

The Nexus of International Trade and Inflation on ASEAN-5 Countries' Economic Growth: The Mediating Role of Exchange Rates

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ABSTRACT

Since the last decade, ASEAN countries have been chosen by the developed countries as one of the favorite trading partners. The establishment of ASEAN allows member countries to accelerate their open trading activities worldwide, especially among ASEAN members. However, the export and import activity of the ASEAN-5 countries have interconnected with inflation and exchange rates, which will affect economic growth. The research goal is to look into the impact of international commerce on the economic growth of ASEAN's founding countries, namely Indonesia, Thailand, Malaysia, Singapore, and the Philippines. We investigated data since the inception of the ASEAN body 53 years (1968-2020) to test the hypotheses and run it using data panel regression with differentiation technique to analyze the data. We used EViews 9th version software to run the data. After the multicollinearity and heteroscedasticity tested, the result shows that the exchange rate significantly mediates international trade (proxied by export and import activity) and the inflation rate on economic growth negatively. While for the direct relationship, import and inflation significantly affect the exchange rate. While export and inflation affect economic growth indirectly effect. Thus, the exchange rate intervenes in a parallel manner between inflation and economic growth and a fully mediate between import and economic growth. The discussions and implications will explain further.

Keywords: ASEAN, Economic Growth, Exchange rates, International Trade, Panel regression.

1. INTRODUCTION

Economic growth is a measure of the progress and development of a nation. Economic growth can show the success and progress of the country in every period [1]. The primary purpose of economic growth is the achievement of economic stability in a country. Economic growth is influenced by several factors, including fiscal and monetary factors. Inflation and interest rates have an impact on economic growth from the standpoint of monetary policy. At the same time, from the fiscal side, there are factors of exchange rates, exports, and imports that affect economic growth [2], [4].

The most common way to increase economic growth is to conduct international trade [5]. After all, no country in the world can meet its own needs. So, it is necessary to exchange goods and services between two or more countries through export and import

activities [6]. International trade affects the economic growth of countries. It will encourage market participants to obtain price balance information to make informed decisions, promote the efficient distribution of resources, and thereby generate economic growth [7].

Since the last decade, ASEAN countries have been chosen by the developed countries as one of the favorite trading partners. The establishment of ASEAN allows member countries to accelerate their open trading activities worldwide, especially among ASEAN members [8]. In ASEAN, the economic growth illustrates by the annual growth of GDP in each country. Based on the Association of Southeast Asian Nations (ASEAN) (2020), the GDP of ASEAN in 2020 is US\$ 2.17 trillion. Indicates that the economic growth of ASEAN countries is fifth in the world after the United States (US\$22,9 trillion), China (US\$16.8

trillion), Japan (US\$5,1 trillion), and Germany (US\$ 4,2 trillion) (Figure 1).

The main goal of economic growth is influenced by many factors, one of which is international trade. Exports and imports, on the other hand, are critical in many parts of the economy. A well-functioning international market enables a country's economy to efficiently transfer risks, resulting in economic progress [10].

Until the fourth quarter of 2021, the international market is still facing tough challenges because there are borders between countries because of the adjustment to the handling of COVID-19 in each country, including ASEAN 5, namely Indonesia, Malaysia, the Philippines, Singapore, Thailand. Currently, these countries are trying to restore economic sectors after the COVID-19 pandemic.

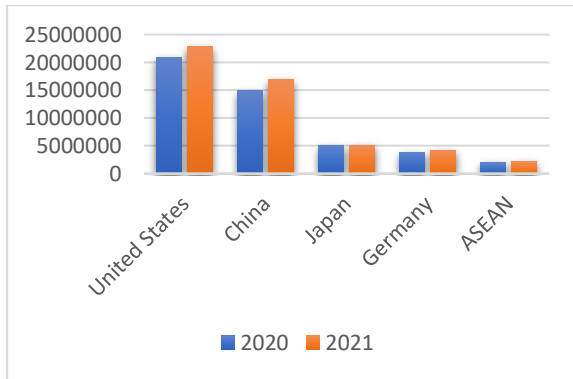


Figure 1. Top Fifth Largest Economies in the World 2020-2021 (US\$ trillion)
Source. [11]

However, it cannot be denied that the international market of ASEAN-5 countries is currently facing a crisis. The ASEAN international market is currently dominated by exports of medical equipment, home electronics, and consumer goods from China. ASEAN countries do not yet could create manufactured products that can compete with the price and quality offered by China, so it is challenging to replace products from China circulating throughout the country.

In general, the problems of the countries members of ASEAN-5 are the same as those of still exporting raw materials compared to finished goods, except for Singapore, which already has progressed in this regard [12]. Not to mention countries in ASEAN-5, such as Indonesia, which still rely on exports of natural products, while oil prices are currently low. However, ASEAN-5 should be optimistic that there is still hope for progress in the future, as reported by the ASEAN secretariat through the ASEAN Figure 2021 report, which predicts that global imbalances will

narrow during 2022–2026 as the twin US deficits subside [13].

This paper aims to investigate whether there is a nexus between international trade, inflation rate, and exchange rates on economic growth in ASEAN-5 Countries. It is interesting to be scrutinized whether the international trade activity of the ASEAN founder countries can enhance their economic growth, especially after they establish the ASEAN community. Besides, it is also interesting to look at the role of the exchange rates and inflation as the impact of the international trade activity can help boost growth. The paper will present the cross-country evidence that exports, imports, and inflation rates correlate with GDP growth rates in 5 countries in ASEAN and mediate by exchange rates.

2. LITERATURE REVIEW

This section reviews the literature about the determinant of economic growth by exports, imports, inflation rates, and exchange rates. However, the theory of economic growth in the decade arises because of social change in society, especially in developing countries, which experts put forward to improve socio-economic conditions in emerging nations. Many studies examined the economic growth in developing countries, including ASEAN-5 [6], [10], [14]–[16]. Several factors affect economic growth. A study [1] in Indonesia examined economic growth from Q1 2009-Q1 2020 using the OLS method and proves that variable interest rates, exchange rates, and imports affect economic growth; meanwhile, inflation and export do not affect the economic growth.

On the other hand, [17] found that export has an insignificant and positive effect on economic growth in Malaysia, while Malaysia's economic growth is greatly harmed by the exchange rate. [18] investigated the influences of exports, imports, exchange rates, and gross domestic investment on economic growth in Cameroon using the Johansen tests of co-integration. Exports, gross domestic investment, and the currency rate all have a favorable impact on Cameroon's economic growth, according to this analysis. According to this analysis, exports, gross domestic investment, and the currency rate all have a beneficial impact on Cameroon's economic growth. Imports, on the other hand, stifle growth, implying that the vast majority of imported products are consumer goods rather than capital or intermediate goods.

The examined economic freedom, actual exchange rates, and economic growth in emerging markets and developing countries, and discovered that the exchange rate had a statistically significant negative effect on growth [19]. According to [20], who conducted a study in Nigeria using the error correction

model (ECM) technique and characteristics such as inflation, exchange rate, and interest rate, researchers discovered that inflation and exchange rate affect economic growth, while interest rate had no effect. However, the result of each country has different outcomes.

A studied the relationship between trade openness and economic growth in ASEAN countries from 1961 to 2012 [21]. Both a long-run equilibrium link and a short-run association between trade openness and economic progress are suggested by the data. [19] examined economic freedom, actual exchange rates, and economic growth in emerging markets and developing countries, and discovered that the exchange rate had a statistically significant negative effect on growth.

However, the result is variety; each country has different outcomes. For example, in some country, export and import boost economic growth and the opposite cause decrease in economic growth. While the exchange rate commonly negatively affects economic growth in several countries, it may happen with ASEAN-5.

3. METHODOLOGY

This study used a quantitative explanatory approach which aims to elucidate and observe the research goal and main question via numerical data analysis by scrutinizing the sample of the population. Descriptive study has been optimized via hypothesis testing with causality design to tell readers about the interconnected relationship among the observed variables and its implications. In this research, the main question that shall be elucidated by quantitative measurement is whether the international trade activity of ASEAN-5 countries and its inflation will affect economic growth.

In this study, the dependent variable is economic growth which has a scale ratio (coded by EG). This variable is proxied by the annual GDP growth in the percentage of each observed country. International trade activity as the predictor element is proxied by the export and import variable (EX-codes export while import is IM). Export and import variable are measured by the total value of exports and imports of goods and services in a year in USD and have a scale ratio. The second independent variable is the inflation rate with a percentage ratio (coded by INFR). The inflation rate is measured by the value of the consumer price index that is computed as a yearly average from monthly averages. While the intervening variable is exchange rates (coded by ER). The "official exchange rate" is the rate set by national authorities or in a legally sanctioned currency market. It is computed as

a yearly average from monthly averages (Concerning the US dollar, local currency units).

As this study scope is the ASEAN region, the population of this study is all eleven country members. Hence, we took five ASEAN founder countries as the sample of this study since they have a big scale economy and massive role in improving ASEAN. ASEAN-5 countries represent more than half of the economic value in ASEAN. Besides, only these five countries have complete data for each study variable.

Secondary data has been used in this research collected from the World Development Indicator's Data Bank provided by the World Bank. We investigated longitudinal data from the inception of ASEAN for the last 53 years (1968-2019) to test the hypotheses and run it using data panel regression with a different technique to analyze the data. Panel regression is a data analysis technique for incorporating cross-section and time-series data to create more diverse data, greater freedom, more informative, less collinearity level, and more efficient.

There are three steps in panel regression analysis. First, as it is a developed version of linear regression, a classical assumption test shall be conducted. Unlike in the linear version, only two assumptions should be met: multicollinearity and heteroscedasticity. We conducted several data transformations to make the data pass the classical assumption in the data running process, especially for multicollinearity and heteroscedasticity assumptions. Breusch Pagan Godfrey has been chosen to test the heteroscedasticity test. At the same time, the collinearity test has been used to see the multicollinearity assumption. Second, a model estimation test via Chow and Hausman's approach was utilized to choose the best model among three options, namely standard effect model, fixed-effect model, and random effect model. Third, after we have considered the best model, we then test the hypotheses by conducting a t-test (partial test) and F-test (determination coefficient) by looking at the R square value [22].

The revealed that in a mediated regression, the direct relationship from independent (X) to intervening (Z) variable as well as from intervening variable (Z) to dependent variable (Y) should be significant [23]. While for the direct relationship from the independent variable (X) to the dependent variable (Y) does not have to be significant. We used EViews 9th version software to run the data. EViews software does not recognize moderated mediation method process into a single unit. Hence, to run panel data containing intervening variables in EViews, data processing is conducted twice to comply with the mediated regression standard procedure.

Substructure I $Y_{i,t} = \beta_0 + \beta_1 X_{1i,t} + \beta_2 X_{2i,t} + \beta_3 X_{3i,t} + \mu_{i,t}$ (1)

Substructure II $Y_{2i,t} = \beta_0 + \beta_4 X_{1i,t} + \beta_5 X_{2i,t} + \beta_6 Y_{1i,t} + \beta_7 X_{3i,t} + \mu_{i,t}$ (2)

- Y_2 : Economic Growth (EG)
- Y_1 : Exchange rates (ER)
- X_1 : Export (EX)
- X_2 : Import (IM)
- X_3 : Inflation rate (INFR)
- $\mu_{i,t}$: Error
- β_0 : Constanta
- $\beta_{1,2,3,4,5}$: Path Coefficients
- i : Country
- t : Year

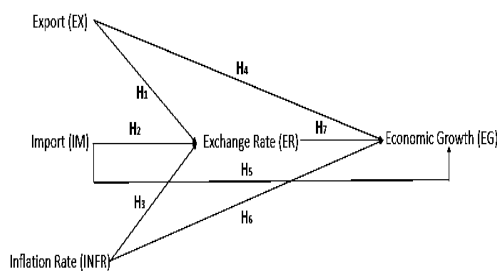


Figure 2. Model Research

Here are the following hypotheses derived from the conceptual framework:

- H_1 : The export has a negative impact on the exchange rates
- H_2 : The import has a negative effect on the exchange rates
- H_3 : The impact of inflation on currency rates is negative.
- H_4 : The export has a positive effect on economic growth in Indonesia
- $H_{4(a)}$: The export positively affects economic growth which is mediated through the exchange rate which has a negative effect on economic growth
- H_5 : The import has a positive impact on Indonesia's economic growth.
- $H_{5(a)}$: The import positively affects economic growth which is mediated by the exchange rates which has a negative effect on economic growth
- H_6 : Inflation rate has a negative impact on economic growth
- $H_{6(a)}$: Inflation rate negatively affects economic growth which is mediated by the exchange rates

which has a negative effect on economic growth

- H_7 : The exchange rates negatively affect economic growth in a direct relation

4. RESULT

The total data of this study is 260 which came from 5 cross-section data (ASEAN-5 countries) and 52 time-series data (52 years). At first, we tried to run the original data set without any transformation process. Unfortunately, the result didn't meet the classical assumptions, especially in normality, multicollinearity, heteroscedasticity, and autocorrelation test. Besides, it resulted in a very low value in the t-test. Hence, we transformed some variables (EX and IM) into the square root and logarithm form. We used the first difference method when we run the model equation to create a better result and fit data. Hence, in this chapter, we provide the findings by the transformation and first difference method.

Table 1. Descriptive Statistic

	EG	ER	EX	IM	INFR
Mean	0.058773	1074.549	249100.9	10.52856	1.31086
Median	0.059250	20.80000	201887.7	10.61807	1.17159
Maximum	0.145256	14236.94	815915.4	11.74625	6.51501
Minimum	0.131267	1.249700	27414.12	9.042296	0.07403
Std. Dev.	0.035810	3016.847	180700.4	0.687300	0.74100
Skewness	-	-	-	-	2.28323
Kurtosis	1.286208	2.998575	0.979841	0.362488	7
Jarque-Bera	7.893252	10.73752	3.457592	2.234682	13.5949
Probability	315.7995	990.2949	41.84739	11.48344	7
Sum	0.000000	0.000000	0.000000	0.003209	0
Sum Sq. Dev.			6177702		325.093
Observations	14.57580	266488.1	7	2611.082	5
	0.316741	2.25E+09	8.07E+1	116.6783	135.623
	9	2	116.6783	3	
	248	248	248	248	248

Based on the table above, the value of Skewness and Kurtosis in some variables depict data set that are not normally distributed. Following [24], the threshold value for the Skewness index should be no more than three. As for Kurtosis, the value cannot be more than ten. Exchange rates and inflation variables have a Kurtosis value of more than ten (10.73 and 13.59) that

making the data set not normally distributed. The normality of data can also be depicted from the Jarque-Bera test probability value that is less than 0.05.

4.1. Classical Assumption Test

The benefit of panel data is that it has the implication in which some of the classical assumptions do not have to be tested, namely normality and autocorrelation. However, as this method uses cross-section data and consists of multiple variables, multicollinearity and heteroscedasticity remain to be tested. It ensures that the R square and error estimation value are accurately resulted without any bias caused by the strong correlation among the variables or cross-section sample.

Table 2. Heteroscedasticity Test Result (Glejser Test)

Variable	Coefficient	t Std. Error	t-Statistic	Prob.
C	9.951984	21.33086	0.466553	0.6413
D(ER)	-0.054609	0.032374	-1.686819	0.0932
D(EX)	0.000832	0.001226	0.678848	0.4980
D(IM)	-473.0656	315.2439	-1.500634	0.1350
D(INFR)	-26.74035	32.15506	-0.831606	0.4066

Glejser test has been conducted by regressing the residual value with independent variables on the data set. The table above shows the result which stated that each independent variable has a probability value greater than or equal to 0.05. The non-significance of the regression coefficient on the Glejser test indicates that there is no heteroscedasticity among the variables.

Table 3. Multicollinearity Test

	D(ER)	D(EX)	D(IM)	D(INFR)
D(ER)	1.000000	-0.195650	-0.229244	0.320523
D(EX)	-0.195650	1.000000	0.619273	0.163653
D(IM)	-0.229244	0.619273	1.000000	0.190695
D(INFR)	0.320523	0.163653	0.190695	1.000000

The second classical assumption that shall be passed is the multicollinearity test. We use a collinearity test to evaluate if the independent variables have a high correlation. There has been multicollinearity if there is a correlation value between variables of 0.8 or more. The table above shows that the highest correlation value among the variables is

0.619273 (**EX** and **IM**). Hence, we can conclude that there is no multicollinearity issue in this research's data set.

Given the two required assumptions on the panel, regression has been fulfilled, we can conclude that the data and sample on this study have no classical assumption issues and are fit to be tested.

4.2. Model Estimation Test

Pooled Least Square/Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) are three alternative techniques to using panel data regression algorithms in data processing [25]. Three tests, including the Chow Test, Hausman Test, and Lagrange Multiplier (LM) Test, can be used to choose the model (estimation approach). CEM is the simplest model because it merely combines time series and cross-section data as a single unit, ignoring time and individual differences (entities).

While FEM or can be called Least Square Dummy Variable (LSDV) assumes that individual disparities in intercepts can be compensated by differences in intercepts. FEM uses a dummy variable technique to capture intercept differences among the cross-sectional samples. The error terms of each cross-section sample accommodate changes in intercepts in the Random Effect model or Error Component Model (ECM). The Random Effect model has the advantage of eliminating heteroscedasticity. [25].

Since we have two substructures to run mediated panel regression, we run the estimation model test twice. To run the model estimation test, we first need to regress the CEM and FEM model then we run the Chow Test. The Chow test serves to determine which model is the best between CEM and FEM.

Table 4. Redundant Fixed Effect/Chow Test (Substructure I)

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.914665	(4,226)	0.0043
Cross-section Chi-square	15.675950	4	0.0035

Substructure I is the equation to help explain whether the independent variables (**EX**, **IM**, and **INFR**) will have a direct significant relationship to the exchange rates (**ER**) as an intervening variable. The table above shows that the probability value of Cross-section Chi-Square is 0.0035 (<0.05). The p-value which is less than 0.005 means that FEM is better to be used as the model than the CEM. If the chow test generates a significant Chi-square value, then we should run the Hausman test to consider which model is better between FEM and REM. To run the Hausman test, we

first need to regress the REM.
Table 5. Correlated Random Effects/Hausman Test (Substructure I)

Test Summary	Chi-Sq. Statistic	Prob.
Cross-section random	15.552066	0.0014

The table above shows that the p-value of the Chi-square is 0.0014 (<0.05). The p-value less than 0.05 means that FEM is still a better model to be used compared with REM. Hence, the best model for substructure I am FEM which is viewed in **Table 6** below.

Table 6. Fixed Effect Model for substructure I

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	192.8188	39.70586	4.856179	0.0000
D(EX)	-0.003533	0.002419	-1.460878	0.1454
D(IM)	-1959.365	613.9062	-3.191635	0.0016
D(INFR)	345.7729	50.88311	6.795436	0.0000

Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.250353	Mean dependent var		59.43363
Adjusted R-squared	0.227134	S.D. dependent var		549.2215
S.E. of regression	482.8359	Akaike info criterion		15.23082
Sum squared resid	52687489	Schwarz criterion		15.34895
Log-likelihood	-1774.006	Hannan-Quinn criter.		15.27845
F-statistic	10.78220	Durbin-Watson stat		2.448341
Prob(F-statistic)	0.000000			

While the estimation model test for substructure II is represented in **Table 7** and **Table 8** below. Substructure II is the equation to help explain whether the independent variable (**EX**, **IM**, and **INFR**), as well as the intervening variable (**ER**) on this model, has a direct relationship with the independent variable (**EG**). Similar to the previous process, the CEM and FEM should be generated before we run Chow Test.

Table 7. Redundant Fixed Effect/Chow Test (Substructure II)

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.444551	(4,225)	0.2202
Cross-section Chi-square	5.933468	4	0.2042

The table above shows that the p-value of Chi-square is 0.2042 which is >0.05. The p-value which is more than 0.005 means that CEM is better to be used as the model than FEM. If the chow test generates a non-significant Chi-square value, then we should run the LM test to consider which model is better between CEM and REM.

Table 8. Lagrange Multiplier Test (Substructure II)

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	0.001843 (0.9658)	63.11595 (0.0000)	63.11779 (0.0000)
Honda	-0.042932 --	7.944555 (0.0000)	5.587291 (0.0000)

The Breusch-Pagan method has been used to run the LM test. Table 8 shows that the p-value of Breusch-Pagan is 0.9658 which is > 0.05. The p-value which is more than 0.005 means that CEM is better to be used as the model than the REM. Hence, the best model for substructure II is CEM which is viewed in **Table 9** below.

Table 9. Common Effect Model for Substructure II

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.009132	0.002954	-3.091060	0.0022
D(ER)	-1.42E-05	4.59E-06	-3.083927	0.0023
D(EX)	4.21E-07	1.68E-07	2.510008	0.0128
D(IM)	0.071988	0.044428	1.620336	0.1065

D(INFR)	-0.010943	0.003926	-2.787499	0.0058
R-squared	0.189189	Mean dependent var	-0.002108	
Adjusted R-squared	0.175027	S.D. dependent var	0.037921	
S.E. of regression	0.034443	Akaike info criterion	-3.877900	
Sum squared resid	0.271663	Schwarz criterion	-3.804069	
Log-likelihood	458.7143	Hannan-Quinn criteria.	-3.848131	
F-statistic	13.35835	Durbin-Watson stat	2.377751	
Prob (F-statistic)	0.000000			

4.3. Hypothesis Testing

Table 6 and Table 9 have depicted the result of hypothesis testing. Table 6 shows the result of panel regression following the FEM model for substructure I. The first important value is R-square which represents the coefficient of determination. Its purpose is to determine the model's quality of fit. The coefficient of determination is a measure of the independent factors' contribution to the dependent variable.

The table shows that the R-square value of substructure I am 0.227134. It means that independent variables (**EX**, **IM**, and **INFR**) in this research contribute to influencing the exchange rates (Y_1) by 22.72%, while the rest (77.28%) is explained and predicted by other determinants variables. While for substructure II, the R-square is 0.189189. It explains that independent variables (**ER**, **EX**, **IM**, and **INFR**) in this research contribute to influencing the economic growth (Y_2) by 18.92%, while the rest (81.08%) is explained and predicted by other determinant variables.

The simultaneous significance test's F-value can be used to see if all of the model's combined independent variables have a significant effect on the dependent variable. F-value allows us to know how big the influence of combining independent variables (together) is toward the dependent one. Table 6 shows that the probability of F-statistic value is 0.0000 which is less than 0.05 which means that the combining independent variables (**EX**, **IM**, **INFR**) on this model are significantly affecting the Y_1 (**ER**). While Table 9 shows that the probability of F-statistic value is 0.0000 which is less than 0.05 means that the combining independent variables (**ER**, **EX**, **IM**, **INFR**) on this model are significantly affecting the Y_2 (**EG**).

The next test is the t-test, which is used to measure the importance of each independent variable in explaining the variation of the dependent variable. Table 6 shows that export activity (**EX**) in ASEAN-5 countries is not significantly influencing the exchange

rate as it has an at-value of 0.1454. Hence, the H_1 on this model has been rejected. While for Import activity (**IM**) and the caused inflation rate behind it (**INFR**) are significantly influence the exchange rates (**ER**) as they have t-test values of 0.0016 and 0.0000 respectively. The hypothesis is accepted when the p-value of the t-test is less than 0.05, indicating that the predictor factors are significant in influencing the dependent variable. As a result, the H2 and H3 hypotheses are fully accepted.

Moving to the second substructure, table 9 shows that export activity (**EX**) of ASEAN-5 countries and the caused inflation rate behind it (**INFR**) significantly influence the economic growth in a direct relationship. The p-value of the t-test of these two independent variables is 0.0128 and 0.0058 which are lower than 0.05. Therefore, the H_4 and H_6 are accepted. The exchange rates (**ER**) as the intervening variable are also significantly influencing economic growth in a direct relationship as it has a t-test probability value of 0.0023 (<0.05) and makes H_7 fully accepted. However, unlike the **EX**-variable, import activity (**IM**) of ASEAN-5 countries is not significantly influencing economic growth considering its p-value of the t-test that is bigger than 0.05 (p-value 0.1065) and it makes H_5 rejected. The conclusion of the t-test (partial significance test) result on this model can be depicted in the figure below:

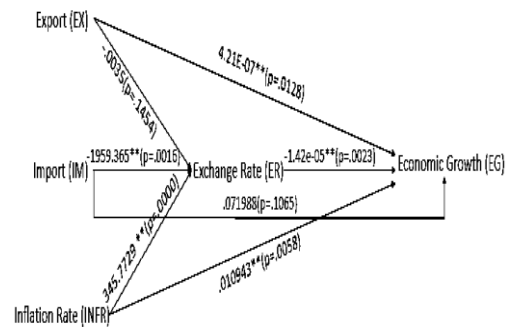


Figure 3. The Result of Partial Significant Test (t-test) of the Model

Because exchange rates (**ER**) has a significant influence on economic growth, they are used to legally mediate the relationship between independent and dependent variables. However, we need to ensure that the direct relationship between predictor variables on the intervening one is significant. As revealed by [23] that the mediation pattern will only occur if the direct relationship from independent (X) to the intervening (Z) variable as well as from intervening (Z) to the dependent variable (Y) are significant. While for the direct relationship from the independent variable (X) to the dependent variable (Y) doesn't have to be significant.

The result shows that variable **EX** doesn't has significant direct effect on **ER** (p-value $0.1454 > 0.05$) and instead it has significant direct effect on economic growth (p-value $0.0128 < 0.05$). It means that the export activity of ASEAN-5 countries can strongly influence economic growth without any mediating factors to help. Hence, the exchange rates cannot mediate the relationship between export activity and economic growth and it makes the $H_4(a)$ being rejected. Conversely, the import activity of ASEAN-5 countries has a significant direct effect on the exchange rates (p-value $0.0016 < 0.05$) but not for the direct effect on the economic growth (p-value 0.1065). For this case, the exchange rates are fully mediating the relationship between import activity on economic growth. Hence, $H_5(a)$ is accepted. While for the inflation rate (**INFR**) is partially mediated by the exchange rates toward economic growth as it has a direct significant effect on economic growth as well. This finding makes $H_6(a)$ fully accepted.

5. DISCUSSIONS AND IMPLICATIONS

ASEAN as a region and community has evolved to be the 5th largest economies in the world. It is also becoming one of the favorite trading partners for advanced countries as well as a favorite market for the manufacture and technological products. Especially for the ASEAN-5 countries, they have transformed to be the leading producer and exporter of automotive (Thailand), services (Singapore), manufacture (Malaysia), and creative industry (Indonesia) products for the world market. The development of international trade has rapidly improved especially after the establishment of ASEAN [26].

According to the result of this study, indeed that international trade of ASEAN-5 countries has significantly influenced economic growth in both negative and positive manner. Exports activity strongly influence the economic growth positively directly (coefficient: $4.21E-07$), and became one of the most important determinant factors of economic growth ($Y=C+I+G+(X-M)$). This finding is in line with the previous study revealed that export in goods and services by ASEAN countries, especially the "five" one will expand their international market and production capacity which in turn will lead to the increase of foreign direct investment, job creation, and finally GDP per capita [6], [10], [15], [18]. ASEAN commitment to always reduce trade barriers and improve investment conducive for the last 53 years has been successful to boost export activity and economic growth and it should be improved as fast as possible. However, in this study export activity doesn't have any significant influence on the exchange rates (coefficient: $-.003353$).

Theoretically, it's supposed to strongly influence the exchange rates positively. Yet, this study found that it's not significant. It could be explained by exogenous variables outside our model. It is very possible that export activities will not always have a significant positive effect on the exchange rate, because the dollars earned from trading transaction activities with international partners are kept in foreign banks, or used by business owners in the ASEAN-5 countries to pay their international obligations [30], [4], [6], [29]. To anticipate this concern, ASEAN-5 countries should arrange the agreement for their businessman to keep their dollars earned from international trade transactions inside the country for a certain period to be utilized then they can use it after.

The result also revealed that the imports activity has no significant direct relationship with economic growth instead, it influences economic growth significantly mediated by the exchange rates in a negative manner (coefficient: -1959.365). This finding has supported previous studies stating that imports activity will negatively influence the exchange rates due to the international transaction will make the dollars go outside the country and make the value of the domestic currency goes low [18], [31]. When the exchange rate is down, it will affect economic growth in the long term.

This study also found that inflation in ASEAN-5 countries has strongly affected economic growth in a negative way directly. It is also can influence economic growth by mediated by the exchange rate. Popular thought said that inflation is always negatively affecting the economy of a country and this study just strengthened the theory [6], [16], [32], [33]. Moderate and high inflation make the prices of many products in the market increase lowering the purchasing power of the people. At a certain level and period, the lower purchasing power makes the domestic consumption slow down which in turn will reduce aggregate supply and production capacity. In the end, it will lead to the decrease of aggregate demand for employment and economic growth [29], [34].

Surprisingly, this research found that inflation had a positive significant effect on exchange rates, but a negative significant effect on economic growth. The inverse finding of this study has been supported by other proofs as well. There is another theory stated that the exchange rate has an inverse connection to economic growth according to structural economists. This finding could be understood if we see the government's response to inflation. When inflation occurs, the government will respond by getting debt from an international financial institution such as IMF and World Bank, nor issuing state and private bonds to earn money.

The money from outside will strengthen the exchange rates. The country uses this money to increase production (by landing debts to producers) to enhance the number of products in the market so that inflation could be balanced. The money coming from outside in turn will increase the exchange rates. However, the impact of inflation remains negative effect on economic growth as the economy has experienced turbulence before the government balancing. This condition could also be understood as the input structure of production, particularly in emerging nations, is dependent on imported capital and intermediate products. Increased exchange rates make import production inputs more expensive, causing the production scale to slow down overall. Hence it has a negative impact on economic growth [4].

The negative effect of exchange rates toward economic growth signed that ASEAN-5 countries should make strategies to anticipate an inverse effect of the exchange rate. subsidies for imported production inputs and the provision of fiscal facilities for working capital from abroad are options that can be implemented. Furthermore, the government of ASEAN-5 countries shall maintain impressive international trade by creating exponential export growth to make sustainable economic growth.

6. CONCLUSIONS

The establishment of ASEAN allows member countries to accelerate their open trading activities around the world, especially among ASEAN members. This study has revealed that international trade has significantly influenced economic growth in both negative and positive manner. Exports activity strongly affect economic growth directly without any mediating pattern with any intervening variable. Imports, on the other hand, have a major negative impact on economic growth, which is mediated by exchange rates. While inflation significantly negatively affects economic growth but has a significant positive effect on exchange rates. Therefore, all of the hypotheses in this study are accepted, except for H_1 (direct effect EX to ER), H_5 (direct effect IM to EG), and $H_4(a)$ (indirect effect EX – ER – EG). This study is inseparable from several shortcomings that could be improved by future studies. First, considering the low value of R-square in both substructures (I and II), future researches can explore other potential determinant factors of economic growth such as FDI, Government expenditure, domestic consumption, etc. Second, this research didn't observe the long-term prediction of relationships among the variables. Future research can use a regression method that includes the lag of both the dependent and independent variables

simultaneously like ARDL (Autoregressive Distributed Lag).

AUTHORS' CONTRIBUTIONS

HARYANI, P. developed the beginning idea of the research framework, writing for the first until half-third chapter, and collected raw data. MAULANA, A. wrote for the third until fifth chapter, collected data, transformed data, played with the computation data running, and interpreted the data to provide deep discussion. AZAM, S.M.F. verified the analytical methods, encouraged and supervised the findings of this work. All authors contributed to the final manuscript and together discussed the results.

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