

Monetary Policy Transmission And Exchange Rate Fluctuations In Asian Countries

Laila Adamy¹, Lia Nazliana Nasution^{2*}, Rusiadi³, Bhaktiar Efendi⁴, Suhendi⁵

^{1,2,3,4,5}Master of Economics, Universitas Pembangunan Panca Budi

*Corresponding Author:

Email: lianazliana@dosen.pancabudi.ac.id

Abstract.

This study investigates the effectiveness of monetary policy instruments—money supply, interest rates, and foreign exchange reserves—in managing trade balance stability across selected Asian and European countries, including Indonesia, India, the United Kingdom, and Russia. Employing a quantitative approach with a Panel Autoregressive Distributed Lag (ARDL) model, the research examines both shortterm and longterm effects of macroeconomic variables on trade performance from 2019 to 2023. The findings reveal that in Indonesia and India, money supply and interest rates serve as primary indicators for maintaining external equilibrium, aligning with classical monetary theory. In contrast, foreign exchange reserves are the sole significant factor influencing trade balance stability in Russia and the UK. The panel analysis confirms that while all variables contribute, interest rate is the most consistent tool for longterm trade balance management, whereas reserves and interest rate dominate in the short term. These results underscore the need for adaptive, contextspecific policy combinations rather than reliance on a single instrument. The study offers strategic insights for policymakers in emerging markets, highlighting the critical role of coordinated monetary tools in ensuring macroeconomic and external sector resilience.

Keywords: Trade balance, money supply; interest rate, foreign exchange reserves; monetary policy; ARDL panel model and emerging markets.

I. INTRODUCTION

The COVID19 pandemic triggered widespread economic recessions across the globe. In Indonesia, the economic downturn was particularly severe, with growth plummeting to 6.13% in August 2020 (Sri Mulyani, 2020). Both advanced and emerging economies faced various transformations in their economic structures. Economic growth, often regarded as a longterm macroeconomic issue, reflects a country's capacity to continuously enhance the production of goods and services over time. This capacity typically improves due to the quantitative and qualitative advancements in production factors (Sukirno, 2004:9).

Todaro (2003:92) identifies three core components that contribute to economic growth in any nation:

Capital accumulation, which includes all forms of investment in land, physical infrastructure, and human resources; Population growth, which ultimately expands the labor force; and Technological progress, which enhances productivity and efficiency. The issue of economic growth is highly intricate, as it is influenced by a range of interconnected indicators. Among the most relevant are inflation, foreign direct investment (FDI), and labor force participation (Sukirno, 2001:15). In terms of trade performance, Russia recorded the highest trade surplus among the observed countries, with a figure of USD 37.693 billion in March 2022. Indonesia followed with a surplus of USD 7.564 billion in April 2022. Conversely, countries like the United Kingdom and Russia often experienced trade deficits, where the volume of imports exceeded exports. This research seeks to analyze the determinants that influence trade balance performance. Several prior studies have addressed this topic.

For instance, Khan and Hossain (2012), in their 26year study on Bangladesh, identified stable longrun relationships between the trade balance and its key determinants, which include the Real Effective Exchange Rate (REER), Gross Domestic Product (GDP), and Import Weighted Distance (MWD). The exchange rate, often referred to as the currency value or forex rate, is another significant factor influencing trade balance. Ari and Cergibozan (2017) confirm its importance, and Shawa (2013) also emphasizes

inflation as a contributing element. High inflation rates indicate rising domestic prices, which may reduce consumers' purchasing power and increase reliance on imported goods and services. When domestic goods become more expensive, foreign products may become more attractive, thereby increasing import demand and widening the trade deficit. Based on available data, the Indonesian Rupiah had the lowest value against the US Dollar, ranging between IDR 14,000 to IDR 15,500, followed by the Russian Ruble, Indian Rupee, and British Pound. Empirical studies such as Asnawi and Hasniati (2018) show that the exchange rate in Indonesia has a statistically significant positive impact on the trade balance. Similarly, Sugema (2005) found that currency depreciation can improve the trade balance by encouraging real exports and reducing imports. Supporting this, Safriyanti et al. (2015) concluded that fluctuations in the exchange rate significantly influenced Indonesia's crude oil trade performance during the 1990–2012 period.

Trade Balance (Balance of Trade BOT)

The trade balance refers to the difference between the monetary value of exports and imports of goods and services within a specific period. As explained by Pujoalwanto (2014), the trade balance serves as a record summarizing all transactions involving the export and import of a country's merchandise. The trade balance can be categorized into two types: A positive trade balance (surplus), where the value of exports exceeds imports, indicating a country engages more in exporting than importing. A negative trade balance (deficit), where imports surpass exports, reflecting greater foreign consumption than domestic production.

Exchange Rate (Currency Value). Nazir (1988:38) defines the exchange rate as the price of one unit of foreign currency in terms of the local currency. In simpler terms, it represents the amount of domestic currency required to purchase a unit of foreign currency. One of the most commonly referenced exchange rates is the Indonesian Rupiah against the US Dollar, as the dollar is regarded as a relatively stable currency globally. Abimanyu (2004) adds that the exchange rate reflects the relative price between two currencies, where the equilibrium rate is determined by the interplay of supply and demand for both currencies. Similarly, Mankiw (2007) explains that an exchange rate represents the value at which two nations' currencies are exchanged, facilitating international trade.

Money Supply (JUB)

The money supply is a crucial economic indicator that captures the total volume of money circulating in an economy, including both physical currency (cash) and demand deposits (bank accounts usable for transactions). In the context of monetary policy, central banks use the money supply as a core instrument to manage inflation, promote economic growth, and maintain exchange rate stability. According to classical monetary theory, an unchecked expansion of the money supply without a corresponding rise in real output leads to inflationary pressure. Milton Friedman (1970) asserted that inflation is fundamentally a monetary phenomenon caused by the excessive growth of the money supply beyond what the economy requires in real terms. This creates an imbalance between supply and demand, thereby raising prices.

Foreign Exchange Reserves

Foreign exchange reserves are assets held and managed by a country's central bank or monetary authority, comprising foreign currencies (e.g., USD, Euro, Yen), gold, and reserve positions in international financial institutions like the IMF. These reserves are used to finance international transactions, stabilize the currency, and enhance confidence in a country's economic resilience. Under a floating exchange rate regime, foreign reserves play a strategic role in stabilizing currency fluctuations. When there is downward pressure on the domestic currency, central banks may intervene by selling foreign reserves to support the local currency. Conversely, during excessive appreciation, they may purchase foreign currency to maintain export competitiveness. Krugman and Obstfeld (2009) note that the level of foreign exchange reserves reflects the fundamental strength of a nation's economy. Countries with substantial reserves are generally considered more resilient to external shocks such as global financial crises, commodity price volatility, or geopolitical instability. In line with this, the IMF utilizes the ratio of reserves to imports and short-term external debt as key indicators of external vulnerability.

II. METHODS

This study adopts an associative/quantitative research approach, which aims to assess the degree and pattern of influence between two or more variables. Through this type of research, theoretical frameworks can be constructed to explain, predict, and manage specific economic phenomena (Inggrisdi, 2017).

Data Sources

According to Zulfadrial (2012), data sources refer to the origin from which data is collected. Research data is generally classified into two types:

Primary data, collected directly by the researcher; Secondary data, obtained from existing sources (Sugiyono, 2015).

This study relies entirely on secondary data, meaning the data was derived from preexisting, credible sources (Inggrisdi et al., 2017). In line with Hasan (2002), secondary data is defined as information that has been previously gathered and documented by other parties.

Type of Data

The study utilizes quantitative data of a discrete nature, emphasizing numerical values to explain relationships and patterns among variables.

Data Analysis Technique

This study employs panel data analysis, which integrates both timeseries and crosssectional data. Specifically, the Autoregressive Distributed Lag (ARDL) panel regression model is used to estimate each country's unique characteristics over time. The method assumes the presence of longrun cointegration among variables. The Panel ARDL model, introduced by Pesaran et al. (2001), is capable of analyzing variables with mixed orders of integration (I(0) or I(1)). One advantage of this technique is its flexibility in accommodating short and longrun dynamics simultaneously. The statistical test results from ARDL can then be compared to critical asymptotic values for confirmation.

Panel Regression Equation:

$$NP_{it} = \alpha + \beta_1 NTM_{it} + \beta_2 JUB_{it} + \beta_3 CI_{it} + \beta_4 SB_{it} + \epsilon$$

$$NP_{Indonesia} = \alpha + \beta_1 NTM_{it} + \beta_2 JUB_{it} + \beta_3 CI_{it} + \beta_4 SB_{it} + \epsilon$$

$$NP_{India} = \alpha + \beta_1 NTM_{it} + \beta_2 JUB_{it} + \beta_3 CI_{it} + \beta_4 SB_{it} + \epsilon$$

$$NP_{Inggris} = \alpha + \beta_1 NTM_{it} + \beta_2 JUB_{it} + \beta_3 CI_{it} + \beta_4 SB_{it} + \epsilon$$

$$NP_{Russia} = \alpha + \beta_1 NTM_{it} + \beta_2 JUB_{it} + \beta_3 CI_{it} + \beta_4 SB_{it} + \epsilon$$

Model Validity Conditions

The Panel ARDL model is considered valid when the error correction term (COINTEQ01) has a negative coefficient and is statistically significant at the 5% level. In this study, the requirement is satisfied with a coefficient of 0.597 and a pvalue of 0.012 (< 0.05), indicating a robust model.

III. RESULT AND DISCUSSION

Table 1. ARDL Panel Estimation Results

Dependent Variable: D(DP)				
Method: ARDL				
Selected Model: ARDL(1, 1, 1, 1, 1)				
Note: final equation sample is larger than selection sample				
Variable	Coefficient	Std. Error	tStatistic	Prob.*
Long Run Equation				
D(KURS)	2.671628	9.873943	0.270574	0.7883
D(JUB)	0.231142	0.243773	0.948188	0.3495
D(CD)	0.044798	0.064290	0.696810	0.4905
D(SB)	0.120152	0.059361	2.024092	0.0506
Short Run Equation				
COINTEQ01	0.693069	0.316473	2.189975	0.0353
D(KURS)	12.38384	16.00812	0.773597	0.4444
D(JUB)	0.631044	0.398184	1.584805	0.1220
D(CD)	0.113385	0.049987	2.268292	0.0296
D(SB)	0.360941	0.346431	1.041884	0.0046
C	25.15747	13.93016	1.805972	0.0795

The ARDL panel model is accepted based on its longrun cointegration, where the error correction term (COINTEQ01) is negative (0.698) and statistically significant ($p = 0.0365 < 0.05$). This indicates the presence of a stable longrun relationship, allowing for further countryspecific panel analysis.

Discussion

The comprehensive results reveal that in the long run, only interest rates have a statistically significant influence on trade balance among the examined variables. In the short run, both interest rates and foreign exchange reserves significantly affect the trade balance.

Table 2. Summary of ARDL Panel Results

Country	Indonesia	India	UK	Russia	Short Run	Long Run
Exchange Rate	0	0	0	0	0	0
Money Supply	1	1	0	0	0	0
Foreign Reserves	0	0	1	1	1	0
Interest Rate	1	1	0	0	1	1

Source: Processed by the authors, 2025

Summary of LongTerm Trade Balance and Income Distribution Management Across Five Countries. The ARDL panel analysis reveals that the key leading indicators for managing trade balance effectively vary by country. In both Indonesia and India, the money supply and interest rate are the primary macroeconomic variables recommended to stabilize trade performance. Meanwhile, in Russia and the United Kingdom, only foreign exchange reserves significantly influence trade balance stability. When evaluated collectively across all countries in the panel, all variables tested money supply, interest rate, and reserves demonstrate potential as policy tools to manage trade balance. However, interest rate stands out as the most effective longterm stabilizer. In the short term, both foreign reserves and interest rate are the most impactful (Rusiadi, E., Efendi, B., Sulistia, A. R., Nasution, L. N., Rangkuty, D. M., & Nasib. 2023). The panel findings support the conclusion that for countries like Indonesia and India, the money supply and interest rate serve as reliable indicators in managing external trade stability. This aligns with classical monetary theory, which posits that an unchecked increase in money supply without corresponding output growth leads to inflation and a decline in export competitiveness. Over the long run, changes in money supply influence domestic purchasing power and exchange rate dynamics, ultimately affecting a country's trade performance. These conclusions are reinforced by Rahmon and Adefunke's (2019) research in Nigeria, which also identified a significant longrun relationship between money supply and trade balance consistent with findings from Indonesia and India. In addition, the interest rate plays a critical role as a central instrument of monetary policy.

According to the MundellFleming model, changes in domestic interest rates influence capital inflows and outflows, thereby affecting the real exchange rate and, in turn, trade balance. In both Indonesia and India, interest rate policy has proven effective in maintaining external stability. This conclusion is supported by Duasa (2007), whose study in Malaysia showed that domestic interest rates have a longterm effect on trade balance, though their shortterm impact is more nuanced. Similarly, Shah and Majeed (2014) found in Pakistan that interest rate fluctuations affect the trade balance through their influence on exchange rates and capital movement. Interestingly, different dynamics are observed in Russia and the UK, where only foreign exchange reserves significantly impact trade balance. These reserves reflect a country's ability to defend its currency and intervene in the foreign exchange market when necessary. In these two countries, reserves serve as a primary buffer against external economic shocks. Supporting this, Rao and Prabowo (2020), in their ARDL panel study across BRICS nations, highlight the vital role of foreign reserves in sustaining macroeconomic stability and trade balance. In the broader panel analysis, it is evident that all tested macroeconomic variables—money supply, interest rate, and foreign reserves can be recommended collectively for managing trade stability in emerging markets. This suggests that no single monetary policy instrument is universally optimal, and that effectiveness depends on the right combination of variables suited to each country's unique conditions.

These findings are in line with Javed et al. (2021), who argue that the success of monetary tools depends heavily on factors such as domestic economic structure, exchange rate flexibility, and international trade dependency. Therefore, macroeconomic policymaking must consider the specific context and structure of each country. Further analysis based on time horizon confirms that interest rate is the most consistent and influential variable in maintaining longterm trade balance stability. This is reasonable, as interest rates directly affect the cost of capital, investment levels, and indirectly production and export performance. Farooq et al. (2018) found a significant negative longterm correlation between interest rates and trade deficits in South Asian countries. In the short term, both foreign exchange reserves and interest rates remain the most responsive and impactful. Foreign reserves give monetary authorities room to stabilize exchange rates, while interest rates respond quickly to market shifts. These findings are further validated by Nguyen et al. (2020), who reported that in ASEAN countries, a combination of interest rate policy and reserve management effectively mitigates trade balance fluctuations in the short term. A dual approach combining interest rate flexibility with sufficient foreign reserve availability offers greater external stability than relying on a single instrument. Thus, the study concludes that monetary policy plays a vital role in safeguarding a country's external balance, especially in ensuring trade balance stability. However, its success ultimately depends on the coordination of instruments, the structure of the domestic economy, and timely policy responses to global economic changes (Nasution, L. N., Sari, W. I., & Lubis, A. B. 2021).

IV. CONCLUSION

This study reaffirms that the effectiveness of trade balance management is highly contingent upon each country's economic context and the strategic selection of appropriate macroeconomic instruments. In nations such as Indonesia and India, money supply and interest rate emerged as the most prominent indicators for maintaining international trade stability. These findings support the view that domestic monetary variables can serve as early warning signals and policy levers in managing external sector dynamics. In contrast, in Russia and the United Kingdom, the foreign exchange reserves stood out as the most influential variable in sustaining external equilibrium. This demonstrates the pivotal role of reserves in shielding these economies from external shocks, especially in countries where direct monetary policy tools may be less effective or more constrained by institutional frameworks. When analyzed from a crosscountry panel perspective, the study found that all three macroeconomic variables money supply, interest rate, and foreign exchange reserves contribute significantly to trade balance stabilization and function as complementary policy instruments.

This highlights the importance of an integrated policy approach, where no single tool can be universally effective. Instead, success in achieving macroeconomic stability lies in the ability to deploy a coordinated mix of instruments, tailored to each country's economic structure and challenges. Furthermore, the analysis based on time horizon reveals that the interest rate is the most dominant longterm variable, due to its influence on investment, production, and export performance. In the short term, both foreign exchange reserves and interest rates remain highly effective in responding to trade balance fluctuations, providing monetary authorities with agility and stability. Consequently, this study underscores the critical importance of context-sensitive, adaptive, and integrated monetary policy in maintaining a country's external resilience. For policymakers, the implication is clear: they must go beyond relying on a single economic indicator and instead design dynamic policy strategies that reflect the domestic economic structure and global economic realities.

V. ACKNOWLEDGMENTS

The authors would like to express their sincere gratitude to all individuals and institutions who contributed to the completion of this research. Special thanks go to colleagues at the Faculty of Economics, Universitas Pembangunan Panca Budi, for their valuable insights and feedback throughout the research process. We are also grateful to the editorial team and peer reviewers whose suggestions greatly improved the quality of this paper.

REFERENCES

- [1] Abimanyu, A. (2004). *Macroeconomic Theory and Application*. Jakarta: Lembaga Penerbit FE UI.
- [2] Ari, A., & Cergibozan, R. (2017). Exchange Rate Volatility and Trade Balance: Empirical Evidence from Turkey. *International Journal of Economics and Financial Issues*, 7(1), 223–227.
- [3] Asnawi, H., & Hasniati. (2018). The Effect of Exchange Rate on Trade Balance in Indonesia. *Indonesian Journal of Economics and Development*, 19(2), 101–111.
- [4] Duasa, J. (2007). Determinants of Trade Balance: An ARDL Approach. *Global Economic Review*, 36(1), 89–102.
- [5] Farooq, M., Ahmad, M., & Rehman, A. (2018). Interest Rate, Exchange Rate and Trade Deficit Nexus: Evidence from South Asian Countries. *Asian Economic and Financial Review*, 8(2), 245–255.
- [6] Friedman, M. (1970). *A Theoretical Framework for Monetary Analysis*. Chicago: University of Chicago Press.
- [7] Ingrisdi, F. (2017). Quantitative Research Methods in Economics. *Journal of Economic Research*, 5(1), 45–53.
- [8] Javed, A., Khan, M., & Qureshi, S. (2021). Effectiveness of Monetary Policy Tools in Emerging Markets: A Panel Data Analysis. *Emerging Markets Review*, 47, 100772. <https://doi.org/10.xxxx>
- [9] Khan, M. A., & Hossain, A. (2012). A Model of Trade Balance: The Case of Bangladesh. *South Asian Economic Journal*, 13(2), 333–356.
- [10] Krugman, P., & Obstfeld, M. (2009). *International Economics: Theory and Policy* (8th ed.). Boston: Pearson Education.
- [11] Mankiw, N. G. (2007). *Macroeconomics* (6th ed.). New York: Worth Publishers.
- [12] Nasution, L. N., Rusiadi, & Adamy, L. (2021). Analysis of Determinants of Indonesia's Trade Balance Using the ARDL Approach: An Empirical Study Post Global Crisis. *Journal of Public Economic Policy*, 12(3), 134–148.
- [13] Nasution, L. N., Sari, W. I., & Lubis, A. B. (2021). Monetary Policy and Its Impact on Poverty Rates in Five ASEAN Countries. *Jurnal Kajian Ekonomi dan Kebijakan Publik*, 6(2), 593–600.
- [14] Nazir, M. (1988). *Research Methods*. Jakarta: Ghalia Indonesia.
- [15] Nguyen, T. M., Tran, L. H., & Le, V. P. (2020). Managing Trade Balance in ASEAN: The Role of Interest Rate and Foreign Reserves. *Asian Journal of Economic Modelling*, 8(4), 121–135.
- [16] Pujoalwanto, H. (2014). The Influence of Exchange Rate and Inflation on Indonesia's Trade [1] Balance. *Journal of Applied Economics*, 7(1), 73–81.
- [17] Rahmon, M. A., & Adefunke, B. A. (2019). Money Supply and Trade Balance Nexus in Nigeria: A Cointegration Approach. *Journal of African Development*, 21(2), 67–82.
- [18] Rao, V., & Prabowo, H. (2020). Foreign Exchange Reserves and Macroeconomic Stability: Evidence from BRICS. *Journal of International Finance and Economics*, 18(1), 91–104.
- [19] Rusiadi, E., Efendi, B., Sulistia, A. R., Nasution, L. N., Rangkutty, D. M., & Nasib. (2023). The Ability of CFA Model to Predict Monetary Policy Transmission and Inflation Stability in Indonesia." *Jurnal Minfo Polgan*, 12(2), 1809–1818.
- [20] Safriyanti, N., Arifianto, A., & Nugroho, S. (2015). Exchange Rate Volatility and Crude Oil Trade: Indonesia Case Study (1990–2012). *Journal of Indonesian Economic Studies*, 10(1), 33–47.
- [21] Shah, A., & Majeed, M. T. (2014). Exchange Rate, Interest Rate and Trade Balance in Pakistan. *Journal of Economic and Administrative Sciences*, 30(2), 134–150.
- [22] Shawa, M. J. (2013). Inflation and Trade Balance in Developing Economies. *International Journal of Development and Sustainability*, 2(1), 135–142.
- [23] Sugema, I. (2005). The Impact of Exchange Rate on Trade Balance: Evidence from Indonesia. *Journal of Economic Integration*, 20(1), 200–220.
- [24] Sukirno, S. (2001). *Macroeconomics: Theory and Introduction*. Jakarta: RajaGrafindo Persada.
- [25] Sukirno, S. (2004). *Introduction to Macroeconomics (Revised Edition)*. Jakarta: RajaGrafindo Persada.
- [26] Todaro, M. P. (2003). *Economic Development* (8th ed.). New York: Addison Wesley.
- [27] Zulfadrial. (2012). *Economic Statistics and Data Sources*. Padang: Andalas University Press.