Jurnal Kebijakan Ekonomi dan Keuangan

International trade and economic growth in ASEAN

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Abstract

Purpose – *This study aims to analyze the effects of international trade represented by imports and exports in the ASEAN region.*

Methods – *This study uses import, export, labor, and FDI variables on GDP in 8 countries in ASEAN for the period 2000 – 2022 using a panel data regression approach.*

Findings – *The results of this study are that international trade has an impact on economic growth. The results specifically show that the negative effects of imports and positive exports contribute to GDP and labor has a positive effect on GDP.*

Implication – *This study recommends a clear international trade policy between countries, namely by simplifying trade restrictions and conditions between countries.*

Originality – *This study contributes to empirical studies of international trade, especially for cases in ASEAN.*

Abstrak

Tujuan – Penelitian ini bertujuan untuk menganalisis efek dari perdagangan internasional yang direpresentasikan oleh impor dan ekspor di wilayah ASEAN.

Metode – Penelitian ini menggunakan variabel impor, ekspor, labor, dan FDI terhadap GDP pada 8 negara di ASEAN untuk periode 2000 – 2022 menggunakan pendekatan regresi data panel.

Temuan – Hasil dari penelitian ini adalah bahwa international trade memili dampak terhadap pertumbuhan ekonomi. Hasil secara spesifik menunjukkan bahwa efek negatif impor dan positif ekspor berkontribusi terhadap GDP serta labor berpengaruh positif terhadap GDP.

Implikasi – Penelitian ini merekomendasikan adanya kebijakan perdagangan internasional yang jelas antar negara yaitu dengan mempermudah batasan dan syarat perdagangan antar negara.

Orisinalitas – Penelitian ini berkontribusi pada kajian empiris perdagangan internasional khususnya untuk kasus di ASEAN.

Introduction

International trade is an inseparable part of a country's economic activities. The role and contribution of economic interactions between countries can be done through trade activities that have an impact on improving the economic conditions of each country. According to (Rodriguez & Rodrik, 2000) explains that policies towards trade with other countries are important factors in

promoting economic growth and convergence in developing countries. The theoretical underpinnings of this research draw from various economic theories, including classical trade theory, neoclassical trade theory, and new trade theory. Classical trade theory, as exemplified by Adam Smith's theory of absolute advantage and David Ricardo's theory of comparative advantage, emphasizes the benefits of specialization and trade in enhancing economic efficiency and welfare. Neoclassical trade theory, building upon the Heckscher-Ohlin model, highlights the role of factor endowments in determining a country's comparative advantage and trade patterns. There are two important factors in economic growth (Makki & Somwaru, 2004) including FDI and Trade because FDI will encourage technological development through transfers from developed and developing countries, in addition, FDI becomes a stimulus for the development of domestic investment and facilitates the development of human capital. Meanwhile, international trade facilitates production to be more efficient because of the shift in products between countries so that they will have comparative advantages.

The Association of Southeast Asian Nations (ASEAN) has emerged as a dynamic economic region, experiencing significant growth and development in recent decades. International trade has played a pivotal role in this transformation, facilitating the exchange of goods, services, and capital among member states and with the rest of the world. Understanding the complex relationship between international trade and economic growth in ASEAN is crucial for policymakers and researchers seeking to optimize economic policies and promote sustainable development. Empirical research on the relationship between international trade and economic growth has yielded mixed results. While some studies have found a positive correlation between trade openness and economic growth, others have challenged this relationship, highlighting potential confounding factors and reverse causality. The complexities of this relationship are further exacerbated by the diverse economic structures, development levels, and policy environments of ASEAN member states. Moreover, the impact of international trade on economic growth in ASEAN is influenced by a range of factors, including trade policies, infrastructure development, institutional quality, and the global economic environment. Trade liberalization measures, such as tariff reductions and trade facilitation agreements, can promote trade and investment flows, leading to increased economic growth. However, the effectiveness of these policies depends on complementary reforms, such as infrastructure development and institutional strengthening, to address the underlying constraints to trade.

The research underlying the initial idea of the effects of international trade on economic growth is shown by several early studies such as (Rodriguez & Rodrik, 2000) which analyzes the effects of foreign trade policies on the economic growth of countries in the world. This study focuses on restrictions on trade between countries that will have implications for a country's economic growth. Another study conducted by (Makki & Somwaru, 2004) in developing countries empirically conducted a study to analyze the effects of FDI, Trade, and Economic Growth based on endogenous growth theory which concluded that FDI and trade contribute to advancing economic growth in developing countries.

Another study conducted (Jenkins & Katircioglu, 2010) tested the effects of financial development, international trade, and economic growth in Cyprus and concluded that conditions that were inconsistent with the theory that the export-led growth and import-led growth hypothesis were not proven in Cyprus. Research (Were, 2015) analyzed the effects of international trade on economic growth and investment between countries in the world. Empirical results show that there are different conditions of effects between international trade and economic growth, in general, the implications are positive for developed and developing countries but tend to be insignificant in least developed countries (LDCs), which largely include African countries. Research in Pakistan with time series data was conducted by (Gokmenoglu et al., 2015) to analyze the influence of international trade, financial development, and economic growth which concluded that there was an influence of international trade and financial development on economic growth in the long term.

Another study that examined the effects of international trade openness and economic growth between countries in the Gulf Cooperation Council (GCC) using the Pooled Mean Group (PMG) approach (Jouini, 2015) concluded that economic growth responded positively to the

effects of international trade openness both in the short and long term. Another study conducted by (Nguyen, 2020) in Vietnam which empirically tested the effect of FDI and exports and imports on economic growth using ordinary least square regression concluded that empirically FDI and exports had a positive and significant effect on economic growth while imports had no effect. In addition, a study conducted by (Hussain & Haque, 2016) Bangladesh on FDI, Trade, and Economic Growth using the Vector Error Correction Model time series approach concluded that trade and FDI have a significant influence on GDP per capita growth, so to support this, policies that promote economic growth need to be implemented through reducing barriers to trade and capital inflow. Furthermore, the global economic environment can significantly impact the effects of international trade on economic growth in ASEAN. The rise of protectionism, trade disputes, and global supply chain disruptions can pose challenges to regional trade and economic development. ASEAN member states must navigate these challenges by diversifying their export markets, fostering regional value chains, and strengthening their resilience to external shocks.

Research Methods

This study uses empirical data that analyzes the effects of international trade on economic growth in 8 countries in the Association of Southeast Asian Nations (ASEAN) for the period 2000 - 2022. In detail, the use of variables used in this study is shown in Table 1 which explains the definition of each variable.

Table 1. Definition of Variabel

Variable Dependent				
Variable	Symbol	Unit	Definition	Sources
Gross Domestic Product	GDP	U.S. dollars	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.	WDI World Bank
Variable Dependent				
Variable	Symbol	Unit	Definition	Sources
Import	IMP	U.S. dollars	Imports of goods and services represent the value of all goods and other market services from the rest of the world.	WDI World Bank
Export	EXP	U.S. dollars	Exports of goods and services represent the value of all goods and other market services provided to the rest of the world.	WDI World Bank
Total Labor Force	LABOR	People	People ages 15 and older who supply labor for producing goods and services during a specified period.	WDI World Bank
Foreign Direct Investment	FDI	U.S. dollars	Foreign direct investment refers to direct investment equity flows in the reporting economy.	WDI World Bank

The research model used in this study is a reference model to analyze the impact of international trade as indicated by Imports and Exports as well as labor and investment between countries in ASEAN in the period 2000 - 2022. The basic model of this study is shown in the following equation:

$$GDP_{it} = f(IMP_{it}, EXP_{it} LABOR_{it} FDI_{it}) \tag{1}$$

Based on the basic model above, an equation can be derived for estimating the model using the panel data model approach in the following equation:

$$LABOR_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 INF_{it} + \beta_3 WAGE_{it} + \beta_4 FDI_{it} + \varepsilon_{it} \qquad (2)$$

This study uses a panel data approach to carry out the estimation process which is carried out by estimating the model that has been formed with three approaches, namely Common Effect (CE), Random Effect (RE) and Fixed Effect (FE). The model selection process is carried out to obtain the best model that will be a reference for interpretation of the regression results. This process is carried out through 3 main tests, namely the Chow Test, the Lagrange Multiplier (LM) Test, and the Hausman Test.

Results and Discussion

The analysis process in this study was carried out and aimed to provide a basic analysis of the condition of the variables up to the estimation process which is the process to answer the research hypothesis that has been set in this study. This initial process is carried out by analyzing the condition of the data analyzed based on the descriptive conditions of the data. The next process carried out is to carry out regression estimation based on the established model so that it will obtain estimation results that represent the empirical conditions that occur between the Import, Export, Labor and FDI variables against GDP in countries in the ASEAN region. This process includes an analysis of the selection of models that determine the best model so that one best model is obtained to be interpreted.

Tabel 2. Descriptive Statistic

	GDP	IMP	EXP	LABOR	FDI
Mean	2.59E+11	1.42E+11	1.57E+11	33671769	1.25E+10
Median	2.26E+11	1.24E+11	1.28E+11	23466612	5.58E+09
Maximum	1.12E+12	6.05E+11	7.18E+11	1.38E+08	1.49E+11
Minimum	5.91E+09	1.94E+09	1.67E+09	151139.0	-4.95E+09
Std. Dev.	2.33E+11	1.32E+11	1.53E+11	37089468	2.25E+10
Skewness	1.479881	1.267347	1.454248	1.398074	3.571726
Kurtosis	5.697896	4.675816	5.267094	4.138274	17.49170
Observations	184	184	184	184	184

The initial analysis conducted in this study was to conduct a descriptive analysis of the data conditions, this was done to provide an overview of each variable. The condition of the data based on the descriptive condition of the data is shown in Table 2, where the results of all variables have stable conditions and can be further analyzed.

Table 3. Overall Estimation Results of Panel Data Model

Variable	Dependent Variable: GDP					
	Common Effect		Random Effect		Fixed Effect	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	-2.47E+10	0.0189	-2.63E+11	0.0000	-3.37E+11	0.0000
IMP	0.068517	0.8952	-0.028712	0.9059	-0.474155	0.0557
EXP	0.716911	0.1167	0.536295	0.0185	0.815602	0.0004
LABOR	5221.542	0.0000	13179.50	0.0000	15909.49	0.0000
FDI	-1.131055	0.0325	-0.097581	0.7068	0.011583	0.9646
R-squared	0.886098		0.885294		0.987074	
Adj. R-squared	0.883553		0.882731		0.986248	
F-statistic	348.1316		345.3786		1194.085	
Prob(F-statistic)	0.000000		0.000000		0.000000	

Table 3 represents the results of model estimation for all variables using the Common Effect, Random Effect, and Fixed Effect approaches in the panel data model. The results of the estimation for the Common Effect model generally show that the Import and Export variables do

not affect GDP, while the Labor and FDI variables have positive and negative effects on GDP for ASEAN countries. The results for the next estimation are the Random Effect model which generally shows a different condition, namely the absence of influence from Import and FDI, while the Export and Labor variables affect GDP. The results of the last estimation in the Fixed Effect model show a different condition, where the Export, Import, and Labor variables affect GDP, but the FDI variable has no effect on GDP for conditions in ASEAN countries.

Table 4. Panel Data Testing Output Results

Chow Test			
Effects Test	Statistic	d.f.	Prob
Cross-section F	191.955203	(7,172)	0.0000
Cross-section Chi-square	400.407777	7	0.0000
LM Test			
	Chibar2(01)		Prob > chibar2
Breusch and Pagan	0.000		1.000
Hausman Test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	Prob.
Cross-section random	132.632556	4	0.0000

The next process carried out in analyzing the panel data model is to test the model specifications shown in table 4 in order to obtain the best model to be interpreted in detail. The first model specification test carried out is the Chow test to choose between Common Effect and Fixed Effect, where the results of the Chow test show a Cross-section F value of 191.955203 with a probability of 0.000, thus concluding that the selected model is Fixed Effect. The next test is the LM test to choose between Common Effect and Random Effect, where the results of the LM Test show a Chibar value of 0.000 with a probability of 1.000, thus concluding that the selected model is Random Effect. The last test carried out is the Hausman Test to test between the Random Effect and Fixed Effect models, where the estimation results show a Chi-Sq Statistic value of 132.632556 with a probability of 0.0000, thus concluding that the best model selected is the Fixed Effect model.

Table 5. Fixed Effect Model Estimation Results

Variable	Dependent Variable: GDP			
	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.37E+11	1.42E+10	-23.76125	0.0000
IMP	-0.474155	0.246176	-1.926078	0.0557
EXP	0.815602	0.227861	3.579392	0.0004
LABOR	15909.49	479.2141	33.19912	0.0000
FDI	0.011583	0.260299	0.044498	0.9646
R-squared	0.987074		F-statistic	1194.085
Adj. R-squared	0.986248		Prob(F-statistic)	0.000000

The estimation results for the best model are shown in table 5 which represents the results of the fixed effect model. The focus of this study is how the conditions of international trade are represented by import and export variables, where the results of this fixed effect model show that for the imported The estimation results for the best model are shown in table 5 which represents the results of the fixed effect model. The focus of this study is how the conditions of international trade are represented by import and export variables, where the results of this fixed effect model show that for the import variable, a coefficient value of -0.474155 is obtained with a probability of 0.0557 so that it can be concluded that the import variable is significant at the 10 percent alpha level. The results for this import variable show that its relationship with GDP is negative, this is because the greater the import carried out by a country will have an impact on the tendency for a country's industrialization to decline because most of the products in the country are the result of other countries so that it will have an impact on economic growth. This result is supported by

(Nguyen, 2020) in Vietnam which explains that it also paid much attention by Vietnam towards importing goods for production, improving technology, and meeting the consumption demands of the economy. Another study (Hussain & Haque, 2016) supports conditions for each country to implement trade promotion and foreign investment-friendly policies that have a crucial role in the long-term economic growth of the country.

The next representation result for international trade is exports which show a coefficient result of 0.815602 with a probability value of 0.004 so it can be concluded that the relationship between exports and GDP is positive and significant. These results show that one of the supporters of increasing a country's GDP is export activity which has an impact on increasing internal productivity and has implications for the development of industrialization of ASEAN countries that prepare industrialization well and systematically. These results are supported by research from (Nguyen, 2020) Vietnam which implements export-oriented international trade strategies has achieved many positive results such as contributing to increasing economic growth, improving the balance of payments, stabilizing the macro economy, controlling inflation, and creating an overall effect to increase production, employment, and foreign exchange reserves. Other research that supports this condition is (Jenkins & Katircioglu, 2010) which shows conditions in Cyprus that growth in imports of goods and services also stimulates an increase in exports of goods and services in Cyprus.

The labor variable shows a coefficient result of 15,909.49 with a probability value of 0.000 so it can be concluded that the relationship between labor and GDP is positive and significant. The role of labor in the economy can be analyzed from the contribution of productivity owned by individual workers. This contribution has an impact on the economic growth of a country. According to (Hondroyiannis & Papapetrou, 2001) one of the things that has implications for the relationship between labor and a country's GDP is the demographic change of a country that will affect the country's labor market. This condition is certainly a challenge for ASEAN countries that have different conditions of demographic change that will have implications for changes in the labor market of each country. One of the empirical pieces of evidence in ASEAN countries, namely Singapore, shows conditions based on research from (Hui & Hashmi, 2007) that the increase in demand for labor in the country is fully supported by workers from abroad which will have implications for permanent immigration which is then expected to increase labor productivity and have an impact on economic growth.

The results for the last variable in this study, namely FDI, obtained a coefficient result of 0.011583 with a probability value of 0.9646 so it can be concluded that the relationship between FDI and GDP has no effect. These results show a different condition from the theory that should provide implications for FDI on GDP in ASEAN countries. This result is theoretically different from previous studies which showed that FDI should have a positive impact on GDP. This is certainly a different finding condition from several findings conducted by (Hussain & Haque, 2016; Nguyen, 2020) which concluded that there was a positive effect of FDI on the country's economic growth. The same results were shown by research from (Abendin & Duan, 2021) in African countries which concluded that there was no effect of Capital and Labor on economic growth.

Conclusion and Implications

Based on the results of the estimation and discussion of the analysis of international trade and economic growth that has been carried out, it can be concluded that international trade represented by imports and exports has an impact that follows the theory that imports have a negative effect on economic growth while exports have a positive effect. This must be a concern for the government of each country in ASEAN to support increased trade interactions between countries at least within the scope of ASEAN and in a wider scope outside ASEAN. In addition, policies related to trade restrictions must be reduced and administrative processes that hinder the country's export performance must be part of the policies that must be carried out. The following results show that the effect of labor participation is an important part in supporting the economic growth of countries in ASEAN so this must be supported by the government through various policy schemes that directly impact the quality of the workforce or which in the long term will have

implications for labor productivity so that it will have a major impact on the economic growth of each country in ASEAN. A different thing is shown by FDI which has no impact on economic growth in ASEAN, where this needs to be noted by policymakers to evaluate the investment process or conditions because this may occur due to a mismatch between investment and programs carried out by the government.

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