Optimum: Jurnal Ekonomi dan Pembangunan
Vol. 16, No. 1, March 2026, pp. 160-169
DOI:10.12928/optimum.v16i1.15536
ISSN 2613-9464

The role of imports, exchange rates, and reserve stability in driving Indonesia's export performance

Azmi Fawwaz Syahrullah [a,1,*], Adang Djatnika Effendi [a,2], Herry Sutanto [a,3]

[a] Department of Management, Faculty of Economy and Business, Sunan Gunung Djati Islamic University, Indonesia
[1]azmifawwazsyahrullah@gmail.com; [2]djeffadang@uinsgd.ac.id; [3]herrysutanto2@gmail.com

* corresponding author

ARTICLE INFO

Received : 05-01-2026
Revised : 15-03-2026
Accepted : 20-03-2026
Published : 25-03-2026

Keywords:
Export Performance
Import
Exchange Rate
Foreign Exchange Reserve

JEL Classification:
F40, F41, F63

ABSTRACT

Indonesia's export performance is shaped by various macroeconomic factors that represent both the country's production capabilities and broader external economic conditions. This study explores how exchange rates, imports, and foreign exchange reserves influence Indonesia's export activities. In contrast to many earlier studies that examined these variables individually, this research brings them together in one empirical framework to better understand their joint impact on export performance. The analysis is based on annual time-series data from 1995 to 2024, sourced from the World Bank database. The Autoregressive Distributed Lag (ARDL) model is applied to identify both short-run dynamics and long-run relationships among the variables. Prior to estimation, several econometric procedures are conducted, including unit root testing, optimal lag selection based on the Akaike Information Criterion, bounds testing for cointegration, and diagnostic tests to ensure model reliability. The empirical findings indicate that imports have a positive and statistically significant impact on Indonesia's exports in both the short term and the long term. Meanwhile, the exchange rate does not appear to have a significant direct influence on export performance. Foreign exchange reserves, on the other hand, show a positive relationship with exports, although the statistical strength of this effect is relatively weaker. Overall, these results suggest that ensuring the availability of imported production inputs and maintaining macroeconomic stability are important factors in supporting sustainable export growth in Indonesia.

1. Introduction

Over the past decade, the stability of the external sector has become an increasingly important issue in the literature on open economies, especially for developing countries that depend heavily on international trade. Exchange rate volatility can create uncertainty in trade which, according to Han et al (2025). Similarly, Lal et al (2023) noted that the contagion from exchange rates can facilitate faster transmission of global economic shocks between economies. Casas (2020) also explains that the extent of exchange rate pass-through differs among industries, which leads to varied responses in export performance across sectors. Ahmed et al (2023) also confirm that exchange rate movements have significant implications for trade balances. In an era of deep financial integration, Ahmed et al (2021) argue that exchange rate stability and international reserves play a critical role in maintaining external resilience. These developments underscore the importance of re-examining export determinants within a comprehensive macroeconomic framework.

Export performance in Indonesia depends not only on price competitiveness but also on the country's structural dependence on imported inputs (Dinul & Kurniawan, 2024). Wang and Yu (2021) note that within global value chains, the extent to which firms depend on imported

intermediate goods affects how sensitive exports are to changes in exchange rates. As a result, a depreciation of the domestic currency does not necessarily lead to higher exports, since the increased cost of imported inputs can offset potential competitive advantages. Dai et al (2021) also highlight that firm-level financial conditions play an important role in determining how exports respond to exchange rate movements. Empirical studies from Indonesia reflect this complexity, showing that export dynamics are shaped by multiple interconnected factors. Sugiharti et al (2020) found that exchange rate volatility significantly affects Indonesia's major export destinations, while Tampubolon et al (2024) demonstrate that macroeconomic variables shape sectoral export performance. These findings suggest that analyzing Indonesia's exports requires a simultaneous consideration of exchange rates and import dynamics.

Foreign exchange reserves are also a key factor in maintaining macroeconomic stability, alongside the interrelationship between world markets and exports/exchange rates. Ahmed et al (2023) note that international reserves play a vital role as a buffer during phases of global monetary tightening because they help countries absorb external shocks. Agénor et al (2025) argue that interventions backed by strong reserve holdings can bolster financial stability while Ferreira et al (2025) show that countries with bigger reserve buffers tend to exhibit less currency volatility. Such stability fosters a more predictable environment for trade activities. In theory, adequate reserve levels may indirectly support export performance by mitigating excessive exchange rate fluctuations. However, the extent to which reserves directly influence exports remains empirically underexplored, particularly in emerging economies such as Indonesia (Suripto et al., 2025; Nabilah et al., 2025).

Although a considerable number of studies have explored the relationship between exchange rates and international trade, much of the existing literature remains fragmented. Urgessa (2023) examines the impact of exchange rate volatility on export earnings but does not consider the productive contribution of imports or the stabilizing role of foreign exchange reserves. Similarly, Dewi et al (2025) analyze the relationship between exchange rate movements and Indonesia's import-export values, yet their study does not incorporate the role of reserve stability in influencing external sector performance. Meanwhile, Montoro & Ortiz (2023) focus primarily on foreign exchange intervention channels rather than real export outcomes. Consequently, earlier studies tend to examine particular variables in isolation as opposed to situating them within a singular analytical framework. Such fragmentation restricts a holistic understanding of the ways external macroeconomic environments interact to influence export performance.

While it has attracted significant research, much of the previous studies have focus on exchange rates, imports and foreign exchange reserves separately. This piecemeal treatment may constrain a more holistic understanding of the ways in which these macroeconomic variables correlate and jointly effectuate export performance, especially in emerging economies that are embedded within global production networks. For example, in Indonesia export performance is heavily reliant on imported intermediate goods and capital input as well as macroeconomic stability to achieve sustainable international trade performance. While many model-based empirical studies have examined exchange rate, import and foreign exchange reserves interactions, analyses that include all three variables in a single framework are comparatively few. This condition reflects a key research gap on how production inputs, price competitiveness and macroeconomic stability combine to determine export performance in an open economy context.

To address this gap in the literature, this study brings together exchange rates, imports, and foreign exchange reserves within a single empirical framework using the Autoregressive Distributed Lag (ARDL) approach. By utilizing an extended time-series dataset covering the period 1995–2024, obtained from the World Bank, the research offers updated empirical evidence on the key factors that influence Indonesia's export performance. The novelty of this study lies in positioning imports as a production input channel, exchange rates as a price competitiveness mechanism, and foreign exchange reserves as an indicator of macroeconomic stability within a single econometric model. Through this integrated perspective, the study offers a more comprehensive explanation of export dynamics and contributes to a better understanding of export determinants in emerging economies.

The study aim to analyze how exchange rates, imports, and foreign exchange reserves affect Indonesia's export performance. More specifically, it investigates the short- and long-run associations among these variables using the Autoregressive Distributed Lag (ARDL) technique. The analysis is based on annual time series data for the period 1995–2024 from the World Bank. This approach aims to empirically show how production inputs, price-competitiveness, and

macroeconomic stability mutually interact features Indonesia's export dynamics and the literature suggests that export performance is influenced by several interconnected macroeconomic channels. Exchange rates impact the exports by affecting price competitiveness, as currency depreciation increases attractiveness of domestic goods in international markets. In integrated economies (that is, those that are tightly embedded in global value chain), imports act upon export performance through the production channel, because imported intermediate inputs are crucial to sustain their strength of export oriented sectors. At the same time, they are important for both national and global macroeconomic stability because adequate foreign exchange reserves can help reduce external vulnerability and limit exchange rate volatility.

2. Literature Review

Indonesia as open economy emphasizes the interaction between relative prices, production capacity, and external stability. Within this framework, exports are understood as the outcome of both global demand conditions and domestic supply capabilities. Bussière & Peltonen (2008) argue that the transmission of exchange rate movements to trade flows depends on economic structure and the degree of international integration. Supporting this perspective, Dainauskas (2023) shows that the pass-through of exchange rates into the terms of trade is dynamic and changes over time. The export performance cannot be explained by external factors alone, and these findings argue against theories based solely on this premise. Instead, it requires a more integrated and holistic approach to gain better insights of the multifaceted determinants of export performance in developing economies like Indonesia.

From the perspective of trade elasticity theory, exchange rates influence exports primarily through changes in relative prices. Makore & Chikutuma (2025) found that exchange rate volatility significantly affects overall trade performance in developing economies. Msomi & Muzindutsi (2025) further highlight that exchange rate fluctuations, combined with supply chain disruptions, can alter export outcomes. In the Indonesian context, Ibrahim et al (2024) stated that exchange rate volatility may generate both symmetric and asymmetric effects on trade. Similarly, Nusriona et al (2026) found evidence of a short-term relationship between exchange rate movements and export performance. Drawing on these findings, this study conceptualizes the exchange rate as a channel of price competitiveness, where changes in currency values affect export demand through adjustments in relative prices in international markets. Considering the theoretical and empirical evidence discussed above, exchange rate fluctuations are expected to influence export performance.

Furthermore, through the demand side, imports function through the supply side of the economy. Apaitan et al (2024) demonstrate that exchange rate changes directly affect import prices, thereby influencing domestic production costs. In economies integrated into global value chains, imported intermediate goods play a crucial role in sustaining export oriented industries. Hansen & Suroso, (2023) emphasize that production efficiency and input structure determine Indonesia's export competitiveness, particularly in downstream sectors. Jalunggono et al (2020) also report dynamic relationships among exports, imports, and foreign exchange reserves in Indonesia. Accordingly, this study treats imports as part of the production or input channel, as they influence export performance by affecting domestic production capacity and cost structures. Based on the theoretical arguments and empirical evidence discussed earlier, imports are therefore expected to affect export performance through their role as essential inputs for export oriented industries.

The literature explains foreign exchange reserves through foreign exchange intervention theory and the portfolio balance channel. However, the empirical article by Adler et al (2019) indicates that central bank interventions in foreign exchange markets have an impact on the stability of exchange rates. Pinzon-Puerto et al (2025) argued the degree to which such interventions are successful depends on the credibility of policy and expectations regarding pro market reforms that ultimately shape economic conditions. Generally for the Indonesian context, Kumar et al (2026) highlighted some structural drivers for the buildup of reserves. Meanwhile, Sitorus et al (2025) and Syahmiyanti & Soebagyo (2023) which identify a relationship among key macroeconomic indicators and the dynamics of reserves. Collectively, these studies suggest a vital role for foreign exchange reserves in promoting external stability by smoothing out booms and busts in the currency. Hence, the approach considers foreign exchange reserves as a channel of stabilization in this study supporting exports indirectly through macroeconomic stability. Reserve accumulation could indirectly assist export

performance when taking into account the function reserves play in supporting external stability and mitigating macroeconomic uncertainty (Aprilia & Malia, 2025).

The existing body of literature suggests that exchange rates, imports, and foreign exchange reserves affect export performance through different but interconnected channels. Changes in exchange rates also affect export demand through price competitiveness with other countries. Imports, meanwhile, help the supply side: they are the intermediate goods and capital inputs that allow for production. Foreign exchange reserves, on the other hand, make significant contributions toward economic stability through minimizing macroeconomic uncertainties and smoothing external shocks. Most previous studies have however studied these factors independently rather than in an integrated framework. Consequently, such a disjointed view could cap a comprehensive outlook on the overarching export performance. Integrating these three transmission channels within a single empirical model offers a more complete explanation of export dynamics. Such an approach allows the analysis to capture both partial and interactive effects among external sector variables. Given the interconnected roles of exchange rates, imports, and foreign exchange reserves in shaping external sector dynamics, these variables may jointly influence export performance within an integrated macroeconomic framework.

Building on the theoretical foundations and empirical evidence discussed earlier, this study groups the independent variables into three main categories. These include the price competitiveness channel (exchange rate), the production or input channel (imports), and the stabilization channel (foreign exchange reserves). In this conceptual framework export performance is established on the basis of three intertwined processes. Requiring that models based on such validates relationships is in not floated by statistical correlation, helping to ensure that the results cross-validated against open economy theory. Organizing the model according to these explicitly defined channels ensures consistency with the gap identified in previous research. The developed framework coherently incorporates existing theoretical underpinnings, enabling the test of external macroeconomic variables' partial and simultaneous effects on Indonesia's export performance.

3. Method

This study is a quantitative research on the phenomenon of exchange rates, imports, foreign exchange reserves and export performance in Indonesia. The study relies on annual time series data between 1995 to 2024 obtained from the World Bank's World Development Indicators (WDI) database. Exports (EXP) as the dependent variable that describes Indonesia's export performance. The dependent variables are the exchange rate (EXCHR), imports (IMP) and foreign reserves (RESERV). Exchange rate can also indicate the exchange rate of rupiah Indonesia against the dollar, and act as a monitor price competitiveness channel in international trade. Imports are the channel of production input, as many export-oriented sectors depend on import intermediate products and capital equipment for their production processes. Meanwhile, foreign exchange reserves indicate the country's capacity to maintain external stability and facilitate international trade activities.

To estimate the relationship between variables, this study employs the Autoregressive Distributed Lag (ARDL) model, which allows the estimation of both short-run dynamics and long-run equilibrium relationships among variables (Kurniawan & A'yun, 2022). The ARDL approach is appropriate for time-series analysis because it can be applied when variables have different orders of integration, provided that none of them are integrated at order two or I(2). The equation for ARDL model as follows:

$$\Delta lnEXP_t = \alpha_0 + \sum_{i=1}^{n1} \alpha_1 \Delta lnEXP_{t-1} + \sum_{i=1}^{n1} \alpha_2 \Delta lnEXCHR_{t-1} + \sum_{i=1}^{n1} \alpha_3 \Delta lnIMP_{t-1} + \sum_{i=1}^{n1} \alpha_4 \Delta lnRESERV_{t-1} + \delta_1 lnEXP_{t-1} + \delta_2 lnIMP_{t-1} + \delta_3 lnEXCHR_{t-1} + \delta_4 lnRESERV_{t-1} + \mu_t \quad (1)$$

Where $\Delta lnEXP_t$ represents the change in Indonesia's export value at time t; $\Delta lnIMP_{t-1}$ is the represents the change in Indonesia's import value at lag i;$\Delta lnRESERV_{t-1}$ represents the change in foreign exchange reserves at lag i; $\sum_{i=1}^{n1}$ indicates the summation of lagged terms included in the model; μ_t is the random error term; α_0 is the constant term; $\alpha_1 - \alpha_4$ is the coefficient of independent variables in the short-run estimation; $\delta_1 - \delta_4$ is the coefficient of independent variables in the long-run estimation. The empirical analysis in this study is carried out through several sequential stages. The first test examined the stationarity characteristics of each variable using an Augmented Dickey Fuller (ADF) unit root test. Second, the maximum lag amount is chosen according to the Akaike

Information Criterion (AIC). Third, the ARDL Bounds Test to test for the presence of long-run equilibrium relationship among variables included in the model. If cointegration holds, the short run and long run relationships are estimated using the ARDL model (Taqiyya et al., 2025). The short run dynamics are examined with the Error Correction Model (ECM) from the ARDL specification, which captures speed of adjustment to long run equilibrium. A number of diagnostic tests are run to verify the reliability of the estimated model. These are the normality test (Jarque Bera) and heteroskedasticity test (Breusch Pagan Godfrey), serial correlation test (Breusch Godfrey LM test), and multicollinearity check using the Variance Inflation Factor (VIF). Also, the stability of the model is evaluated through CUSUM and CUSUM of Squares tests.

4. Results and Discussion

The first step for time-series data is a unit root test was conducted to examine the stationarity properties of the variables used in this study. The Augmented Dickey-Fuller (ADF) test was employed to determine whether the time-series data were stationary at level or at first difference. Table 1 shows the ADF test indicate that all variables become stationary after being differenced once. In particular, the first difference for export, import, exchange rate and foreign exchange reserve probability values all fall below the 5 percent significance level. These results indicate that the time series are integrated of order one, I(1), thus meeting the initial condition to employ ARDL model. Thus, the ARDL approach allows for examining both short run dynamics and long run relationship among the variables.

Table 1. ADF Unit Root Test

Variable	ADF t-Statistic	Probability	Critical Value (5%)	Conclusion
EXP	-4.800	0.0010	-3.005	Stationary
EXCHR	-4.600	0.0012	-2.998	Stationary
IMP	-4.912	0.0008	-2.998	Stationary
RESERV	-4.926	0.0007	-2.998	Stationary

Source: data processed

Table 1 shows the average income inequality value in the study area was 0.3363 with a standard deviation of 0.0419. This average value indicates that income inequality is in the moderate category, meaning that income distribution in the study area is not too unequal but still requires attention. Economic growth showed an average of 4.9931 with a standard deviation of 2.5080, indicating moderate economic growth, reflecting relatively stable economic development. However, the standard deviation of 2.5080 indicates fluctuations in economic growth between regions, which can be caused by external factors such as economic policy, investment, and labor market conditions. The average HDI in the study area was 70.3910, indicating that the overall level of human development in the study area is in the medium to high category. The standard deviation of 6.1236 indicates significant variation between regions, indicating differences in levels of well-being, access to healthcare, education, and living standards across regions.

Table 2. Bound Test Result

Test Statistic	Value	Significance Level	I(0) Lower Bound	I(1) Upper Bound
F-statistic	10.307	10%	2.37	3.2
		5%	2.79	3.67
		2.50%	3.15	4.08
		1%	3.65	4.66

Source: data processed

Table 2 shows the Bounds test and indicate that the F-statistic is 10.307 for (k = 3) and n = 27. The F-statistic is then compared with the critical values at 1%, 5% and 10% significance level. This could be witnessed from ARDL cointegration test comparison that F-statistic surpasses the critical value (I(1)) upper bound at all significance level, which serves evidence of long-run equilibrium relationship among variables However, in order to look further in as well if there exists short run dynamics among the variables. Therefore, the null hypothesis of no long-run relationship among the variables is rejected. These results indicate the existence of cointegration or a long-run equilibrium relationship between exchange rates, imports, foreign exchange reserves, and Indonesia's export performance.

Consequently, the ARDL model can be further used to estimate both the short-run dynamics and long-run relationships among the variables. The relevant model for ARDL using lag of 1, 0, 2, 0 based on Akaike Information Criterion (AIC) for the optimal lag length in the model and means the lag for dependent variable based on lag 1 and independent variables on lag 0, 2 and 0.

Table 3. Result of Panel Data

Variables	Coefficient
Short-run Estimation for ARDL	
D(EXP(-1))	-0.142 (-0.773)
D(EXCHR)	-73567.66 (-0.062)
D(IMP)	0.822 (10.977)***
D(IMP(-1))	0.065 (0.355)
D(IMP(-2))	-0.264 (-3.626)***
D(RESERV)	0.361 (1.732)*
Ect	-1.142 (-7.864)***
C	3.520 (1.470)
Long-run Estimation for ARDL	
D(EXCHR)	-64443.93 (-0.062)
D(IMP)	0.546 (4.301)***
D(RESERV)	0.316 (1.742)*
C	3.090 (1.450)
Diagnostic Tools	
Normality Test	0.412
Heteroskedasticity Test	0.360

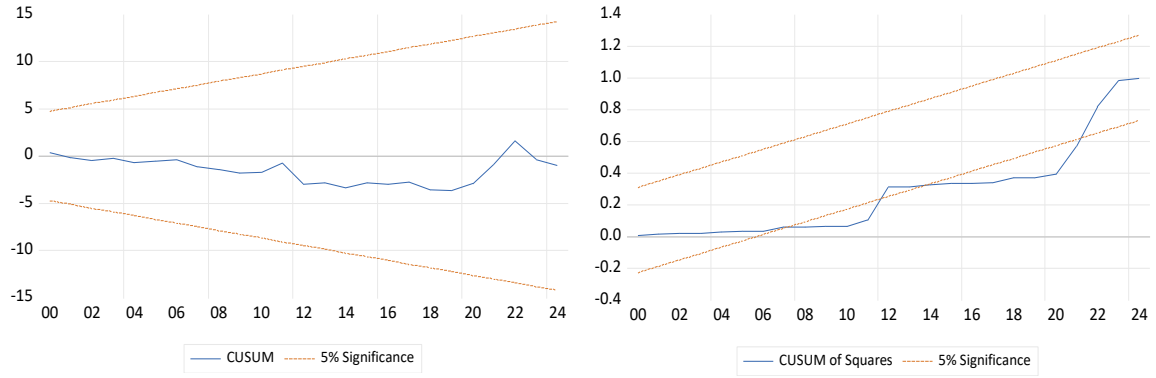
Source: data processed

Table 3 shows the results of ARDL model, In many emerging economies, export activities rely heavily on imported intermediate goods and capital inputs for production. As Wang and Yu (2021) stated that imports can strengthen export competitiveness because firms use these imported inputs to enhance product quality and production efficiency. In line with this claim, estimation results reveal a positive and significant impact of imports on exports for both short run as well as long-run. This suggests that increased importation of production inputs could spur export performance by stimulating activities underpinning industrial and supply chain operations. The strong effects found the possibility that imports have a lagged influence on exports and production, consistent with depreciation time lags in production lags. Similarly, Msomi and Muzindutsi (2025) observed that the global supply chains yield strong linkages between import and export related activity, as imported inputs are often integrated into production geared towards exports. Thus, imported raw materials and intermediate goods can bolster export capacity and enhance trade performance.

The exchange rate variable in Table 3 shows lacks a statistically significant impact on exports. While an economic theory predicts that depreciation in the exchange rate will boost the competitiveness of exports, empirical observations however are often less evident. Sugiharti et al (2020) argued from exchange rate fluctuations can be biased downwards particularly in countries with a high share of imported inputs into the factors of export production. Similarly, Lal et al (2023) contend that large exchange rate volatility raises uncertainty in foreign markets and can reduce the export response to movements in the exchange rate. Export performance, on the other hand, is

positively related to foreign exchange reserves. Research by Ahmed et al. (2023) concludes that higher levels of foreign exchange reserves reduce external vulnerabilities in financial markets and provides secondary market stability. In addition, Ferreira et al (2025) confirm that optimal levels of reserves strengthen macroeconomic stability, improve investor confidence and indirectly contribute to international trade activities.

Table 3 shows the long-run ARDL estimation results which indicate that imports positively affect Indonesia's exports. The import variable has a coefficient of 0.546012 and p-value of 0.0003 showing that in the long run, increased imports can positively impact export performance (higher exports). On the other hand, for the exchange rate variable has negative coefficient with statistically significance of 0.9511. Likewise, foreign exchange reserves have a positive sign and are marginally significant at the 10% level. The negative coefficient of error correction term (Ect) verifies a long-run equilibrium relationship among variables in the model. The implication is that any short-run fluctuations in performance tend to drift back towards the long-run equilibrium. This relatively faster adjustment speed indicates that Indonesia's export system dynamically reacts to the macroeconomic shocks.



CUSUM CUSUM-Q

Figure 1. CUSUM and CUSUM-Q Test

Figure 1 shows the CUSUM line is between 5 percent significance bounds at every observation period. This suggests that there is no clear evidence of time-varying structural instability in the parameters of the model. Furthermore, the CUSUM Squares plot is also located inside the 5% critical boundaries and indicates that zero variance of residuals is stable and there are no structural breaks in model during sample period.

5. Conclusion

This study examines the impact of exchange rates, imports, and foreign exchange reserves on Indonesia's export performance using annual time-series data from 1995–2024 retrieved from the World Bank. Using the Autoregressive Distributed Lag (ARDL) method, the findings show that imports has a positive and significant effect on Indonesia's exports in both short-run and long-run. The implication of this finding is that export activities in Indonesia are heavily dependent on imported intermediate goods and capital inputs that are vital for production. Conversely, exchange rate seems not to have significant direct effect on exports, while foreign currency reserves tend to positively affect export performance even though their impact is rather relatively low.

These results suggest that improving export performance needs policies extending beyond exchange rate stabilization. Reliable access to imported components of production, rising industrial productivity and macroeconomic stability are all key to sustaining export growth. Also, holding appropriate level of foreign exchange reserves continues to be crucial for strengthening external stability and trade resilience. The novelty of this study is the combination of exchange rate, imports, and foreign exchange reserves used in a single empirical framework by long term ARDL time series analysis for Indonesia. This leads us to a more nuanced appreciation of the interrelated role that production inputs and macroeconomic stability play in determining export performance. Further studies could build on this work using different macroeconomic variables and higher frequency data to reveal further insights into the dynamics driving Indonesia's export activity.

Acknowledgment

The author is also grateful to the academic supervisors, Dr. Adang Djatnika Effendi, M.T., and Herry Sutanto, S.E., M.M., for his helpful, suggestions, and unwavering support during the course of preparing this paper. In addition, We appreciate all data providers who kindly provided important data needed to conduct this research.

Declarations

Author contribution	:	All authors contributed equally to this study, with shared responsibility as the principal contributors to the manuscript. Each author has reviewed the final version of the paper and has given full approval for its submission and publication.
Funding statement	:	This research was conducted without financial support from any external funding sources.
Conflict of interest	:	The authors declare no conflict of interest.
Additional information	:	No additional information is available for this paper.

References

Adler, G., Lisack, N., & Mano, R. C. (2019). Unveiling the effects of foreign exchange intervention: A panel approach. *Emerging Markets Review, 40*, 100620. doi: 10.1016/j.ememar.2019.100620

Agénor, P.-R., Jackson, T. P., & Pereira da Silva, L. A. (2025). Foreign exchange intervention and financial stability. *Journal of International Money and Finance*, *160*, 103439. doi: 10.1016/j.jimonfin.2025.103439

Ahmed, R., Aizenman, J., & Jinjarak, Y. (2021). Inflation and exchange rate targeting challenges under fiscal dominance. *Journal of Macroeconomics*, *67*, 103281. doi: 10.1016/j.jmacro.2020.103281

Ahmed, R., Aizenman, J., Saadaoui, J., & Uddin, G. S. (2023). On the effectiveness of foreign exchange reserves during the 2021-22 U.S. monetary tightening cycle. *Economics Letters*, *233*, 111367. doi: 10.1016/j.econlet.2023.111367

Apaitan, T., Manopimoke, P., Nookhwun, N., & Pattararangrong, J. (2024). Heterogeneity in exchange rate pass-through to import prices in Thailand: Evidence from Thailand. *Journal of International Money and Finance*, *149*, 103196. doi: 10.1016/j.jimonfin.2024.103196

Aprilia, R., & Malia, R. (2022). Balance of payments and exchange rates in ASEAN countries: Granger causality test. *Optimum: Jurnal Ekonomi Dan Pembangunan, 12*(1), 1-15. doi: 10.12928/optimum.v12i1.4357

Bussière, M., & Peltonen, T. (2008). Exchange rate pass-through in the global economy the role of emerging market economics. *Working Paper Series No 951*. European Central Bank. Frankurt. doi: 10.2139/ssrn.1313045

Casas, C. (2020). Industry heterogeneity and exchange rate pass-through. *Journal of International Money and Finance*, *106*, 102182. doi: 10.1016/j.jimonfin.2020.102182

Dai, M., Nucci, F., Pozzolo, A. F., & Xu, J. (2021). Access to finance and the exchange rate elasticity of exports. *Journal of International Money and Finance*, *115*, 102386. doi: 10.1016/j.jimonfin.2021.102386

Dainauskas, J. (2023). Time-varying exchange rate pass-through into terms of trade. *Journal of International Money and Finance*, *137*, 102925. doi: 10.1016/j.jimonfin.2023.102905

Dewi, L. G. K., Widiasa, K. A. P., & Dewi, N. L. P. S. (2025). The effect of foreign exchange rate changes on Indonesia's import-export values. *Journal of Business and Management*, *5*(1), 25–33. doi: 10.52432/justbest.5.1.25-33

Dinul, A. A., & Kurniawan, M. L. A. (2024). Analisis variabel makroekonomi terhadap utang luar negeri Indonesia: Pendekatan VAR. *Modus, 36*(2), 266-281. doi: 10.24002/modus.v36i2.8910

Ferreira, A., Gozluklu, A., & Mainente, J. (2025). Central bank reserves and currency volatility. *Open Economies Review*. doi: 10.1007/s11079-025-09837-1

Han, K., Kong, M., Xu, Q., & Zhou, J. (2025). Exchange rate contagion and international trade: Insights from the TENET method. *Journal of International Money and Finance*, *160*, 103471. doi: 10.1016/j.jimonfin.2025.103471

Hansen, T., & Suroso, A. I. (2023). The determinant, efficiency, and potential of Indonesian palm oil downstream export to the global market. *Cogent Economics & Finance*, *11*(1). doi: 10.1080/23322039.2023.2189671

Ibrahim, K. H., Handoyo, R. D., Dwi Kristianto, F., Kusumawardani, D., Ogawa, K., Azlan Shah Zaidi, M., Erlando, A., Haryanto, T., & Sarmidi, T. (2024). Exchange rate volatility and COVID-19 effects on Indonesia's food products trade: Symmetric and asymmetric approach. *Heliyon*, *10*(12). doi: 10.1016/j.heliyon.2024.e32611

Jalunggono, G., Cahyani, Y. T., & Juliprijanto, W. (2020). Pengaruh ekspor, impor dan kurs terhadap cadangan devisa Indonesia periode tahun 2004–2018. *Jurnal Ekonomi, Bisnis, Dan Akuntansi*, *22*(2), 171–181. doi: 10.32424/jeba.v22i2.1593

Kumar, K. S., Prabheesh, K. P., & Gunadi, I. (2026). Unravelling the factors behind Indonesia's international exchange reserves. *Journal of Asian Economics*, *102*, 102105. doi: 10.1016/j.asieco.2025.102105

Kurniawan, M. L. A., & A'yun, I. Q. (2022). Dynamic analysis on export, FDI and growth in Indonesia: An Autoregressive Distributed Lag (ARDL) model. J*ournal of Economics, Business, & Accountancy Ventura*, *24*(3), 350-362. doi: 10.14414/jebav.v24i3.2717

Lal, M., Kumar, S., Pandey, D. K., Rai, V. K., & Lim, W. M. (2023). Exchange rate volatility and international trade. *Journal of International Trade*, *167*. doi: 10.1016/j.jbusres.2023.114156

Makore, I., & Chikutuma, C. N. (2025). Exchange rate volatility and its impact on international trade: Evidence from Zimbabwe. *Journal of Risk and Financial Management*, *18*(7), 376. doi: 10.3390/jrfm18070376

Montoro, C., & Ortiz, M. (2023). The portfolio balance channel of capital flows and foreign exchange intervention in a small open economy. *Journal of International Money and Finance*, *133*, 102825. doi: 10.1016/j.jimonfin.2023.102825

Msomi, S., & Muzindutsi, P.-F. (2025). Exchange rates, supply chain activity/disruption effects, and exports. *Forecasting*, *7*(1), 10. doi: 10.3390/forecast7010010

Nabilah, R. S., Kurniawan, M. L. A., & Purna, F. P. (2025). Determinant of macroeconomic variables on foreign exchange reserves in Indonesia. *INCOME: Innovation of Economics and Management*, *4*(3), 105-111. doi: 10.32764/income.v4i3.5636

Nusriona, N., Rahim, M., & Ariani, W. O. R. (2026). Pengaruh kurs dan pasokan uang terhadap ekspor di Indonesia. *Halu Oleo International Conference on Economic and Business (HOICEB 2025)*, *5*, 232–240.

Pinzon-Puerto, F., & Villamizar-Villegas, M. (2025). Foreign exchange intervention: A comparative analysis of announcements versus trades. *European Economic Review*, *178*, 105119. doi: 10.1016/j.euroecorev.2025.105119

Sitorus, E., Nopeline, N., & Purba, E. F. (2025). Hubungan ekspor, kurs rupiah, dan inflasi terhadap cadangan devisa Indonesia. *Journal Economic and Strategy*, *6*(2).

Sugiharti, L., Esquivias, M. A., & Setyorani, B. (2020). The impact of exchange rate volatility on Indonesia's top exports to the five main export markets. *Heliyon*, *6*(1), e03141. doi: 10.1016/j.heliyon.2019.e03141

Suripto, S., Athfal, A. A., Kurniawan, M. L. A., & Salim, A. (2025). Structural cointegration of

exchange rate, gross domestic product, and external debt in Indonesia: An analysis of macroeconomic stability with the ARDL-ECM approach. *Ekuilibrium: Jurnal Ilmiah Bidang Ilmu Ekonomi*, *20*(2), 271-294. doi: 10.24269/ekuilibrium.v20i2.2025.pp271-294

Syahmiyanti, K., & Soebagyo, D. (2023). Analisis faktor-faktor yang mempengaruhi cadangan devisa di Indonesia tahun 2006–2021. *Primanomics: Jurnal Ekonomi & Bisnis*, *21*(1), 71–81. doi: 10.31253/pe.v21i1.1750

Tampubolon, A., Hou, A., & Sakuntala, D. (2024). The impact of exchange rate, inflation and interest rates on Indonesian mining product exports. *Jurnal Ekonomi*, *13*(3), 803.

Taqiyya, F. F., Sudarsono, H., & Perdana, A. R. A. (2025). Examining the contribution of Islamic bank to Indonesia economic growth. *Optimum: Jurnal Ekonomi Dan Pembangunan*, *15*(2), 174-186. doi: 10.12928/optimum.v15i2.12395

Urgessa, O. (2023). Effects of real effective exchange rate volatility on export earnings in Ethiopia: Symmetric and asymmetric effect analysis. *Heliyon*, *10*(1). doi: 10.1016/j.heliyon.2023.e23529

Wang, Y., & Yu, M. (2021). Imports and RMB exchange rate pass-through: The role of quality sorting. *Journal of Economic Behavior and Organization*, *187*, 470–487. doi: 10.1016/j.jebo.2021.04.039