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Research Article

The Impact of Monetary Policy and Macroeconomic Indicators on the Current Account in Developing ASEAN

Sofi Tri Andini*, Vadilla Mutia Zahara, and Stannia Cahaya Suci

Sultan Ageng Tirtayasa University, Indonesia

Abstract.
The current account balance is a component of the balance of payments, in which a surplus or deficit is a form of a country's external balance or imbalance. Since the 2008 financial crisis and the COVID-19 pandemic, several countries, especially developing countries, have experienced external imbalances, which is related to a continuous pattern of transactions with the rest of the world. Developing countries in the ASEAN region are often vulnerable to experiencing external imbalances which are reflected in their current account balance, which every year the country continues to fluctuate and tends to decrease until it experiences a current account deficit. This research was conducted to analyze the impact of monetary policy and macroeconomic indicators on the current account situation of developing countries in the ASEAN region during the 15 year period of 2007–2021. The Current Account Balance as the dependent variable and the independent variable uses Interest Rates in explaining monetary policy and macroeconomic variables including Exchange Rate, Inflation, Gross Domestic Product, Foreign Direct Investment, and Trade Openness. This study analyzes long-term and short-term effects using the VECM panel model. The results show that Interest Rates in the short term has no effect, but in the longer term has a significant negative effect. The Exchange Rate in the short term and long term have a significant positive effect. Inflation and GDP have no effect in the short term but have a significant negative effect in the long term. FDI has a significant positive effect in the short term and the long term. And finally, Trade Openness in the short term has a significant positive and in the long term has a significant negative effect.

Keywords: current account balance, interest rate, macroeconomic, VECM panel

1. Introduction

In the current era of globalization, the economy of a country is certainly increasingly integrated with other countries, therefore an open economy is important in the movement of the economy in a country. According to [1] in an open economy, the attention of policy makers is directed to the goal of internal and external balance. Simply put, internal balance is a combination of full employment (optimal allocation of all resources) and a stable level of price or capacity. Meanwhile, external balance has a focus on a country's balance of payments which is strongly influenced by the exchange rate. In

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addition, external balance can be realized if a country's current account balance does not experience a serious deficit so that the country is unable to pay its foreign debt [1].

The current account balance shows the ability of a country to export and import goods and services, which reflects the strength of international competitiveness and the extent to which a country can utilize its resources [2]. Overall, the current account represents the net value between the credit side (transactions that give rise to the right of residents of a country to receive payments) and the debit side (transactions that create an obligation to pay residents of a country to residents of other countries) of all transactions that recorded in the current account component system.

Since the 2008 financial crisis and the crisis caused by the Covid-19 pandemic, several countries in the world have experienced external imbalances [3], which is related to a continuous pattern of transactions with the rest of the world. According to [4], a declining balance or even a current account deficit is one of the main indicators of external imbalances in the global economy, where global imbalance refers to the size of the deficit and surplus of the current account position in the world economy. Thus, the existence of external imbalances continues to receive attention in international macroeconomics, especially after the 2008 global financial crisis which increased the vulnerability of developing country markets to global shocks [5].

ASEAN (Association of Southeast Asian Nations) is one of the associations that was formed from a background of increasing globalization trends, where the initial purpose of its establishment was for economic and political purposes. This association also aims to increase overall competitiveness in world markets and encourage economic activity through exports and imports which are summarized in the current account balance. Within ASEAN there is only one developed country, namely Singapore, while the other countries are each included in developing countries, so that in this case ASEAN is dominated by developing countries. Overall, developing ASEAN countries have almost similar characteristics, both from geographical, social and economic aspects. ASEAN developing countries are often vulnerable to external imbalances which are reflected in their current account balance. Which every year the country continues to fluctuate which tends to decrease until it experiences a current account deficit as shown in Figure 1.

Based on Figure 1, it can be seen that Indonesia, Myanmar and the Philippines are countries that always experience a deficit each year during the 2017 – 2021 period. Meanwhile, Brunei Darussalam, Malaysia, Thailand and Vietnam tend not to experience a deficit but each year experience a decrease in the current account balance, until in Finally, in 2021, Thailand and Vietnam will experience a current account deficit of
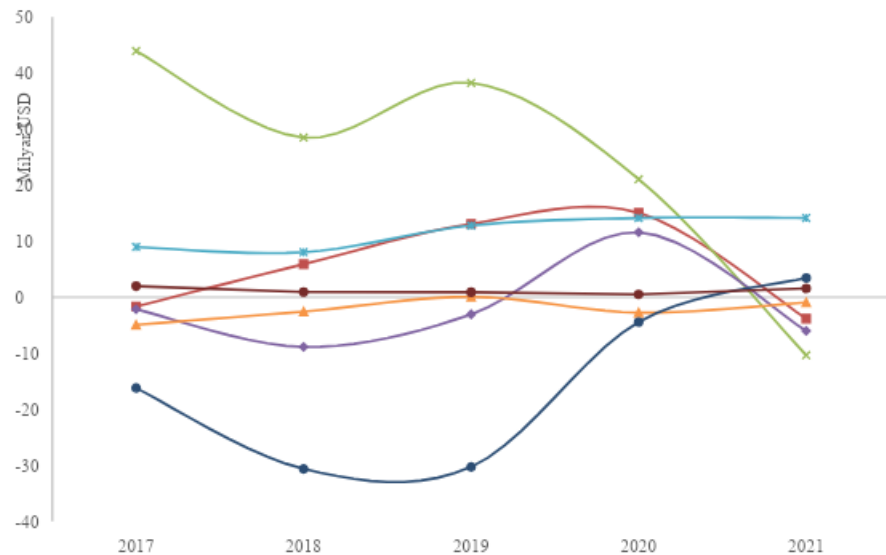
Figure 1: Variable Indicators and Measurement.

-10.34 billion USD and -3.81 billion USD, respectively. Among the seven countries, Indonesia is a country that experiences a deficit annually with the largest current account balance, reaching -30.63 billion USD in 2018. In general, the cause of countries experiencing deficits in 2017-2021 is due to trade balance deficit and primary income account simultaneously. Overall, the main component that influences the ups and downs of the current account balance by each country is its trade balance. This is in line with the statement by [6], namely the main support that influences a country's current account balance is the trade balance which is considered to be the largest contribution to the current account balance, especially trade in goods (commodities). So that international trade, in this case exports and imports, is important in influencing the current account surplus in each country [7]. According to [8] developing countries tend to experience greater export volatility than developed countries. This is because developing countries only export a few commodities or export commodities only to a few countries but are very dependent on the types of commodities exported.

In an open economy, economic interaction between countries is an important aspect of a country's economic development. The openness of a country's economy will bring risks to the planning and implementation of macroeconomic policies, including monetary policies. This is because the greater the international trade and financial transactions carried out by a country, the greater the flow of foreign funds into and out of the country concerned. Thus, the flow of foreign funds will then affect the money supply, interest rates and exchange rates in the economy which will ultimately affect economic growth and inflation. Where theoretically, this can be explained by the Mundell-Fleming

Model to see the impact of monetary policy expansion and exchange rate adjustments on the open economy of a country that adheres to a floating exchange rate system [9]. Through this process, interest rates and exchange rates serve as important adjustment mechanisms to the current account balance. So the implication in this case can be concluded that when monetary policy is contractive it will push domestic interest rates to rise and the exchange rate will tend to appreciate, which in turn will increase imports and reduce exports, thus the current account balance will worsen and even experience a deficit, as well otherwise.

Apart from the monetary policies carried out by each country, fluctuating current account conditions are also inseparable from shocks to macroeconomic variables [10]. Where viewed from the monetary side above, the current account balance is also affected by the exchange rate, due to changes in the exchange rate which will affect the prices of imported and exported goods in the country's currency. On the other hand, inflation as an economic phenomenon is very interesting to note, where whenever social, political and economic shocks occur at home or abroad, people always associate it with the problem of inflation. So that in this case inflation can be another factor that can affect the current account balance. High inflation causes the price of domestic goods (exports) to increase so that compared to prices of goods in other countries it is relatively uncompetitive [11]. So that this causes the value of exports to decrease and has an impact on a decrease in the current account balance.

The economic growth of a country is considered to be able to affect the current account balance. Economic growth, which in this case is shown by Gross Domestic Product (GDP), illustrates the ability of domestic consumers to carry out consumption activities. According to [12] in [13], when income increases, it will cause people's purchasing power and expenditure to increase. This means that the level of people's economic activity is increasing, including consumption of goods from abroad or increasing demand for imported goods to meet high expenditures, which will eventually create a current account deficit. Another macroeconomic indicator that can affect the imbalance in the current account balance is foreign direct investment (FDI) because international trade gives investors the freedom to invest in a country [7]. The widening current account position can be attributed to increased globalization, which has increased cross-border trade and flows of financial capital. A country's degree of openness to international trade, measured as total exports and imports as a share of GDP, can also reflect industrial policy choices, including tariff regimes [14]. Trade openness can have a positive or negative impact on a country's economy. In open trade, import and export activities are important tools for calculating the current account [15].

Based on previous research, [13] in his research found that the current account balance is negatively affected by all the independent variables, namely interest rates, exchange rates, GDP and FDI. However, research conducted by [16], found results that interest rates have a positive effect on the current account balance. Then there are differences in the results of research conducted by [17] which found that FDI and trade openness variables have a positive effect on the current account balance. Also [14] in his research found results that trade openness has a negative effect and inflation has a positive effect on the current account balance.

Based on various relevant theories and research, the imbalance in the current account balance cannot be separated from the influence of macroeconomic variables. Because an understanding of these influences is important as a reference material that can be used by policy makers, so that it is more optimal to show how the impact of monetary policy and macroeconomic indicators play a significant role in increasing the current account surplus in the 7 developing ASEAN countries. Based on previous research and the existence of research gaps related to current account research results, the authors want to examine and develop how the impact of monetary policy and broad macroeconomic indicators on the Current Account Balance in ASEAN developing by using the determining variable of the current account balance which consists of Interest Rates , Exchange Rates, Gross Domestic Product, Inflation, Foreign Direct Investment and Trade Openness in ASEAN developing.

2. Theory, Literature Review, and Hypothesis

The current account balance is a measure of a country's macroeconomic performance that shows the sources and uses of national income from exports of goods and services, as well as foreign investment and receipt of grants as a source of national income [18]. In other words, the current account balance summarizes the flow of funds between one country and all other countries as a result of purchases of goods or services on financial assets or unilateral transfers [19].

The current account balance reflects a country's trade in foreign goods and services, which can produce a surplus or a deficit. A surplus position indicates that a country exports more goods and services than it imports, which means that a country has accumulated foreign currency assets so that it has a positive balance in foreign investment. Meanwhile, a deficit shows that a country's imports from a country exceed its exports, resulting in a decrease in investment abroad [11].

1. The Elasticity Approach

The elasticity approach focuses on changes in the exchange rate as a modifier to correct balance of payments imbalances [20]. According to [21] the trade balance elasticity approach explains how various levels of elasticity of demand and supply for imported goods can affect the current account balance through the trade balance.

2. The Absorption Approach

The current account absorption approach is a macroeconomic-oriented approach that views the current account balance as the difference between national income and national expenditure [22]. [20] the absorption approach is a combination of changes in income, expenses and exchange rates to restore the external balance of the balance of payments.

3. The Monetary Approach

An approach that assumes that the balance of payments is a monetary phenomenon, where there is a relationship between the balance of payments and the money supply of a country. This approach explains changes in the country's external position as a result of changes in demand and supply of domestic currency, creation of domestic credit and changes in domestic real income [5].

The transmission mechanism in the Mundell-Fleming theory says that when a lower price level lowers interest rates, investors move some of their funds abroad and this in turn causes a relative depreciation of the domestic currency against foreign currencies. This depreciation makes local goods cheaper than foreign goods and therefore triggers net [23]. High interest rates can cause the cost of money to become expensive. This will weaken export competitiveness in the world market so that the business world is not enthusiastic about investing in the country, production will decline, and economic growth will stagnate. So that it also has an impact on the performance of the current account balance which will then result in a balance deficit.

The current account balance, in particular the trade balance, tends to be sensitive to changes in foreign exchange rates. When a country's currency depreciates against the currency of a country that is its trading partner, the country's exports will tend to rise and its imports will tend to fall, thus improving the trade balance [24]. Changes in the exchange rate can make the relative price of products more or less expensive relative to other countries, so exchange rates are sometimes used to increase competitiveness (encouraging exports). A decline in currency exchange rates or commonly called exchange rate depreciation can change the position of the current account balance in a country. In accordance with the Mundell-fleming theory and the J-curve, a depreciation

in the exchange rate will encourage an increase in export activities due to increased competitiveness.

Inflation is one thing that is highly avoided in an economy, especially high inflation. This is because inflation causes domestic commodity prices to rise, making them relatively uncompetitive compared to commodity prices in other countries. This causes a decrease in demand for domestic goods, which in turn causes a deficit in the current account balance.

Economic growth, which in this case is shown by Gross Domestic Product (GDP), illustrates the ability of domestic consumers to carry out consumption activities. According to [12] in [13], when income increases it will cause people's purchasing power and expenditure to increase, this is in accordance with the Keynesian Consumption Theory. The higher the level of people's economic activity, including the consumption of goods from abroad or the increasing demand for imported goods to meet high expenditures, which will ultimately create a current account balance deficit.

In developing countries, foreign direct investment is considered an important component of the balance of payments. The influx of foreign direct investment can affect overall economic activity. Developing countries often face savings investment gaps, therefore FDI is considered a source of external financing for these economies [17]. According to the internalization theory, capital inflows in the form of foreign direct investment generally encourage exports through gross capital formation, transfer of technology, increased productivity and competitiveness, introduction of new technologies in production, better managerial skills, and opening access to new markets that increase current account. FDI as a determinant of economic growth and development encourages an overflow of technology and knowledge, encourages trade and international trade by increasing exports and increasing the production efficiency of recipient countries [25].

A country is said to be active in its international trade activities if the level of trade openness is getting bigger. The important thing in trade openness is to be able to increase the potential scale of sales in the international trade market and increase competitive pressure, due to good information and regulations known to exporters and importers. Heckscher Ohlin's theory shows that trade affects the current account balance by affecting the trade balance. If a country exports goods that use its abundant production factors, the country will earn foreign exchange, which leads to an improvement in the current account balance. Conversely, if a country imports goods that use its abundant production factors, the country must pay for them in foreign exchange, which causes a decrease in the current account balance [26].

Several empirical studies examine the impact of macro variables on the current account balance. [27] conducted a study using the VECM Panel method regarding the effect of macroeconomic indicators on the current account balance covering 21 OECD countries in 1974 - 2009. The results found that the GDP variable in the short and long term had a negative effect on the current account balance. The real exchange rate in the short term has no effect, but has a negative effect in the long term on the current account balance. [5] in their research found the result that monetary policy interest rates and GDP have a negative effect on the current account balance. The real exchange rate has a positive effect, when the exchange rate increases which means the domestic currency depreciates, it will cause an increase in the current account balance. [13] with the research obtained the result that GDP has a negative effect on the current account balance in the short term, while interest rate variables, foreign direct investment and exchange rates have a negative effect on long-term current account balance. [16] in his states that in the long term investment, real exchange rates, increases in capital flows, FDI, financial development, and GDP have an effect negative on the current account balance. Meanwhile, the fiscal balance, population, commodity prices and interest rates have a positive influence on the current account balance. [28] in his research found results that in the short term GDP growth, trade openness and FDI have a positive effect on the current account balance, while the real exchange rate and inflation have a negative effect. In the long run GDP growth and the real exchange rate have a positive effect on the current account balance, while trade openness, FDI and inflation have a negative effect.

On the basis of the theoretical basis in the empirical framework of research thought made to answer the problem formulation previously described, a research hypothesis is formed, namely as follows:

There is an influence of Interest Rates, Exchange Rates, Inflation, Gross Domestic Product, Foreign Direct Investment, and Trade Openness on the Current Account Balance in short-term and long term relationships in Developing ASEAN countries in 2007 – 2021.

There is a causal relationship between Interest Rates, Exchange Rates, Inflation, Gross Domestic Product, Foreign Direct Investment, and Trade Openness with the Current Account in the short and long term in Developing ASEAN in 2007 – 2021.

3. Research Methods

3.1. Scope of Research

In this study the focus is on the dependent variable, namely the Current Account Balance and the independent variables, namely Interest Rates, Exchange Rates, Gross Domestic Product, Inflation, Foreign Direct Investment and Trade Openness in 7 Countries Developing ASEAN including Brunei Darussalam, Philippines, Indonesia, Malaysia, Myanmar, Thailand and Vietnam in 2007 – 2021.

3.2. Types and Sources of Data

This type of research is descriptive research, with the aim of describing events and phenomena in the research variables, as well as to find out the influence between the independent variables and the dependent variable. The data used is in the form of numbers or quantitative data, namely data calculated on a numerical (numeric) scale, where the type of data is panel data, namely a combination of time series data for the period 2007 – 2021 and cross section data for 7 developing ASEAN countries. The source of the data obtained in this study is secondary data which is data that has been accumulated by data collection agencies and published in the data user community. The data in this study were obtained through the publication of the World Bank.

3.3. Data Analysis Method

This study uses the Vector Error Correction Model (VECM) panel method. The VAR / VECM model was first developed by Sims in 1980, where the assumption is that if there is true simultaneity among a set of variables, those variables should be treated equally where there is no distinction between exogenous and endogenous variables [29]. The analysis procedure in the VECM Panel method are with the best panel models selection step, data stationary test, optimum lag test, model stability test, cointegration test, VECM model estimation, granger causality, impulse response function (IRF) and the variance decomposition (VD). The basic form of the VAR panel model according to [30] is as follows:

$$\Delta Y_{it} = \alpha + \sum_{i=1}^{k} \beta_1 \Delta Y_{it-1} + \sum_{i=1}^{k} \beta_2 \Delta M_{it-1} + \sum_{i=1}^{k} \beta_3 \Delta N_{it-1} + \mu_{it} \qquad (1)$$

The equation of the VECM panel model used in this study is the result of a reduction from the VAR panel model in this study, which is as follows [30].

$$
\begin{aligned}
\Delta CA_{it} = \; \alpha &+ \sum_{i=1}^{k} \beta_1 \Delta CA_{it-1} + \sum_{i=1}^{k} \beta_2 \Delta IR_{it-1} \\
&+ \sum_{i=1}^{k} \beta_3 \Delta RER_{it-1} + \sum_{i=1}^{k} \beta_4 \Delta INF_{it-1} + \sum_{i=1}^{k} \beta_5 \Delta GDP_{it-1} \\
&+ \sum_{i=1}^{k} \beta_6 \Delta FDI_{it-1} + \sum_{i=1}^{k} \beta_7 \Delta OPENNESS_{it-1} + \mu_{it}
\end{aligned} \tag{2}
$$

Where:

β_0 : Intercept

$\beta_0 - \beta_7$: Coefficient

$\sum_{i=1}^{k}$: The number of lags used in the model is between 1 to with k

ΔCA_{it} : The first derivative vector of the endogenous variable is the Current Account for region i in the year t (milyar USD)

ΔIR_{it-1} : The first derivative vector of the Interest Rate variable for region i in year t (percent) with the 1st lag

ΔRER_{it-1} : The first derivative vector of the Real Exchange Rate variable for region i in year t (current LCU) with the 1st lag

ΔINF_{it-1} : The first derivative vector of the Inflation variable for region i in year t (percent) with the 1st lag

ΔGDP_{it-1} : The first derivative vector of the GDP variable for region i in year t (milyar USD) with the 1st lag

ΔFDI_{it-1} : The first derivative vector of the FDI variable for region i in year t (milyar USD) with the 1st lag

$\Delta OPENNESSS_{it-1}$: The first derivative vector of the Trade Openness variable for region i in year t (percent) with the 1st lag

μ_{it} : Error Terms

i : 7 countries of developing ASEAN

t : Years of 2007 – 2021

4. Results and Discussion

4.1. Test of Stationarity

The stationarity test is the first step carried out in both VAR and VECM panel models. The first requirement in using the VECM Panel analysis method is that the data used must be stationary and cointegrated data. Decisions are made with the criteria that if the probability value < level α = 5%, then reject H0, meaning that the data is stationary at the degree level or difference. Conversely, if the probability values of the three methods are > level α=5%, then H0 is not rejected, meaning that the data is not stationary [29]. The stationarity test results in this study are shown in Table 1.

TABLE 1: Stationarity Test Results.

Variable	Level			First Difference			Second Difference		
	LLC	ADF-Fisher	PP-Fisher	LLC	ADF-Fisher	PP-Fisher	LLC	ADF-Fisher	PP-Fisher
CA	-2.2118	15.2961	14.8573	-2.2511	36.8176	82.3776	-9.3656	73.3143	125.198
	0.0135	0.3582	0.3880	0.0122	0.0008	0.0000	0.0000	0.0000	0.0000
	**			**	***	***	***	***	***
IR	-5.8712	50.6389	92.9397	-7.7909	67.9007	144.004	-9.2811	82.1851	149.588
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	***	***	***	***	***	***	***	***	***
LNRER	-2.10979	11.2135	28.2664	-2.3698	19.0481	30.8827	-5.3972	42.6272	95.0213
	0.0174	0.6692	0.0131	0.0089	0.1631	0.0058	0.0000	0.0001	0.0000
	**		**	***		***	***	***	***
INF	-5.45761	44.1394	60.233	-6.8011	65.8027	152.918	-8.0883	79.8013	144.051
	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	***	***	***	***	***	***	***	***	***
GPD	-1.75266	11.2715	15.2966	-3.0588	25.7329	51.0269	-4.3470	46.2149	100.119
	0.0398	0.6646	0.3582	0.0011	0.0280	0.0000	0.0000	0.0000	0.0000
	**			***	**	***	***	***	***
FDI	0.0288	21.5032	30.7839	-1.9422	39.6644	93.3479	-10.617	91.8284	133.289
	0.5115	0.0894	0.0059	0.0261	0.0003	0.0000	0.0000	0.0000	0.0000
			***	**	***	***	***	***	***
OPENNESS	-1.43175	13.4382	32.4159	-3.5334	34.8345	49.4374	-9.7017	82.6347	118.933
	0.0761	0.4923	0.0035	0.0002	0.0016	0.0000	0.0000	0.0000	0.0000
			***	***	***	***	***	***	***

Note : value in parentheses ( ) is p-value. *** p<0.01; ** p<0.05; *p<0,1

4.2. Optimum Lag Test

Determination of the optimal lag length is carried out to determine the estimation of model parameters and present how long it takes a variable to respond to changes in other variables. Based on Table 2, the most estimated lag results indicated by asterisks indicate the optimal lag, which in this study is at the 5th lag.

TABLE 2: Optimum Lag Test Results.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-5026.073	NA	5.81E+60	159.7801	160.0182*	159.8737
1	-4946.801	138.4112	2.24E+60	158.8191	160.7241	159.5683*
2	-4905.58	62.81368	3.04E+60	159.066	162.6379	160.4709
3	-4869.581	46.85481	5.33E+60	159.4788	164.7175	161.5392
4	-4823.07	50.2033	7.85E+60	159.5578	166.4634	162.2738
5	-4710.143	96.7941*	1.83e+60*	157.5283*	166.1009	160.9

4.3. Stability Test

When the Root and Modulus Polynomial values are less than 1 (<1), it can be stated that the VECM Panel model is stable (Gujarati, 2004). Table 3 shows the values of the Root and Modulus Polynomial less than 1 (<1), so the VECM panel model is said to be stable.

4.4. Cointegration test

The next step in making a choice using the VECM panel model is to conduct a cointegration test, with the aim of seeing the existence of a long-term relationship between the variables in the model. Based on Table 4 it can be seen that there are indications of 5 cointegrating, indicated by the value of the trace statistic that is greater than the critical value, and listed "Trace test indicates 7 cointegrating eqn (s) at the 0.05 level". So there is a long-term relationship or cointegration in this study so that the VECM panel was chosen as a tool or estimate to answer the research objectives.

4.5. Estimation Result of VECM Model

TABLE 3: Stability Test Result.

Root	Modulus
-0.333834 - 0.632480i	0.715176
-0.333834 + 0.632480i	0.715176
0.474909 - 0.482615i	0.677094
0.474909 + 0.482615i	0.677094
-0.178595 - 0.541965i	0.570634
-0.178595 + 0.541965i	0.570634
-0.361443 - 0.339777i	0.496074
-0.361443 + 0.339777i	0.496074
-0.208928 - 0.399756i	0.451061
-0.208928 + 0.399756i	0.451061
0.450681	0.450681
0.297029 - 0.215510i	0.366975
0.297029 + 0.215510i	0.366975
-0.313290	0.313290

TABLE 4: Cointegration Test Result.

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.859130	264.8903	125.6154	0.0000
At most 1 *	0.653234	155.1349	95.75366	0.0000
At most 2 *	0.542891	95.82505	69.81889	0.0001
At most 3 *	0.318048	51.98639	47.85613	0.0195
At most 4 *	0.280029	30.54985	29.79707	0.0409
At most 5	0.172253	12.15138	15.49471	0.1498
At most 6	0.027555	1.564717	3.841466	0.2110
Trace test indicates 5 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

4.6. Granger Causality Test

Based on the VECM estimation results it shows that in the short term relationship at lags 1 to 5 the contribution of the interest rate variable has no effect on the current account balance. Meanwhile, in the long-term relationship, the interest rate variable has a significant influence on the current account balance with a negative coefficient direction. Meaning that if interest rates rise it will have an impact on a decrease in the

TABLE 5: Estimation Results of Long Term VECM.

Variable	Coefficient	t-statistics	Information
D(IR(-1))	-8.71740	-4.31748	Significant
D(LNRER(-1))	2.50868	-2.42178	Significant
D(INF(-1))	-7.99105	-4.54784	Significant
D(LNGDP(-1))	-0.13424	-3.41551	Significant
D(FDI(-1))	9.18220	7.92853	Significant
D(OPENNES(-1))	-7.65888	4.66196	Significant

current account balance. This is in accordance with research conducted by [19] and [13] which says that in the long term interest rates have a negative and significant effect on the current account balance. Then, in the causal relationship between interest rates and the current account balance, it is known that interest rates do not cause the current account balance, and vice versa, the current account balance does not cause interest rates or there is no causal relationship, either one-way or two-way between interest rates and the current account balance in developing ASEAN. The interest rate is used as an indicator of monetary policy attitudes, which is a policy choice tool within the inflation targeting framework. When analyzing the direct impact of domestic interest rates on the savings-investment gap, there are two channels through which interest rates affect private saving, namely the substitution effect and the income effect. Under the substitution effect, an increase in the real interest rate acts as an incentive to increase private saving and reduce consumption, which reduces the current account deficit as the saving-investment gap narrows. The alternative, according to [5] when contractionary monetary policy will result in higher interest rates, which then increases capital inflow (capital inflow) and appreciates the exchange rate. This implies that imports become cheaper and exports become relatively more expensive. Consequently, by increasing the amount of imports and reducing the amount of exports, the trade balance deteriorated which resulted in a decrease in the current account balance. This is in accordance with Mundell Fleming's theory put forward by Mundell in 1962, where this theory is used to see the impact of monetary policy expansion and exchange rate adjustments on the open economy of a country that adheres to a floating exchange rate system.

Based on the VECM estimation, it is known that in the short term relationship at lag 1, lag 2 and lag 3 the exchange rate variable has a significant influence on the current account balance with a positive coefficient direction. Likewise in the long term, exchange rate variables have a significant influence on the current account balance with a positive

TABLE 6: Estimation Results of Short Term VECM.

Variable	Coefficient	t-statistics	Information
D(CA(-1),2)	0.519402	1.92660	Not Significant
D(CA(-2),2)	0.519373	1.68624	Not Significant
D(CA(-3),2)	0.552907	1.79464	Not Significant
D(CA(-4),2)	-0.090379	-0.32571	Not Significant
D(CA(-5),2)	0.080309	0.29760	Not Significant
D(IR(-1),2)	-3.501120	-1.04481	Not Significant
D(IR(-2),2)	-1.450918	-0.74399	Not Significant
D(IR(-3),2)	-4.796770	0.27948	Not Significant
D(IR(-4),2)	9.553851	0.78268	Not Significant
D(IR(-5),2)	6.793736	0.88647	Not Significant
D(LNRER(-1),2)	1.865968	3.06306	Significant
D(LNRER(-2),2)	1.512394	2.54070	Significant
D(LNRER(-3),2)	1.221624	2.70981	Significant
D(LNRER(-4),2)	4.672153	1.68438	Not Significant
D(LNRER(-5),2)	3.239410	1.58242	Not Significant
D(INF(-1),2)	-2.132421	-0.68220	Not Significant
D(INF(-2),2)	-1.454915	-0.07021	Not Significant
D(INF(-3),2)	1.379768	0.85189	Not Significant
D(INF(-4),2)	1.518151	1.20607	Not Significant
D(INF(-5),2)	6.694768	0.84258	Not Significant
D(GDP(-1),2)	0.108549	1.38774	Not Significant
D(GDP(-2),2)	-0.110979	-1.24208	Not Significant
D(GDP(-3),2)	-0.104039	-1.46998	Not Significant
D(GDP(-4),2)	0.069072	0.87201	Not Significant
D(GDP(-5),2)	0.117158	1.96471	Not Significant
D(FDI(-1),2)	7.956203	3.16614	Significant
D(FDI(-2),2)	7.233722	3.40444	Significant
D(FDI(-3),2)	4.689976	2.58039	Significant
D(FDI(-4),2)	2.544155	1.94397	Not Significant
D(FDI(-5),2)	0.098786	0.12995	Not Significant
D(OPENNES(-1),2)	-6.697985	-1.80996	Not Significant
D(OPENNES(-2),2)	5.822320	0.16620	Not Significant
D(OPENNES(-3),2)	7.667728	2.47964	Significant
D(OPENNES(-4),2)	6.248672	1.88208	Not Significant
D(OPENNES(-5),2)	8.042596	3.6175	Significant

TABLE 7: Granger Causality Test Result.

Dependent Variable	Independent Variable	Chi-Sq	Df	p-value
Current Account (CA)	Interest Rate (IR)	3.674597	1	0.5971
	Real Exchange Rate (LNREER)	9.822466	1	0.0804
	Inflation (INF)	3.077840	1	0.6880
	Gross Domestic Product (LNGDP)	34.61076	1	0.0000
	Foreign Direct Investment (FDI)	45.36795	1	0.0000
	Trade Openness (OPENNESS)	15.23174	1	0.0094
Interest Rate (IR)	Current Account (CA)	2.779219	1	0.7340
	Real Exchange Rate (LNREER)	7.504522	1	0.1857
	Inflation (INF)	2.377022	1	0.7949
	Gross Domestic Product (LNGDP)	2.727499	1	0.7419
	Foreign Direct Investment (FDI)	4.129981	1	0.5309
	Trade Openness (OPENNESS)	7.746516	1	0.1708
Real Exchange Rate (LNREER)	Current Account (CA)	12.83310	1	0.0250
	Interest Rate (IR)	4.243308	1	0.5149
	Inflation (INF)	4.605783	1	0.4660
	Gross Domestic Product (LNGDP)	19.37318	1	0.0016
	Foreign Direct Investment (FDI)	12.97689	1	0.0236
	Trade Openness (OPENNESS)	4,910489	1	0.4269
Inflation (INF)	Current Account (CA)	2.445419	1	0.7847
	Interest Rate (IR)	1.719069	1	0.8865
	Real Exchange Rate (LNREER)	7.024630	1	0.2188
	Gross Domestic Product (LNGDP)	2.495693	1	0.7771
	Foreign Direct Investment (FDI)	3.978282	1	0.5525
	Trade Openness (OPENNESS)	7.597550	1	0.1799
Gross Domestic Product (LNGDP)	Current Account (CA)	39.77133	1	0.0000
	Interest Rate (IR)	10.61785	1	0.0595
	Real Exchange Rate (LNREER)	11.13812	1	0.0487
	Inflation (INF)	10.48686	1	0.0626
	Foreign Direct Investment (FDI)	41.96653	1	0.0000
	Trade Openness (OPENNESS)	16.63641	1	0.0052
Foreign Direct Investment (FDI)	Current Account (CA)	19.60380	1	0.0015
	Interest Rate (IR)	5.809598	1	0.3252
	Real Exchange Rate (LNREER)	3.077577	1	0.6880
	Inflation (INF)	5.955338	1	0.3106
	Gross Domestic Product (LNGDP)	20.44875	1	0.0010
	Trade Openness (OPENNESS)	8.251689	1	0.1429
Trade Openness (OPENNESS)	Current Account (CA)	4.908055	1	0.4272
	Interest Rate (IR)	3.617633	1	0.6057
	Real Exchange Rate (LNREER)	2.440010	1	0.7855
	Inflation (INF)	2.838701	1	0.7248
	Gross Domestic Product (LNGDP)	4.145280	1	0.5287
	Foreign Direct Investment (FDI)	2.918981	1	0.7125

coefficient direction. An increase in the exchange rate of one LCU by each country means that the domestic currency depreciated against the dollar in one, two and three previous periods will affect the increase in the current account balance in developing ASEAN in the short term and long term. This is in accordance with research conducted by [19] and [28] which says that the exchange rate has a positive and significant relationship in the short term and in the long term. In the causal relationship between the exchange rate and the current account balance, it is known that the exchange rate does not cause the current account balance, and vice versa, the current account balance does not cause the exchange rate or there is no causal relationship, either one-way or two-way between the exchange rate and the current account balance in developing ASEAN. This is in line with the j-curve theory which explains the sensitivity of import and export trade variables due to currency devaluation or depreciation. Initially the depreciation of the currency caused an expansive current account deficit and imports, but then access to international markets which became easier to compete with foreign producers led to a decrease in costs after a period of time, consequently export volumes and import prices increased causing a decrease in the current account deficit.

Based on the VECM estimation, it is known that in the short term relationship at lag 1 to 5 the contribution of the inflation variable has no effect on the current account balance. Whereas in the long term relationship the inflation variable has a negative significant influence on the current account balance, meaning that if inflation rises it will have an impact on a decrease in the current account balance. This is in accordance with research conducted by [28] in their long-term research who found results that inflation had a negative and significant effect on the current account balance. Then, in the causal relationship between inflation and the current account, it is known that inflation does not cause the current account, and vice versa, the current account does not cause inflation or there is no causal relationship, either one-way or two-way between inflation and the current account in developing ASEAN. Inflation is a very important macroeconomic indicator because it affects the value of money in such a way that people can feel the impact directly. If a country's inflation rises relative to the inflation of its trading partner countries, then its current account balance will decrease. Domestic consumers and cooperation will buy more goods from abroad due to high domestic inflation, while exports to other countries will decrease. High inflation will reduce competitiveness in foreign markets because the price of export products is relatively more expensive so that the value of exports will decrease and have an impact on a decrease in the current account balance.

Based on the VECM estimation, it is known that in the short term, in the 1st to 5th lag, the contribution of the gross domestic product variable has no effect on the current account balance. Whereas in the long term relationship the variable gross domestic product has a significant negative effect on the current account balance, meaning that if GDP increases it will have an impact on a decrease in the current account balance. This is in line with research conducted by [17] who found results that GDP has a negative and significant effect on the current account balance. In the causal relationship between gross domestic product and the current account balance, it is known that gross domestic product causes the current account balance, similarly the current account balance also causes gross domestic product or there is a two-way causal relationship between gross domestic product and the current account balance in developing ASEAN. Economic growth as described in gross domestic product (GDP) shows the ability of domestic consumers to carry out consumption activities. According to [12] in [13] when income increases it will cause people's purchasing power to increase. Increasing public purchasing power means higher levels of public consumption, including consumption of goods from abroad or increased imports, which in turn reduces the current account balance. This is in line with the statement of Keynesian consumption theory which says that the factor that influences consumption is income, if income is higher then the level of consumption will also be higher. So is the national income. The higher the GDP or growth that reflects people's purchasing power, the higher the level of consumption, including the consumption of goods from abroad or increasing imports.

Based on the VECM estimation, it is known that in the short term relationship on the 1st lag, 2nd lag and 3rd lag and the long term relationship the foreign direct investment variable has a significant influence on the current account balance with a positive coefficient direction, meaning that if FDI increases it will have an impact on improving the current account balance in the short term and long term. This is in line with research conducted by [17] which found results that FDI has a positive and significant effect on the current account balance. In the causality relationship of foreign direct investment and the current account balance, it is known that foreign direct investment causes the current account balance, similarly the current account also causes foreign direct investment or there is a two-way causality relationship between foreign direct investment and the current account balance in developing ASEAN. FDI is said to positively affect the current account balance through increasing exports by increasing capital for export production, facilitating the transfer of new technology and new products for export, providing training for the local workforce and enhancing technological and managerial skills, and helping access to new and large markets [17]. This is in line with the internalization theory

which says that companies engage in foreign direct investment (FDI) to internalize the benefits of the specific advantages of their ownership, such as technology, know-how, and brand reputation [31]. This theory suggests that FDI can affect the current account balance by affecting the trade balance.

Based on the VECM estimation, it is known that in the short term relationship on the 3rd and 5th lags and the long term relationship the trade openness variable has a significant influence on the current account balance with a negative coefficient direction in the short term and positive in the long term. This means that if trade openness increases, it will have an impact on increasing the current account balance in the long run. Meanwhile, in the short term, if trade openness increases, it will have an impact on a decrease in the current account balance. This is in line with research conducted by [28] which found results that in the short term trade openness has a positive effect on the current account balance, whereas in the long term trade openness has a negative effect on the current account balance. Research by [25] also found trade openness to have a positive effect on the current account balance. As well as research by [32] found results that trade openness has a negative effect on the current account balance. In the causal relationship between trade openness and the current account balance, it is known that trade openness causes the current account balance, but conversely the current account balance does not cause trade openness, which means there is a one-way causal relationship from the variable trade openness to the current account balance in developing ASEAN. Trade openness is directly related to the volume of exports and imports. However, the overall impact of trade openness on the current account balance depends on the relative size of exports and imports. Openness of trade is defined conceptually as the removal of barriers to international trade through the elimination or reduction of tariffs and increase of quotas. In addition, trade openness establishes fewer barriers to international trade for technology transfer, trade in goods and services, and more capital inflows. Countries with more open economies can improve their current account balance by increasing exports and capital inflows. In the long term, trade openness has a negative effect on the current account balance. Developing countries that are very open to international trade may run higher current account deficits because they have to import a lot of intermediate goods and machinery from developed countries. Likewise in developing countries where most of their economies are highly dependent on foreign goods with the size of their capital imports still below the level needed to support growth.

5. Finding and Conclusion

Based on the results of research that has been conducted regarding the Impact Analysis of Monetary Policy and Macroeconomic Indicators on the Current Account in Developing ASEAN from 2007 to 2021 using the Vector Error Correction Model (VECM) panel model, the following conclusions can be drawn.

Interest rates do not have a significant effect on the Current Account in a short-term relationship, but have a significant negative effect on the Current Account in a long-term relationship. As well as in a causal relationship Interest Rates do not have a one-way or two-way causality relationship with the Current Account.

Exchange Rates have a significant positive effect on the Current Account in short-term and long-term relationships. As well as in the causality relationship, the Exchange Rate does not have a one-way or two-way causality relationship with the Current Account.

Inflation does not have a significant effect on the Current Account in a short term relationship, but has a significant negative effect on the Current Account in a long term relationship. As well as in the causality relationship Inflation does not have a one-way or two-way causality relationship with the Current Account.

Gross Domestic Product does not have a significant effect on the Current Account in a short term relationship, but has a significant negative effect on the Current Account in a long term relationship. As well as in the causality relationship Gross Domestic Product has a two-way causality relationship with the Current Account.

Foreign Direct Investment has a significant positive effect on the Current Account in short-term and long-term relationships. As well as in the causality relationship Foreign Direct Investment has a two-way causality relationship with the Current Account.

Trade openness has a significant positive effect on the Current Account in a short-term relationship, and has a significant negative effect on the Current Account in a long-term relationship. As well as in the causality relationship Trade Openness has a one-way causality relationship with the Current Account.

6. Implications, Limitations, and Suggestions

This research has several limitations. First, this research does not take all samples of developing ASEAN countries. ASEAN Berkemang consists of 9 countries, but due to unavailable data, this research takes 7 countries (not including Laos and Cambodia). So, the authors suggest that further research can add samples, variables and research periods. This research is expected to be a reference and can add insight to readers.

In addition, based on the conclusions above, several policies can be recommended for the future.

The government must use effective monetary policy tools to reduce rising inflation which will ultimately impact the current account balance.

Economies in developing ASEAN must be placed more attractively in order to bring in FDI which is oriented towards increasing exports which will ultimately increase the current account surplus.

Society must reduce import consumption in order to reduce the current account deficit.

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