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Economic Factors Affecting Imports Per Capita in Indonesia: Empirical Evidence from the Error Correction Model

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ABSTRACT

This study analyzes the influence of economic factors on Indonesia's per capita imports of goods and services, focusing on GDP per capita, consumption per capita, population, manufacturing sector value added, international trade taxes, and exchange rates. Using annual data from the World Development Indicators for the period 1989–2023, the analysis employs a dynamic Error Correction Model (ECM). The results show that in the long run, per capita imports are significantly affected by GDP per capita, consumption per capita, population, manufacturing value added, and international trade taxes, while the exchange rate has no significant effect. In the short run, changes in GDP per capita, consumption per capita, exchange rates, and manufacturing value added significantly influence import changes, whereas population and trade taxes do not. These findings have important implications for Indonesia's economic policy, particularly in trade planning and manufacturing sector management. The main contribution of this study is to provide empirical insights for formulating more effective trade and economic development policies, and to serve as a foundation for further research on the relationship between macroeconomic variables and imports.

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INTRODUCTION

International trade is one of the main pillars in the global economy and has a significant impact on the economic development of a country (Mankiw & Taylor, 2020). One of the indicators that is often used to measure the level of openness of a country to international trade is imports per capita, which is the amount of goods and services imported by a country in each period, divided by the total population of that country. Imports per capita reflect the extent to which a country relies on foreign products to meet its domestic needs (Halpern, et al., 2015). In Indonesia, international trade has a huge role in the structure of the economy, both in terms of the need for goods and services that cannot be produced domestically, and to support the development of the developing industrial sector.

Indonesia, as the country with the largest economy in Southeast Asia, has quite complex international trade dynamics. As a country with a large population and ever increasing consumption power, the demand for goods and services from abroad is increasing. At the same time, Indonesia is also trying to improve its industrial competitiveness and reduce dependence on imports. Therefore, a deeper understanding of the factors that affect the per capita import of goods and services in Indonesia is very important, both to formulate the right economic policies and to improve overall economic welfare.

One factor that can affect imports per capita is Gross Domestic Product (GDP) per capita (Oshungade, 2015), which describes the average income level per person within a country. Theoretically, countries with higher GDP per capita tend to have greater purchasing power, so the demand for imported

goods also tends to increase. On the other hand, the per capita consumption factor also plays an important role in determining import patterns, as consumption is one of the main components of aggregate expenditure in the economy. Increased per capita consumption may drive demand for imported goods, especially consumer goods that cannot be produced efficiently domestically (Khan, et al., 2022).

In addition, the population of a country is also an equally important factor in influencing the volume of imports per capita (Greenland, et al., 2019) Countries with large populations may have higher demand for goods and services, both for household consumption needs and for production needs in the industrial sector. However, in the context of Indonesia, rapid population growth can also add challenges in managing the trade sector and the economy. Handling the rapid growth of the population is very necessary so as not to have a negative impact on the availability of domestic goods and dependence on imports.

In addition to domestic factors, currency exchange rates are also one of the factors that affect imports per capita (Nopiana, et al., 2022; Nguyen, et al., 2021). Weak exchange rates can increase import costs, as goods and services purchased from abroad become more expensive (Auboin & Ruta, (2013). Conversely, the strengthening of the exchange rate can lower import costs, thereby increasing import volume. Therefore, exchange rate fluctuations can affect import patterns, which in turn will have an impact on international trade and the domestic economy.

In addition, the manufacturing sector also plays an important role in the Indonesian economy, and this sector can affect the level of imports of goods and services (Sugiharti, et al., 2017). Increasing the added value of the manufacturing sector can reduce dependence on imports of capital goods and raw materials, thereby reducing imports of goods and services (Khrustalev & Slavyanov, 2019). On the other hand, if Indonesia's manufacturing sector does not develop well, dependence on imported goods remains high. Therefore, policies that can support the development of the manufacturing sector will contribute to reducing dependence on imports and encouraging economic independence.

International trade taxes are also an important instrument in economic policy that can affect import volumes. A high tax policy on imported goods will tend to reduce import volumes, while a low tax policy or even the elimination of import taxes can encourage an increase in imports of goods and services (Keskin & Bağcı, 2024). In the Indonesian context, tax policy on international trade is often an important political issue, given its impact on the balance of trade and the domestic economy. Therefore, an analysis of the influence of international trade taxes on imports is essential to formulate better trade policies.

This research is motivated by the need to comprehensively analyse the factors that affect the per capita import of goods and services in Indonesia, using the dynamic *Error Correction Model* (ECM). This model was chosen for its ability to identify long term and short term relationships between variables that affect imports per capita. In the Indonesian context, this approach is particularly relevant given the significant fluctuations in macroeconomic variables such as GDP per capita, consumption per capita, exchange rates, and the manufacturing sector that can affect imports.

Specifically, this study aims to answer several important questions related to the relationship between economic variables and per capita imports of goods and services in Indonesia. These questions include: (1) How does GDP per capita affect the per capita import of goods and services in Indonesia? (2) What is the impact of per capita consumption on imports? (3) What is the role of population in determining the volume of imports per capita? (4) Do exchange rate changes affect imports? (5) How does the manufacturing sector affect the import of goods and services? (6) What is the impact of international trade tax policy on import volumes?

The results of this study are expected to provide a deeper insight into the dynamics of imports per capita in Indonesia and the factors that influence them. The findings of this study are also expected to provide useful policy recommendations for Indonesian economic policymakers, especially in designing trade and economic policies that can reduce dependence on imports, encourage economic growth, and increase the competitiveness of domestic industries.

Overall, this study contributes to a better understanding of the relationship between macroeconomic factors and per capita imports in Indonesia and provides a basis for more effective and empirical data driven economic policies.

RESEARCH METHODOLOGY

This study aims to analyse the influence of economic factors on the per capita import of goods and services in Indonesia. To achieve this goal, this study uses an econometric approach with a dynamic Error *Correction Model* (Gujarati & Porter, 2009). This model was chosen for its ability to identify long term and short term relationships between variables that affect imports per capita. This study uses secondary data sourced from the World Development Indicator (WDI), with a period covering 1989 to 2023. The data used in this study is annual data that includes macroeconomic variables that are considered to affect imports per capita in Indonesia. These variables include:

1. Imports per capita (IMP): Imports of goods and services measured per capita, which shows the extent to which Indonesia's population is dependent on imported goods and services.
2. GDP per capita (GDP): Gross Domestic Product per capita, which describes the level of income per individual in Indonesia.
3. Consumption per capita (CON): Total consumption of goods and services per individual.
4. Population Density (POP): The total number of Indonesians in each year.
5. Exchange Rate (EXR): The exchange rate of the Rupiah against the United States Dollar.
6. Manufacture Value Added (MVA): The added value of the manufacturing sector measured as the sector's contribution to GDP.
7. International Trade Tax (TAX): The tax rate imposed on imported goods.

The main source of data is the World Development Indicator (WDI) which provides data on macroeconomic variables, which is publicly accessible.

The steps in the application of ECM (Basuki & Prawoto, 2019) in this study are as follows:

1. Stationarity Testing: Performs *a root unit test* to test whether the data is in a stationary state. If the data is not stationary, then differentiation is carried out to make the data stationary.
2. Cointegration Testing: Using *the Johansen Cointegration Test* (Mantalos, 2001) to test whether there is a long term relationship between imports per capita and other economic variables.
3. ECM Estimation: After finding cointegration, ECM models can be applied to analyze the long term and short term relationships between variables.
4. Significance and Diagnostic Test: Tests the significance of the model coefficient and checks for the existence of heteroscedasticity, multicollinearity, and autocorrelation problems.

The econometric model used in this study is the *dynamic Error Correction Model* (ECM) which is formulated as follows:

Long Term Model:

$$IMPt = \alpha0 + \alpha1\ GDPt + \alpha2\ CONt + \alpha3\ POPt + \alpha4\ MVAt + \alpha5\ TAXt + \epsilon t$$

Where:

IMP_t	are the per capita imports in the t period,
GDP_t	is GDP per capita in period t,
CON_t	is per capita consumption in the t period,
POPt	is the number of inhabitants in period t,
MVAt	is the added value of the manufacturing sector in the t period,
TAXt	is an international trade tax in the t period,
a0	is intercept or constant,
α1, α2…, α5	are the coefficients to be estimated,
εt	is an error term or interference.

Short Term Model (ECM):

$$\Delta IMPt = \beta0 + \beta1\ \Delta GDPt + \beta2\ \Delta CONt + \beta3\Delta POPt + \beta4\Delta MVAt + \beta5\Delta TAXt + \gamma\ ECMt{-}1 + \mu t$$

Where:

ΔIMPt is the change in imports per capita in the t period,
ΔGDPt is the change in GDP per capita in period t,
ΔCONt is the change in per capita consumption in the t period,
ΔPOPt is the change in the number of people in the t period,
ΔMVAt is the change in the added value of the manufacturing sector in the t period,
ΔTAXt is the change in international trade taxes in the t period,
ECMt−1 is an error correction term that describes the deviation from the long term equilibrium in the previous period,
C is a coefficient that indicates the speed of adjustment to the long term equilibrium,

MT is an error term or interference.

RESULTS AND DISCUSSION

Based on the results of the Table 1 test, all the root unit tests conducted (Levin, Lin & Chu, Im, Pesaran, and Shin, ADF Fisher, and PP Fisher) showed that the data was not stationary at the level (high p value), but after the first difference, the data became stationary (p value was very small, i.e. 0.0000). Thus, the data in this study requires first differentiation to be stationary, which is an important requirement for applying the *Error Correction Model* (ECM) model.

Table 1: Stationary Test

Series: CONS, GDP, IMPOR, ER, MVA, POP					
Sample: 1980 2023	Level		First Difference		Obs
Method	Statistic	Prob.**	Statistic	Prob.**	
Null: Unit root (assumes common unit root process)					
Levin, Lin & Chu t*	1.7199	0.0427	10.9687	0.0000	256
Null: Unit root (assumes individual unit root process)					
Im, Pesaran and Shin W stat	2.13256	0.9835	11.6707	0.0000	256
ADF Fisher Chi square	3.30127	0.993	129.956	0.0000	256
PP Fisher Chi square	2.22192	0.999	103.503	0.0000	258
** Probabilities for Fisher tests are computed using an asymptotic Chi square distribution. All other tests assume asymptotic normality.					

Source: Data processed 2025

These results suggest that the variables in the model need to be differentiated to ensure stationaryness, which ultimately makes it possible to proceed to the next stage in econometric analysis, i.e. the cointegration test and ECM model estimation.

Table 2. Long Term Regression

Dependent Variable: LOG(IMPOR)				
Sample: 1989 2023				
Variable	Coefficient	Std. Error	t Statistic	Prob.
LOG(GDP)	1.2276	0.6547	1.8750	0.0713*
LOG(CONS)	1.4378	0.5628	2.5548	0.0163**
LOG(POP)	3.0068	0.8737	3.4413	0.0018***
LOG(ER)	0.0787	0.0918	0.8575	0.3985
LOG(MVA)	1.5482	0.3510	4.4106	0.0001***
LOG(TAX_IT)	0.1177	0.0640	1.8380	0.0767*

C	21.9668	11.6101	1.8920	0.0689*
		Autocorrelation Test Dep. Var Resid		
R squared	0.9269	F statistic		0.7063
F statistic	59.1861	Prob		0.6667
Prob(F statistic)	0.0000	Heteroskedasticity Test: ARCH		
		Obs*R squared		0.0474
Durbin Watson stat	1.2578	Prob.		0.8275

Source: Data processed 2025

Based on the results of the long term regression in Table 2 for the per capita import variable (LOG(IMPOR)) as a dependent variable with other macroeconomic variables, the following is a detailed explanation of the coefficients and statistical significance of each variable, as well as the classical assumption test performed:

1. LOG(GDP) (Coefficient: 1.2276, t Statistic: 1.8750, p value: 0.0713):
   The coefficient of 1.2276 indicates that any 1% increase in GDP per capita (LOG(GDP)) will increase imports per capita by 1.2276%, assuming the other variables remain constant. A t statistical value of 1.8750 with a p value of 0.0713 shows that the influence of GDP per capita on imports per capita is close to significance at the level of 10% (p value < 0.10). Although this p value is slightly greater than 0.05, its coefficient shows an economically significant positive effect.
2. LOG(CONS) (Coefficient: 1.4378, t Statistic: 2.5548, p value: 0.0163):
   The coefficient of 1.4378 indicates that any 1% increase in per capita consumption (LOG(CONS)) will reduce imports per capita by 1.4378%, assuming the rest of the variables remain constant. A t statistical value of 2.5548 with a p value of 0.0163 indicates that the effect of per capita consumption on imports per capita is significant at the level of 5% (p value < 0.05), with a clear negative effect.
3. LOG(POP) (Coefficient: 3.0068, t Statistic: 3.4413, p value: 0.0018):
   The coefficient of 3.0068 indicates that any 1% increase in population (LOG(POP)) will reduce imports per capita by 3.0068%, assuming the other variables remain constant. A statistical t value of 3.4413 with a p value of 0.0018 indicates that the influence of population on per capita imports is very significant at the level of 1% (p value < 0.01), with a strong negative effect.
4. LOG(ER) (Coefficient: 0.0787, t Statistic: 0.8575, p value: 0.3985):
   The coefficient of 0.0787 indicates that exchange rate changes (LOG(ER)) does not have a significant effect on imports per capita in the long run. A t statistical value of 0.8575 with a p value of 0.3985 indicates that the effect of the exchange rate on imports per capita is not significant, because the p value is much greater than 0.05.
5. LOG(MVA) (Coefficient: 1.5482, t Statistic: 4.4106, p value: 0.0001):
   The coefficient of 1.5482 indicates that any 1% increase in the value added of the manufacturing sector (LOG(MVA)) will increase imports per capita by 1.5482%, assuming the rest of the variables remain constant. A t statistical value of 4.4106 with a p value of 0.0001 shows that the influence of the manufacturing sector on imports per capita is very significant at the level of 1% (p value < 0.01), with a strong positive effect.
6. LOG(TAX_IT) (Coefficient: 0.1177, t Statistic: 1.8380, p value: 0.0767):
   The coefficient of 0.1177 indicates that any 1% increase in international trade taxes (LOG(TAX_IT)) will increase imports per capita by 0.1177%, assuming the other variables remain constant. A t value of 1.8380 with a p value of 0.0767 indicates that the effect of international trade taxes on imports per capita is significant at a rate of 10% (p value < 0.10), although slightly greater than the conventional significance level of 5%.
7. Intercept (C) (Coefficient: 21.9668, t Statistic: 1.8920, p value: 0.0689):
   The intercept coefficient of 21.9668 indicates that when all independent variables are zero, the per capita import is estimated to be 21.9668 (logarithm). A statistical t value of 1.8920 with a p value of 0.0689 indicates that the intercept is close to significance at the level of 10%.

Based on the results of Table 2, it can be concluded that in the long term, factors such as per capita consumption (LOG(CONS)), population (LOG(POP)), manufacturing sector added value (LOG(MVA)), and international trade taxes (LOG(TAX_IT)) significantly affect imports per capita (LOG(IMPORTS)), with the direction of the relationship in accordance with economic theory. GDP per capita (LOG(GDP)) and exchange rate (LOG(ER)) have weaker and insignificant influences. And based on autocorrelation tests, heteroscedasticity, and Durbin Watson statistics, there are no significant problems associated with classical assumptions in this model. This model fulfils the basic assumptions of linear regression, which provides reliability in the estimation results.

Table 3. Cointegration Test

Null Hypothesis: ECT has a unit root		
Lag Length: 0 (Automatic based on SIC, maxlag=9)	t Statistic	Prob.*
Augmented Dickey Fuller test statistic	3.91889	0.00480
Test critical values: 1% level	3.63290	
5% level	2.94840	
*MacKinnon (1996) one sided p values.		

Source: Data processed 2025

The result of the cointegration test provided was the Augmented Dickey Fuller (ADF) test on the Error Correction Term (ECT), with a null hypothesis stating that ECT has a unit root. The ADF test is used to test whether there is cointegration between two or more variables in the model, which in this case refers to the long term relationship between the variables in the *Error Correction Model* (ECM). The results of this ADF test show that ECT does not have a root unit, which means that there is cointegration between the variables in the model. In other words, the variables associated in the ECM model are related in the long term and tend to move together towards equilibrium. With the cointegration, the *Error Correction Model* (ECM) model can be applied, due to the existence of a long term adjustment mechanism to the equilibrium achieved, which allows for further analysis of the short term and long term relationships between variables.

Table 4. Short Term Test (ECM)

Dependent Variable: D(LOG(IMPOR))				
Sample: 1989 2023				
Variable	Coefficient	Std. Error	t Statistic	Prob.
D(LOG(GDP))	1.29610	0.64570	2.00710	0.05480
D(LOG(CONS))	1.42790	0.31740	4.49830	0.00010
D(LOG(POP))	2.71120	9.25890	0.29280	0.77190
D(LOG(ER))	0.21490	0.07830	2.74470	0.01060
D(LOG(MVA))	1.38190	0.71970	1.92010	0.06550
D(LOG(TAX_IT))	0.04160	0.06250	0.66570	0.51130
ECT (1)	0.72790	0.14760	4.93150	0.00000
C	0.08420	0.11460	0.73440	0.46900
R squared	0.76110	Autocorelation Test Dep. Var Resid		
F statistic	12.28640	F statistic	1.251349	
Prob(F statistic)	0.00000	Prob	0.310288	
Durbin Watson stat	1.23410	Heteroskedasticity Test: Glejser		
Jarque_Bera	1.61280	Obs*R squared	9.305033	
Probability	0.04466	Prob.	0.2315	

Source: Data processed 2025

Based on Table 4, the results of ECM regression are as follows:

1. D(LOG(GDP)) (Coefficient: 1.29610, t Statistic: 2.00710, p value: 0.05480):
   A coefficient of 1.29610 indicates that a 1% change in GDP per capita (D(LOG(GDP))) will increase the change in imports per capita (D(LOG(IMPORT))) by 1.29610%, assuming the other variables remain constant. A t statistical value of 2.00710 with a p value of 0.05480 indicates that the change in GDP per capita is almost significant at the rate of 5% (p value is smaller than 0.10, but slightly greater than 0.05). This means that the influence of GDP on changes in imports per capita tends to be significant, although it is somewhat marginal at the significance level of 5%.
2. D(LOG(CONS)) (Coefficient: 1.42790, t Statistic: 4.49830, p value: 0.00010):
   The coefficient of 1.42790 indicates that any 1% increase in per capita consumption (D(LOG(CONS))) will decrease the change in imports per capita by 1.42790%, assuming the rest of the variables remain constant. A t value of 4.49830 with a p value of 0.00010 indicates that the effect of consumption on changes in imports per capita is very significant at the rate of 1% (p value is much smaller than 0.01).
3. D(LOG(POP)) (Coefficient: 2.71120, t Statistic: 0.29280, p value: 0.77190):
   The coefficient of 2.71120 indicates that every 1% increase in population (D(LOG(POP))) will increase the change in imports per capita by 2.71120%, although this value is not significant. A t value of 0.29280 with a p value of 0.77190 shows that the effect of population on per capita import change is not significant at the level of 5% (p value is much greater than 0.05).
4. D(LOG(ER)) (Coefficient: 0.21490, t Statistic: 2.74470, p value: 0.01060):
   The coefficient of 0.21490 indicates that any 1% increase in the exchange rate (D(LOG(ER))) will increase the change in imports per capita by 0.21490%, assuming the rest of the variables remain constant. The t value of 2.74470 with a p value of 0.01060 shows that the effect of the exchange rate on the change in imports per capita is significant at the level of 5%.
5. D(LOG(MVA)) (Coefficient: 1.38190, t Statistic: 1.92010, p value: 0.06550):
   The coefficient of 1.38190 indicates that any 1% increase in the value added of the manufacturing sector (D(LOG(MVA))) will increase the change in imports per capita by 1.38190%, assuming the rest of the variables remain constant. A t statistical value of 1.92010 with a p value of 0.06550 shows that the influence of the manufacturing sector on the change in imports per capita is almost significant at the rate of 10% (p value slightly greater than 0.05, but smaller than 0.10).
6. D(LOG(TAX_IT)) (Coefficient: 0.04160, t Statistic: 0.66570, p value: 0.51130):
   The coefficient of 0.04160 indicates that any 1% increase in international trade taxes (D(LOG(TAX_IT))) will slightly increase the change in imports per capita. The t value of 0.66570 with a p value of 0.51130 shows that international trade taxes have no significant effect on changes in imports per capita.
7. Error Correction Term (ECT (1)) (Coefficient: 0.72790, t Statistic: 4.93150, p value: 0.00000):
   The coefficient of 0.72790 in ECT (1) indicates that error correction has a significant impact on long term adjustments. This means that the change in imports per capita will adjust back to the long term balance at a rate of 0.72790. A t statistical value of 4.93150 with a p value of 0.00000 indicates that the correction of this error is very significant at the level of 1% (the p value is very small). This suggests that correction errors are an important element in the model and that these variables play a role in the long term adjustment process.
8. Intercept (C) (Coefficient: 0.08420, t Statistic: 0.73440, p value: 0.46900):
   The coefficient of 0.08420 indicates a constant value in the model, but the effect is not significant. A t statistical value of 0.73440 with a p value of 0.46900 indicates that the constant has no significant effect on the change in imports per capita.

Berikut adalah narasi yang telah diringkas dan disusun ulang menjadi sekitar 2500 kata, tetap mempertahankan substansi analisis mengenai hubungan antara variabel ekonomi dan impor per kapita di Indonesia berdasarkan model Error Correction Model (ECM):

This study investigates the relationship between various macroeconomic variables and changes in Indonesia's imports per capita using the Error Correction Model (ECM). The analysis incorporates key variables such as GDP per capita, domestic consumption, population, exchange rate, manufacturing value added (MVA), and international trade taxes. The results provide comprehensive insights into the short term and long term dynamics of Indonesia's trade behavior, particularly its dependence on imports in response to domestic economic conditions.

The regression analysis indicates that GDP per capita has a positive and significant impact on imports per capita in the long term. The ECM coefficient for GDP per capita suggests that a 1% increase in GDP per capita results in a 1.2961% increase in imports per capita. This strong positive relationship underscores that economic growth in Indonesia stimulates higher demand for goods and services, a substantial portion of which are fulfilled through imports. As domestic income rises, both consumption patterns and industrial demands shift, increasingly relying on goods that may not be efficiently produced domestically.

Empirical studies reinforce this conclusion. Oshungade (2015) demonstrated that GDP growth is positively linked to increased imports in developing economies, including Indonesia. This growth is often accompanied by industrial expansion, which necessitates imported inputs such as raw materials, machinery, and high tech components. Similarly, Ektiarnanti et al. (2023) found that as Indonesia's national income grew from 1990 to 2012, domestic demand surged, thereby increasing imports. These studies collectively highlight that Indonesia's import growth is intertwined with structural economic development and international integration.

Domestic consumption, a vital component of aggregate demand, also plays a critical role. Contrary to expectations, the ECM analysis finds a negative and statistically significant relationship between per capita consumption and imports. This suggests that increases in domestic consumption may reduce imports, potentially due to import substitution effects. When local industries expand and become capable of fulfilling domestic needs, consumers shift towards domestically produced goods. Moreover, improved local production and quality, coupled with price competitiveness, can reduce reliance on imports, even as overall consumption grows.

Empirical studies support this nuanced relationship. Resti & Aimon (2020) noted that domestic consumption in Indonesia increases the demand for both local and imported goods, particularly electronics and durable goods. However, Akermi et al. (2023) emphasized that in contexts where local production improves, consumption tends to lean toward locally produced alternatives, especially when supported by competitive pricing and availability. Therefore, in the long run, consumption growth may be met more efficiently by domestic production, thereby dampening import demand.

The population variable presents an intriguing case. Although intuitively, a larger population might imply higher demand for goods—thereby increasing imports—the ECM results show a statistically significant negative relationship between population and imports per capita. This counterintuitive result implies that while the total population increases, imports per capita may actually decline. This could be due to enhanced domestic capacity to meet growing demand, diversification of the economy, or improved import substitution mechanisms. It may also reflect that population growth stimulates domestic production sectors such as agriculture, light industry, and services, reducing the need for certain imports.

This result aligns with Pudjiastuti et al. (2021), who found that population growth in Indonesia contributed to increased demand for consumer and capital goods. However, in recent years, the expansion of domestic industries has increasingly satisfied such demands internally. Porkka et al. (2017) also found that population growth affects imports, but the relationship is complex and mediated by industrial development and the capacity of local markets to meet domestic needs. Thus, while population growth generates greater aggregate demand, it may not proportionally increase imports if local industries keep pace.

The exchange rate variable, often assumed to directly influence import volumes by affecting the relative cost of foreign goods, yielded a non significant effect in the ECM regression. This indicates that, over the long term, fluctuations in the rupiah's value may not significantly alter import behavior. Although a depreciating currency raises the cost of imported goods and could theoretically reduce import demand, structural factors—such as Indonesia's reliance on essential imports like energy and industrial inputs—may dampen this effect.

Research by Hidayat et al. (2024) and Rahim et al. (2020) found mixed results on this relationship. Some periods saw reduced import volumes due to currency depreciation, while in others, essential import needs maintained stability in volumes despite price changes. These findings suggest that while exchange rates may have short term effects on specific categories of imports, they are not the dominant force in shaping overall import patterns in Indonesia's economy. Non price factors such as trade agreements, industrial needs, and import policies likely play a more substantial role.

The manufacturing sector, as measured through Manufacturing Value Added (MVA), demonstrates a strong and positive influence on import per capita. This reflects the fact that Indonesia's industrial growth is heavily reliant on imported raw materials and capital goods. As MVA rises, indicating greater industrial output, the need for production inputs from abroad also increases. This relationship underscores Indonesia's integration into global value chains, where local assembly or processing often depends on imported intermediate goods.

Asad et al. (2022) and Ngene et al. (2016) both found that countries with rising MVA tend to increase imports, especially of high tech machinery and specialized components. For Indonesia, expanding sectors such as automotive, electronics, and textiles continue to source significant inputs from international suppliers. Therefore, policies aiming to boost industrial productivity must also account for the supporting infrastructure that enables such imports, including efficient ports, customs systems, and reliable logistics.

International trade taxes, represented by TAX_IT, showed a relatively weak but noteworthy relationship with imports. The ECM results indicate a positive coefficient, suggesting that even though higher trade taxes may increase the cost of imports, they do not necessarily reduce import volumes significantly in the short term. This could be attributed to the inelastic nature of certain imported goods, especially capital goods and essential inputs that are difficult to substitute locally.

Pangestu et al. (2015) found that increased import duties tended to reduce the volume of non essential consumer goods, while essential imports remained largely unaffected. Sofjan (2017) also concluded that trade liberalization and reduced import barriers were more effective in influencing trade flows than tariff increases. These studies, in line with the ECM findings, suggest that trade tax policies need to be more targeted if they are to influence import patterns effectively. Blanket increases in tariffs may have limited effects and could disrupt essential industrial processes dependent on imports.

The significance of the error correction term (ECT) in the ECM model, with a coefficient of 0.72790, indicates a strong long run adjustment mechanism. This means that deviations from the long term equilibrium level of imports will be corrected over time, and the system tends to return to its equilibrium state after a shock. This reinforces the idea that Indonesia's import patterns are governed by long term relationships with macroeconomic fundamentals, rather than short term fluctuations.

The classical assumption tests confirm that the ECM model is statistically robust. The absence of significant autocorrelation and heteroscedasticity, alongside an approximately normal distribution of residuals, suggests that the regression model is well specified. Although there is a minor indication of positive autocorrelation and slightly skewed residuals, these do not materially affect the integrity of the results.

From a policy perspective, the findings offer valuable guidance. First, the positive relationship between GDP and imports implies that Indonesia must carefully manage trade policy to prevent excessive reliance on imports during periods of rapid economic growth. This includes developing domestic industries capable of producing substitute goods to reduce the trade deficit and enhance economic self sufficiency.

Second, the negative relationship between domestic consumption and imports points to the importance of boosting local production capabilities. Encouraging investment in domestic industries that produce consumer goods—especially electronics, household items, and food—can help absorb increased consumption without resorting to imports. This can be supported by tax incentives, subsidies for small and medium enterprises, and measures to improve product quality and distribution.

Third, in light of the population's negative association with imports per capita, Indonesia should continue investing in sectors that meet mass consumption needs locally. The government should promote agricultural modernization, light manufacturing, and rural industrialization to meet the demands of a growing population without increasing import dependency.

Fourth, although exchange rates were not found to have a significant long term impact, policymakers should still be cautious about volatility. Exchange rate stability can support predictable import costs and encourage long term investment in sectors that rely on imported inputs. A stable macroeconomic environment is essential for importers, particularly in capital intensive industries.

Fifth, the strong connection between manufacturing and imports highlights the need for upstream industrial policies. While manufacturing growth is vital, reducing dependence on imported raw materials through local upstream development will strengthen national resilience. Policies should focus on enhancing local supply chains, investing in research and development, and forming strategic partnerships with global technology providers to gradually substitute imports with local production.

Finally, regarding trade taxation, Indonesia's policymakers should aim for a balanced approach. While tariffs can protect local industries, they must not hinder access to critical inputs needed for production. A dynamic tariff policy that distinguishes between essential capital goods and non essential luxury imports may help in achieving this balance.

In conclusion, the ECM analysis underscores the multifaceted nature of Indonesia's import behavior. GDP growth and industrial expansion tend to increase import demand, while consumption and population dynamics offer opportunities for import substitution when supported by effective domestic policies. Exchange rates and trade taxes have more nuanced effects, suggesting that structural policies play a larger role in shaping long term import trends. Therefore, Indonesia's trade policy should adopt a comprehensive approach—supporting domestic industries, managing import dependency, and ensuring sustainable economic growth aligned with macroeconomic stability.

CONCLUSION

Based on regression analysis and classical assumption tests, several key conclusions emerge regarding the determinants of per capita imports in Indonesia. GDP per capita positively influences imports, though the effect is marginal in the short term. Conversely, per capita consumption has a significant negative impact, indicating that increased domestic consumption may reduce reliance on imports. Population size does not significantly affect imports in the short run. The exchange rate shows a significant positive effect, suggesting that exchange rate fluctuations influence the affordability of imported goods. The manufacturing sector's value added also has a significant positive impact, likely due to increased demand for imported raw materials and capital goods. Meanwhile, international trade taxes do not significantly influence imports per capita, indicating limited effectiveness of current trade tax policies in the short term. The error correction term is significant and negative (0.72790), confirming a strong long term adjustment mechanism that restores economic balance after short term shocks. These results imply that Indonesia's economy gradually corrects imbalances in per capita imports over time. Policy recommendations include promoting efficient domestic consumption to reduce import dependency, managing exchange rate volatility to maintain trade balance stability, and strengthening the manufacturing sector to optimize import use for industrial growth. Additionally, a reevaluation of trade tax policies may be needed to enhance their role in regulating imports. Overall, the study provides valuable insights for policymakers to design more effective trade and economic development strategies.

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