Determinant of Trade Balance: Empirical Study in ASEAN 5 Countries

Erika Novendira Purnamasari[a], Idah Zuhroh[b*], Eris Tri Kurniawati[c]

[a,b,c] Economic Development, Faculty of Economics and Business, Universitas Muhammadiyah Malang, Indonesia

* Corresponding author: idah@umm.ac.id

Artikel Info	Abstrak
Article history: Received September 23, 2022 Revised December 26, 2022 Accepted December 30, 2022 Available online December 31, 2022	*International trade is a form of partnership and global activity of a country with other countries, traded from exports and imports. International trade activity is recorded in the trade balance for a certain period based on the value of the prevailing currency. It is one of the benchmarks for the success of an economy. This study examines the relationship between fundamental macroeconomic variables consisting of inflation, interest rates, imports, exchange rates, and GDP, which affect the trade balance performance in ASEAN-5 (Indonesia, Malaysia, Philippines, Singapore, and Thailand). The analytical method used is a regression with panel data from 2000-2019 with research objects from ASEAN-5 countries. The results of the analysis found that interest rates and imports had a significant adverse effect on the trade balance in ASEAN-5. GDP and exchange rates significantly positively affect the trade balance of ASEAN-5 countries. On the other hand, inflation has a negative effect but does not significantly affect the trade balance in ASEAN-5 countries.*

INTRODUCTION

Globalization is increasingly opening trade relations between countries, marked by the rapid flow of goods and services between countries. The trade balance has important indicators in economic activity, especially in countries that adopt an open economy (Khaliq, 2021). The increasingly rapid flow of globalization has also increased interaction between countries regarding international trade, which can increase the chances for countries to optimize benefits both directly and indirectly. The direct benefits of international trade are reflected in the specialization of a country so that a country can export the commodities it produces to be exchanged with those made by other countries. The government will benefit directly through an increase in national income which will increase the rate of output and economic growth (Silviana, 2016). The difference in natural resources between one country and another creates a positive externality in the form of the comparative advantage of each country. This phenomenon can be the basis for cooperation between countries in trade to fulfill domestic needs in the form of commodities, both goods and services (Marpaung & Purba, 2017).

International trade is also a way that is determined by each country by using an open economic system. International trade activities will then be recorded in the balance of trade and international payments (Leonufna et al., 2016). The trade balance is part of the balance of payments that records a country's income and expenses against other countries (Sitompul & Siahaan, 2020). To calculate the performance of a country's international trade, calculations are carried out by looking for the difference between export flows and import flows in a certain period so that net export results will be found that reflect the performance of a country's international trade. International trade is recorded in the trade balance with categories consisting of 3 including trade surplus, trade deficit and trade balance. The trade balance is in a trade surplus condition if the results of the calculation of net exports are positive, and a trade deficit if net exports are negative and if net exports are 0, it means that exports and imports have the same value.

A surplus in the trade balance will contribute to increasing a country's foreign exchange earnings. Meanwhile, when the trade balance is in a deficit position, it will disrupt economic stability and cause a crisis in the country concerned (Puri &Amaliah, 2019). The condition of a deficit trade balance in the long term will force the capital account to cover the deficit (Ektiarnanti et al., 2021). The situation of a surplus or minimum balance is ideal so that it can maintain the stability of the exchange rate and trade balance. However, suppose, under certain conditions, a trade balance deficit occurs. In that case, this will become the government's focus to make appropriate and effective adjustments so that it is expected to minimize exchange rate depreciation (Silviana, 2016). Countries with a high potential to develop the export sector should also be balanced with increased involvement to maximize trade volume (Hidayat et al., 2021). A trade balance deficit can also be caused by the state's failure to manage existing resources. According to Friedman, a trade balance deficit will automatically impact the current account deficit, which is marked by an increase in the volume and value of imports compared to exports (Jabaru & Jimoh, 2020).

Several empirical studies form the basis for the formulation of this research problem. According to research from Ektiarnanti *et al.*, (2021) and Udiyana *et al.*, (2017), imports significantly negatively affected the trade balance performance. In contrast to these results, Wiryanti, (2015) found that implications did not considerably affect the trade balance performance. Apart from imports, price stability is also a dominant factor influencing international trade performance. Price stability is reflected in the inflation rate that occurs in a country. According to Sukiro (2016), inflation will affect the exchange rate because a decrease in foreign exchange rates will respond to high prices. Rising commodity prices on global markets will react to rising inflation; this increase will affect declining export demand, so countries will tend to import more (Bashir et al., 2011). This phenomenon will result in a deficit in the balance of trade and payments.

Inflation conditions in the ASEAN-5 countries fluctuate on average every year, but Indonesia shows a tendency for higher inflation than other countries. An empirical study by Pratiwi (2014); Sitompul & Siahaan, (2020); and Ektiarnanti et al. (2021) found results that inflation showed a positive and significant effect on trade balance performance. These results are not in line with the empirical studies conducted by Silviana (2016); Puri et al. (2019); and Jabaru & Jimoh (2020), which indicate that inflation has a significant adverse effect on the trade balance. Within the price stability framework, when price increases occur continuously for a certain period, it can reduce demand for export goods. This condition resulted in a decline in export revenues, so the trade balance would be disturbed and could even experience a deficit (Sitompul & Siahaan, 2020).

Another variable that has been extensively studied to see the performance of a country's trade balance is interest rates as an instrument of monetary policy and a means of controlling financial and economic stability (Mertzanis, 2011). According to Boediono (1996:75) explains that the interest rate is the basis for the use of money within a certain period, so if domestic interest rates increase beyond foreign interest rates, it will result in capital inflow which has the effect of strengthening the domestic exchange rate. If it is related to the performance of the trade balance, when the exchange rate increases in the short term, it can increase the value of exports; but if this happens continuously, it will have an impact on decreasing the weight and volume of exports because export demand declines due to higher prices of goods. This interest rate affects saving and spending and the movement of other variables, such as the exchange rate, trade balance, and export commodity prices (Mwai, 2015). Interest rates as an instrument of monetary policy, considering its designation as a form of flexible and conservative policy, will massively help maintain economic stability (MUN et al., 2017). Empirically, some previous studies, such as those carried out by Puri et al. (2019) and Jabari & Jimoh (2020), found an inverse relationship where the interest rate has a significant adverse effect on the trade balance. At the same time, Asnawi & Hasniati, (2018) found that the interest rate has no significant impact on the trade balance.

The exchange rate is a macroeconomic variable whose movement greatly influences a country's trade balance. The exchange rate can be interpreted as the ratio of a country's currency to other countries' currencies; in this case, the dollar is still the reference for global currency in international trade and transactions. (Arize et al., 2017). Exchange rate movements result in fluctuations in the trade balance, so this condition often occurs in the international trade balance (Galí & Monacelli, 2005; Mwai, 2015). In certain situations, based on the findings of Eita & Naimhwaka (2019) and Akorli, (2014); a depreciation of the exchange rate can be an advantage for the export side; because under these conditions, the price of exported goods is lower so demand will increase which will ultimately affect the export revenue side which can have an impact on improving the performance of the trade balance. So it

can be concluded that the exchange rate has a significant adverse effect on the performance of the trade balance. Contrary to these results, empirical studies from Singh (2002); Liew, e al, (2003); Yusoff (2007); and Aziz (2008) that in the long and short term, the exchange rate has a significant positive effect on the trade balance.

Gross domestic product is the total goods and services purchased by final consumers and proxied by a country in a given period. The value of goods and services produced becomes an essential indicator of a country's economic performance (MUN et al., 2017). According to Herispon, (2018) that residents in a country create GDP, both domestic and foreign residents who produce output in the form of goods and services in a certain period. In certain conditions, when GDP increases, it can be interpreted as an increase in demand which is responded to by production output and can ultimately increase people's income. Consumption patterns that change due to increased revenue when it leads to increased demand for imported goods will also affect a decrease in the trade balance (Wibowo, 2021). Within the framework of the Mundell-Fleming theory, net exports are influenced by the performance of domestic and foreign GDP in a positive direction; This means that when there is an increase in domestic or global GDP. It will impact increasing exports so that the trade balance is in a surplus condition and vice versa. An empirical study by Tomayahu & Joan Kumaat, (2019) found that the GDP of other countries, namely China, significantly affects Indonesia's trade balance. At the same time, Asnawi & Hasniati, (2018) indicate that GDP does not significantly affect the trade balance.

This study has some limitations but is based on previous empirical studies. This research tries to select variables to analyze macroeconomic variables which simultaneously act as monetary instruments as policies in controlling price stability and exchange rate stability in intervening in trade balance movements in ASEAN-5 countries. The declining trade performance occurred in almost all ASEAN countries experiencing fluctuations in the condition of the trade balance throughout 20115-2019 due to increasingly high global uncertainties. The trend of ups and downs in trade performance in several countries with large trading sectors in ASEAN, such as Indonesia, Malaysia, Philippines, Thailand, and Singapore, demonstrates this condition.

Figure 1. Movement of International Trade Performance in ASEAN 5
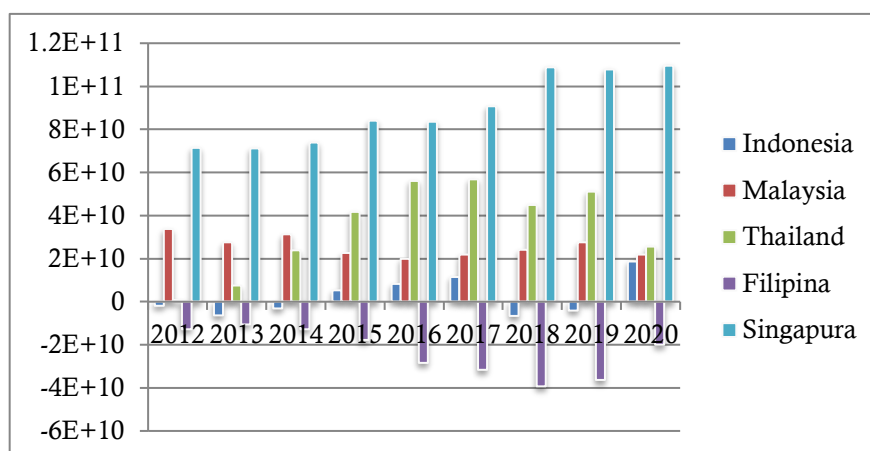
Source: World Bank, 2020

The figure above confirms that the problems that occur are shown by the decline in performance on the international trade balance in several countries, especially in Indonesia and the Philippines, with a trade balance deficit that is quite large, especially in the Philippines. Meanwhile, Thailand, Malaysia, and Singapore also experienced a decline in trade performance, although it was still in the proportion of a surplus in the trade balance. This condition can be caused by various factors, both internal and external. The sensitivity of global economic conditions is indicated by increasing uncertainty. Variable instruments related to international trade transactions also experience instability, such as unstable exchange rates and increasingly high global inflation. It results in a delay in the prices of commodities traded, which also experience price increases that could trigger a decrease in demand from the export side and can hamper import activity. This dependence is one of the exciting foundations in this study because the effectiveness of policies and the performance of macroeconomic variables can influence the trade balance's performance.

RESEARCH METHODS

This research used the regression method with panel data consisting of ASEAN-5 countries with the 2000-2019 time series. The data used is in the form of secondary data in the form of an annual source from UNCTADSTAT, the World Bank, and the International Monetary Fund. In panel data regression, three models will be selected as the best to be further estimated. Panel data combines cross-section and time series data, so the analysis has several models (Greene, 2018). Based on Gujarati (2004), it is explained that there are several tests for selecting the model, including the Chow test (testing between the Common Effect Model and the Fix Effect Model), the Hausman test (test between Fix Effect Model and Random Effect Model); as well as the Lagrange Multiplier test (testing the Random Effect Model and Common Effect

Model). From this test, it can be seen that the probability value is compared with the alpha value.

Based on several empirical studies supporting this research, the model specifications are formed as follows:

Common Effect Model

$$LogTB_{it} = \beta_0 + \beta_1 INF_{it} + \beta_2 IR_{it} + \beta_3 logIM_{it} + \beta_4 logER_{it} + \beta_5 logGDP_{it} + e_{it} \dots\dots\dots\dots\dots(1)$$

Fix Effect Model

$$LogTB_{it} = a_1 + a_2 D_{2i} - a_3 D_{3i} + a_4 D_{4i} + a_5 D_{5i} + a_6 D_{6i} + \beta_0 + \beta_1 INF_{it} + \beta_2 IR_{it} + \beta_3 logIM_{it} + \beta_4 logER_{it} + \beta_5 logGDP_{it} + \beta_6 Dummy_{it} + \mu_{it} \dots\dots\dots\dots\dots(2)$$

Random Effect Model

$$LogTB_{it} = \beta_0 + \beta_1 INF_{it} + \beta_2 IR_{it} + \beta_3 logIM_{it} + \beta_4 logER_{it} + \beta_5 logGDP_{it} + \beta_6 Dummy_{it} + e_{it} + \mu_{it} \dots\dots\dots\dots\dots(3)$$

It is known that TB is a trade balance that reflects the trade balance in US\$ units; GDP is the Gross Domestic Product variable in US\$ units; INF is inflation as a reflection of the price level in percent units; IR is the interest rate in percent; IM reflects import performance in US\$ units; ER is the exchange rate in US\$ units; it reflects that the data used is panel data (a combination of cross section and time series data); β_0 is Constanta; $\beta_{1,2}, \beta_3, \beta_4, \beta_5$ are parameter, and μ is the error term.

RESULT AND DISCUSSION

Based on the purpose of this study to analyze the effect of macroeconomic variables on the trade balance in ASEAN-5 countries, panel data analysis calculations are used. Before estimating the best model, which was carried out through a model selection test, descriptive statistics were analyzed to describe the data on the research variables. The following Tables 1 and 2 show the results of descriptive statistics on trade balance variables and macroeconomic variables in each country in ASEAN-5 and a combination of ASEAN-5 countries.

Table 1. Descriptive Statistic for *Trade Balance* ASEAN-5 Countries

	Indonesia	Malaysia	Phillipiness	Singapura	Thailand	ASEAN5
Mean	12732.90	26784.20	-14520.30	30833.75	3.471.300	11860.37
Max	26061.00	43065.00	1.050.000	54500.00	21190.00	54500.00
Min	-8.583.00	14224.00	-50022.00	3.259.000	-21902.00	-50022
S.Dev	11384.08	7.963.128	14302.91	14006.95	11273.78	20273.97

Table 2. Descriptive Statistic Macroeconomics Variable in ASEAN 5 Countries

	Inflation	Interest Rate	Import	Exchange Rate	GDP
Mean	3.300600	3.672000	188098.2	0.202348	319742.1
Max	13.10000	12.32000	557509.0	0.800210	1119191.
Min	-0.900000	-3.900000	34524.00	7.00E-05	76262.00
S.Dev	2.828571	3.041183	129760.7	0.266301	237680.7

Table 1 shows the value of descriptive statistics on the variable trade balance of each country and ASEAN-5 as a whole. The results show that the average trade balance indicated by the Singapore and Malaysia trade balance variable is the highest compared to the overall ASEAN-5, with an average value of 30833.75 and 26784.20. Indonesia also has the third largest average score compared to all ASEAN-5 countries, with a score of 12732.90, and Thailand, with an average score of 3471300. At the same time, the Philippines has the lowest average score compared to the 4 ASEAN-5 countries and the overall ASEAN-5 average with a value of -14520.30. This condition confirms that the trade balance in the Philippines throughout the study period experienced a deficit.

From the maximum value, it can also be seen that Singapore has the most significant trade balance value compared to other ASEAN-5 countries, with a maximum weight of 54500.00. In contrast, the Philippines has the lowest trade balance compared to other ASEAN-5 countries, with a minimum value of -50022.00. In addition, each country also has different data variations. Judging from the standard deviation value, the Philippines, Thailand, and ASEAN-5 countries have a higher variation in data than other countries, confirmed by the standard deviation value, which is greater than the average value, namely 14302.91>-14520.30 for the Philippines; 11273.78>3471300 for Thailand and 20273.97> 11860.37. Meanwhile, Malaysia and Singapore have relatively low data variation for Indonesia, which is confirmed by a standard deviation value smaller than the average value of 11384.08 <12732.90 for Indonesia; 7.963.128<26784.20 for Malaysia and 14006.95<30833.75 for Singapore.

Meanwhile, for other variables such as exchange rates, interest rates, imports, inflation, and GDP, the results of the descriptive statistical tests showed different results. In the inflation variable, the highest average inflation compared to ASEAN-5 inflation as a whole is Indonesian inflation, with an average value of 6.7%. The lowest average inflation is in Singapore, with a discount of 1.57%. Compared to other ASEAN-5 countries, Indonesia's inflation is also the highest seen from a maximum value of 13.1%, which occurred in 2006, while a minimum value indicates the lowest inflation rate from Thailand, with a figure of -0.9% occurring in 2015. High data variation occurs in the inflation variable in Singapore compared to other countries, with a standard deviation value of 1.9, more excellent than the average value of 0.98. Meanwhile, variations in inflation data in other countries tend to be low.

The interest rate variable pattern also shows different results. In this variable, the highest average value of Indonesia's interest rate is the highest compared to other ASEAN-5 countries and ASEAN-5 as a whole, with a value of 4.947. The highest interest rate occurred in Indonesia in 2002, with a maximum weight of 12.32%, and the lowest occurred in Malaysia in 2008, with an interest rate of -3.9%. The standard deviation value indicates common data variation in all ASEAN-5 countries and all ASEAN-5 countries for each country which is lower than the average value.

In the imported variable, the highest average value occurs in Singapore, with an average value more significant than other ASEN-5 countries and all ASEAN-5 countries, namely US$.372140. Furthermore, the most considerable import value was found in Singapore, with a value of US$.557509 in 2008, and the lowest import value of US$.34524 occurred in the Philippines in 2001. The data used in the imported variable for each ASEAN- 5 and ASEAN-5 has common data variation indicated by a standard deviation value lower than the average value.

Exchange rate data with an average value above the average value of all ASEAN-5 countries consists of the average exchange rate of Indonesia, Malaysia, and Singapore with each value of 9.75; 0.27 and 0.68 are more significant than 0.20. In addition, the highest confirmed exchange rate with a maximum value of 0.80021 was found in Singapore in 2012, and the lowest exchange rate of 0.000007 occurred in Indonesia in 2015. Meanwhile, all ASEAN -5 and Malaysia show high data variation, which is confirmed by a standard deviation value more significant than the average value.

GDP data also shows different patterns in each ASEAN-5 country and the whole ASEAN-5 countries. The average GDP value in Indonesia is higher than ASEAN-5, confirmed by an average value of 634457> 319742. The highest GDP was also found in Indonesia occurred in 2019, with a value of 1119191, and the lowest occurred in the Philippines in 2001, with a value of 76262. GDP data for ASEAN-5 countries and each ASEAN-5 country has common variation confirmed by a lower standard deviation value than the average.

Furthermore, a test was conducted to select the best model in panel data after analyzing the descriptive statistics. The results found that the Fix Effect Model (FEM) is the best model to be estimated further in estimating panel data regression. These results were confirmed using the Chow test as follows:

Table 3. Chow Test Result

Effects Test	Statistic	d.f.	Prob.
Cross-section F	39.636382	(4,90)	0.0000
Cross-section Chi-square	101.581637	4	0.0000

The results of the model selection test show that FEM is the best model, which is confirmed by a probability value on the Chow test of 0.0000, which is less than the alpha value of 5%. So for further estimation, FEM is the best model

to be analyzed further. The results of the FEM analysis are shown in Table 3 as follows:

Table 4. Fixed Effect Model Estimation Results

Variable	t-Statistic	Prob.
C	14.08457	0.0000
INF	-2.332093	0.0219
IR	0.250176	0.8030
LOG(IM)	-6.649582	0.0000
LOG(ER)	4.361487	0.0000
LOG(GDP)	5.773730	0.0000

The FEM estimation results confirm that, partially, macroeconomic variables significantly influence the trade balance of ASEAN-5 countries with different coefficients. The inflation and import variables show a significant adverse effect on the trade balance in ASEAN-5, confirmed by a coefficient of -0.008523 and a probability of 0.0219 for inflation, a coefficient of -7.462836, and a possibility of 0.0000. Meanwhile, the exchange rate and GDP variables positively influenced the trade balance, confirmed by a coefficient value of 0.35941 and 0.491334, then a probability value of 0.0000 each. On the other hand, the interest rate variable shows a positive but not significant influence on the performance of the trade balance in ASEAN-5.

Table 4. Result of Cross ID in ASEAN-5 Countries

Specific Country	Effect
Indonesia	1.561621
Malaysia	-0.584156
Philippines	-0.518574
Singapura	-0.381722
Thailand	-0.077170

Based on the CrossID value, it was also found that the trade balance with the best performance was Indonesia, with a value of 1.561621, while other countries (Malaysia, the Philippines, Singapore, and Thailand) had a negative CrossID effect value with a value of -0.584156 respectively; -0.518574; -0.381722 and -0.077170. To obtain the CrossID number, the highest value is added to the trade balance variable with the aim that there is no data with negative numbers because this will impact smoothing the data. These CrossID results confirm that Indonesia has a stable international trade performance with a surplus trade balance position. In contrast, other countries have an unstable trade balance performance because it has a negative value which means the trade balance performance is in a deficit position.

The role of trade is significant and contributes to creating economic stability. The results of the analysis confirm that inflation hurts the trade balance. This condition can be logically stated that in the long run, when inflation increases which will have an impact on increasing prices for domestic goods, including export commodities, this increase will be responded to by a

decrease in export demand trade balance deficit. This result is in line with the results of empirical studies by Ademe, (2016), however, it contradicts the results of empirical studies from Aye et al. (2016), who found that inflation had a significant positive effect on the trade balance in Asia. Inflation affects the performance of the trade balance from import activity. Domestic price gaps that specific consumer groups cannot reach will encourage people to choose imported goods that are more affordable. This condition increases the import ratio, which will improve the trade balance deficit (Alawin & Oqaily, 2017).

Other findings of this study indicate that the role of interest rates does not significantly affect the trade balance in ASEAN-5. The interest rate-setting policy of each Central Bank in ASEAN-5 countries has no impact on the export and import sectors. The interest rate setting was not responded to by demand in the export and import markets in the ASEAN-5 countries; This indicates that interest rate policy in ASEAN-5 countries is less effective in influencing trade performance. Interest rate policy can be through various transmissions, both from investment transmission and exchange rates. Investment transmission from interest rate policy occurs when interest rates increase, which will impact increasing investment, which will impact expansion in creating new growth from the investment side.

Meanwhile, the transmission of interest rate policy through the exchange rate can occur when an increase in interest rates is well responded to by increased investment. Which will impact increasing capital inflow when setting domestic interest rates is more significant than global interest rates. This condition will affect the domestic exchange rate, which will appreciate so that it will affect the increase in export commodity prices. This increase can increase a country's international trade balance.

Import is a component in calculating the international trade balance and is one of the international trade activities. The findings from this study show that imports have a negative and significant effect on the trade balance in ASEAN-5. This result is by trade theory and balance calculations that if the value of the imported component exceeds exports, it will result in a negative balance figure so that the trade balance is in a deficit. This trade balance deficit will disrupt the country's balance of payments and foreign exchange reserves. In addition, when imports increase, a country's national productivity is poor because it cannot meet its own needs. This result is in line with the findings from Bagaskoro (2019) that imports hurt trade transactions in Indonesia.

On the exchange rate variable, the results of the analysis of this study indicate that there is a positive relationship between the exchange rate influencing the performance of the trade balance for ASEAN-5 countries. This result is in line with the Mundell-Fleming theoretical framework that the exchange rate has a unidirectional relationship with the international trade balance. From an empirical point of view, this research is in line with Petrović & Gligorić, (2010). Appreciation of the exchange rate will impact competitiveness and increase the price of export commodities on the global market. The phenomenon in Indonesia, the depreciation of the rupiah that

occurred in 2018 in the first and second quarters, further weakened the balance of trade and payments so that it touched the lowest figure throughout 2015 to 2018 in the third quarter with a nominal value of 3% of GDP (Indonesia Economic Outlook, 2019). Most ASEAN countries are in the developing country classification, which still import a lot of commodities such as finished materials; This can increase the flow of imports and increase the trade balance deficit.

GDP also affects the performance of a country's trade balance. This study found that GDP has a significant positive relationship with the trade balance in ASEAN-5. GDP, composed of production output in various sectors of a country's business field, will affect the performance of the trade balance. When there is an excess of national production output in the export potential sector, this excess can become an export commodity and contribute to increasing the trade balance. Study Mallik & Chowdhury, (2001) is also in line with the research results that a positive relationship exists between GDP and increased export performance in the long term. It impacts the trade balance surplus in India, Bangladesh, Sri Lanka, and Pakistan. Several countries, such as Malaysia, rely heavily on international trading activities to create positive and sustainable growth for their country. Export activity has significantly contributed to Malaysia's GDP in recent years. Empirical results from Manual & San, (2019) broadly support the results of this study that inflation, GDP, and exchange rates significantly affect the trade balance in Malaysia, while the money supply does not affect the trade balance in Malaysia. These results further reinforce that the macroeconomic component is a significant variable in stabilizing a country's trade balance, especially in the ASEAN-5 region.

CONCLUSION

This study found that changes in macroeconomic variables such as inflation, imports, GDP, and exchange rates significantly affect trade performance in ASEAN-5. However, monetary policy instruments such as setting interest rates in each country did not substantially affect trade performance even though the coefficient indicated a positive direction; This concludes that domestic macroeconomic performance dominantly influences trade performance in ASEAN-5 countries. Based on the research hypothesis, these results also answer the idea with the direction of the coefficient but significantly, the interest rate instrument shows an insignificant role.

The limitations of the data series also limit this research to exploring and choosing a more in-depth estimation tool. The use of panel data cannot explain each country in more detail. Limited availability of data per sector of export and import commodities was also not found, limiting this research to analyze further related to the performance of the trade balance of the commodity sector.

Furthermore, external variables such as international interest rate policy, global inflation, and global uncertainty index are significant to observe because they have the potential to impact price stability and exchange rate conditions, ultimately affecting the trade balance. In addition, long-term estimates also cannot show variable relationships in the short term.

REFERENCES

Ademe, A. S. (2016). Determinants of Ethiopian Trade Balance: Vector Error Correction Model (VECM) Approach. *Journal of Research in Business, Economics, and Management*, *6*(2), 858–867.

Akorli, E. (2017). *The Effects of Exchange Rates on Trade Balance in Ghana. 52406.*

Alawin, M., & Oqaily, M. (2017). Current account balance, inflation, industry, and sustainable development in Jordan. *Revista Galega de Economia*, *26*(3), 45–56. https://doi.org/10.15304/rge.26.3.4459

Arize, A. C., Malindretos, J., & Igwe, E. U. (2017). Do exchange rate changes improve the trade balance: An asymmetric nonlinear cointegration approach. *International Review of Economics and Finance*, *49*, 313–326. https://doi.org/10.1016/j.iref.2017.02.007

Asnawi, & Hasniati. (2018). Pengaruh Produk Domestik Bruto, Suku Bunga, Kurs Terhadap Neraca Perdagangan Di Indonesia. *Jurnal Ekonomi Regional Unimal Volume*, *01*(April), 1–7.

Aye, G, C., Luis A, H.C., Gil-Alana., Gupta, R. (2016). Does gold act as a hedge against inflation in the UK? Evidence from a fractional cointegration approach over 1257 to 2016. *Resources Policy* Volume 54, December 2017, Pages 53-57.

Aziz, N. (2008). The role of the exchange rate in trade balance: Empirics from Bangladesh. *University of Birmingham, UK*, *June* 1–25.

Bashir, F., Nawaz, S., Yasin, K., Khursheed, U., Khan, J., & Qureshi, M. J. (2011). Determinants of Inflation in Pakistan: an Econometric Analysis Using Johansen Co-Integration Approach. *Australian Journal of Business and Management Research*, *01*(05), 71–82. https://doi.org/10.52283/nswrca.ajbmr.20110105a09

Boediono (1996), Ekonomi Moneter, Seri Sinopsis Pengantar Ilmu Ekonomi No. 5 Edisi 3, Yogyakarta : BPFE.

Eita, J. H., Manuel, V., & Naimhwaka, E. (2019). Macroeconomic variables and current account balance in an open economy: Evidence from Namibia. *Journal for Studies in Economics and Econometrics*, *43*(2), 55–70. https://doi.org/10.1080/10800379.2019.12097348

Ektiarnanti, R., Rahmawati, A., Fauziah, F. K., & Rofiqoh, I. (2021). *Indonesian Trade Balance Performance By GDP , Exports , Imports , BI Rate and Inflation as Intervening Variables. 2*(1), 1–11.

Galí, J., & Monacelli, T. (2005). Monetary policy and exchange rate volatility in a small open economy. *Review of Economic Studies*, *72*(3), 707–734. https://doi.org/10.1111/j.1467-937X.2005.00349.x

Greene, W. H. (2002). Econometric Analysis Fifth Edition. Prentice Hall.

Gujarati, Damodar N. (2006). Ekonometrika Dasar. Jakarta : Penerbit Erlangga

Herispon, H., Tinggi, S., & Ekonomi, I. (2018). *B U K U A J A R E K O N O M I M A K R O (buku II). January 2009.*

Hidayat, A. M., Indiastuti, R., Budiono, B., & Hadiyanto, F. (2021). *Steady-State Analysis and Trade Balance Convergence Rate of ASEAN Member*

Countries.   *8*(6),   579–586. https://doi.org/10.13106/jafeb.2021.vol8.no6.0579

Indonesia Economic Outlook 2019. Macroeconomic Analysis Series. LPEM FEB UI

Jabaru, S. O., & Jimoh, K. (2020). Effect of Selected Macroeconomic Variables on the Kenya Economy. *International Journal of Advanced Research*, *8*(8), 1236–1242. https://doi.org/10.21474/ijar01/11608

Khaliq, A. (2021). *The Dynamics of Exchange Rate, Inflation, and Trade Balance in Indonesia*. *14*(2).

Leonufna, L., Kumaat, R., Mandeij, D., & Ratulangi, U. S. (2016). Analisis Pengaruh Neraca Pembayaran Internasional Terhadap Tingkat Kurs Rupiah/Dollar As Melalui Cadangan Devisa Dalam Sistem Kurs Mengambang Bebas Di Indonesia Periode 1998.1 Sampai 2014.4. *Jurnal Berkala Ilmiah Efisiensi*, *16*(2), 315–324.

Liew, K., Lim, K.-P., & Hussain, H. (2003). Exchange Rates and Trade Balance Relationship: The Experience of ASEAN Countries. *International Trade*, *April 2016*, 1–11.

Mallik, G., & Chowdhury, A. (2001). Inflation and economic growth : evidence from four South Asian countries. *Asia-Pacific Development Journal*, *8*(1), 123–135.

Manual, V., & San, W. (2019). The dynamic relationship between trade balance and macroeconomic elements: Empirical evidence from emerging economies in Malaysia. *International Journal of Recent Technology and Engineering*, *7*(5), 47–54.

Marpaung, A. M., & Purba, J. H. V. (2017). Pengaruh Nilai Tukar Terhadap Ekspor Dan Dampaknya Terhadap Pertumbuhan Ekonomi Indonesia [The Effect of Exchange Rates on Exports and its Impact on Indonesia's Economic Growth]. *DeReMa (Development Research of Management): Jurnal Manajemen*, *12*(2), 285. https://doi.org/10.19166/derema.v12i2.500

Bagaskoro, M. H. I. (2019). Exports And Imports Effect on Current Account of Indonesia, Before and After Subprime Mortgage. *JIEP: Jurnal Ilmu Ekonomi Dan Pembangunan*, *2*(2), 331–345.

Mertzanis, H. (2011). Institutional change and corporate governance reform. *Corporate Board: Role, Duties and Composition*, *7*(1 A), 140–151. https://doi.org/10.22495/cbv7i1c1art5

MUN, J. W. Y., TENG, L. Y., YI, L. H., & JIE, T. J. (2017). *Effect of Macroeconomic Variables*. *August* 15–59.

Mwai, C. (2015). *The Effect of Selected Macroeconomic Variables on Balance of Payment in Kenya*. *November*, 1–67.

Tomayahu, N., A., Robby Joan Kumaat, D. M. (2019). *ANALISIS PENGARUH NILAI TUKAR, PDB TIONGKOK, DAN FOREIGN DIRECT INVESTMENT (FDI) TERHADAP NERACA PERDAGANGAN DI INDONESIA (2000-2019)*. *9*(1), 1291–1300.

Petrovic, P., & Gligori, M. (2010). Exchange rate and trade balance: J-curve effect.   *Panoeconomicus*,   *57*(1),   23–41.

https://doi.org/10.2298/PAN1001023P

Pratiwi, A. (2014). *ANALISIS PENGARUH NILAI TUKAR, INFLASI, HARGA MINYAK, DAN PRODUK DOMESTIK BRUTO TERHADAP NERACA PERDAGANGAN INDONESIA*.

Puri, Nenden. Yushinta Ima Amaliah, W. R. (2019). Pengaruh Inflasi , Suku Bunga , PDB , Nilai Tukar dan Krisis Ekonomi. *Ilmu Ekonomi*, *5*(2), 419–428.

Silviana, H. (2016). Analisis pengaruh kurs dan inflasi terhadap neraca perdagangan di negara-negara anggota Organisasi Kerjasama islam. *Universitas Islam Sunan Kalijaga: Yogyakarta*.

Singh, T. (2002). India's trade balance: The role of income and exchange rates. *Journal of Policy Modeling*, *24*(5), 437–452. https://doi.org/10.1016/S0161-8938(02)00124-2

Sitompul, N., & Siahaan, M. (2020). Analisis Pengaruh Nilai Tukar Dan Inflasi Terhadap Neraca Perdagangan Di Indonesia 2008 – 2018. *Visi Sosial Humaniora*, *1*(1), 65–72. https://doi.org/10.51622/vsh.v1i1.21

Sukirno, S. (2013). Makroekonomi: Teori Pengantar. Jakarta: Rajawali Press.

Udiyana, I. B. G., Setyarti, T., Astini, N. N. S., & Aniyati, I. (2017). Fluktuasi Nilai Kurs dan Inflasi Pengaruhnya terhadap Ekspor Impor dan Neraca Perdagangan Indonesia Tahun 2007-2015. *Forum Manajemen*, *15*(1), 76–86.

Wibowo, S. (2021). *Analisis Pengaruh Nilai Tukar, Inflasi, Suku Bunga, dan PDB Terhadap Neraca Perdagangan Indonesia*. 6.

Wiryanti, T. (2015). Korelasi Ekspor Dan Impor Terhadap Neraca Perdagangan Dan Neraca Pembayaran Di Indonesia Tahun 2003-2013. *Kreatif*, *2*(2), 111–128.

Yusoff, M. B. (2007). The Malaysian real trade balance and the real exchange rate. *International Review of Applied Economics*, *21*(5), 655–667. https://doi.org/10.1080/02692170701474686