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THE EFFECTS OF EXCHANGE RATES, EXPORTS, AND IMPORTS ON ECONOMIC GROWTH IN INDONESIA, 2011–2025

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ABSTRACT

This study aims to examine the short-term and long-term effects of the exchange rate, exports, and imports on economic growth in Indonesia. This study employs a quantitative approach using an associative research design. The data used in this study are secondary data in the form of quarterly Indonesian data for the period 2011–2025, obtained from the Central Statistics Agency (BPS) and Bank Indonesia (BI). The data analysis methods employed include stationarity tests, cointegration tests, determination of the optimal lag, causality tests, the Vector Error Correction Model (VECM), the Impulse Response Function (IRF), and Variance Decomposition (VD), all conducted using EViews 13 software. The results of this study indicate that, in the long run, the exchange rate, exports, and imports have a significant effect. In the short run, the exchange rate and imports also have a significant effect, but the export variable does not have a significant effect. The study identified a gap in the literature, namely differing findings regarding the effects of exports, imports, and the exchange rate on economic growth. Some studies have found that exports have a significant positive effect, while others have found no significant effect. Furthermore, most studies use annual data and regression methods, which do not allow for simultaneous explanation of both short-term and long-term relationships.

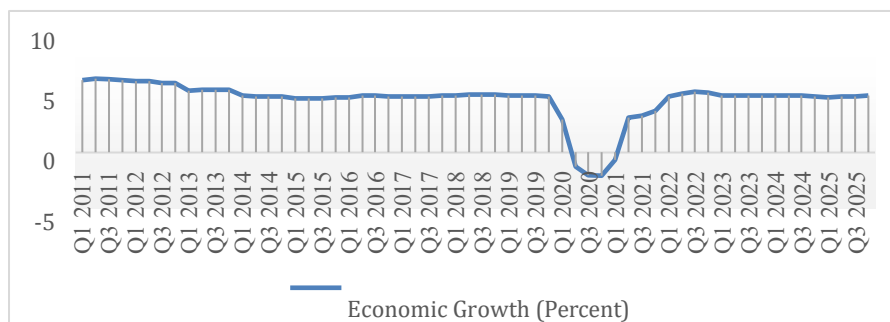
INTRODUCTION

Economic growth is one of the key indicators used to assess the success of a country's economic development efforts. Higher economic growth is expected to create greater opportunities for improving the well-being of its people.[1] Economic growth can be defined as a process of continuous improvement in a country's economic conditions over a specific period of time. Therefore, economic growth can be achieved through increased productivity in an economy, which is then reflected in an increase in national income.[2]

For developing countries, including Indonesia, economic growth is a primary focus of national development efforts aimed at achieving equitable social welfare. Effective economic development can accelerate the pace of economic growth, just as economic growth supports the process of sustainable economic development. These conditions ultimately lead to an increase in people's income over a certain period. This is because economic activity is fundamentally the process of producing goods and services that utilizes various factors of production as the main drivers of economic activity. This process generates a flow of profits to the factors of production owned by the local community.[3]

In general, a country's economic growth is measured using Gross Domestic Product (GDP), including GDP per capita. In addition, Gross National Product (GNP) can also serve as an indicator for assessing a country's economic development. The key difference between the two is that GDP reflects a country's productivity, whereas GNP is used to measure the overall productivity of its citizens. Given these various metrics, developing countries generally use GDP for their assessments, while developed countries typically use GNP.[4]

One developing country that uses Gross Domestic Product (GDP) as a measure of its economic growth is Indonesia. As a developing country, Indonesia faces various challenges in improving the quality of economic development and public welfare. This can be seen from its per capita income, which is relatively lower than that of developed countries, as well as the continuing development disparities among regions. Nevertheless, Indonesia possesses high economic potential, abundant natural resources, and a Gross Domestic Product (GDP) that continues to grow each year. Based on information released by the Central Statistics Agency (BPS), Indonesia's economy has shown a positive trend in recent years. However, in 2020, the economy contracted due to the outbreak of the pandemic. The following data presents Indonesia's economic growth over the past 15 years.

Graph 1. Indonesia's Economic Growth by Quarter, 2011–2025

Source: Central Bureau of Statistics, 2026

According to data from the Central Statistics Agency (BPS), Indonesia's economic growth during the 2011–2025 period showed fluctuating trends, with several declines and increases due to both global and domestic conditions. From 2011 to 2019, Indonesia's economy was relatively stable, as evidenced by GDP growth ranging from a high of 6.58 percent in the second quarter of 2011 to a low of 5.02 percent in the fourth quarter of 2019. These figures indicate that domestic production and consumption were performing fairly well prior to the COVID-19 pandemic. In 2020, Indonesia's economy experienced a significant decline. GDP hit its lowest point in the fourth quarter of 2020 at -2.07 percent, driven by the COVID-19 pandemic, which reduced economic activity, including production, household consumption, and international trade. This decline marked the most severe economic contraction during the observed period.

Indonesia's economy began to recover in 2021, with GDP rising to 3.7 percent in the fourth quarter of 2021 and continuing to grow to reach 5.41 percent in the third quarter of 2022. This growth indicates an economic recovery driven by increases in household consumption, investment, and export activity. From 2023 to 2025, Indonesia's economic growth will stabilize again and exceed pre-pandemic levels, reaching 5.05 percent in the third quarter of 2023, 5.04 percent in the third quarter of 2024, and 5.11 percent in the fourth quarter of 2025. This stability demonstrates Indonesia's ability to sustain economic growth amid global uncertainty and shows that the economy is capable of recovering and continuing to grow positively in the post-pandemic era.

According to the Keynesian theory, the rate of economic growth is influenced by the level of aggregate demand, which includes consumption, investment, government spending, and net exports—that is, the difference between exports and imports. When the exchange rate weakens, the price competitiveness of domestic products increases, thereby boosting exports, which in turn adds to aggregate demand and stimulates output and economic growth. Conversely, an appreciation of the exchange rate makes imports cheaper, which can increase dependence on foreign goods and reduce the contribution of net exports. Thus, exchange rate fluctuations that affect the balance of exports and imports will be directly reflected in changes in aggregate demand. Consequently, these three factors—the exchange rate, exports, and imports—serve as predictors of an increase or even a decrease in a country's economic growth.

The first factor believed to influence economic growth is the exchange rate. The exchange rate is also known as the “kurs,” which can be defined as an agreement used to assign a nominal value to current or future payments involving two or more currencies of the countries concerned.[5] When a country engages in trade or investment with another country, there are times when the value of its domestic currency will appreciate or even depreciate. When the exchange rate depreciates, the price of imported goods from abroad will be high, but conversely, when exporting, goods sold to other countries will be more competitive. Thus, fluctuations in the exchange rate will impact global trade flows, which in turn will affect a country's economic growth.[6]

The second factor believed to influence economic growth is exports. Exports involve the sale of domestically produced goods to other countries. In carrying out export activities, a country's ability to produce goods that are competitive in the international market is a crucial factor in its success.[7] In boosting the domestic economy, exports are crucial because they can open up markets far larger than the local market, create jobs, and improve public welfare. This is because international trade, particularly in the form of exports, directly impacts national income. Consequently, the government strives to encourage the growth of exports for the benefit of all parties and to boost the country's own economic growth.[8]

The third factor believed to influence economic growth is imports. Imports are defined as a form of commercial transaction involving the purchase of goods or services shipped into the country from other nations.[9] Imports are a form of international trade conducted by a country to meet needs that cannot yet be produced or optimally fulfilled by domestic industries.[8] Some of the benefits gained from importing goods and services can drive economic growth in terms of distribution, production, and consumption.[10] Import activities are often likened to a double-edged sword because they have both positive and negative effects on a country's economy. On the positive side, imports play a role in meeting public demand for goods and services that are not yet available or cannot yet be produced efficiently domestically. Additionally, imports support the continuity of production processes by supplying raw materials and capital goods, and help control inflation by maintaining the availability of goods and price stability in the domestic market. However, on the other hand, excessive imports can reduce demand for domestic products, put pressure on local industries, and increase dependence on foreign products. Therefore, import policies must be managed carefully so that their benefits can be maximized without causing negative impacts on national economic growth and resilience.

Various studies show that the dynamics of economic growth are inextricably linked to macroeconomic indicators. In a study conducted by Sani Auliaul Muslimah, Ayu Rahma Pratiwi, and Perwito, the results indicate that exports have a positive and significant effect on economic growth, while imports are not significant on their own but still contribute alongside exports.[11] Furthermore, research by Merdita Manik indicates that exports have a positive and significant impact on Indonesia's economic growth. Conversely, imports do not

have a significant impact and, in the long term, have the potential to hinder economic growth.[2] Additionally, research by Nulhanuddin and Devi Andriyani indicates that in the short term, the exchange rate has a negative and significant impact on economic growth, while exports have a positive but insignificant impact. Meanwhile, in the long term, the exchange rate continues to show a negative trend, albeit not significant, and exports have a positive but also insignificant impact on Indonesia's economic growth.[12]

This study presents several novelties compared to previous research. First, this study uses quarterly data for the period 2011–2025, thereby providing a more detailed and accurate picture of developments in Indonesia's exchange rate, international trade, and economic growth in both the short and long term. Second, this study employs the Vector Error Correction Model (VECM), a method that is still relatively rarely used in similar studies; it is therefore expected to explain long-run equilibrium relationships and the adjustment processes among economic variables more comprehensively. The results of this study are expected to provide empirical evidence regarding the role of the exchange rate and international trade (exports and imports) in influencing Indonesia's economic growth. Furthermore, this study is expected to serve as a reference for academics, the government, and policymakers in formulating strategies that support economic stability and promote sustainable economic growth in Indonesia

METHODS

This study employs a quantitative approach. A quantitative approach is a research method in which the process—from data collection and data processing to the interpretation of results and the drawing of research conclusions—is dominated by the use of numerical data. The presentation of quantitative research results is generally displayed in numerical form, supported by tables, graphs, figures, or other forms of data presentation.[13]

This research was conducted through a literature review using secondary data as the primary source of information. Indonesia was selected as the research location based on its dynamic economic conditions and active participation in international trade. Indonesia is also vulnerable to external shocks, such as changes in global economic conditions, monetary policies of developed countries, and fluctuations in global commodity prices, which directly affect the exchange rate and the performance of international trade. The data used were sourced from publications on the websites of the Central Statistics Agency and Bank Indonesia, utilizing quarterly data from 2011 to 2025, resulting in 60 data observations.

In this study, there are two variables: the independent variable and the dependent variable. First, the independent variable is a variable that influences and causes changes in other variables. The independent variables include the exchange rate (X1), exports (X2), and imports (X3). The second variable, the dependent variable, is a variable whose value is influenced by the independent variables. In this study, the dependent variable used is economic growth (Y). The indicators used for each variable are as follows: first, for the exchange rate, the mid-market exchange rate of the rupiah against the U.S. dollar (USD); second, for exports, the value of oil and gas and non-oil and gas imports; third, for imports, the value of oil and gas and non-oil and gas imports; and fourth, Gross Domestic Product (GDP), using GDP data based on economic sectors at constant 2010 prices.

In this study, the data analysis method used is the Vector Error Correction Model (VECM). VECM is an analytical technique used to correct short-run imbalances toward long-run equilibrium. The VECM is an extension of the Vector Autoregression (VAR) model in the form of a restricted VAR. These restrictions are necessary because the data used are non-stationary but exhibit a cointegration relationship. Therefore, the VECM incorporates this cointegration information into the model specification so that the short-run and long-run relationships among variables can be analyzed more accurately.[14] The VECM was chosen because this study uses time-series data, which allows for the analysis of relationships among variables over time. Unlike analyses that only examine relationships at a specific period, the VECM is capable of depicting dynamic changes and illustrating the adjustment process that occurs over time toward long-run equilibrium. To facilitate the calculations for each test, this study uses Eviews version 13 as a tool. This study uses EViews 13 because the data type used is time-series data that requires econometric analysis such as stationarity tests, cointegration tests, VAR stability tests, the “,” and so on. These features are not fully available in SPSS; therefore, EViews is more appropriate for producing accurate estimates in accordance with macroeconomic research standards.

RESULTS AND DISCUSSION

The data analysis technique used in this study was the Vector Error Correction Model (VECM) test. The VECM model is a time-series projection system designed to analyze dynamic effects. The software used in this study was EViews 13, with testing conducted using the VECM model.

1. Stationarity Test

The stationarity test serves as the initial step in research using the VAR model. It is used to determine the stationarity of the obtained data. The stationarity test employs the Augmented Dickey-Fuller (ADF) test to determine whether the VAR model contains a unit root.

Table 1. Stationarity Test Results at the Level

Variable	ADF (Level)		Description
	ADF	Probability	
Economic Growth (Y)	0.648056	0.9898	Non-Stationary
Exchange Rate (X1)	-1.883706	0.3375	Non-stationary
Exports (X2)	-0.523159	0.8787	Non-stationary
Imports (X3)	-1.109410	0.7066	Non-Stationary

Source: Processed Data from Eviews13

Based on Table 1, the stationarity test at the level for the exchange rate, export, and import variables yielded a significance value or Prob. greater than 0.05. This means that the data to be used is not yet stationary at the level. Meanwhile, for the economic growth variable, the test yielded a significant result, with a probability (Prob.) less than 0.05. This means the data is stationary at the original level. Therefore, to achieve overall stationarity, the data must be transformed to the first-difference level. The following are the results of the stationarity test analysis:

Table 2. Results of the Stationarity Test at the First-Difference Level

Variable	ADF (^{1st} Difference)		Description
	ADF	Probability	
Economic Growth (Y)	-2.972959	0.0438	Stationary
Exchange Rate (X1)	-6.525217	0.0000	Stationary
Exports (X2)	-6.999407	0.0000	Stationary
Imports (X3)	-8.022401	0.0000	Stationary

Source: Processed Data from Eviews13

Table 2 shows that each variable tested using first-difference levels yields a probability significance value of less than 0.05. If the Prob. value is less than 0.05, then the variable in the research data is declared stationary.

2. Optimal Lag Test

The second step in testing a VAR model is to determine the optimal lag. The optimal lag is used to ensure that the model provides a dynamic and comprehensive explanation. When determining the optimal lag, the lag length should be neither too short nor too long. The optimal lag can be determined using lag length criteria, and the following are the results of the analysis:

Table 3. Optimal Lag Test Results

Lag	LR	FPE	AIC	SC	HQ
0	NA	4.24e+26	72.66268	72.80478*	72.71803*
1	32.80140*	3.97e+26*	72.59551*	73.30600	72.87226

Source: Processed Data from Eviews13

Based on Table 3, the optimal lag can be determined by the lag with the most asterisks (*); therefore, lag 1 is used.

3. VAR Stability Test

After conducting the optimal lag test, the next step is the VAR stability test, which serves as a prerequisite for ensuring that the IRF results approach the desired stability. However, if the data is found to be unstable in this stability test, the IRF results will struggle to achieve long-term stability. To determine whether the data is stable, one examines the modulus value. If the modulus value is less than 1 (<1), the data is considered stable; conversely, if the modulus value is greater than 1, the data is considered unstable. The following are the results of the analysis:

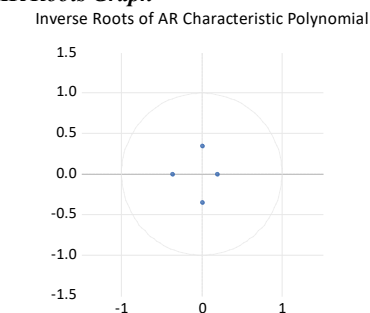
Table 4. VAR Stability Test Results

Root	Modulus
-0.053506 - 0.752345i	0.754245
-0.053506 + 0.752345i	0.754245
0.095032 - 0.551207i	0.559339
0.095032 + 0.551207i	0.559339
-0.546923	0.546923
0.143040 - 0.206461i	0.251170
0.143040 + 0.206461i	0.251170
0.033264	0.033264

Source: Processed Data from Eviews13

Based on Table 4, the modulus of all roots is less than 1, which means the VAR model is considered stable at a lag length of 1. This stable VAR model can be used in IRF and VD analyses. This is because economic variables exhibit both long-run and short-run equilibria over a specific period. Determining VAR stability is not based solely on the modulus values; it can also be done using the AR Roots Graph. The AR Roots Graph indicates that if the points lie inside the circle, the VAR model is considered stable. The following are the results of the AR Roots Graph:

Figure 1. VAR Stability Test Using the AR Roots Graph



Source: Data Processed Using Eviews13

4. Cointegration Test

The next step is to test for cointegration using the Johansen Cointegration Test. The cointegration test is conducted to determine the relationship between variables. The relationship in question is the long-run relationship among several economic variables. This study uses the variables of exchange rate, exports, imports, and economic growth. The Johansen Cointegration Test was applied to a VAR model structure with data differencing to ensure the data were stationary. The following are the results of the cointegration test:

Table 5. Cointegration Test Results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.** Critical Value
None *	0.704366	155.2874	47.85613	0.0000
At most 1 *	0.487876	85.82528	29.79707	0.0000
At most 2 *	0.391837	47.68155	15.49471	0.0000
At most 3 *	0.287664	19.33473	3.841465	0.0000

Source: Processed Data from Eviews13

Table 5 shows that if the trace statistic value is greater than the critical value at a 5% significance level, a long-run relationship is considered to exist. Furthermore, if the probability value is less than 0.05, the VAR model is also considered to indicate a relationship. It can be seen that the trace statistic value is $155.2874 > 47.85613$, and the Prob. value is $0.0000 < 0.05$; therefore, a long-run relationship is considered to exist. Once a long-run relationship has been established, the next step is to test the Vector Error Correlation Model (VECM).

5. Granger Causality Test

The Granger causality test is used to determine whether or not there is a cause-and-effect relationship between variables, whether unidirectional or bidirectional. In this study, the test was conducted using Granger's causality method. The determination of a causal relationship was made by comparing the probability value with a significance level of 5%. If the probability value is less than 0.05, then a causal relationship is established between the variables. Conversely, if the probability value exceeds 0.05, then a causal relationship between the variables cannot be proven.

Table 6. Results of the Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
EXCHANGE_RATE does not Granger-cause ECONOMIC_GROWTH	59	0.58010	0.4495
ECONOMIC_GROWTH does not Granger-cause EXCHANGE_RATE		3.55115	0.0647
EXPORTS does not Granger-cause ECONOMIC_GROWTH	59	0.13508	0.7146
ECONOMIC_GROWTH does not Granger-cause EXPORTS		2.27335	0.1372
IMPORTS do not Granger-cause ECONOMIC_GROWTH	59	0.00430	0.9479
ECONOMIC_GROWTH does not Granger-cause IMPORTS		2.09181	0.1537
EXPORTS does not Granger-cause EXCHANGE_RATE	59	1.78612	0.1868
EXCHANGE_RATE does not Granger-cause EXPORTS		0.96660	0.3298
IMPORTS do not Granger-cause EXCHANGE_RATE	59	4.03835	0.0493
EXCHANGE_RATE does not Granger-cause IMPORTS		0.32194	0.5727
IMPORTS do not Granger-cause EXPORTS	59	4.47781	0.0388
EXPORTS do not Granger-cause IMPORTS		13.6413	0.0005

Source: Processed Data from Eviews13

Based on Table 6, it is evident that the exchange rate variable has no significant relationship with or influence on economic growth. This is because the probability value for the exchange rate's effect on economic growth is greater than 0.05 ($0.4495 > 0.05$). Conversely, the probability value of the relationship between economic growth and the exchange rate is also greater than 0.05 ($0.0647 > 0.05$), indicating that there is no bidirectional causal relationship between the exchange rate and economic growth.

Furthermore, the export variable has no significant relationship with or impact on economic growth because the probability value is greater than 0.05 ($0.7146 > 0.05$). Conversely, the effect of economic growth on exports is also not significant because the probability value is greater than 0.05 ($0.1372 > 0.05$). Thus, there is no causal relationship between exports and economic growth.

Furthermore, the import variable has no significant relationship with or impact on economic growth because the probability value is greater than 0.05 ($0.9479 > 0.05$). Conversely, the effect of economic growth on imports is also not significant because the probability value is greater than 0.05 ($0.1537 > 0.05$). Therefore, there is no causal relationship between imports and economic growth.

Regarding the relationship between exports and the exchange rate, it is evident that exports do not have a significant relationship with or influence on the exchange rate because the probability value is greater than 0.05 ($0.1868 > 0.05$). Conversely, the effect of the exchange rate on exports is also not significant because the probability value is greater than 0.05 ($0.3298 > 0.05$). Thus, there is no causal relationship between exports and the exchange rate.

Furthermore, the import variable has a significant relationship with and influence on the exchange rate because the probability value is less than 0.05 ($0.0493 < 0.05$). Conversely, the exchange rate's effect on imports is not significant because the p-value is greater than 0.05 ($0.5727 > 0.05$). Thus, there is a one-way causal relationship from imports to the exchange rate.

Finally, the import variable has a significant relationship with and influence on exports because the probability value is less than 0.05 ($0.0388 < 0.05$). Conversely, exports also have a significant relationship with and influence on imports because the probability value is less than 0.05 ($0.0005 < 0.05$). Thus, there is a two-way causal relationship between imports and exports

6. Vector Error Correction Model (VECM) Test

The Vector Error Correction Model (VECM) is used to analyze long-run relationships among variables while examining the adjustment process toward short-run equilibrium. This model shows that the variables under study not only exhibit long-run equilibrium but also dynamic interactions in the short run. The relationship was tested by comparing the t-statistic value to the t-table value. If the t-statistic value exceeds the t-table value, the variables are deemed to have a significant influence or relationship. Conversely, if the t-statistic value is lower than the t-table value, the relationship between the variables is considered insignificant. The following are the results of the VECM model analysis:

The following are the results of the t-table value calculation:[15]

Table 7. t-Table Values

n (number of observations)	60
df = n - k - 1	56
Significance Level	0.05
Critical t-value	2.0032407

Table 8. Results of the Short-Run VECM Model Test

Variable	Coefficient	t-statistic	t-table	Notes
D(EXCHANGE_RATE(-1),2)	-37.07930	-2.22259	2.0032407	Significant
D(EXPORTS(-1),2)	2.006500	0.30071	2.0032407	Not Significant
D(IMPORTS(-1),2)	-12.65807	-2.29112	2.0032407	Significant

Source: Processed Data from Eviews13

Based on Table 8, the analysis results show that the partial t-statistic value for the exchange rate variable at lag 1 is -2.22259, which is greater than the critical t-value of 2.0032407. This indicates that the exchange rate variable has a significant effect on economic growth in the short run. The resulting coefficient of -37.07930 indicates a negative relationship, meaning that when the exchange rate increases, the economic growth variable tends to decrease.

Furthermore, the analysis results show that the partial t-statistic value for the export variable at lag 1 is 0.30071, which is smaller than the critical t-value of 2.0032407. This means that the export variable does not have a significant effect on the economic growth variable in the short run. The coefficient value of 2.006500 indicates a positive relationship, suggesting that an increase in exports tends to be followed by an increase in the economic growth variable, although this relationship is not statistically significant.

Meanwhile, the import variable yielded different results. The partial t-statistic value of -2.29112 is greater than the t-table value of 2.0032407, so it can be concluded that the import variable has a significant effect on the economic growth variable in the short run. The coefficient of -12.65807 indicates that the relationship is negative, meaning that any increase in imports will be followed by a decrease in the economic growth variable.

The following are the results of the long-run VECM model analysis:

Table 9. Results of the Long-Run VECM Model Test

Variable	Coefficient	t-statistic	t-table	Notes
D(EXCHANGE_RATE(-1))	-27.16515	-2.03006	2.0032407	Significant
D(EXPORTS(-1))	14.10060	2.26372	2.0032407	Significant
D(IMPORTS(-1))	-22.53584	-3.25485	2.0032407	Significant

Source: Processed Data from Eviews13

Based on Table 9, the long-run estimation results show that the exchange rate variable has a negative and significant effect on the economic growth variable at the 5% significance level, with a t-statistic value of -2.03006, which is greater than the critical t-value of 2.0032407. This means that in the long run, the exchange rate has a significant effect on economic growth. The coefficient of -27.16515 indicates that a one-point increase in the exchange rate in the previous period will reduce economic growth by 27.16515 points in the current period.

The results of the long-run estimation of the export variable indicate that exports have a positive and significant effect on economic growth at the 5% significance level, with a t-statistic of 2.26372, which is greater than the critical t-value of 2.0032407. The coefficient of 14.10060 indicates that a one-point increase in exports in the previous period will increase the economic growth variable by 14.10060 points in the current period.

Meanwhile, the results of the long-term estimation of the import variable indicate a negative and significant effect on the economic growth variable at the 5% significance level, with a t-statistic value of -3.25485, which is greater than the critical t-value

of 2.0032407. The coefficient of -22.53584 indicates that a one-point increase in imports in the previous period will reduce the economic growth variable by 22.53584 points in the current period.

7. Impulse Response Function (IRF) Analysis

The results of the tests in Tables 8 and 9 were then analyzed using the Impulse Response Function (IRF). IRF analysis explains the response resulting from a shock to one variable on another variable. IRF analysis is used for both the short term and the long term. The following are the results of the IRF tests for each variable:

a. Economic Growth

To facilitate interpretation, the analysis results are presented in Table 12 across 10 periods.

Table 12. Results of the IRF Test for Economic Growth

Period	D (Economic Growth)
1	52233.21
2	7,712.495
3	-18,125.56
4	13,993.19
5	23,948.53
6	3,308.143
7	331.6403
8	13,381.15
9	13,076.04
10	52,233.21

Source: Processed Data from Eviews13

Based on the results of the IRF test, it can be seen that the economic growth variable exhibits a fluctuating response to shocks occurring in the initial period, then tends to move toward a more stable condition in subsequent periods.

In the first period, the economic growth response was positive at 52,233.21, indicating that at the beginning of the period there was a significant response due to a shock in the system. Subsequently, in the second period, the response remained positive but decreased to 7,712.495.

However, in the third period, the response turned negative at -18,125.56. This indicates that during that period, the shock had a negative impact on economic growth. Subsequently, in the fourth period, the response returned to a positive value of 13,993.19 and continued to rise in the fifth period to 23,948.53.

From the sixth through the eighth periods, the economic growth response remained positive with a more stable trend, at 3,308.143, 331.6403, and 13,381.15, respectively. Furthermore, in the 9th and 10th periods, the response remained positive at 13,076.04 and 52,233.21, although it experienced a slight decline compared to the previous periods.

Overall, the IRF results show that the economic growth response to shocks is volatile in the short term, as evidenced by the shift from a positive to a negative response in the initial period. However, in subsequent periods, the response returns to positive territory and tends to stabilize. This indicates that the impact of shocks on the economic system is only temporary and that, in the medium to long term, economic growth is able to return to a more stable equilibrium.

b. Exchange Rate

To facilitate interpretation, the analysis results are presented in Table 13, covering 10 periods.

Table 13. Results of the IRF Test of the Exchange Rate's Effect on Economic Growth

Period	D(Exchange_Rate)
1	0.000000
2	-1559.762
3	5,028.147
4	5,908.258
5	525,1355
6	1,511,234
7	4,320.319
8	3,402,396
9	1,798,801
10	2,627.206

Source: Processed Data from Eviews13

Based on the table, it can be seen that the variable responds to shocks in the exchange rate itself, which fluctuates in the early periods but then tends to stabilize at a positive value in subsequent periods.

In the first period, the exchange rate's response to a shock to itself was 0.000000, indicating that there was no response to the *shock* during the initial period. In the second period, a response began to emerge but was negative, at -1,559.762. This indicates that the initial shock caused the exchange rate to decline.

Next, in the third period, the response turned positive at 5,028.147 and continued to rise in the fourth period to 5,908.258. In the fifth period, the response declined but remained positive at 525.1355. Then, from the sixth to the eighth periods, the response increased again and remained relatively stable at 1,511.234, 4,320.319, and 3,402.396, respectively.

In the ninth and tenth periods, the response of the exchange rate variable tended to remain positive, with values of 1,798.801 and 2,627.206. Although there were slight fluctuations, overall the response showed a trend toward stability in the final periods.

Overall, these results indicate that shocks to the exchange rate variable are met with fluctuating responses in the short term, as evidenced primarily by the shift in the response from negative to positive during the initial period. However, in the medium to long term, the response becomes more stable and remains positive. This indicates that the exchange rate undergoes an adjustment process toward equilibrium, in which the volatile effects of the initial *shock* gradually subside and move toward a more stable condition.

c. Exports

To facilitate interpretation, the results of the analysis are presented in Table 14, covering 10 periods

Table 14. Results of the IRF Test of Exports on Economic Growth

Period	D (Exports)
1	0.000000
2	-10,585.04
3	-838.6903
4	495.5802
5	-4,349.852
6	-4,761.841
7	-1,700.293
8	-1,917.448
9	-3,759.311
10	-3,319.119

Source: Processed Data from Eviews13

Based on the table, it can be seen that the export variable responds to shocks to the export variable itself, exhibiting fluctuations in the early periods and tending to be dominated by negative values in subsequent periods.

In the first period, the response of the export variable to a shock to itself was 0.000000, indicating that in the initial period there was no response to the shock. In the second period, a response began to emerge, with a negative value of -10,585.04. This indicates that the initial shock had a significant downward impact on exports.

Next, in the third period, the response remained negative at -838.6903. However, in the fourth period, the response turned positive at 495.5802, indicating a temporary improvement following the *shock*. However, in the fifth period, the response turned negative again at -4,349.852 and continued to decline in the sixth period to -4,761.841.

From the seventh through the tenth periods, the export variable's response remained negative, with values of -1,700.293, -1,917.448, -3,759.311, and -3,319.119, respectively. Although there were fluctuations in the values, the export response generally continued to show a negative trend in the final periods.

Overall, these results show that shocks to the export variable elicit fluctuating responses in the short term, as evidenced by the shift from negative to positive responses in the early periods. However, in the medium to long term, the response is again dominated by negative values. This indicates that shocks to exports have a fairly persistent downward impact and that the adjustment process toward equilibrium proceeds relatively slowly

d. Imports

To facilitate interpretation, the analysis results are presented in Table 15, covering 10 periods

Table 15. Results of the IRF Test of Imports on Economic Growth

Period	D (Imports)
1	0.000000
2	21,722.33
3	16,247.31
4	5,389.968
5	9,341.472
6	16,082.77
7	12,045.92
8	9,045.343
9	11,621.83
10	13,281.79

Source: Processed Data from Eviews13

Based on the table, it can be seen that the import variable responds to shocks to the import variable itself, with responses that tend to be positive and relatively stable in subsequent periods.

In the first period, the response of the import variable to the shock itself was 0.000000, indicating that in the initial period there was no response to the shock. In the second period, a response began to emerge, with a positive value of 21,722.33. This indicates that the initial shock had a significant upward impact on imports.

Furthermore, in the third period, the response remained positive at 16,247.31, although it decreased compared to the

previous period. In the fourth period, the response declined again to 5,389.968 but remained positive. Then, from the fifth to the sixth period, the response increased again by 9,341.472 and 16,082.77, respectively.

From the 7th to the 10th periods, the response of the import variable remained positive, with values of 12,045.92, 9,045.343, 11,621.83, and 13,281.79, respectively. Despite some fluctuations, the import response tended to remain stable at positive values in the final periods.

Overall, these results show that shocks to the import variable are met with a positive response starting from the initial period following the shock. The fact that this response remains positive through the final period indicates that the import variable has a fairly good ability to adjust to shocks, so that in the medium to long term, its movements tend to stabilize and move toward equilibrium.

8. Variance Decomposition (VD) Analysis

The next step after the IRF test is the Variance Decomposition (VD) analysis. The purpose of the VD analysis results is to predict the contribution (as a percentage) of the variance of each variable due to a shock in the VAR model. The following are the results of the Variance Decomposition test for each variable:

a. Economic Growth

To facilitate interpretation, the analysis results are presented in Table 16 over 10 periods

Table 16. Results of the VD Test for Economic Growth

Period	D(Economic_Growth)
1	100.0000
2	82.62260
3	78.05211
4	77.88428
5	78.77478
6	74.54509
7	72.24235
8	71.88212
9	70.85607
10	68.77168

Source: Processed Data from Eviews13

Based on Table 16, the results of the Variance Decomposition analysis for the Economic Growth (Y) variable show that, in the first period, the contribution of the Economic Growth variable to itself was 100.0000%. This value indicates that, at the beginning of the period, fluctuations in Economic Growth were entirely influenced by the variable itself. Subsequently, in the second period, this value decreased to 82.62260%. In the third period, it decreased again to 78.05211%, and in the fourth period, it decreased slightly to 77.88428%.

Then, in the 5th period, there was a slight increase to 78.77478%. However, the value subsequently declined again in the 6th period to 74.54509%, in the 7th period to 72.24235%, and in the 8th period to 71.88212%. In the ninth period, the Variance Decomposition value declined again to 70.85607%, reaching 68.77168% in the tenth period—the lowest value at the end of the observation period.

Overall, these results show that the contribution of the Economic Growth variable to itself tends to decline from period to period. This indicates that in the long run, variations in Economic Growth are not only influenced by itself but also begin to be influenced by other variables outside the model.

b. Exchange Rate

Table 17. Results of the VD Test of the Exchange Rate's Effect on Economic Growth

Period	D(Exchange_Rate)
1	0.000000
2	0.072103
3	0.694158
4	1.472560
5	1.275150
6	1.246985
7	1.554469
8	1.682932
9	1.646105
10	1.698298

Source: Processed Data from Eviews13

Based on Table 17, the results of the variance decomposition analysis of the exchange rate variable on economic growth (Y) show that during the first period, the exchange rate's contribution to economic growth was 0.000000%. This indicates that at the beginning of the period, the exchange rate had no impact on fluctuations in economic growth. Subsequently, in the second period, the exchange rate's contribution began to rise to 0.072103%. In the third period, it increased again to 0.694158%, and continued to rise in the fourth period to 1.472560%, which represents a fairly significant increase.

However, in the 5th period, its contribution declined slightly to 1.275150%, then fell again in the 6th period to 1.246985%. After that, in the 7th period, the exchange rate's contribution rose again to 1.554469%, and in the 8th period, it rose to 1.682932%. In the ninth period, the exchange rate's contribution declined slightly to 1.646105%, but rose again in the tenth period to 1.698298%, which was the highest value during the observation period.

Overall, these results show that the exchange rate's contribution to economic growth tends to increase over the long term. This indicates that changes in the exchange rate have an increasingly significant impact on fluctuations in economic growth as the observation period lengthens.

c. Exports

Table 18. Results of the VD Test on the Impact of Exports on Economic Growth

Period	D (Exports)
1	0.000000
2	3.320655
3	2.823870
4	2.656988
5	2.674300
6	2.957392
7	2.919552
8	2.842216
9	2.924641
10	2.997316

Source: Processed Data from Eviews13

Based on Table 18, the results of the variance decomposition analysis of the Export variable on Economic Growth (Y) show that during the first period, the contribution of the Export variable to Economic Growth was 0.000000%. This indicates that at the beginning of the period, the Export variable had no impact on fluctuations in Economic Growth.

Next, in the second period, the contribution of exports increased quite significantly to 3.320655%, which was the highest value during the observation period. Then, in the third period, this contribution decreased to 2.823870%, and declined further in the fourth period to 2.656988%.

In the fifth period, the contribution of exports rose slightly to 2.674300%, then increased again in the sixth period to 2.957392%. However, in the seventh and eighth periods, the contribution declined slightly to 2.919552% and 2.842216%, respectively.

Subsequently, in the ninth period, the contribution of exports rose again to 2.924641%, and in the tenth period, it increased further to 2.997316%.

Overall, these results show that the contribution of the "Exports" variable to economic growth tends to fluctuate but continues to have an impact in the long term. This indicates that changes in exports play a role in influencing fluctuations in economic growth, although their contribution is relatively smaller than the impact of the "Economic Growth" variable itself.

d. Imports

Table 19. Results of the VD Test of Imports on Economic Growth

Period	D(Imports)
1	0.000000
2	13.98464
3	18.42986
4	17.98617
5	17.27577
6	21.25053
7	23.28363
8	23.59273
9	24.57319
10	26.53270

Source: Processed Data from Eviews13

Based on the results of the Variance Decomposition analysis of the Imports variable on Economic Growth (Y), it can be explained that in the first period, the contribution of the Imports variable to Economic Growth was 0.000000%. This indicates that at the beginning of the period, the Imports variable had not yet influenced fluctuations in Economic Growth.

Subsequently, in the second period, the contribution of Imports increased quite significantly to 13.98464%. In the third period, it rose again to 18.42986%, then declined slightly in the fourth period to 17.98617%, and declined further in the fifth period to 17.27577%.

In the 6th period, the contribution of imports rose again to 21.25053%. This increase continued into the 7th period, reaching 23.28363%, and the 8th period, reaching 23.59273%. Furthermore, in the ninth period, the contribution of imports increased again to 24.57319%. By the tenth period, the contribution of imports reached 26.53270%, which was the highest

value during the observation period.

Overall, these results show that the contribution of the “Imports” variable to economic growth tends to increase from period to period. This indicates that, in the long run, the “Imports” variable has an increasingly significant influence on fluctuations in economic growth.

The Effect of the Exchange Rate on Economic Growth

This study shows that the exchange rate variable has a significant negative effect on economic growth in both the long and short term. This indicates that an increase in the exchange rate will cause a decline in economic growth in the short term, with a greater impact than in the long term. The direction of this negative relationship suggests that exchange rate depreciation can put pressure on economic activity and hinder economic growth. In an open economy such as Indonesia's, the movement of the rupiah's exchange rate against foreign currencies—particularly the U.S. dollar—often experiences fluctuations influenced by domestic and global factors, such as inflation, interest rates, and global economic conditions. The exchange rate is a key indicator in a country's economy because it is directly linked to international trade, foreign investment, and macroeconomic stability [16]. An appreciation of the rupiah tends to boost import capacity because the prices of goods from abroad become relatively cheaper, whereas a depreciation of the rupiah can increase the prices of imported goods and the production costs of goods that use raw materials from abroad. [17]

The results of this study are consistent with the Mundell-Fleming theory, which explains that in an open economy, changes in the exchange rate have a strong influence on macroeconomic equilibrium, particularly on economic growth through the channels of international trade, investment, and monetary policy. [18] In the short term, exchange rate depreciation can indeed boost export competitiveness; however, in developing countries that remain highly dependent on imports of raw materials and capital goods, a weaker exchange rate tends to have a negative impact on economic activity due to rising prices for goods purchased from abroad.

The findings of this study are supported by [19], conducted by Wailul Saputri, Dwi Hasmidayani, Levia Ega Berliani, Ria Gustini, and Muhammad Akbar Budiman. [19] The study states that the exchange rate has an impact on economic growth in Indonesia. This means that changes in the rupiah's exchange rate against foreign currencies can affect the national economy, whether through international trade, investment, or the stability of domestic prices for goods and services. These findings indicate that when the exchange rate depreciates or weakens, the cost of importing raw materials and capital goods increases, which can hinder the production process and reduce economic productivity. Additionally, exchange rate volatility can erode investor confidence in a country's economic conditions, leading to a decline in incoming investment. Another impact is rising inflation due to higher prices for imported goods, which can ultimately reduce consumer purchasing power.

The Impact of Exports on Economic Growth

This study shows that exports have a positive and significant effect on long-term economic growth, but do not have a significant effect in the short term. Exports have a positive impact on a country's economic activity, as they represent spending by residents of other countries on domestically produced goods. However, international trade—particularly Indonesia's exports—has declined. This certainly has an adverse impact on national economic growth. [20] In this study, the results show that exports are one of the key factors that can support long-term economic growth. The higher a country's export activity, the greater the opportunity for economic growth through international trade.

The results of this study are consistent with Keynesian economic theory, which states that economic growth is strongly influenced by an increase in aggregate demand in the economy. In Keynesian theory, exports are a key component in the formation of aggregate demand and Gross Domestic Product (GDP). [21] In the long run, when exports increase, this will drive an increase in domestic production, the utilization of factors of production, employment, and national income—all of which ultimately contribute to economic growth. However, regarding their short-term impact, this study aligns with the Adjustment Theory, which explains that in the short term, the economy's response to changes in exports does not occur immediately and in full but is subject to a time lag. This means that the effect of exports on economic growth will become apparent only after a certain period due to adjustment processes across various economic sectors. The results of this long-term study were supported by Merdita Manik. [2] The study found that exports have a positive and significant impact on Indonesia's economic growth. This finding indicates that exports play a crucial role in driving economic activity, as they can increase government revenue through foreign exchange earnings. Furthermore, increased exports can also expand markets for domestic products, thereby driving growth in production, investment, and employment. As demand for export products rises, the domestic industrial and manufacturing sectors will expand, leading to positive effects on economic growth.

However, in the short term, the results of this study are supported by the findings of a study conducted by Ulfa Hanifah. [22] That study noted that the export variable does not have a significant effect on economic growth in Indonesia. This finding indicates that the contribution of exports to Indonesia's economic growth is still influenced by various other, more dominant factors. One of these factors is Indonesia's export structure, which remains dominated by raw commodities with relatively low value added; consequently, increased exports have not yet been able to optimally boost national income. Furthermore, dependence on international market conditions and fluctuations in global commodity prices also cause the contribution of exports to economic growth to be less stable.

The Impact of Imports on Economic Growth

This study shows that imports have a significant negative effect on economic growth in both the short and long term. This negative relationship indicates that as imports increase, economic growth tends to decline. Imports play a role in supplementing domestic production, which helps drive trade in raw materials and modern technology; thus, imports can support national stability. [23] Although imports can meet needs that cannot be met by domestic production, excessive increases in imports can reduce domestic production and

lower national income. This highlights the need for prudent import management to protect domestic industries from unfair competition.[24]

The results of this study are consistent with the theory of *Comparative Advantage* proposed by David Ricardo. This theory explains that a country will gain an advantage in international trade if it focuses its production on goods that have a relatively lower cost of production compared to other countries, and then trades to meet its needs for other goods that it cannot produce efficiently.[25] In the short term, an increase in imports can reduce demand for domestic products, thereby lowering output and economic growth. Meanwhile, in the long term, high dependence on imports can hinder the development of domestic industries, increase the trade deficit, and reduce the domestic sector's contribution to the economy. As a result, economic growth tends to slow down.

The findings of this study were supported by M. Nur, Hamdi Agustin, and Nuriman M. Nur.[26] The study states that the import variable has a negative and significant effect on economic growth in Indonesia, with a t-value of $0.0288 < \alpha (0.05)$ and a coefficient value of b_0 equal to -7.32959 . This is because an increase in imports raises the volume of goods produced abroad, thereby reducing domestic productivity and, consequently, domestic economic growth.

CONCLUSIONS

Based on the results of a study on the impact of the exchange rate, exports, and imports on economic growth in Indonesia for the period 2011–2025, it can be concluded that these three variables play a significant role in influencing the dynamics of Indonesia's economic growth. The analysis shows that the exchange rate has a negative and significant effect on economic growth, both in the long term and the short term. This finding indicates that a weakening of the rupiah tends to put pressure on economic activity because it increases the cost of importing raw materials and capital goods, which are still widely used in domestic production processes. This situation leads to higher production costs, which can ultimately hinder economic growth.

This study also found that exports have a positive and significant impact on economic growth in the long term, but do not have a significant impact in the short term. These results indicate that the benefits of exports to the economy are not immediately apparent; rather, they take time to drive increases in production, investment, employment, and national income. Thus, exports remain a strategic factor in supporting Indonesia's economic growth, particularly from a long-term perspective.

Meanwhile, imports have been shown to have a significant negative impact on economic growth in both the short and long term. These findings indicate that high dependence on imported goods can reduce the contribution of the domestic production sector and increase economic leakage abroad. Although imports are necessary to meet the demand for raw materials and goods that cannot yet be produced efficiently domestically, an increase in imports that is not balanced by the strengthening of domestic industries has the potential to hinder economic growth.

Overall, this study shows that Indonesia's economic growth is influenced not only by internal factors but also significantly by the dynamics of international trade and exchange rate movements. Therefore, efforts to maintain exchange rate stability, enhance export competitiveness, and reduce dependence on imports are crucial steps in fostering sustainable economic growth. It is hoped that the findings of this study will serve as a basis for the government in formulating economic policies capable of strengthening national economic resilience and improving Indonesia's economic growth performance in the future.

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