



The Impact of Imports from Japan on Indonesia's Income Per Capita: An Aggregate and Sectoral Perspective

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Abstract: This study aims to provide a comprehensive analysis of the impact of aggregated and disaggregated imports from Japan on Indonesia's income per capita. This study uses the FMOLS, DOLS, and CCR models. In addition to these models, the Co-Integration Test, Granger Causality Test, Impulse Response Function, and Variance Decomposition Function are used in this study for empirical analyses. This research treats income per capita as the dependent variable, with aggregated imports and disaggregated imports (intermediate goods, capital goods, and consumer goods) as independent variables, along with key macroeconomic control variables such as Foreign Direct Investment (FDI) and the Exchange Rate (EXCR). The FMOLS and DOLS model tests indicate a significant positive long-run impact of aggregated and disaggregated imports from Japan on Indonesia's income per capita, and the CCR model verified the consistency of the results. Granger causality tests highlight a directional causality between imports and income per capita. The Impulse Response Function and Variance Decomposition Function analyses quantify the contributions of explanatory variable to variation in income per capita over time. The findings suggest that Indonesia's income per capita is significantly influenced by imports from Japan, with clear long-term benefits. The results call for policies that enhance the productivity of imported goods, improve the efficiency of capital formation, and maximize the benefits of trade openness. Future research could explore other sectoral differences in import contributions and potential strategies to strengthen Indonesia's export base to complement its import-driven growth model.

Keywords: Imports, Income Per Capita, Bilateral Trade, Japan-Indonesia.

1 Introduction

International trade is a key driver of economic growth, development, and integration in a world where economies are becoming increasingly interconnected. Countries around the world use trade to obtain a wide range of goods, services, and technologies, thereby encouraging specialization and increasing productivity. The dynamic relationship between imports and domestic economic indicators, especially income per capita, has been a topic of significant academic research and policy discussion for a long time (UNCTAD, 2025). For developing economies, the strategic management of import policies is essential, as it can profoundly impact industrial growth, technological progress, and overall quality of life. Indonesia, the largest economy in Southeast Asia, is a good

example of a country that is deeply connected to this global trade network. Its economy is greatly affected by its international business ties (World Bank, 2023).

Indonesia's economy has risen rapidly during the past 20 years. GDP growth has exceeded 5% recently (BPS, 2025). This growth has helped reduce poverty and raise living standards. Indonesia imports raw materials, intermediate goods, and advanced capital goods to meet the expanding demand for industrial and manufacturing sectors, even though it has many factories (Koenen & Simpfendorfer, 2024). This relationship highlights how import patterns sustain Indonesia's economy and long-term development. Indonesia trades heavily with Japan. Indonesia receives substantial FDI and high-quality manufactured goods, machinery, and technology from Japan (Arya, 2025). Japan and Indonesia have a complex trade relationship, and Japanese imports benefit several Indonesian industries. Academics and policymakers must understand this contribution and its impact on Indonesia's revenue per capita. The general literature on import-led growth (ILG) explains how imports enhance productivity and enable knowledge transfer to drive economic development (Hendrik & Lewer, 2015). Targeted evaluations of bilateral trade ties, such as Indonesia-Japan, are lacking, especially for disaggregated import categories.

Imports, especially intermediate and capital products, may boost productivity and economic growth, according to previous studies (Nopiana et al., 2022). Maitra (2020) and Panta et al. (2022) demonstrate ILG across several contexts, highlighting a positive association between imports and economic growth. Khaja et al. (2025) found a positive long-run relationship between trade openness and economic growth in South Asian countries from 1980 to 2023, concluding that open trade policies, through mechanisms like specialization and technology transfer, enhance economic productivity and growth. Bunje & Abendin (2022) found a mixed effect of trade openness on economic growth in Africa, with pooled OLS showing a mixed influence, fixed-effects models indicating a negative and statistically significant effect, and system-GMM suggesting that imports stifle growth while exports boost it. These works give a solid theoretical and empirical foundation for studying imports and national revenue.

This study uses a comprehensive analysis of the impact of aggregated and disaggregated imports from Japan on Indonesia's income per capita. The subsequent sections of this paper will examine how imports from Japan have affected Indonesia's income per capita, presenting the empirical methodology and findings, and discussing the implications for Indonesia's development strategy. This research aims to provide evidence-based insights into how Indonesia can optimize economic benefits from its engagement with Japan while addressing concerns about trade imbalances and economic dependency.

2 Literature Review and Framework

2.1 Theoretical Framework

Several economic growth theories explain how imports affect economic growth and income per capita. These theories provide the conceptual foundations for analyzing how international trade, particularly imports, affects a nation's economy. This section discusses import-led growth theories such as Solow Neoclassical Growth Theory, Endogenous Growth Theory, Schumpeterian Growth Theory, and the Harrod-Domar model.

In the mid-20th century, Robert Solow developed the Neoclassical Growth Theory (Solow, 1956), which holds that capital accumulation, labor force growth, and technical advancement promote long-term economic growth. This concept assumes technical growth is exogenous, independent of economic factors. Imports are vital to capital accumulation and technological growth in this scenario. According to the hypothesis, economies reach a stable state where technological advancement determines per capita output growth. Imports of capital goods and modern machinery can directly increase a nation's capital stock, enhance productivity, and propel the economy towards a higher steady-state output per capita (Banton, 2023). Imports can boost domestic production efficiency and promote the adoption of new technologies, even if the technology is exogenous to the model, by providing access to a broader range of intermediate and capital products.

In the 1980s, Endogenous Growth Theory (Romer, 1990) challenged the neoclassical notion of external technological advancement. It claims that innovation, human capital accumulation, and R&D promote economic growth from within the system. In this setting, imports represent a vital source of capital goods, knowledge spillovers, and technological diffusion. By importing modern goods and services, a country can learn embedded technologies and production techniques from developed nations (Liberto, 2023). It is known as 'learning by importing.' This method allows poor nations to embrace innovations without paying for R&D. Thus, imports, particularly high-tech goods and specialized components, can directly boost a nation's productive capacity and innovation, resulting in sustained income per capita growth (Aghion & Howitt, 1992; Chen et al., 2022).

In Joseph Schumpeter's economic development theory, innovation and 'creative destruction' generate growth (Schumpeter, 1934). Entrepreneurs disrupt market structures with new products, processes, or organizational forms, driving rapid growth and the downfall of established sectors. Schumpeter's view imports in two ways. Competition from new and inventive imports can force domestic industries to develop and become more efficient, generating creative destruction and dynamic growth (Aghion et al., 1998). However, imports of innovative machinery and technology can help domestic enterprises adopt their own inventions, improving productivity and worldwide competitiveness (Mitra & Sharma, 2025). This theory shows how a varied range of imported goods and technology can drive the innovation cycle, boosting long-term economic growth and income per capita.

Roy Harrod & Evsey Domar independently devised the Harrod-Domar model, a Keynesian economic growth model that emphasizes savings, investment, and expansion (Harrod, 1939). According to the model, economic growth is directly proportional to savings and inversely proportional to capital-output. The model focuses on domestic savings and investment, although imports can be added, especially in developing nations with foreign-exchange constraints. Importing capital goods for investment and productivity often requires foreign exchange. A lack of export profits or foreign aid might limit a country's ability to import capital goods, thereby constraining investment and growth (Rumawir, 2019). Thus, the Harrod-Domar model implies that a country's ability to finance capital goods imports is crucial to economic growth and wealth per capita. This model emphasizes the need for a balanced trade account or external funding to import investment items for economic growth (Dumo et al., 2023).

The Import-led Growth (ILG) theory directly addresses the positive effect of imports on economic development (Madaleno et al., 2023). The export-led growth (ELG) hypothesis emphasizes exports as an engine of growth, while ILG emphasizes imports, particularly of certain products, as a major contributor to economic growth and income per capita. In developing countries, where foreign capital and intermediate goods are essential for industrialization and modernization, the ILG hypothesis has been supported empirically (Panta et al., 2022; Tivatyi et al., 2022). The idea suggests that policymakers should view imports as a growth engine, particularly when they include commodities that enhance productivity and technology.

Overall, these theoretical frameworks provide a solid foundation for understanding the complex effects of imports on income per capita. Imports are essential to economic growth and development, as they promote capital accumulation, technical diffusion, innovation, and investment. A nation's international trade, especially its import strategies, shapes its economic destiny and the prosperity of its citizens. Theories vary on how imports influence them.

2.2 Empirical Review

Many studies have looked at how imports affect economic growth in both emerging and developed countries. The results typically rely on the country, the structure of the economy, and the methods used. The majority of the research focuses on the import-led growth hypothesis, which asserts that imports, particularly capital and intermediate goods, are essential for promoting growth via technology transfer, production efficiency, and structural transformation. Research on African economies has yielded mixed results. Chibaya (2018) investigated Malawi from 1961 to 2016 and found that imports, especially capital goods, boost economic growth. In Kenya, Maina (2015) found that imported intermediate and capital items improve domestic production. Nopiana et al. (2022) revealed that exchange rates and imports affect Indonesian economic growth, supporting the ILG theory. Elakkad & Hussein (2023) used Autoregressive Distributed Lag (ARDL) bounds testing on 1974–2021 annual data in Egypt to identify a long-term cointegrated import-GDP relationship. With short-term modifications over

the next two years, imports boosted economic growth. Chibaya (2018) employed a neoclassical growth model and Ordinary Least Squares (OLS) regression for Malawi (1961–2016) and found that imports, exports, capital, and labor force all contributed to growth, emphasizing the importance of trade liberalization.

Asia research yields more varied results. Nguyen (2025) used OLS to analyze Vietnam (2000–2018) and found that FDI and exports had significant positive benefits, whereas imports had a negative but statistically negligible impact, suggesting modest growth spillovers. Bölükbaşı & Civeir (2024) used a multi-sectoral balance-of-payments limited development model for Turkey from 1970 to 2019. Their findings showed that imports of intermediate goods increased exports but slowed the country's balance-of-payments-constrained growth rate. Panel studies reveal broader tendencies. Using panel estimating methods for five emerging market nations (1993–2016), Raghutla (2020) found a long-term positive association between trade openness—including imports—and growth. Ali et al. (2020) used Johansen co-integration and Granger causality in Bahrain (1986–2018) and found that trade variables cointegrated, but no causal association between imports and growth. Rinta & Suhartono (2022) employed multiple linear regression for 2011–2020 in East Java, Indonesia, and found that imports did not affect regional growth, but exports and imports did.

Other studies show indirect or replacement effects. Millia et al. (2021) examined Indonesia (2004Q1–2018Q1) using an ARDL and found that a 1% drop in imports increased GDP by 1.17% over time, suggesting import-substitution advantages. Shadab (2021) employed VECM and Toda-Yamamoto causality analysis (1975–2017) to confirm that imports Granger-caused GDP growth in the UAE, supporting the import-led growth hypothesis. Triyawan et al. (2023) used multiple regression to show that imports, exchange rates, inflation, and exports affected Qatar's GDP between 2000 and 2020. Recent research links imports to environmental and technical effects, expanding the issue. Safi et al. (2021) used panel cointegration methods to investigate E-7 countries (1995–2018) and found that imports increased carbon emissions, underscoring environmental trade-offs. A panel regression by Pozovna et al. (2023) across 11 developed economies showed that high-technology imports were closely linked to technological advancement and macroeconomic performance. Bakari & Mabrouki (2017) employed Johansen co-integration and Granger causality (1980–2015) in Panama to prove imports drive growth.

Sunday et al. (2023) found that imports positively affected growth in Nigeria (1981–2016) using OLS, while Stojanović et al. (2023) found that imports had a greater influence on GDP in selected EU countries than exports. Can et al. (2023) observed that import and export diversification boosted growth in emerging nations, while Sunde et al. (2023) found a negative link between imports and growth in Namibia using an ARDL model. Carrasco & Tovar-García (2020) found that high-tech and capital goods imports were positively associated with growth across 19 developing nations, highlighting structural variations in the trade-growth nexus. Together, these studies show that imports affect growth in different contexts. Due to reliance, substitution dynamics, or

structural imbalances, capital and technology-intensive imports benefit certain economies but hurt others.

The bilateral trade relationship between Japan and Indonesia presents a compelling case study for the import-led growth hypothesis. Japan has historically been a vital economic partner for Indonesia, providing not only significant foreign direct investment but also a crucial source of advanced machinery, technology, and intermediate goods necessary for Indonesia's industrialization and economic diversification (Mohamed & Liew, 2023). Recent data indicate that Japan remains a key trading partner for Indonesia, with substantial trade volumes (OEC, 2025). Existing empirical studies on Japanese imports and Indonesia's income per capita are scarcer than regional studies, yet it is valuable. Widyasanti (2017) examined Indonesia and Japan's macroeconomic performance under new trade agendas and found that trade affects growth through sector-specific learning. In addition to imports, this study suggests that the nature of items traded, particularly Japanese imports, can affect the Indonesian economy over time. Aprilia & Handoyo (2019) found that economic cooperation, including import flows, boosts economic growth in the ASEAN-Japan Comprehensive Economic Partnership (AJCEP).

Studies on Indonesia's import dynamics, which include Japanese imports, have demonstrated positive relationships with economic indices. Prawoto (2025) used an Error Correction Model to examine economic factors affecting Indonesian imports per capita, providing current empirical evidence on import demand. This study does not isolate Japanese imports, but it helps explain Indonesia's import behavior and per capita income. Marwah & Tavakoli (2004) discovered that foreign capital and imports, especially Japanese goods, boost economic growth in four Asian nations, including Indonesia.

The literature lacks a comprehensive, contemporary research of the disaggregated effects of imports from a large trade partner, such as Japan, on Indonesia's per capita income. Despite these contributions, a comprehensive, disaggregated empirical analysis of the impact of various Japanese import categories on Indonesia's income per capita, using recent data and advanced econometric techniques, is needed. A detailed, empirical study of aggregated and disaggregated Japanese imports and their effects on Indonesia's per capita income, utilizing recent data and advanced econometric methods, addresses this fundamental gap. The literature generally aggregates import data or focuses on broader trade agreements, making it challenging to understand the complex implications of individual import compositions from a single key trading partner. This study examines how aggregated and disaggregated Japanese exports affect Indonesia's income per capita to better understand bilateral trade dynamics and their developmental effects. The findings will help Indonesians understand the benefits of bilateral trade and implement targeted import structural policies to boost economic growth and living standards. This study aims to provide empirical information to influence trade discussions and economic strategy, ensuring that trade connections remain powerful accelerators for national success.

3 Data, Methodology & Model Specification

This study empirically analyses the dynamic impacts of aggregated and disaggregated imports from Japan on Indonesia's income per capita. The research used a rich dataset comprising annual time series from 1974 to 2023 for aggregated imports and from 1989 to 2022 for disaggregated imports, due to data availability. For aggregated imports, each variable within the dataset comprises 49 observations. On the other hand, for disaggregated imports, each variable within the dataset comprises 33 observations, and there are no missing values. This research treats GDP per capita as a proxy for income per capita, the dependent variable, while aggregated imports and disaggregated imports (e.g., intermediate goods, consumer goods, and capital goods) serve as independent variables. The data were primarily sourced from the WDI (World Bank, 2025) and WITS (World Bank, 2025) databases, as well as the Bank Indonesia database, ensuring credibility and consistency across all variables. The controllable variables include Foreign Direct Investment and the exchange rate between the Indonesian Rupiah and the Japanese Yen.

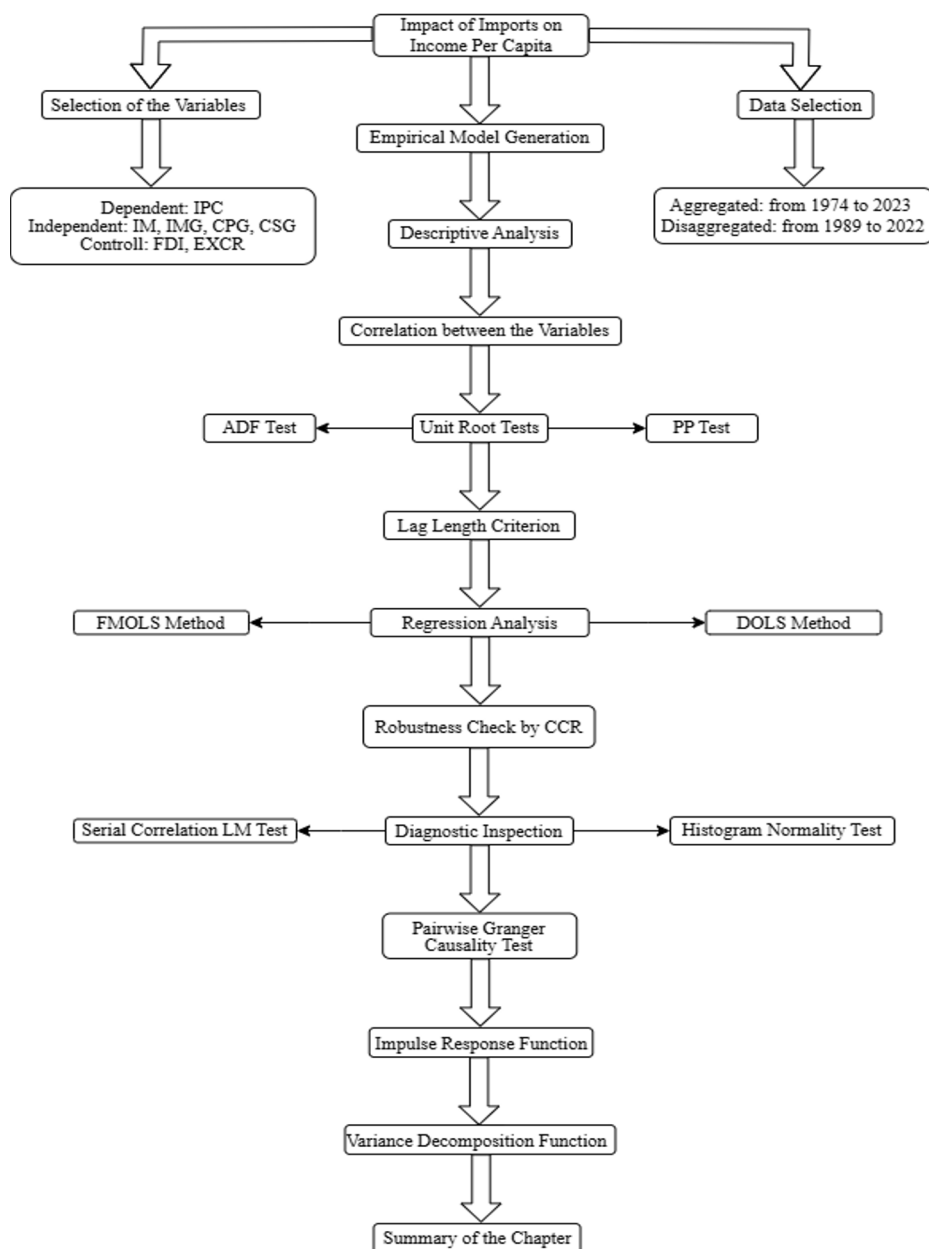


Fig. 1. Conceptual Framework of the Study
Source: Author's Formation

This research estimates the following equations for the variables that are in the logarithmic form for aggregated and disaggregated imports from Japan to trace the influence on income per capita in Indonesia. The model specification for aggregated imports from Japan is given below:

$$LNIPC_t = \alpha_0 + \beta_1 LNIM_t + \beta_2 LNFDI_t + \beta_3 LNEXCR_t + \varepsilon_t \quad (1)$$

Where, *LNIPC* is the natural logarithm of income per capita of Indonesia, *LNIM* is the natural logarithm of aggregated imports from Japan to Indonesia at the USD, while *LNFDI* and *LNEXCR* represent the list of control variables such as Foreign Direct Investment and the exchange rate between the Indonesian Rupiah and the Japanese Yen that depicts macroeconomic conditions and other aspects of the economy that might influence imports from Japan on income per capita in Indonesia, and ε_t is the stochastic error term of the model.

This research also selected several more imported products from Japan to Indonesia for sectoral analysis (disaggregated imports). Importing various products from Japan to Indonesia influences commercial transactions and affects sectoral performance, market competitiveness, economic development, and finally, people's livelihood. The model specification is given as follows for disaggregated imports from Japan:

$$LNIPC_t = \alpha_0 + \beta_1 LNIMG_t + \beta_2 LNFDI_t + \beta_3 LNEXCR_t + \varepsilon_t \quad (2)$$

$$LNIPC_t = \alpha_0 + \beta_1 LNCPG_t + \beta_2 LNFDI_t + \beta_3 LNEXCR_t + \varepsilon_t \quad (3)$$

$$LNIPC_t = \alpha_0 + \beta_1 LNCSG_t + \beta_2 LNFDI_t + \beta_3 LNEXCR_t + \varepsilon_t \quad (4)$$

Where, *LNIPC* is the natural logarithm of income per capita of Indonesia, *LNIMG* is the natural logarithm of intermediate goods at the USD, *LNCPG* is the natural logarithm of capital goods at the USD, and *LNCSG* is the natural logarithm of consumer goods at the USD, while *LNFDI* and *LNEXCR* represent the list of control variables, and ε_t is the stochastic error term of the model.

This study employs an innovative methodological approach, using advanced econometric techniques to model and analyze relationships among variables based on time-series data, as well as economic theories such as the Solow Neoclassical Growth Theory, Endogenous Growth Theory, Schumpeterian Growth Theory, and the Harrod-Domar model. This study also uses FMOLS (Fully Modified OLS), DOLS (Dynamic Ordinary Least Squares), and CCR (Canonical Cointegrating Regression) models as part of the analytical framework. In addition to these models, the Cointegration Analysis, the Granger Causality Test, Impulse Response Function, and Variance Decomposition Function are used in this study for empirical analyses.

The FMOLS estimation procedure works with the standard triangular representation of a regression specification and assumes the existence of a single cointegrating vector (Phillips & Hansen, 1990; Hansen, 1992). On the other hand, the CCR estimation procedure is, in principle, closely related to FMOLS but instead employs stationary transformations of the data to eliminate the long-run correlation between the cointegrating

equation and the innovations of the stochastic regressors. The Canonical Cointegrating Regressions (CCR) model transforms variables into a cointegrating regression that removes the second-order bias of the OLS estimator. The transformation of variables can eliminate endogeneity caused by long-run correlation (Montalvo, 1995). The CCR was also used to verify the robustness of the results. Furthermore, Stock & Watson (1993) suggest that DOLS is more robust in data series with small observations as compared to other alternative long-run estimators, including models proposed by Engle & Granger (1987), Johansen (1991), and Phillips & Hansen (1990).

4 Empirical Analysis and Discussion

Prior to conducting the primary empirical analysis, several diagnostic tests and preliminary examinations were performed to assess the data's properties. This included trend series analysis to identify underlying patterns, descriptive statistics to summarize key features, and correlation analysis to evaluate bivariate relationships. However, the most crucial step was the unit root tests, which were conducted to check for stationarity. To examine the long-run relationships among the variables, the Johansen Cointegration Test was conducted. Both the Trace and Maximum Eigen value statistics were employed to determine the number of cointegrating relationships. These tests played a significant role in ensuring the robustness of the subsequent econometric modeling. While these steps are critical for validating the dataset, their detailed results are omitted for brevity and focus on the core findings.

The estimation results from FMOLS, DOLS, and CCR (See Table 1) consistently reveal a positive and statistically significant long-run relationship between aggregated imports (LNIM) and income per capita, with a uniform coefficient of 0.31 across all three models. This robustness across methodologies shows the reliability of the findings, suggesting that a 1% increase in imports is associated with approximately a 0.31% increase in income per capita. The inclusion of control variables further strengthens the validity of the results, indicating that imports play a critical role in driving growth within the studied period (1974-2023). The findings align with the core tenets of the Import-led Growth (ILG) hypothesis (Madaleno et al., 2023; Panta et al., 2022). This result is further supported by endogenous growth theory, which posits that imports serve as conduits for technological diffusion and knowledge spillovers, thereby enhancing domestic productivity and fostering sustained income growth (Romer, 1990; Chen et al., 2022). The positive long-run relationship also resonates with neoclassical growth theory, wherein imports of capital goods directly augment the domestic capital stock, pushing the economy toward a higher steady-state output per capita (Solow, 1956; Banton, 2023).

Table 1. Results of the FMOLS, DOLS, CCR Model Outcomes (Aggregated Imports)

Variables	Methods	Coefficient
LNIM	FMOLS	0.31*
LNIM	DOLS	0.31*
LNIM	CCR	0.31*

Control Variables	Yes	Yes
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Source: Author Computation, Secondary Data from 1974 to 2023

Notes: Signs * and ** denote the level of significance at 1%, and 5% respectively

The results of Jarque-Bera normality tests for FMOLS, DOLS, and CCR models (see Table 2) indicate that the residuals are normally distributed, as all probability values exceed the 5% significance level. This confirms the stability and reliability of the estimated models suggesting that the results are free from specification bias and are suitable for further statistical inference.

Table 2. Results of Model Stability and Sensitivity Analysis

Name of Tests	Model Name	Coefficient	Probability	Decision
Jarque-Bera test	FMOLS	1.80	0.41	Residuals are normally distributed
Jarque-Bera test	DOLS	3.16	0.21	Residuals are normally distributed
Jarque-Bera test	CCR	1.59	0.45	Residuals are normally distributed

Source: Author’s Computation

The Granger causality test (see Table 3) results reveal a unidirectional causal relationship running from income per capita (LNGDPPC) to imports (LNIM), as the null hypothesis of LNGDPPC not causing LNIM is rejected at the 1% significance level, while the reverse causality is not supported. This indicates that in the long run, income per capita drives the expansion of imports rather than imports directly driving income growth. This finding is consistent with studies such as Nguyen (2025), which found that imports in Vietnam had a statistically insignificant effect on growth, and Rinta & Suhartono (2022), who observed no significant impact of imports on regional growth in East Java. It also echoes the Harrod-Domar model’s implication that import capacity is often constrained by domestic income and savings levels (Harrod, 1939; Rumawir, 2019), meaning that economic expansion must precede or accompany the ability to finance productive imports.

Table 3. Granger Causality Results

Null Hypothesis	Direction of Causality	F- Stati.	Prob.
LNIM does not Granger Cause LNGDPPC	LNIM ← LNGDPPC	0.28	0.75
LNGDPPC does not Granger Cause LNIM	Unidirectional Causality	5.61	0.00*

Notes: Signs * and ** denote the level of significance at 1%, and 5% respectively

The impulse response and variance decomposition results (See Table 4) indicate that shocks to imports (LNIM) generate a persistent positive response in income per capita, though the magnitude declines overtime. Variance decomposition further shows that the contribution of imports to explaining fluctuations in GDP per capita rises steadily from 0% in the first period to over 10% by the tenth period, showcasing the rising importance of imports in impacting long-run income growth dynamics. Conversely,

income per capita consistently explains around 12-16% of variations in imports across periods, confirming a stronger and more stable influence of income growth on import dynamics.

Table 4. Results of the Impulse Response and Variance Decomposition Outcomes

Period	Response of LNGDPPC	Response of LNIM to LNGDPPC	S.E. (LNGDPPC)	LNIM Contribution to LNGDPPC (%)	S.E. (LNIM)	LNGDPPC Contribution to LNIM (%)
1	0.04	0.15	0.03	0.00	0.25	12.55
2	0.04	0.20	0.06	1.44	0.33	11.93
3	0.04	0.14	0.07	2.33	0.37	12.98
4	0.04	0.09	0.08	3.66	0.38	13.82
5	0.03	0.06	0.09	5.16	0.39	14.48
6	0.03	0.03	0.09	6.61	0.39	14.93
7	0.03	0.01	0.10	7.89	0.39	15.21
8	0.03	0.01	0.10	8.94	0.40	15.38
9	0.02	0.01	0.10	9.77	0.40	15.51
10	0.02	0.00	0.11	10.43	0.40	15.64

Source: Author's Computation

The impulse response and variance decomposition analyses together highlight the strong influence of income per capita (LNGDPPC) on imports (LNIM). Figure 2 shows that shocks to GDP per capita initially generate a significant positive response in imports, peaking around the second period before gradually tapering off and stabilizing near zero in the long run, indicating short-run sensitivity but diminishing long-run effects. Complementing this, Figure 3 shows that innovations in GDP per capita explain a substantial share of the variance in imports, rising quickly to about 60% by the second period and remaining stable thereafter. Taken together, these results confirm that while the direct impact of growth shocks on imports weakens over time, income per capita (LNGDPPC) consistently serves as a key driver of import dynamics, accounting for a large and persistent share of their variation.

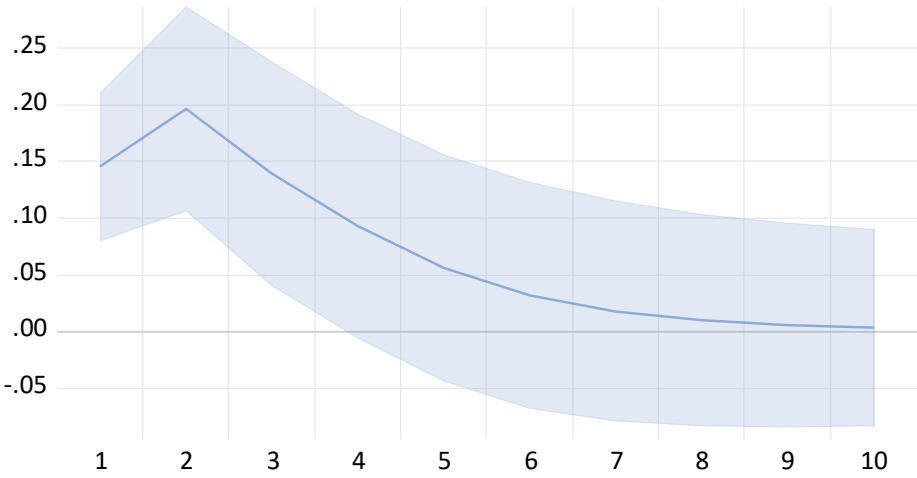


Fig. 2. Impulse Response of LNIM to LNGDPPC Innovation
Source: Author's Computation

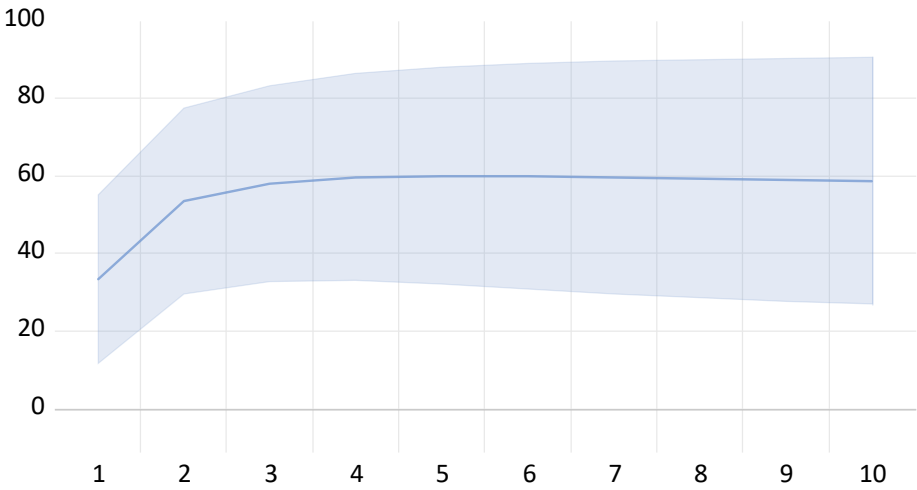


Fig 3. Percent LNIM variance due to LNGDPPC Innovation
Source: Author's Computation

The sector-wise estimation results from FMOLS, DOLS, and CCR models (see Table 5) consistently demonstrate a strong positive and statistically significant long-run relationship between different categories of imports and income per capita (LNGDPPC). Specifically, import of intermediate goods (LNIMG) shows a moderate elasticity of 0.42, while capital and consumer goods (LNCG and LNCSG) exhibit substantially higher elasticities of 0.23 and 0.25, respectively. The uniformity of coefficients across all three estimation techniques reinforces the robustness of the findings, indicating that sector-specific imports, particularly capital and consumer goods, exert a dominant influence on long-run income per capita (LNGDPPC) during the period 1989–2022. The outsized impact of capital goods imports is consistent with findings from Chibaya (2018) in Malawi and Maina (2015) in Kenya, both of whom identified capital goods as key growth catalysts. It also supports the Schumpeterian view that imported machinery and technology enable domestic firms to innovate and compete globally, thereby triggering “creative destruction” and dynamic income growth (Aghion & Howitt, 1992; Mitra & Sharma, 2025). The strong effect of consumer goods may reflect rising middle-class demand and improved welfare — a phenomenon indirectly supported by Widyasanti (2017), who noted that trade affects growth through sector-specific learning and structural transformation, including shifts in consumption patterns.

Table 5. Results of the FMOLS, DOLS, CCR Model Outcomes (Sector wise Imports)

Variables	FMOLS	DOLS	CCR
LNIMG	0.42*	0.42*	0.42*
LNCSG	0.25*	0.25*	0.25*
LNCG	0.23*	0.23*	0.23*

Source: Author Computation, Secondary Data from 1989 to 2022

Notes: Signs * and ** denote the level of significance at 1%, and 5% respectively

5 Conclusion, Suggestions, and Recommendations

This study provides strong empirical evidence on the impact of imports from Japan on Indonesia's income per capita, considering both aggregate and sectoral dimensions. The long-run estimates from FMOLS, DOLS, and CCR models consistently show that imports have a positive, statistically significant effect on income per capita, highlighting the growth-enhancing role of Japanese exports to Indonesia. Granger causality results further reveal a unidirectional causality running from income growth to imports, implying that improvements in Indonesia's income levels increase demand for Japanese goods rather than imports directly driving income growth. Impulse response and variance decomposition analyses reinforce this finding, showing that shocks in income per capita stimulate imports in the short run, while imports gradually explain a growing share of income variation in the long run. Sectoral results demonstrate that imports of intermediate, capital, and consumer goods from Japan have a substantially more substantial effect on income per capita, underscoring their strategic role in Indonesia's industrial upgrading, technological advancement, and consumption patterns. Overall, the analysis confirms that Japanese exports have been a key driver of Indonesia's economic modernization, enabling technology transfer, enhancing industrial capacity, and con-

tributing to higher living standards over the study period. Based on the empirical findings, some critical policy recommendations may be made for Indonesia to maximize the developmental benefits from imports from Japan. Policymakers should prioritize facilitating the import of capital goods, machinery, and advanced technology from Japan, as these industries significantly enhance long-term income per capita by bolstering productivity and industrial expansion. Simultaneously, imports of consumer goods must be adequately controlled to align domestic demand with the advancement of local industries. Secondly, Indonesia ought to enhance its bilateral economic collaboration with Japan through agreements that facilitate investment, knowledge transfer, and joint ventures in industries such as automotive, electronics, and renewable energy, where Japan has technological superiority. Third, additional initiatives must be taken to boost infrastructure, logistics, and foreign exchange stability to reduce transaction costs and improve the efficiency of imports. Moreover, developing local industry ties with imported inputs is essential, ensuring that Japanese exports integrate into domestic value chains instead of displacing local production. Finally, Indonesia's industrial diversification should be promoted to ensure that imports from Japan fulfil not only current consumption and production requirements but also facilitate long-term industrial development and economic resilience. By implementing these recommendations, Indonesia can transform its import relationship with Japan into a strategic instrument for sustained income growth, industrial modernization, and long-term economic resilience.

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Credit Authorship Contribution Statement

Mohammad Saiyedul Islam: Writing – review & editing, software, resources, methodology, conceptualization, formal analysis. Lu Min: Writing – review & editing, Resources, Methodology, Investigation. Xu Tao: Writing – original draft, visualization, Software, resources, investigation, conceptualization. Zheng Gong: Writing – review & editing, resources, methodology, Formal analysis. Salma Salsabila: writing – review & editing, resources, methodology, data curation.

Disclosure of Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Additional information

No additional information is available for this paper.

Data Availability Statement

Data will be made available on request.

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