3.1. Research Approaches

The approach used in this research is a quantitative approach. This approach focuses on proving hypotheses and understanding through various tests. Approachit more often seeks to measure a concept (variable), so that it is easier to understand statistically. In carrying out research, the quantitative approach more often directs the problem into a causal relationship so that the problem formulation can be explained in the form of a relationship between various variables. In this study, the authors used the "Eviews 10" software to analyze the data that had been collected.

### 3.2 Variable Identification

This study uses the VAR (Vector Autoregression) model. The basic form of the VAR model used treats all variables symmetrically regardless of the dependent variable or independent variable (Ilmiyah, B., and Widiastuti, T., 2015). Or in other words, this model treats all variables as endogenous variables (Tan, H., 2019). In this study using five variables. The variables used are the exchange rate (RER), exports (X), imports (M), investment (I) and economic growth (GDP).

### 3.3 Data Analysis Techinique

3.3.1 Vector Autoregression (VAR) Models

The analysis in this study uses a modelVector Autoregression (VAR) which was first developed by Christopher Sims (1980). The VAR model assumes that all variables are interdependent with one another. VAR is a model that is able to analyze the interdependence of time series variables. The practical analytical framework in this model will provide a number of systematic information and be able to properly estimate the information in the equation formed from time series data. And the estimation tools in the VAR model are easy to interpret. The estimation tools that will be used in interpreting the estimation results of the VAR model in this study are the Impulse response and Variance Decomposition functions.

The form of the VAR model used for analysis is formulated as follows:

$$RER_t = \alpha_0 + \sum_{i=1}^{n} \alpha_1 RER_{t-i} + \sum_{i=1}^{n} \alpha_2 X_{t-i} + \sum_{i=1}^{n} \alpha_3 M_{t-i} + \sum_{i=1}^{n} \alpha_4 I_{t-i} + \sum_{i=1}^{n} \alpha_5 PDB_{t-i} + U_{1t}$$

$$X_t = \beta_0 + \sum_{i=1}^{n} \beta_1 RER_{t-i} + \sum_{i=1}^{n} \beta_2 X_{t-i} + \sum_{i=1}^{n} \beta_3 M_{t-i} + \sum_{i=1}^{n} \beta_4 I_{t-i} + \sum_{i=1}^{n} \beta_5 PDB_{t-i} + U_{2t}$$

$$M_t = \theta_0 + \sum_{i=1}^{n} \theta_1 RER_{t-i} + \sum_{i=1}^{n} \theta_2 X_{t-i} + \sum_{i=1}^{n} \theta_3 M_{t-i} + \sum_{i=1}^{n} \theta_4 I_{t-i} + \sum_{i=1}^{n} \theta_5 PDB_{t-i} + U_{3t}$$

$$I_t = \gamma_0 + \sum_{i=1}^{n} \gamma_1 RER_{t-i} + \sum_{i=1}^{n} \gamma_2 X_{t-i} + \sum_{i=1}^{n} \gamma_3 M_{t-i} + \sum_{i=1}^{n} \gamma_4 I_{t-i} + \sum_{i=1}^{n} \gamma_5 PDB_{t-i} + U_{4t}$$

$$PDB_t = \delta_0 + \sum_{i=1}^{n} \delta_1 RER_{t-i} + \sum_{i=1}^{n} \delta_2 X_{t-i} + \sum_{i=1}^{n} \delta_3 M_{t-i} + \sum_{i=1}^{n} \delta_4 I_{t-i} + \sum_{i=1}^{n} \delta_5 PDB_{t-i} + U_{5t}$$

Where :

$RER_t$ = exchange rate in period t

$X_t$ = Exports in period t

$M_t$ = Imports in period t

$I_t$ = Investment in period t

$PDB_t$ =Economic growth (GDP) in period t

$\alpha_0, \beta_0, \theta_0, \gamma_0 \delta_0$ = intercept

$U_1, U_2, U_3, U_4, U_5$ = parameter coefficient

n &i = lag length

3.3.2 Augmented Dickey-Fuller Test

TestUnit roots are the most popular test to find out the stationary data. To test the unit roots in this study, the Augmented Dickey-Fuller (ADF) test developed by Dickey and Fuller was used, namely by comparing the statistical ADFtest values with the Mackinnon critical values of 1%, 5% and 10%. The form of the stationary test equation can be written as follows (Ginting, AM, 2017)

3.3.3 Determination of Optimal Lag Length

Determining this lag is very important considering the purpose of developing a VAR model is to see the behavior and relationship of variables in the short term. With too little lag, the residual from the regression will not display a white noise process so that the model cannot estimate the actual error precisely. However, if you include too much lag, it can reduce the ability

to reject H0 because too many additional parameters will reduce the degrees of freedom (Imani, SI 2018).

3.3.4 Impulse Response

To find out the effectshock in the economy, the impulse response method is used. As long as the coefficients in the VAR structural equation above are difficult to interpret, many practitioners suggest using the impulse response function (IRF) (Hidayat, S. 2016). The impulse response function describes the rate of shock of one variable against another in a certain period of time. So that it can be seen how long the influence of the shock of a variable on other variables until the effect disappears or returns to the balance point. This function will track the response of the dependent variable if there is a shock in u1 and u2 (Iskandar, A. 2015).

3.3.5 Decomposition variant

Variance Decomposition or commonly called Forecast Error Variance Decomposition (FEVD) is a VAR model tool that separates variations from a number of variables into innovation variables, assuming the innovation variables are not correlated with each other. Variance decomposition will provide information about the proportion of the movement of the shock effect on a variable to the shock of other variables in the current and future periods (Azwar, A. 2016).

## 4. RESULTS AND DISCUSSION

### 4.1. Stationary Data Analysis Test Results

Before the regression analysis is carried out, one of the procedures that must be carried out in estimating an economic model with time series data is to perform a stationarity test on the data. The test procedure used to test unit roots is the Augmented Dickey Fuller (ADF) test method. The results of the ADF test must be compared with the MacKinnon critical value. If the ADFtest arithmetic statistic is smaller than the Mackinnon critical value, then it contains unit roots, meaning the data is not stationary. Conversely, if the ADFtest arithmetic statistic is greater than the Mackinnon critical value, then the equation does not contain unit roots, meaning the data is stationary.

Unit root testing starts at the form level (degree I(0)). If the data is at a non-stationary level, then it will proceed with differencing data which also uses the ADF test, where data testing is carried out in the form of first difference (degree I(1)) or second difference (degree I(2)).

**Table 1. ADF Test Results in the Form of Difference**

| Variable | ADF | MacKinnon Critical Values | | |
|---|---|---|---|---|
| | Statistics | 1% | 5% | 10% |
| (RER) | -6.883093 | -3.615588 | -2.941145 | -2.609066 |
| (X) | -9.878721 | -3.621023 | -2.943427 | -2.610263 |
| (M) | -10.25147 | -3.615588 | -2.941145 | -2.609066 |
| (i) | -7.255492 | -3.621023 | -2.943427 | -2.610263 |
| (GDP) | -80.17214 | -3.626784 | -2.945842 | -2.611531 |

*Source: Primary data processed using Eviews 10, 2023*

After differencing the data in the form of first difference and/or second difference, the results obtained for the variables RER, X, M and I are stationary data at the first difference level, as well as the stationary GDP variable at the first difference level. It can be seen that the value of the ADFtest statistic for all variables is greater than the value of the test critical values and the probability value for all variables is significant at α = 10%. So that all these variables are stationary.

### 4.2 Optimal Lag Length Test Results

In using the VAR model, determining the optimal lag length is an important step. This is related to the accuracy of the information that will be generated by the estimation of the VAR model. Determining the optimal lag length in this study uses the selection of information criteria using the Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Criterion (SC) and Hannan Quinn (HQ) methods.

The testing process in determining the optimal lag length in research can be seen in table 2 as follows:

**Table 2. Optimal Lag Length Test Results**

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|---|---|---|---|---|---|---|
| 0 | -4718.232 | NA | 5.2e+104 | 255.3098 | 255.5275 | 255.3866 |
| 1 | -4631.206 | 145.8261* | 1.9e+103* | 251.9571* | 253.2633* | 252.4176* |
| 2 | -4612.827 | 25.83092 | 2.9e+103 | 252.3150 | 254.7096 | 253.1592 |
| 3 | -4585.157 | 31.40861 | 3.1e+103 | 252.1707 | 255.6537 | 253.3986 |

*Source: Primary data processed using Eviews 10, 2023*

The asterisk indicates the optimal lag recommended by the Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Criterion (SC) and Hannan-Quinn (HQ) method criteria. From the results above it is obtained that all the asterisks are at lag 1. This shows that the optimal lag lies at lag 1.

### 4.3 VAR Estimation Results

To see whether the RER, X, M and I variables affect GDP and vice versa, it can be seen by comparing the estimated statistical values with the ttable values. If the statistical value is greater than the ttable value, it can be said that the RER, X, M and I variables affect GDP

Based on the results of the VAR estimation, it is known that the dependent (endogenous) variable in the equation:

I = 0.415953*X(-1) + 0.002052*X(-2) + 0.044891*M(-1) - 0.191894*M(-2) - 0.215125*I(-1) - 0.183344*I(-2) -7.52E+09 *RER(-1) - 5.72E+08*RER(-2) + 96.80591*GDP(-1) + 58.39900*GDP(-2)

Capableexplains the relationship or attachment to diversity I of 0.268606 (26.86%), meaning that the investment ratio is in a very different amount in each quarter, there is a significant change. This is illustrated from the equation above which explains the value of the coefficient of determination which is almost close to 0%, which is 26.86%. The investment ratio in Indonesia tends to be unstable. In addition, based on the results of the VAR estimation, it is known that the dependent (endogenous) variable in the equation:

RER = 7.72E-12*X(-1) + 2.34E-11*X(-2) - 1.60E-11*M(-1) + 4.92E-12*M(-2) - 3.85E-12*I(-1) - 5.31E-12*I(-2) + 0.788869*RER(-1) + 0.065731*RER(-2) + 3.37E-09*GDP(-1) + 4.93E-10*GDP(-2)

Capableexplains the relationship or attachment to the diversity of the RER of 0.927969 (92.79%), meaning that the exchange rate ratio is almost the same in each quarter, there is no significant change. This is illustrated from the equation above which explains the value of the coefficient of determination which is almost close to 100%, namely 92.79%.

### 4.4 Impulsive Response

The rate or speed of the shock of a variable in influencing other variables in a certain period can be seen from the impulse response function. So that it can be seen the response of the endogenous variables in the VAR system due to shocks or changes in the disturbance variable (e). The horizontal axis shows the time period in quarterly, the vertical axis shows the magnitude of the rate of change of shocks of the disturbance variable in the endogenous variable.

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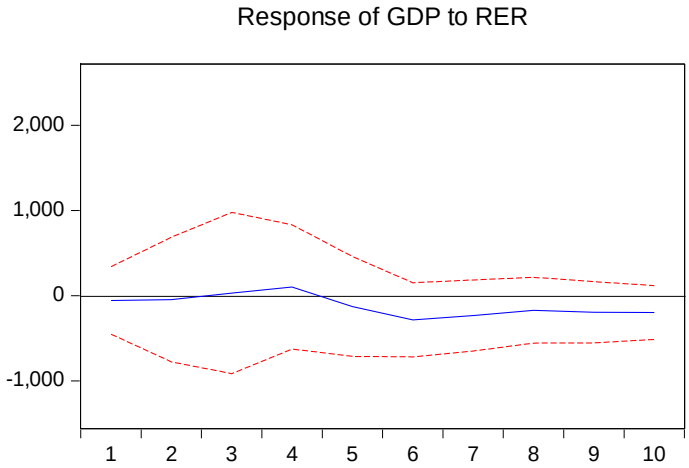


Figure 1. Impulse Response of GDP to RER shock

The response of the GDP variable due to the RER variable shock is shown in Figure 1. The GDP variable responded negatively to the presence of the RER shock at the beginning of the period. This caused GDP to experience a decline at the beginning of the period until the 2nd period, then increased until the 3rd period and in the 5th period it experienced a decline then in the 6th period and then until the end of the period it always approached the balance line even though it experienced slight fluctuations.

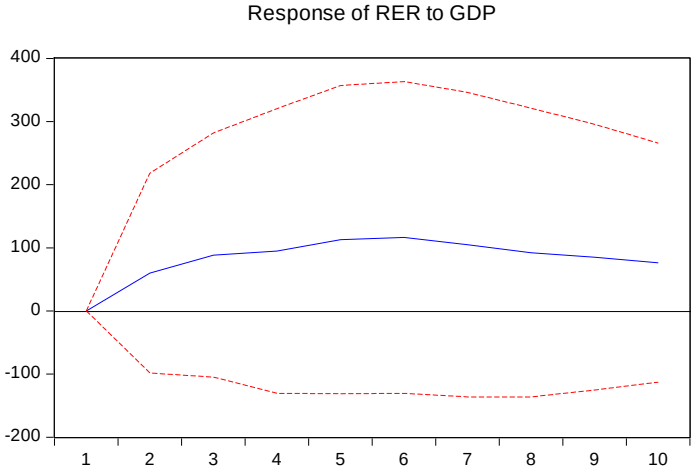


Figure 2. Impulse Response of RER to GDP shock

The RER response due to the GDP shock is shown in Figure 2. The RER responded positively to the GDP shock at the beginning of the period, then responded positively in the 2nd period and then responded positively again in the 6th period and experienced slight fluctuations and approached the balance line in the 2nd period. 7th to the end of the period. The greatest positive effect is suggested in the 5th period, while the influence decreases in the 7th period

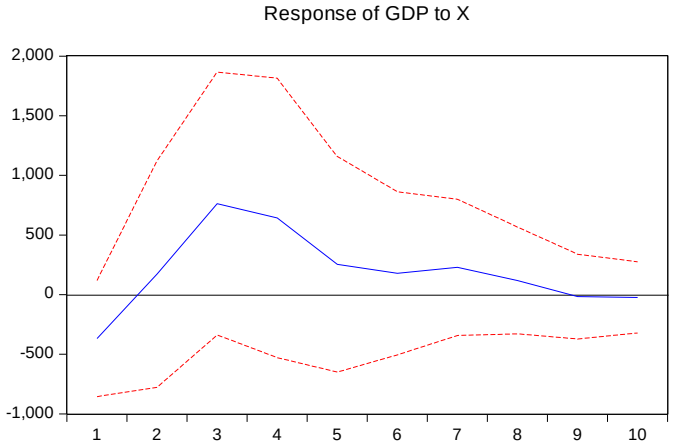


Figure 3. Impulse Response of GDP to shock X

The response of the GDP variable due to the shock of variable X is shown in Figure 3. The negative response of the variable GDP to the shock X is the GDP variable at the beginning of the period. This causes GDP to increase at the beginning of the period then increase in the 3rd period and decrease again in the 4th period then decline again and at the end of the period in a negative response approaching the balance line.

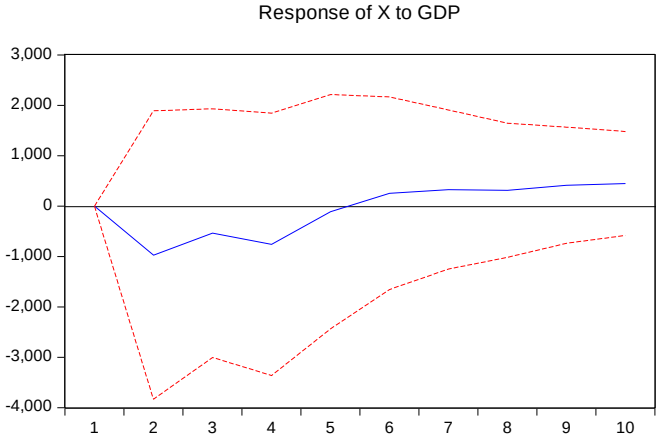


Figure 4. Impulse Response X to GDP shock

X's response due to the GDP shock is shown in Figure 4. X responded negatively to the GDP shock in the 2nd period. In the 3rd period there was a decrease which was negatively responded to and in the subsequent period there was a change in influence from the 5th period to the 6th period to a positive response again and then away from the balance line in the 8th period until the end of the period. The peak of its positive influence occurs in the 10th period

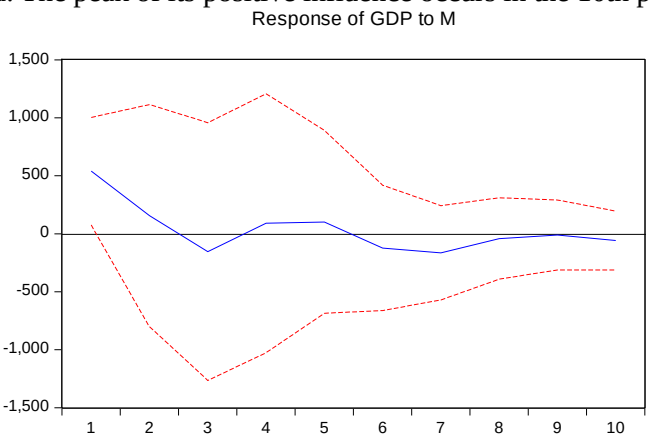


Figure 5. Impulse Response of GDP to shock M

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The response of the GDP variable due to the shock of the variable M is shown in Figure 5. The presence of the M shock caused GDP to increase at the beginning of the period and decrease in the 3rd period and then increase again. In the 6th period it decreased, then increased again in the 8th period to the 9th period, the response was negative, approaching the balance line which at the end of the period decreased and slightly away from the balance line.

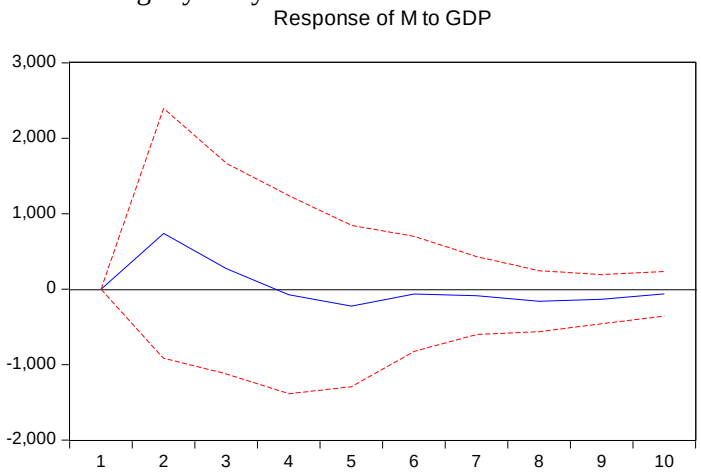


Figure 6. Impulse Response M to GDP shock

The response of the variable M due to the GDP variable shock is shown in Figure 6. In the 2nd period the GDP variable shock was responded positively by variable M. Then it responded negatively from the 4th period to the end of the period, but the negative response always approached the balance line.

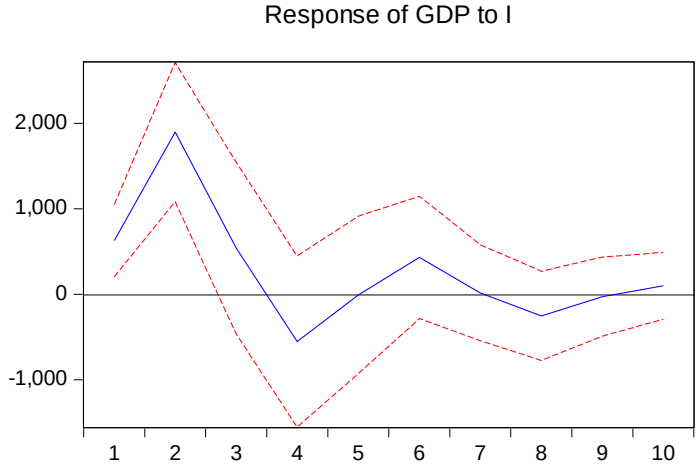


Figure 7. Impulse Response of GDP to shock I

The response of the GDP variable due to variable I shock is shown in Figure 7. There was a positive response to shock I at the beginning of the period causing GDP to increase until the 2nd period, then decreased in the 3rd period and decreased again in the 4th period which gave a negative response . But in the 5th period to the final period, the response occurs alternately, both positive and negative. At the end of the period, the response is moving in a positive way.

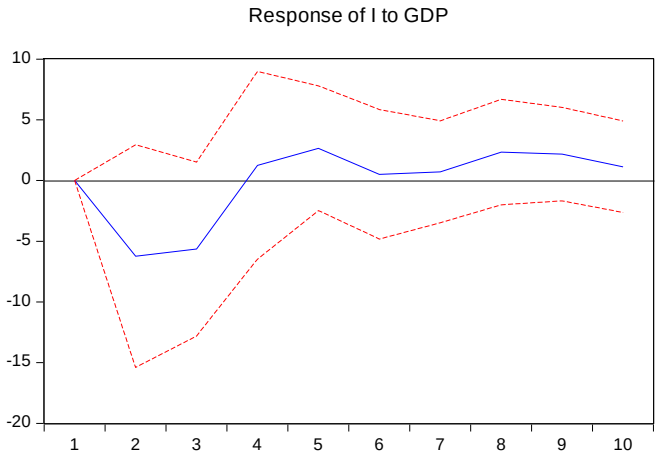


Figure 8. Impulse Response I to GDP shock

The response of variable I due to the GDP shock is shown in Figure 8. In the 2nd period the GDP variable shock was responded negatively by variable I. Then it increased and responded positively in the 4th period. but in the 6th period it approaches the balance line and receives a positive response again and increases in the 8th period and then approaches the balance line again until the end of the period.

### 4.5. Variance Decompositions

Variance Decompositionswill provide information regarding the proportion of the movement of the effect of shock on a variable to the shock of other variables in the current period and future periods. In other words, Variance Decompositions explains what variables are and how much these variables influence other variables.

**Table 3. Variance Decompositions RER, X, M and I on GDP Variables**

| Period | X | M | I | RER | GDP |
|---|---|---|---|---|---|
| 1 | 5.854363 | 12.55213 | 16.95950 | 0.141896 | 64.49211 |
| 2 | 2.117448 | 4.039413 | 51.03386 | 0.070834 | 42.73844 |
| 3 | 8.132810 | 3.694706 | 46.59152 | 0.069628 | 41.51133 |
| 4 | 11.64037 | 3.489196 | 46.04483 | 0.169664 | 38.65594 |
| 5 | 12.14511 | 3.551118 | 45.51018 | 0.330226 | 38.46337 |
| 6 | 12.07104 | 3.585972 | 45.87558 | 1.099345 | 37.36806 |
| 7 | 12.40470 | 3.794380 | 45.26711 | 1.596954 | 36.93686 |
| 8 | 12.37947 | 3.763178 | 45.30629 | 1.854849 | 36.69621 |
| 9 | 12.32702 | 3.747584 | 45.11292 | 2.205460 | 36.60702 |
| 10 | 12.26768 | 3.760061 | 44.96480 | 2.559202 | 36.44825 |

*Source: Primary data processed using Eviews 10, 2023*

On Table 3 explains the Variance Decompositions of the economic growth variable (GDP) and how much the other variables contribute to the GDP variable. In the first period the GDP variable is influenced by the variable itself (100%).

The RER variable in the 1st period contributed 0.14% and decreased in the 3rd period by 0.06%, but in the 4th period it again increased to 0.16% and continued to increase until the 10th period, namely 2.55%. Variable X in the 1st period contributed 5.85%, decreased until the 2nd period, which was 2.11% and experienced an increase in the 3rd period, which was 8.13%, then increased again from the 4th period to the 4th period. the 10th, namely 12.26%.

Variable M in the 1st period contributed 12.5% then decreased until the 2nd period, namely 4.03%, in the 3rd period it decreased again, namely 3.69% and then increased again in the 5th period to the 7th period, namely 3.79%. Variable I in the initial period contributed 16.9% and then

increased in the 2nd period, namely 51.03%, but in the 3rd period it decreased again and up to the 10th period, namely 44.9%.

**Table 4. Variance Decompositions of GDP on RER variables**

| period | X | M | I | RER | GDP |
|---|---|---|---|---|---|
| 1 | 24.56420 | 0.581099 | 2.289712 | 72.56499 | 0.000000 |
| 2 | 16.11534 | 0.554090 | 8.493749 | 74.01073 | 0.826087 |
| 3 | 13.97032 | 0.613180 | 9.276858 | 74.19805 | 1.941595 |
| 4 | 12.51707 | 0.500131 | 8.291239 | 75.88889 | 2.802669 |
| 5 | 11.54668 | 0.430074 | 8.085364 | 76.03857 | 3.899312 |
| 6 | 10.93589 | 0.381435 | 8.470296 | 75.34455 | 4.867836 |
| 7 | 10.75198 | 0.351287 | 8.487136 | 74.90171 | 5.507886 |
| 8 | 10.69554 | 0.329275 | 8.321711 | 74.72787 | 5.925603 |
| 9 | 10.64864 | 0.313652 | 8.290669 | 74.48691 | 6.260132 |
| 10 | 10.63836 | 0.303184 | 8.347324 | 74.20065 | 6.510483 |

*Source: Primary data processed using Eviews 10, 2023*

On Table 4 explains the Variance Decompositions of exchange rate variables (RER). It was found that the Variance Decompositions of the exchange rate variable (RER) were influenced by the economic growth variable (GDP). In the 2nd period the GDP variable had an effect of 0.82%, this value continued to increase until the 10th period, namely 6.51%.

**Table 5. Variance Decompositions of GDP on variable X**

| period | X | M | I | RER | GDP |
|---|---|---|---|---|---|
| 1 | 100,0000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 2 | 88.06439 | 0.737625 | 7.461666 | 2.819532 | 0.916785 |
| 3 | 84.27258 | 3.649209 | 8.518723 | 2.503446 | 1.056038 |
| 4 | 82.32069 | 4.032411 | 8.155645 | 4.008084 | 1.483173 |
| 5 | 81.40384 | 4.146795 | 8.119568 | 4.863093 | 1.466705 |
| 6 | 79.65913 | 4.150182 | 8.884758 | 5.823622 | 1.482312 |
| 7 | 78.45540 | 4.164121 | 9.091133 | 6.752218 | 1.537130 |
| 8 | 77.49157 | 4.110537 | 8.989108 | 7.820555 | 1.588228 |
| 9 | 76.62869 | 4.059350 | 8.966208 | 8.650331 | 1.695418 |
| 10 | 75.83388 | 4.014265 | 9.068226 | 9.260453 | 1.823178 |

*Source: Primary data processed using Eviews 10, 2023*

On Table 5 explains the Variance Decompositions of the export variable (X). It was found that the Variance Decompositions of the export variable (X) were influenced by the economic growth variable (GDP). In the 2nd period the GDP variable had an effect of 0.91%, in the 3rd period it experienced a slight increase of 1.05%. In the 4th period, the effect slowly increased to the 10th period, which was 1.82%.

**Table 6. Variance Decompositions of GDP to variable M**

| Perid | X | M | I | RER | GDP |
|---|---|---|---|---|---|
| 1 | 0.420281 | 99.57972 | 0.000000 | 0.000000 | 0.000000 |
| 2 | 2.083935 | 93.41468 | 1.238621 | 1.611958 | 1.650804 |
| 3 | 2.119842 | 89.94346 | 4.530543 | 1.618942 | 1.787215 |
| 4 | 3.016213 | 88.55910 | 4.687237 | 1.961803 | 1.775651 |
| 5 | 3.041450 | 87.66494 | 5.399819 | 1.994275 | 1.899517 |
| 6 | 3.035592 | 87.33056 | 5.411150 | 2.318550 | 1.904145 |
| 7 | 3.022968 | 86.98133 | 5.512164 | 2.566408 | 1.917127 |

| | | | | | |
|---|---|---|---|---|---|
| 8 | 3.018018 | 86.73608 | 5.574363 | 2.687770 | 1.983769 |
| 9 | 3.017266 | 86.52816 | 5.668681 | 2.756929 | 2.028962 |
| 10 | 3.036511 | 86.41925 | 5.662773 | 2.844453 | 2.037015 |

*Source: Primary data processed using Eviews 10, 2023*

On Table 6 describes the Variance Decompositions of the imported variable (M). It was found that the Variance Decompositions of the import variable (M) were influenced by the economic growth variable (GDP). In the 2nd period the GDP variable had an effect of 1.65%, this value increased 3% in the 3rd period to 1.78%. Then in the 4th period it experienced a consistent increase until the 10th period reached 2.03%.

**Table 7. Variance Decompositions of GDP on variable I**

| period | X | M | I | RER | GDP |
|---|---|---|---|---|---|
| 1 | 3.232327 | -5.438411 | 28.69166 | 0.000000 | 0.000000 |
| 2 | 9.239173 | -8.076811 | -3.546618 | 3.294202 | -6.229549 |
| 3 | 2.469121 | 1.442725 | -13.98629 | 7.583537 | -5.645871 |
| 4 | 2.736513 | 1.371900 | 4.792559 | 3.934544 | 1.238254 |
| 5 | 0.144804 | -2.264496 | 10.20859 | 3.267037 | 2.653225 |
| 6 | 2.763152 | -1.404590 | -0.711618 | 5.197801 | 0.508561 |
| 7 | 1.236973 | 1.212728 | -3.218394 | 5.553017 | 0.710881 |
| 8 | 0.022919 | 0.778265 | 2.879773 | 3.940108 | 2.337674 |
| 9 | 1.053569 | -0.581820 | 3.779919 | 3.276934 | 2.172368 |
| 10 | 1.785577 | -0.292053 | 0.098599 | 3.537924 | 1.123145 |

*Source: Primary data processed using Eviews 10, 2023*

On Table 7 explains the Variance Decompositions of the investment variable (I). It was found that the Variance Decompositions of the investment variable (I) were influenced by the economic growth variable (GDP). In the 4th period the GDP variable had an effect of 1.23%, this value increased by 4% in the 5th period with a value of 2.65% and in the following period it continued to fluctuate until the 10th period which was 1.12% .

## 5. CONCLUSIONS AND SUGGESTIONS

### 5.1. CONCLUSION

Based on the results of calculations and analyzes that have been carried out, it can be concluded that:

1. There is a one-way relationship between exchange rate variables, exports and imports to economic growth. There is a two-way relationship in the exchange rate variable affecting exports and imports. Meanwhile, there is no significant relationship between the investment variable and economic growth.
2. The exchange rate shock was responded negatively by economic growth at the beginning of the period, even though the economic growth response always approached the balance line at the end of the period. The export shock was responded positively at the beginning of the period, the export shock was responded negatively by the highest economic growth occurring in the 3rd period, then responded positively and approached the balance line by experiencing fluctuations to a negative response at the end of the period. The import shock was responded positively at the beginning of the period, then the import shock was responded negatively by the highest economic growth also occurring in the 3rd period, then increasing to approach the balance line by experiencing fluctuations which finally responded negatively until the end of the period.

### 5.2 Suggestions

Based on the results of the research, there are things that need to be done further, including:

1. The need to use the rupiah exchange rate policy in an effort to boost output to increase economic growth in the agricultural sector, however, must be carried out with caution because even though depreciation will increase the competitiveness of domestic goods abroad, it will also cause an increase in domestic prices which in turn can contractionary impact on the economy.
2. The government needs to pay attention to trade deregulations, the availability of good infrastructure, low transaction costs and economic-political conditions in the country which aim to facilitate trading activities, especially exports of domestic goods so as to increase economic growth.
3. For further research that reviews economic growth in Indonesia, it can add new variables such as labor variables in the agricultural sector, as well as the level of farmer exchange rates to add to the wealth of information obtained from Indonesia's economic growth.

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