



TESTING THE J-CURVE PHENOMENON ON INDONESIA'S TRADE BALANCE WITH THE FIVE BIGGEST TRADING PARTNERS

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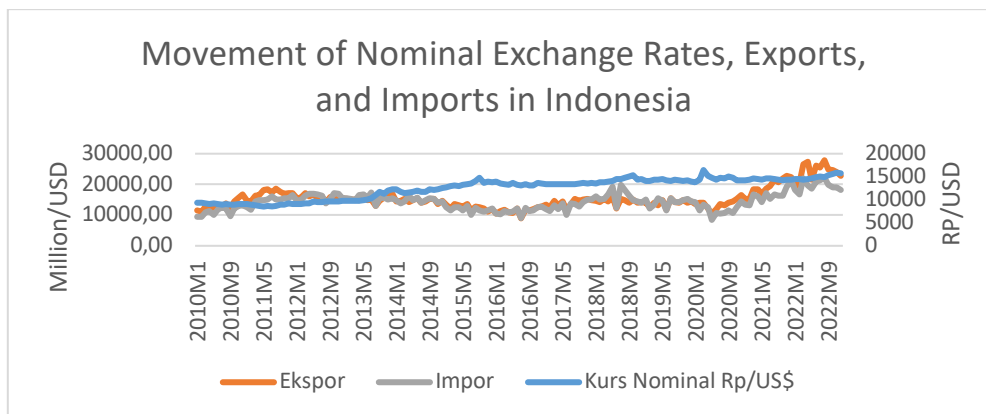
Abstract

The J-Curve is an assumption that exchange rate depreciation will improve a country's trade balance in the long term. This phenomenon occurs when exchange rate depreciation causes the trade balance to worsen in the short term. However, in the long term the trade balance will improve and increase permanently. This study aims to test whether the J-Curve phenomenon occurs in Indonesia's bilateral trade balance with the five largest trading partners using the Vector Autoregressive (VAR) method and in the observation period 2010.1-2022.12. The results of the analysis of the Impulse Response Function (IRF) show that the J-Curve phenomenon occurs in the trade balance model between Indonesia and Japan and the United States. Meanwhile, for Indonesia's trade balance with the European Union, exchange rate depreciation can improve the trade balance directly. For Indonesia's trade balance with China and Singapore, exchange rate depreciation improves the trade balance initially, but will worsen (inverted J-curve) in the long term so that the long-term impact of exchange rate depreciation on the trade balance is negative.

Keywords: J-Curve, Trade Balance, Real Exchange Rates, Export, and Import.

INTRODUCTION

Changes in exchange rates have an impact on currency appreciation and depreciation. In addition, the exchange rate is determined by the supply-demand relationship for the currency. If the demand for a currency increases, while the supply remains constant or decreases, then the exchange rate will rise. If the supply of a currency increases, while demand remains constant or decreases, the exchange rate will weaken. The following is the movement of nominal exchange rates, exports and imports in Indonesia for the 2010-2022.



Source: Bank Indonesia and International Monetary Funds, 2023

Figure 2. Movement of Nominal Exchange Rates and Trade Balance in Indonesia

Based on Figure 2, it is known that movements in the nominal exchange rate tend to experience an increasing trend from year to year, which indicates a depreciation of the nominal exchange rate relative to foreign exchange rates. Meanwhile, movements in the value of Indonesia's exports and imports tend to experience fluctuating movements from year to year. Furthermore, based on Figure 2, it can be seen that the highest (most depreciated) nominal exchange rate occurred in March-May 2020, namely IDR. 16,449, where in the same period there was also a decrease or lowest value of Indonesian exports and imports respectively, namely 10,454.28 million US dollars and 8,438.63 million US dollars. During this period, unstable fluctuations occurred in nominal exchange rates, exports and imports in Indonesia due to the rapid spread of the Covid-19 outbreak in Indonesia, resulting in instability in the domestic financial market. This shows that when the nominal exchange rate weakens or depreciates against foreign currencies, it will encourage the value of exports to increase and the value of imports to decrease. Depreciation of the exchange rate will reduce the prices of export goods and services abroad so that by decreasing export prices, demand for exports from abroad will increase, which will ultimately increase the amount of Indonesian exports. However, the value of imports tends to decrease, this is because the depreciation of the exchange rate or the weakening of the rupiah against foreign currencies will result in the prices of imported goods and services

from abroad becoming more expensive, so that due to the high prices of imported goods and services this will reduce demand for imports (Putri, 2019). Thus, in conditions where the exchange rate is depreciating, it will encourage a high value of exports and reduce the value of imports. So, it can be concluded from Figure 1 that the most depreciating nominal exchange rate (March 2020) will ultimately result in a deficit in Indonesia's trade balance. This can be seen from the existing graph, where the lowest value of exports and imports also occurred in July 2016.

Theoretically, exchange rate depreciation results in increased exports and decreased imports. However, based on Figure 1, when there is an increase in exchange rate depreciation, export movements do not show an increasing trend and import movements do not show a decreasing trend. Therefore, researchers want to analyze this problem. Research related to the influence of exchange rates on the trade balance has been carried out by several researchers. This research is generally based on developing countries but also in developed countries. There are several different research results depending on various aspects of the country. Several developing and developed countries have the J-Curve phenomenon.

For example, in research conducted by Siklar & Celik Kecili (2018) explained that the J-Curve phenomenon apply in Turkey in their research. This is proven by the finding that exchange rate depreciation will result in the trade balance improving in the long term. Apart from that, there are other studies that differ from previous research, such as research from Wijaya (2020), which found that bilateral Indonesia-China and Indonesia-Japan did not have the J-Curve phenomenon. Meanwhile, bilateral Indonesia-Singapore has the J-Curve phenomenon. Therefore, based on the background above, presenting various pros and cons resulting from research related to proving the J-Curve phenomenon is the main reason for conducting research on the topic of "Testing the J-Curve Phenomenon on Indonesia's Trade Balance with Indonesia's Five Largest Trading Partners". Thus, the use of Indonesia's five largest trading partners, namely China, Japan, the United States, the European Union and Singapore, has been used as a proxy for the trade balance and real exchange rates.

LITERATURE REVIEW

Trade Balance

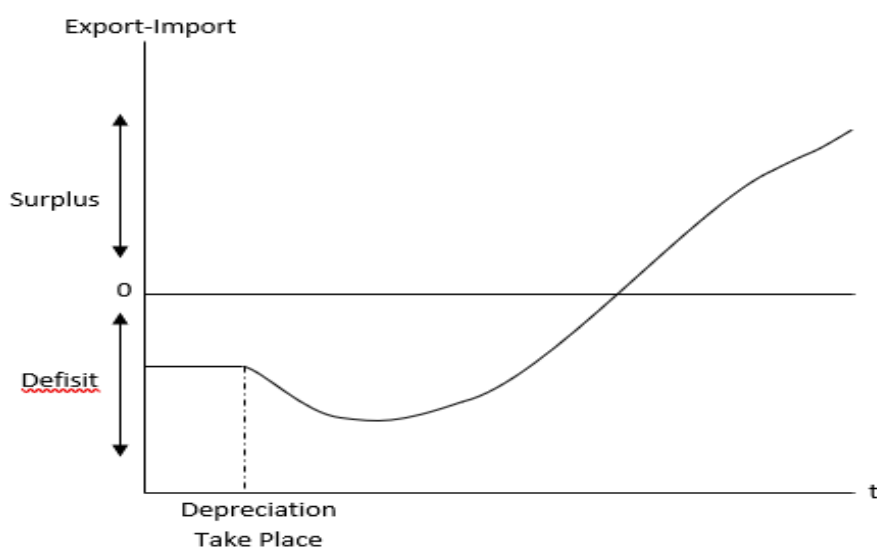
The trade balance is an important component of the current account balance which records the flow of exports and imports of goods which are usually expressed in US dollars. A positive trade balance means there is a trade surplus if the export value is higher than imports, and vice versa for a negative trade balance (R & Saudi, 2020). In a country's economic activities, one of the important things is international trade, which in the implementation of international trade between one country and another is called exports and imports. Exports are the activity of

selling goods and services in the country to other countries, while imports are the activity of buying goods and services from abroad into the country. So, export activities from a country can improve the country's economy, because it will increase foreign exchange, increase investment and create new jobs (Mwito et al., 2021).

International trade is trade carried out by residents of one country with residents of other countries. Economic indicators can also be seen from the performance of international trade through the condition of each country's trade balance (Ginting, 2014). A trade balance surplus indicates that export performance dominates the economy more than imports, but when a trade balance deficit occurs, this means that import performance is greater in a country's economy (Acemoğlu et al., 2009).

J-Curve

According to P. R. Krugman (2000), the J-Curve is an assumption that exchange rate depreciation will improve a country's trade balance in the long term. This phenomenon occurs when exchange rate depreciation causes the trade balance to worsen in the short term. However, in the long term the trade balance will improve and increase permanently.



Source: Appleyard Adaptation, 2014

Figure 2. J-Curve

Based on Figure 2, it shows how the J curve is formed. In Figure 4, the horizontal line describes time and the vertical line describes the balance of trade balance. Exchange rate depreciation occurs at time t . When adjustments occur, depreciation of the exchange rate will cause export prices to decrease and import prices to increase, thus causing an increase in export volume and a decrease in import volume. The time to make adjustments until the trade balance reaches a surplus is formed resembling the letter J ("J-Curve For Indonesia's Trade Balance With Non-Linear ARDL," 2024). The J-Curve phenomenon depends on the elasticity of demand

for imports and exports (Nopeline et al., 2023). Each country has a different trade balance adjustment elasticity and time horizon. The existence of the J-Curve phenomenon depends on the elasticity of demand for imports and exports. The elasticity and time period for each country is different in adjusting the trade balance (Bahmani-Oskooee & Harvey, 2017).

Real Exchange Rates

Real exchange rates, also called real exchange rates, are the relative prices of goods between two countries. This exchange rate states that the rate at which we can trade goods from one country for goods from another country. Real exchange rates are obtained from the nominal exchange rate and the price ratio between two countries. The adjustment of the nominal exchange rate and price ratio between the two countries involved serves as an indicator of real exchange rates. According to research by Ricci et al. (2008) and Indrasari et al. (2024) states that there are six basic determinants of real exchange rates which are based on the Consumer Price Index (CPI) as follows:

- 1) Net foreign assets. The standard intertemporal macroeconomic model of prosperity states that depreciating real exchange rates are intended to generate trade surpluses necessary to meet their external obligations. Alternatively, economies with relatively high assets outside the bordering country can “buy” the more expensive real exchange while still having a high payout threshold.
- 2) Productivity differentiation. According to the so-called Balassa-Samuelson effect, higher wages produced in the tradable sector will exert upward pressure on wages in the non-tradable sector if productivity in the tradable sector expands faster than in the non-tradable sector . a greater relative price is obtained as a result of trading. cannot be traded. Productivity impacts on tradable and non-tradable commodities would be of the same magnitude (and opposite sign) under conventional neoclassical assumptions, as was the original Balassa-Samuelson contribution. This productivity disparity is expected to have a positive impact on real exchange rates.
- 3) Commodity trading conditions. Higher exchange rates for commodities should appreciate real exchange rates through effects on wealth or income. Commodity prices are determined in relation to the prices of manufactured exports from industrialized countries.
- 4) Government consumption. Higher government consumption (as a percentage of GDP) is expected to raise real exchange rates to the extent that consumption is concentrated in non-tradable rather than tradable commodities, increasing the relative cost of the former.
- 5) Trading restrictions index. Trading restrictions can increase local prices and real exchange rates.

Price control. in a transitional economy, the percentage of prices in the regulated CPI basket serves as a surrogate for deviations of prices from their market value. When price controls are lifted, government-regulated prices will tend to rise sharply along with market prices, which will lead to an increase in the consumer price index. Thus, it is concluded that a lower proportion of regulated prices in the consumer price index will be associated with more favorable real exchange rates.

METHODOLOGY

The data used in this study are secondary data for trade balance and real exchange rates. Data in the form of time series from January 2010 - December 2022. The data used is monthly, where trade balance are obtained from export value and import value as well as real exchange rates are obtained from nominal exchange rates and consumer price index.

Variable Operationalization

Trade Balance

The trade balance is a summary that shows the difference in the value of export and import transactions in a country within a certain period of time. The trade balance is defined as a list containing the comparison/difference in the value of a country's exports and imports within a certain period of time. The trade balance in this study uses monthly export and import data in USD units. This research data was obtained from the Central Statistics Agency.

Real Exchange Rates

Real exchange rates are the relative prices of goods between two countries. Real exchange rates state the rate at which we can trade goods from one country for goods from another country. RER attempts to measure the value of one country's goods relative to the goods of another country, group of countries, or the rest of the world, at the prevailing nominal exchange rate. In this research, Real exchange rates use data from RER Indonesia with Indonesia's 5 largest trading partners. Real exchange rates consist of nominal exchange rates (sourced from Bank Indonesia) and domestic and foreign consumer price indices (sourced from the International Monetary Fund). This data concept is presented in monthly form for the years 2010 – 2022. According to Appleyard (2014), the equation for the formula produced for Real Exchange Rates is as follows;

$$RER = e \frac{PI_{LN}}{PI_{DN}}$$

Information:

RER : Real Exchange Rates

e : Nominal exchange rate

PI_{LN} : Overseas price index

PI_{DN} : Domestic price index

Data Analysis Techniques

The analysis used to prove the J-Curve phenomenon is by using the impulse response function which is aimed at answering whether or not there is a J-curve phenomenon in Indonesia's bilateral trade balance with each of Indonesia's five largest trading partners by looking at the response of the trade balance as a result of shocks. Real Exchange Rates (RER).

In determining whether or not there is a J-Curve phenomenon in Indonesia's bilateral trade balance with each of Indonesia's five largest trading partners, this research uses a regression model in the form of VAR which will be the basis for producing an impulse response function using the following model:

$$TB = \beta_0 + \beta_1 RER + \varepsilon$$

Information;

β_0 : Regression Constant

$\beta_1, \beta_2, \beta_3$: Regression Coefficient

TB : Trade Balance

ε : Error Term

To estimate the VAR model, a long lag is needed to see the relationship between one variable and other variables. The lag length used in this research in estimating the VAR model is to use a criterion, namely the Akaike Information Criterion (AIC), namely by selecting the estimation result with the smallest AIC value. The lag length of the VAR model chosen is the lag length that has the minimum Akaike information criterion value (Gujarati, 2009). The AIC criteria can be written as follows:

$$\ln AIC = \frac{2k}{n} + \ln\left(\frac{SSR}{n}\right)$$

Information:

SSR : Sum of Squared Residuals (Sum Of Squared Residuals)

k : Number of Estimation Parameter Variables

n : Number of Observations

RESULT & DISCUSSION

Stationary Test

The results of the stationary test using the Philips-Perron Test approach to monthly data for the trade balance (TB) are shown in Table 1.

Variabel	Constant dan Trend									
	Level					First Difference				
	Nilai Kritis MacKinnon			PP	Prob	Nilai Kritis MacKinnon			PP	Prob
	1%	5%	10%			1%	5%	10%		
TBIC	-4,01	-3,43	-3,14	-10,3	0,0000*	-4,01	-3,43	-3,14	-56,31	0,0001**
TBIJ	-4,01	-3,43	-3,14	-8,31	0,0000*	-4,01	-3,43	-3,14	-31,60	0,0001**
TBIAS	-4,01	-3,43	-3,14	-4,68	0,0011*	-4,01	-3,43	-3,14	-25,80	0,0000**
TBIUE	-4,01	-3,43	-3,14	-9,42	0,0000*	-4,01	-3,43	-3,14	-121,03	0,0001**
TBIS	-4,01	-3,43	-3,14	-7,14	0,0000*	-4,01	-3,43	-3,14	-36,68	0,0001**

Table 1. Philips-Perron Test on Trade Balance (TB)

Source: Eviews 10, Summary from Appendix 4

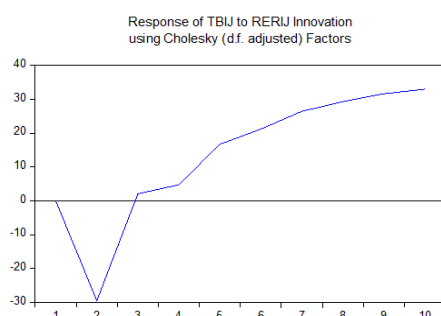
Information: * Stationary on Level

** Stationary on First Difference

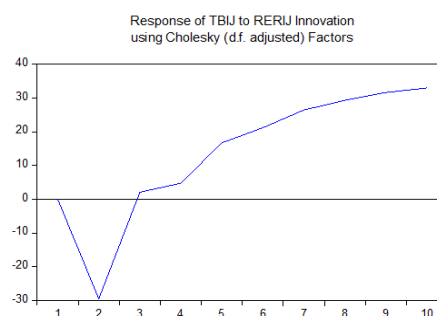
Based on Table 12, it shows that all Trade Balance (TB) variables from Indonesia's five largest trading partners are stationary at level. The data used is data that has been calculated. Trade balance data is obtained from the export value minus the import value.

J-Curve Analysis

Impulse Response Function (IRF) analysis is used to explore the response of an endogenous variable to shocks to certain variables in the VAR model. The IRF results show the J-Curve phenomenon if the depreciation of real exchange rates causes the balance of trade to worsen in the initial period. However, in the following period the trade balance will improve. These impulse response function results has been adjusted to the best lag criteria in the VAR model. The following are the results of the Impulse Response Function (IRF) in graphic form in this research, namely as follows:



Indonesia – China Model



Indonesia – Japan Model

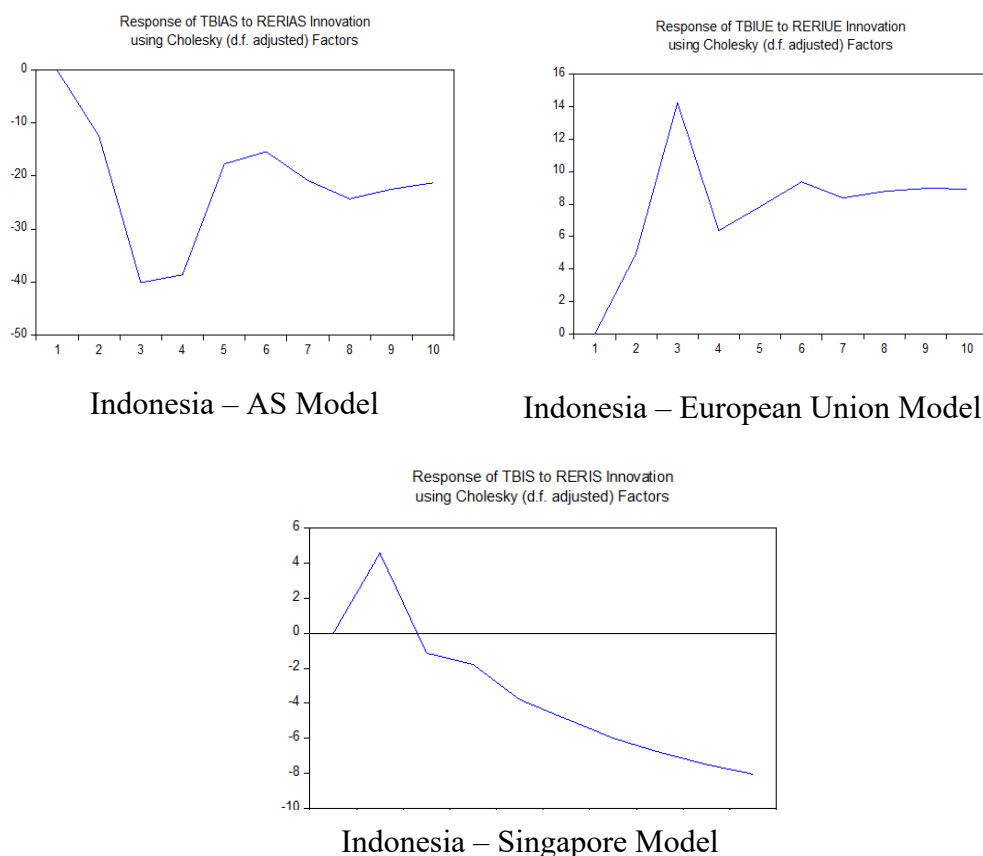


Figure 6. Impulse Response Function (IRF) Estimation Results

Source: Eviews 10, Summary from Appendix 8

The results of the analysis of the Impulse Response Function (IRF) show that the J-Curve phenomenon occurs in the trade balance model between Indonesia and Japan and the United States. Meanwhile, for Indonesia's trade balance with the European Union, exchange rate depreciation can improve the trade balance directly. For Indonesia's trade balance with China and Singapore, exchange rate depreciation improves the trade balance initially, but will worsen (inverted J-curve) in the long term so that the long-term impact of exchange rate depreciation on the trade balance is negative.

In the Indonesia – China trade balance model, the trade balance increases until the second period after the first shock of exchange rate depreciation. The trade balance experienced a sharp decline in value in the third and fourth periods due to the weakening exchange rate. Furthermore, the trade balance experienced a continuous decline until the tenth period. The estimation results of this research are in line with research (Wijaya, 2020) which states that the Indonesia - China trade balance model does not show the J-Curve phenomenon.

In the Indonesia-Japan trade balance model, depreciation of the exchange rate results in a sharp decline caused by shocks so that the balance of the Indonesia-Japan trade balance is in the first to second periods. However, the balance of trade balance increased which occurred in the

third period. Then, a gradual increase in the trade balance occurred from the fourth to the tenth period. The estimation results of this research are in line with Hapsari & Kurnia (2018) and Sabila (2018) stating that the Indonesia - Japan trade balance model shows the J-Curve phenomenon. Meanwhile, in the Indonesia - US trade balance model, the shock that occurred in the initial period of exchange rate depreciation resulted in a decline in the balance of the Indonesia - US trade balance in periods one to four. A drastic increase in the trade balance due to exchange rate depreciation occurred in the fourth to sixth periods. Furthermore, in the sixth to tenth period the balance of trade balance tends to fluctuate until it reaches the condition of the trade balance in the tenth period. These estimation results are in line with research conducted by Ishtiaq et al. (2016) stated that the Pakistan-US trade balance model shows a J-curve phenomenon, considering that Pakistan has the same characteristics in that it has economic driving forces in the fields of agriculture, industry and services.

In the Indonesia – European Union trade balance model, exchange rate depreciation results in an increase in the trade balance in periods one to three. A significant decline occurred in the fourth period as a result of exchange rate depreciation. Then, the fifth to seventh periods tend to experience fluctuations in the trade balance value. In the end, the trade balance tends to be stable from the eighth to the tenth period. This is in line with research conducted by Yenipazarlı & Güneş (2012) which states that the Turkey - European Union trade balance model does not indicate the occurrence of the J-Curve phenomenon considering that Turkey has the same characteristics as Indonesia, where these two countries are countries with the majority of power. economics in the oil and gas industry.

Meanwhile, in the Indonesia-Singapore trade balance model, a slow upward and downward movement in the Indonesia-Singapore trade balance occurs in the picture above, where it is stated that initially the first to second periods experienced an increase. However, a slow decline in the trade balance as a result of exchange rate depreciation occurred in the third to tenth periods. A slow decline in the trade balance occurred due to exchange rate depreciation. This result is in line with Sabila (2018) who stated that the Indonesia-Singapore trade balance model does not experience the J-Curve phenomenon in the long term.

CONCLUSION

The results of the analysis of the J-Curve phenomenon showed that the J-Curve phenomenon occurred in Indonesia bilaterally with China and the US. Meanwhile, the J-Curve phenomenon does not occur in Indonesia bilaterally with Japan, the European Union and Singapore. From the results of the research above, depreciation of real exchange rates will not necessarily improve the trade balance. This shows that these results are not in line with previous

theory because there are other external and internal factors that can influence export and import demand in general apart from real exchange rates, including: 1) consumer preferences for goods produced at home and abroad, 2) commodity prices at home and abroad, 3) consumer income at home and abroad, 4) transportation costs between countries, and 5) government policies regarding international trade (Mankiw, 2009). So that these aspects become the basis for the government as the main party in determining international trade policies, it is necessary to review these aspects to improve the quality of Indonesian trade in the international arena, especially regarding government policies in facing international trade competition.

REFERENCES

- Acemoğlu, D., List, J., & Laibson, D. (2009). *Macroeconomics*. Erlangga.
- Appleyard, D. R., & JR, A. J. F. . (2014). *International Economics* (8th ed.). McGraw-Hill/Irwin.
- Bahmani-Oskooee, M., & Harvey, H. (2017). The J-curve and bilateral trade balances of Indonesia with its major partners: are there asymmetric effects? *New Zealand Economic Papers*, 53(1), 63–76. <https://doi.org/10.1080/00779954.2017.1371207>
- Ginting, A. M. (2014). Perkembangan Neraca Perdagangan Dan Faktor-Faktor Yang Mempengaruhinya. *Buletin Ilmiah Litbang Perdagangan*, 8(1), 51–72. <https://doi.org/10.30908/bilp.v8i1.85>
- Gujarati, D. N. (2009). *Dasar-dasar Ekonometrika Edisi 5 Terjemahan* (5th ed.). Penerbit Salemba Empat.
- Hapsari, A. T., & Kurnia, A. S. (2018). Fenomena Kurva J Pada Neraca Perdagangan Indonesia Dengan Enam Negara Mitra Dagang Utama. *Jurnal Dinamika Ekonomi Pembangunan*, 1(2), 10. <https://doi.org/10.14710/jdep.1.2.10-27>
- Indrasari, D. R., Soelistyo, A., & Anjaningrum, W. D. (2024). Determinants of Indonesia's Trade Balance: a Vecm Model Approach. *Jurnal Ilmiah Bisnis Dan Ekonomi Asia*, 18(2), 193–204. <https://doi.org/10.32815/jibeka.v18i2.2012>
- Ishtiaq, N., Qasim, H. M., & Dar, A. A. (2016). Testing the Marshall-Lerner Condition and the J-Curve Phenomenon for Pakistan: Some New Insights. *International Journal of Economics and Empirical Research*, 4(6), 307–319.
- J-Curve For Indonesia ' s Trade Balance With Non-Linier ARDL. (2024). *Financial Engineering*, 2, 270–282. <https://doi.org/10.37394/232032.2024.2.26>
- Krugman, P. R. (2000). Technology, Trade and Factor Prices. *Journal of International Economics*, 50(1), 51–71.
- Mankiw, N. G. (2009). *Macroeconomics* (5th ed.). Worth Publisher.
- Mwito, M. M., Mkenda, B. K., & Luvanda, E. (2021). The asymmetric J-curve phenomenon: Kenya versus her trading partners. *Central Bank Review*, 21(1), 25–34. <https://doi.org/10.1016/j.cbrev.2020.09.001>
- Nopeline, N., Sirojuzilam, Tanjung, A. A., & Syafii4, M. (2023). The J-curve of Indonesia Trade Balance with His Trading Partners: Autoregressive Distributed Lag Method. *Montenegrin Journal of Economics*, 18(4).
- Putri, K. H. (2019). *the Impact of Depreciation of Exchange Rate Toward Trade Balance in Indonesia: Time*

Series.

- R, R. L., & Saudi, M. H. M. (2020). Analysis of the Factors Affecting Trade Balance in Indonesia. *International Journal of Psychosocial Rehabilitation*, 24(02), 3113–3120. <https://doi.org/10.37200/ijpr/v24i2/pr200617>
- Ricci, L. A., Milesi-Ferretti, G. M., & Lee, J. (2008). Real Exchange Rates and Fundamentals: A Cross-Country Perspective. *Journal of Money, Credit and Banking*, 45(5), 845–865.
- Sabila, A. (2018). Fenomena Kurva J Pada Fluktuasi Nilai Tukar Di Neraca Perdagangan Bilateral Indonesia. *Fakultas Ekonomi, Universitas Islam Indonesia Yogyakarta*.
- Siklar, I., & Celik Kecili, M. (2018). Estimation of the Marshall-Lerner Condition and J Curve Dynamics for Turkey. *International Journal of Economics and Financial Research ISSN*, 4(5), 125–130.
- Wijaya, E. (2020). Analisa Perdagangan Bilateral Indonesia dengan Pendekatan Marshall Lerner Condition dan Fenomena J Curve. *Jurnal Dinamika Ekonomi Pembangunan*, 3(3), 187–201. <https://doi.org/10.14710/jdep.3.3.187-201>
- Yenipazarlı, A., & Güneş, S. (2012). The Bilateral J Curve: Turkey Versus EU 27. *EBES Euroasia and Business Society Conference ...*, June.
- Acemoğlu, D., List, J., & Laibson, D. (2009). *Macroeconomics*. Erlangga.
- Appleyard, D. R., & JR, A. J. F. . (2014). *International Economics* (8th ed.). McGraw-Hill/Irwin.
- Bahmani-Oskooee, M., & Harvey, H. (2017). The J-curve and bilateral trade balances of Indonesia with its major partners: are there asymmetric effects? *New Zealand Economic Papers*, 53(1), 63–76. <https://doi.org/10.1080/00779954.2017.1371207>
- Ginting, A. M. (2014). Perkembangan Neraca Perdagangan Dan Faktor-Faktor Yang Mempengaruhinya. *Buletin Ilmiah Litbang Perdagangan*, 8(1), 51–72. <https://doi.org/10.30908/bilp.v8i1.85>
- Gujarati, D. N. (2009). *Dasar-dasar Ekonometrika Edisi 5 Terjemahan* (5th ed.). Penerbit Salemba Empat.
- Hapsari, A. T., & Kurnia, A. S. (2018). Fenomena Kurva J Pada Neraca Perdagangan Indonesia Dengan Enam Negara Mitra Dagang Utama. *Jurnal Dinamika Ekonomi Pembangunan*, 1(2), 10. <https://doi.org/10.14710/jdep.1.2.10-27>
- Indrasari, D. R., Soelistyo, A., & Anjaningrum, W. D. (2024). Determinants of Indonesia's Trade Balance: a Vecm Model Approach. *Jurnal Ilmiah Bisnis Dan Ekonomi Asia*, 18(2), 193–204. <https://doi.org/10.32815/jibeka.v18i2.2012>
- Ishtiaq, N., Qasim, H. M., & Dar, A. A. (2016). Testing the Marshall-Lerner Condition and the J-Curve Phenomenon for Pakistan: Some New Insights. *International Journal of Economics and Empirical Research*, 4(6), 307–319.
- J-Curve For Indonesia ' s Trade Balance With Non-Linier ARDL. (2024). *Financial Engineering*, 2, 270–282. <https://doi.org/10.37394/232032.2024.2.26>
- Krugman, P. R. (2000). Technology, Trade and Factor Prices. *Journal of International Economics*, 50(1), 51–71.
- Mankiw, N. G. (2009). *Macroeconomics* (5th ed.). Worth Publisher.
- Mwito, M. M., Mkenda, B. K., & Luvanda, E. (2021). The asymmetric J-curve phenomenon: Kenya versus her trading partners. *Central Bank Review*, 21(1), 25–34. <https://doi.org/10.1016/j.cbrev.2020.09.001>

- Nopeline, N., Sirojuzilam, Tanjung, A. A., & Syafii4, M. (2023). The J-curve of Indonesia Trade Balance with His Trading Partners: Autoregressive Distributed Lag Method. *Montenegrin Journal of Economics*, 18(4).
- Putri, K. H. (2019). *the Impact of Depreciation of Exchange Rate Toward Trade Balance in Indonesia: Time Series*.
- R, R. L., & Saudi, M. H. M. (2020). Analysis of the Factors Affecting Trade Balance in Indonesia. *International Journal of Psychosocial Rehabilitation*, 24(02), 3113–3120. <https://doi.org/10.37200/ijpr/v24i2/pr200617>
- Ricci, L. A., Milesi-Ferretti, G. M., & Lee, J. (2008). Real Exchange Rates and Fundamentals: A Cross-Country Perspective. *Journal of Money, Credit and Banking*, 45(5), 845–865.
- Sabila, A. (2018). Fenomena Kurva J Pada Fluktuasi Nilai Tukar Di Neraca Perdagangan Bilateral Indonesia. *Fakultas Ekonomi, Universitas Islam Indonesia Yogyakarta*.
- Siklar, I., & Celik Kecili, M. (2018). Estimation of the Marshall-Lerner Condition and J Curve Dynamics for Turkey. *International Journal of Economics and Financial Research ISSN*, 4(5), 125–130.
- Wijaya, E. (2020). Analisa Perdagangan Bilateral Indonesia dengan Pendekatan Marshall Lerner Condition dan Fenomena J Curve. *Jurnal Dinamika Ekonomi Pembangunan*, 3(3), 187–201. <https://doi.org/10.14710/jdep.3.3.187-201>
- Yenipazarlı, A., & Güneş, S. (2012). The Bilateral J Curve: Turkey Versus EU 27. *EBES Euroasia and Business Society Conference ...*, June.