

THE INFLUENCE OF AGRICULTURAL IMPORTS,
FOREIGN INVESTMENTS, AND EXCHANGE VALUE ON
INDONESIAN ECONOMIC GROWTH

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Abstract

Economic growth in Indonesia is shaped by the dynamics of international trade, especially through agricultural imports, foreign direct investment (FDI), and exchange rates. The main goal of this research is to explore how agricultural imports, foreign direct investment (FDI), and exchange rates have influenced economic growth in Indonesia from 1990 to 2020. Data from the years 1990 to 2020 was gathered for this study, focusing on variables such as economic development, sales of agricultural products abroad, purchases of agricultural products from other countries, foreign investment, and currency exchange values. The information was sourced from the World Bank. To evaluate the research hypothesis, an econometric model was constructed utilizing the Error Correction Model (ECM) technique, with calculations performed using E-Views version 10. The findings suggest that agricultural imports, FDI, and exchange rates have a lasting impact on Indonesia's economy, with agricultural commodity imports having a negative impact due to increased pressure on domestic agricultural products that struggle to compete with cheaper imported commodities. Investment and exchange rates have a negative and insignificant effect on economic growth in the short term. Therefore, government policies that limit agricultural imports and maintain exchange rate stability are crucial in supporting sustainable economic growth and protecting the domestic agricultural sector from the negative impacts of international trade.

Keywords: Economic Growth in Indonesia, Agricultural Commodity Imports, Foreign Investment, Exchange Rate, Error Correction Model

1. INTRODUCTION

Economic progression is intertwined with the impact of economic growth, encompassing changes in financial systems beyond just economic development like adjustments to investments, assets, and the worldwide economic structure. The rise in GDP annually at fixed rates is an indicator of a nation's economic advancement.

Todaro (2006) suggest that economic development is the ability of an economy to maintain GDP growth and long-term stability even in difficult circumstances. Adam Smith believed that engaging in international trade provides access to bigger markets. There are two main types of international trade transactions: exporting and importing.

Imports are when items are bought from other countries, following the rules of the nation, and paid for with foreign currency. Imports are vital for a country's economic growth, as indicated by the Heckscher-Ohlin theory in Appleyard and Cobb (2008), which states that an importer from a country possesses production elements that are rarely held by them. This activity is productive for the country but inefficient compared to manufacturing.

The Harrod-Domar theory of savings and investment (Eltis, 1987), remains significant in current debates on economic development, posits that the speed of economic expansion is influenced by the amounts of savings and investment being made. When savings and investment are lacking, a country will experience a deceleration in its economic growth. The development problem is fundamentally a matter of additional investment, and the issue that has not been developed is the lack of capital. Currently, almost all countries, especially developing ones, require foreign capital. Foreign investment is crucial for the development of a country.

In international trade, activities such as exports and imports create differences in the currencies used among the countries involved. This difference in currency values is called the exchange rate. The exchange rate is the amount of domestic currency needed to buy 1 unit of foreign currency (Murni, 2006). In an open economy, the exchange rate is important for prices, interest rates, balance of payments, and current transactions (Rivera-Batiz & Rivera-Batiz, 1994). Based on the Mundell-Fleming theory presented in Mankiw (2003), economic growth decreases when the exchange rate increases because it causes a drop in net exports. This decrease will affect the level of production, resulting in a reduction in GDP (economic expansion).

Ginting (2017) discovered in prior research that the economic growth is related to exports, imports, and investments. The short-term analysis results indicate that exports and investments positively influence economic growth, while imports have a negative impact. Furthermore, a study carried out by Fitriani (2019) indicated that exports have been advantageous for Indonesia's economy, while imports have hampered economic growth in the period from 2011 to 2015.

Prior research suggests that the arrival of imported goods has a negative effect on Indonesia's overall economic development. This research is unique because it specifically examines how agricultural imports influence Indonesia's economic development. Previous studies discussed imports in general and their impact on the economy. This research focuses on analyzing agricultural imports' impact on economic growth in relation to foreign direct investment (FDI) and exchange rates in both the short and long term through the ECM method.

This research also offers new insights by analyzing the elasticity of these variables and their impacts in both the short and long term on the Indonesian economy. Analyzing data from 1989 to 2019 using the ECM method provides a fresh outlook on how agricultural imports, foreign investments, and exchange rates affect the Indonesian economy, with a focus on the agricultural sector that has previously been overlooked in research. The goal of this study is to analyze how agricultural imports, foreign direct investment (FDI), and exchange rates have impacted Indonesia's economic growth between 1989 and 2019. The Error Correction Model (ECM) will be used to assess the short and long-term effects of these factors. The ECM method can help identify the short-term adjustment coefficient size and long-term model significance.

2. LITERATURE REVIEW

2.1. Economic Growth

Economic growth is when there is a boost in the manufacturing and production of goods and services, as well as an increase in the creation of capital goods. This expansion occurs when more goods and services are being produced in a specific economy. It is difficult to accurately measure the quantity of goods and services produced within a specific period, so GDP is used as a proxy based on financial value (Sukerio 2013).

2.2. Agricultural Imports

Imports are the purchase or access to goods or products from abroad into the domestic economy. Referring to the Heckscher-Ohlin theory in Appleyard and Cobb (2008), a country's economic growth is heavily impacted by its imports, as countries import items that do not require the same production factors or resources that are scarce domestically. The influence of the import variable is upheld by the post-neoclassical theory called endogenous economic growth theory, which clarifies how international trade works, including exports and imports, positively impacts economic production and growth (Roma 1986).

2.3. Foreign Direct Investment

One of the theories still in use for economic development is the Harrod-Domar theory on savings and investment. This theory suggests that economic growth depends on rises in savings and investment. If a nation has low savings and investments, it will experience slow economic growth. Putting money into this portfolio will improve the economy. The presence of foreign investors appears to be unavoidable in order to drive the progress and growth of a country, as foreign investment plays a vital role in its development. Research using the ECM method by Muazi and Arianti (2013) provides a brief overview of the positive and significant impact on the overall economic growth of Central Java in the long term.

2.4. Exchange Rate

The exchange rate refers to how much of the local currency is needed, specifically the quantity of rupiah necessary to acquire one unit of foreign currency (Murni, 2006). The exchange rate is crucial in a market economy as it impacts prices, interest rates, the balance of payments, and ongoing transactions (Rivera-Batiz & Rivera-Batiz, 1994). According to the Mundell-Fleming theory (Mankiw, 2003), an inverse relationship can be observed between the exchange rate and economic growth, as a decrease in the exchange rate leads to a reduction in output volume and ultimately a decline in GDP. In a study done by Ismanto et al. (2019), it was explained that the exchange rate and imports influence economic growth.

3. RESEARCH METHODS

This study utilizes a quantitative methodology and is dependent on pre-existing data. Time series data is used to analyze the information using multiple linear regression techniques. Time series data is data organized in chronological order based on time for a particular variable. This study covers the period from 1989 to 2019, with data sourced from the World Bank website.

Key information includes economic development, imports of agricultural products, Foreign Direct Investment (FDI), and the exchange rate of the rupiah against the US dollar. The research's objective is to identify the elements that influence Indonesia's economic growth using the Error Correction Model (ECM) to assess the impact of various factors on economic growth over time, both in the short and long term.

Conducting a stationarity test on the data is crucial prior to utilizing the ECM. The Unit Root Test, or unit root test, is employed for this task. The stationarity test, along with the unit root test, is carried out using the Augmented Dickey-Fuller (ADF) test. Cointegration testing is used to address issues with non-stationary time series data. The core idea behind the cointegration method is that a group of time series data that strays from its mean in the near future will eventually converge towards balance in the distant future. In other words, if a number of variables have long-term equilibrium and are integrated at the same order, it can be stated that these variables are interrelated (Gujarati, 2003). The aim of conducting a cointegration test on variables is to show whether independent variables have a long-term connection or balance with the dependent variable. Nevertheless, there could be disparities among these factors in the near future. This discrepancy frequently occurs in economic behavior due to economic agents' difficulty in rapidly adapting to changes in economic variables (Harris & Sollis, 2003).

The cointegration test, as mentioned above, indicates that the existence of a linear combination of non-stationary series illustrates a balance relationship within the economic system. In the short term, there could be disparities. These disparities are commonly observed in economic activities, meaning that what economic agents desire may not align with what actually occurs. When there is a difference between what economic behavior desires and what happens, adjustments are required. Therefore, a technique is necessary to correct short-term imbalances toward long-term equilibrium. The model that incorporates adjustments to correct imbalances is called the Error Correction Model (ECM) (Widarjono, 2018).

The regression steps in the ECM regression discussion begin with estimating the model for economic growth in the long term, which is used in this research as follows:

$$PE_t = \beta_0 + \beta_1 \text{Import} + \beta_2 \text{FDI}_t + \beta_3 \text{Kurst} + e_t$$

Description:

β_0	= Intercept or Constant
$\beta_1, \beta_2, \beta_3, \beta_4$	= Coefficients
PE	= Economic Growth (GDP, %)
Import	= Agricultural Imports (% of total import commodities)
FDI	= Foreign Direct Investment (%)
Kurst	= Exchange rate (rupiah against the US Dollar)
t	= Year
e	= Error

The short-term equation is formulated from the equation provided above. The presence of the Error Correction Term (ECT) sets the Error Correction Model (ECM) apart. In the long-term equation, the ECT stays constant and helps determine cointegration and is also a variable in the short-term equation. A significant ECT coefficient with a probability value below 5% indicates the model is appropriate. Hence, for this research, the brief formula can be expressed in the following way:

$$\Delta PE_t = \Delta \beta_0 + \Delta \beta_1 \text{Import} + \Delta \beta_2 \text{FDI}_t + \Delta \beta_3 \text{Kurs} + \Delta \beta_4 \text{ECT} + \Delta e_t$$

Description:

β_0	= Intercept or Constant
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$	= Coefficients
PE	= Economic Growth (GDP, %)
Import	= Agricultural Imports (% of total import commodities)
FDI	= Foreign Direct Investment (%)
Kurs	= Exchange rate (rupiah against the US Dollar)
ECT	= Error Correction Term
t	= Year
e	= Error

4. RESULTS AND DISCUSSION

4.1. Research Results

4.1.1. Stationarity Testing

Prior to testing the overall model with the ECM model test, it is essential to first conduct a stationarity test on the data being utilized. The Augmented Dickey-Fuller test (ADF test) is used to test stationarity for all variables. The stationarity test calculations results are displayed in Table 1, indicating that 2 variables show stationarity at a 5% significance level: economic growth and agricultural imports, with probability values below alpha 0.05. Meanwhile, the other 2 variables, namely investment and exchange rate, have not yet reached stationarity, as indicated by the probability values of these variables at the level above alpha 0.05. However, when tested at the 1st difference level, all variables show stationarity.

Table 1. Stationarity Testing Results

Variable	Augmented Dickey Fuller Test	
Economy Development	0.0094	0.0119
Agricultural Imports	0.0082	0.0112
Investment	0.5133	0.0000
Exchange Rate	0.3083	0.0005

Source: Processed with EViews 10

4.1.2. Cointegration Testing

Following the stationary test, the subsequent step involves performing the cointegration test utilizing the Johansen technique. If the test results show the presence of cointegration vectors, then the model equations used are confirmed to have an error correction mechanism. All variables in the research meet the required criteria for integration. They show stationarity at the same level of differentiation, specifically at the 1st difference level. This indicates that all variables are first-order integrated.

According to the findings from the Johansen cointegration test with a lag of 2, as depicted in Table 2, there are two cointegration equations significant at the 5% level. Hence, economic growth, agricultural imports, FDI, and exchange rate show a stationary linear combination (cointegration).

Table 2. Cointegration Testing

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.696729	71.77705	47.85613	0.0001
At most 1 *	0.503880	37.17630	29.79707	0.0059
At most 2	0.421582	16.84912	15.49471	0.0311
At most 3	0.032989	0.972807	3.841466	0.3240

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Processed with EViews 10

4.1.3. ECM Testing

The ECM model is utilized for examining the extended connections of the linked variable equations. The outcomes of the ECM examination for the extended period (Figure 1) and brief period (Figure 2) are shown below:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(IMPOR_PERTANIAN)	1.013941	0.001201	843.9116	0.0000
D(INVESTASI)	4.00E-13	9.55E-13	0.419093	0.6787
D(KURS)	-0.002420	0.003251	-0.744518	0.4635
ECT(-1)	-0.001567	0.046300	-0.033836	0.9733
C	-0.024665	0.004298	-5.738265	0.0000
R-squared	0.999978	Mean dependent var	-0.310389	
Adjusted R-squared	0.999974	S.D. dependent var	4.535285	
S.E. of regression	0.023072	Akaike info criterion	-4.549345	
Sum squared resid	0.013308	Schwarz criterion	-4.315813	
Log likelihood	73.24018	Hannan-Quinn criter.	-4.474636	
F-statistic	280124.4	Durbin-Watson stat	0.279283	
Prob(F-statistic)	0.000000			

Figure 1. Long-term ECM Testing

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IMPOR_PERTANIAN	1.015629	0.006330	160.4392	0.0000
INVESTASI	-1.78E-11	2.68E-12	-6.646434	0.0000
KURS	-0.042201	0.009948	-4.242238	0.0002
C	1.529557	0.037702	40.57015	0.0000
R-squared	0.999193	Mean dependent var	4.717276	
Adjusted R-squared	0.999103	S.D. dependent var	3.838190	
S.E. of regression	0.114957	Akaike info criterion	-1.368611	
Sum squared resid	0.356805	Schwarz criterion	-1.183580	
Log likelihood	25.21347	Hannan-Quinn criter.	-1.308296	
F-statistic	11138.71	Durbin-Watson stat	0.867141	
Prob(F-statistic)	0.000000			

Figure 2. Short-term ECM Testing

According to the long-term ECM estimation findings, Table 3 shows that agricultural imports, investment, and exchange rates have a significant impact on economic growth in the long run, with probability values less than 0.05. In the short run estimation results, it was discovered that investment and exchange rates can hinder economic growth. The factors affecting investment and exchange rates have a small yet beneficial effect on immediate economic growth.

Based on the ECM estimation findings mentioned above, it is evident that economic growth will decrease in the short and long run with an increase in agricultural commodity imports. This is due to the fact that when there are high levels of agricultural commodity imports, domestic agricultural products face difficulties in competing due to the typically lower prices of imported agricultural commodities. If this is allowed to continue, it will result in domestic agricultural producers, in this case, farmers, going bankrupt.

Because imports involve using exchange rates for transactions, this results in every import lowering Indonesia's exchange rate compared to foreign currencies. Therefore, Indonesia's economic growth will be negatively affected by any increase in exchange rates, whether in the short or long term. Therefore, it is necessary for the government to enforce measures that limit the importation of agricultural commodities in order to safeguard local farmers and boost the competitiveness of their goods within the domestic market.

After running the ECM TEST, an assumption test is typically conducted to determine whether the selected model meets the necessary criteria for being an optimal model. The findings from the conducted classical assumption tests are as listed below:

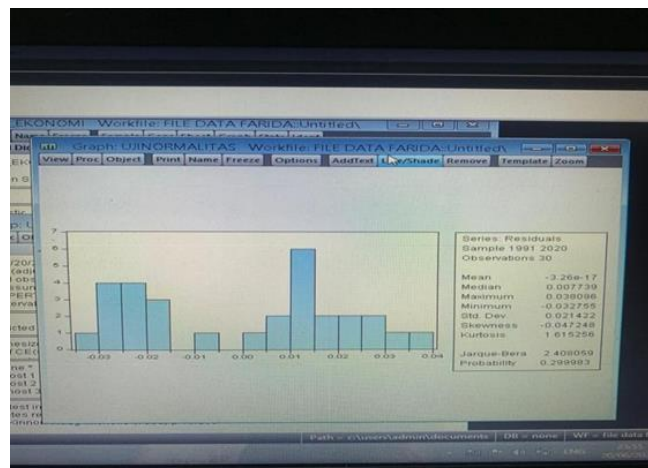


Figure 3. Normality Test

Source: Processed with EViews 10

According to Figure 3, the Normality Test indicates a Jarque-Bera statistic of 2.408059, with a probability value of 0.299983, exceeding the 0.05 threshold. Hence, it can be inferred that the data is either normal or satisfies the normality criteria.

Table 5. Multicollinearity Test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	1.85E-05	1.041170	NA
Agricultural Imports	1.44E-06	1.577723	1.571261
D(Investment)	9.11E-25	1.508120	1.489569
D(Exchange Rate)	1.06E05	1.378725	1.376789
RESID01_ECT(-1)	0.002144	1.041170	1.376789

Source: Processed with EViews 10

According to Table 5, the Agricultural Imports variable has a VIF value of 1.571261, the Investment variable has a VIF value of 1.489569, and the Exchange Rate variable has a VIF value of 1.376789. All variables have VIF values below 10, indicating the absence of multicollinearity among them. Hence, it can be affirmed that the model does not have any multicollinearity problems.

Table 6. Heteroscedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.159784	Prob. F(4,25)	0.9567
Obs*R-squared	0.747846	Prob. Chi-Square(4)	0.9456

Source: Processed with EViews 10

According to Table 6 Heteroskedasticity Test, with a Chi-square probability value of 0.9453 greater than $\alpha = 5\%$, it is evident that the regression model utilized does not have heteroskedasticity problems.

Table 7. Autocorrelation Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001265	0.001805	0.700747	0.4905
Agricultural Imports	1.89E-05	0.000516	0.036664	0.9711
D(Investment)	-8.52E-13	4.07E-13	-2.091018	0.0478
D(Exchange Rate)	0.002280	0.001410	1.617356	0.1194
RESID01_ECT (-1)	-0.049924	0.020561	-2.428101	0.0234
RESID (-1)	1.081908	0.183128	5.907941	0.0000
RESID (-2)	-0.070482	0.192164	-0.366779	0.7171
R-squared	0.838568	Mean dependent var		-3.26E-17
Adjusted R-squared	0.796478	S.D. dependent var		0.021422
S.E. of regression	0.002148	Akaikeinfo criterion		-6.239793
Sum squared resid	0.002148	Schwarz criterion		-5.912847
Log likelihood	100.5969	Hannan-Quin criter.		-6.135200
F-statistic	19.91508	Durbin-Watson stat		1.397334
Prob(F-statistic)	0.000000	Akaikeinfo criterion		

Source: Processed with EViews 10

Based on Table 7, it can be concluded that the F-statistic value is 19.91508 with a probability value of 0.00000.

4.2. Discussion

The complexities of Indonesia's economic structure and global dynamics can help explain the impact of agricultural imports, investments, and exchange rates on the country's long-term economic growth. Agriculture, as one of the important sectors, often relies on imports to meet the needs for raw materials such as fertilizers, seeds, and agricultural technology. This dependency makes the Indonesian economy vulnerable to fluctuations in international prices and global trade policies. However, with the right strategies, these imports can present opportunities for increasing agricultural productivity. Investments, particularly in the form of foreign direct investment (FDI), can strengthen the agricultural sector by enhancing production capacity, technology, and human capital, ultimately driving sustainable economic growth.

In the long term, agricultural imports play an indirect role in economic growth through their impact on production costs. Although agricultural imports do not always directly increase agricultural GDP, the growth of agricultural GDP can boost the demand for imports of raw materials and more advanced agricultural technologies (Suharjono, 2013). The import prices are greatly impacted by the exchange rate, with a decrease in the exchange rate resulting in higher import expenses, potentially causing an increase in prices for agricultural supplies and hampering economic growth (Nopiana et al., 2022).

Moreover, the exchange rate is vital in the long run. Fluctuations in currency exchange rates have the potential to influence both the ability of exported goods to compete in the market and the costs linked to the purchase of imported materials. When the exchange rate is stable, Indonesia can manage trade transactions and capital flows more efficiently, which positively impacts economic growth. For example, a stable

exchange rate can enhance investor confidence, both domestically and internationally, as well as maintain the purchasing power of the population over imported goods. Furthermore, effective monetary and fiscal policies in managing exchange rates and encouraging investment will strengthen economic growth in the long term.

Investment in the agricultural sector shows a more direct relationship with economic growth. Increased investment is often associated with higher productivity, which in turn can boost agricultural GDP. Significant investments also show a positive response to economic shocks, indicating that sustained investment is crucial for the development of this sector and for attracting more capital in the long term (Kurniasih, 2019). Long-term studies show a positive correlation between investment in the agricultural sector and overall economic growth, emphasizing the importance of policy incentives to support investment in this area.

In the short term, the positive but insignificant influence of investment and exchange rates indicates that economic growth takes time to respond to changes in investment and exchange rate fluctuations. Investments, especially in capital-intensive sectors, require time to have a real impact because the processes of infrastructure development, capacity enhancement, and the adoption of new technologies cannot be instant. Additionally, short-term fluctuations in exchange rates may not have an immediate impact on the economy, as sectors like exports and imports require time to adjust to changes in international prices.

Meanwhile, the negative impact of agricultural imports in the short term may be due to the instability of global agricultural commodity prices, changes in trade policies, or logistical constraints. A high dependency on imports to meet domestic needs can pressure local producers, especially if the prices of imported goods are more competitive. This creates market distortions that can hinder short-term economic growth. In such situations, government policies focused on increasing domestic agricultural production, diversifying resources, and strengthening the local agricultural sector become essential. By promoting domestic production and reducing reliance on imports, Indonesia can enhance economic independence and minimize the negative impacts of price and exchange rate fluctuations.

Changes in exchange rates have a significant impact on the overall economic landscape, particularly regarding import costs and export competitiveness. Exchange rate stability is crucial in maintaining the stability of agricultural input prices, which can ultimately drive the profitability of this sector. Stable currency policies play a vital role in supporting broader economic growth, both through price stability and export and import performance (Raafat & Salehizadeh, 2002). In the long term, the interaction between agricultural imports, investments, and exchange rates shapes the structure of Indonesia's economic growth, with the agricultural sector serving as one of its important pillars.

Hence, even though these factors exhibit varying impacts in the immediate and extended periods, it is crucial for policymakers to devise a comprehensive approach. This involves improving the competitiveness of the farming industry, making it easier to make profitable long-term investments, and ensuring the stability of exchange rates to attain sustainable economic growth in the short and long term. The policy implications that can be drawn from this research are the need for the government to reduce dependence on agricultural commodity imports by increasing local production and limiting imports. On

the other hand, foreign investment should be directed towards sectors that can have a positive long-term impact, such as enhancing production capacity and creating job opportunities.

5. CONCLUSION

This research has found that the economic growth of Indonesia is significantly negatively affected by agricultural imports in both the short and long run. High dependency on imported agricultural commodities creates tough competition for domestic products, thereby affecting the productivity of the domestic agricultural sector. In the long term, foreign direct investment (FDI) and exchange rates also influence Indonesia's economic growth, although they exhibit more complex effects. Stability in the exchange rate and sustainable investment are necessary to support long-term economic growth.

Referring to the research findings, the government should increase support for farmers by offering incentives like tools, funding, and protection to help them become the main suppliers in the local market. This can be achieved by implementing restrictions or reducing imports of agricultural commodities. Reducing imports could have a beneficial effect on the rupiah's exchange rate with other currencies. Furthermore, the government should be selective about foreign investments entering Indonesia, ensuring that these ventures contribute to poverty alleviation by creating new job opportunities. While foreign investment can stimulate short-term economic growth through capital influx, there are concerns that long-term economic development may focus solely on extracting existing resources in Indonesia without contributing to poverty reduction by absorbing the local workforce.

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