

Article

The Role of Economic Integration Policies in Increasing Economic Growth in Selected Southeast Asian Countries

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Abstract: Southeast Asian countries have come together to form the Association of South-east Asian Nations (ASEAN), especially the formation of the ASEAN Economic Community (AEC) in 2015, which has united countries into an AEC economic bloc. The aims of the study are to assess the impact of integration policies and the role of the AEC on economic growth during the period 1970–2022. Using quantitative analysis methods through OLS, FEM, REM and long-term impact analysis through the ARDL panel, the research results show that a higher level in economic integration is consistent with a higher level of economic growth. Specifically, FDI has a positive impact on economic growth in the short term and the positive impact is stronger in the long term. At the same time, trade openness has a negative impact on growth in the short term, but this effect is no longer in the long term. The result affirms the very positive nature of the AEC for international integration and contribution to economic growth in the Southeast Asian region. Finally, this study has some policy implications for Southeast Asian countries in the context of implementing economic integration policies and setting growth targets.

Keywords: integration; economic growth; Southeast Asia; trade; FDI



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1. Introduction

Economic growth is the increase in annual economic output, which reflects the increase in social wealth and the level of economic development. To become a developed country, maintaining high economic growth is an important goal to improve the productivity and efficiency of the economy. Therefore, socio-economic development in countries is a goal pursued by governments. Indeed, when the economy grows, it helps increase per capita income, improve access to education, health care and human development indicators. Therefore, maintaining high economic growth is a goal set on the agenda of many countries.

Neoclassical theory argued that international trade benefits countries because the ability to expand markets allows for the exchange of goods and services, expanding trade (Bazán Navarro et al., 2024). Further, Bazán Navarro et al. (2024) also argued that international trade encourages specialization in the production of efficient goods and services and exports to less efficient places, and this process improves production and uses resources more efficiently. Indeed, economic development requires economies to invest and trade with each other. Each economy always has its own competitive advantage, and therefore, they always need to supplement investment and trade from other countries—where they have higher competitive advantages. The rapid globalization process makes countries more dependent on each other, that is, if a country exports one item, it can export another based on that country's competitive advantage. To achieve that, the role of economic integration becomes important and has a positive impact on economic growth and development. It is important to note

that economic integration makes it easier to connect domestic and foreign investment and trade activities, especially economic integration associated with the expansion of free trade agreements and agreements that make the economic ties closer than ever.

Southeast Asia is located in the southern part of Asia on the world's busiest sea route connecting East Asia and the rest of the world. With its favorable geographical location, Southeast Asian countries have many advantages in attracting investment and trade within the bloc and with other countries outside the bloc (Macdonald, 2019; Poh & Ghosh, 2024). In particular, Southeast Asian countries have also formed the Association of Southeast Asian Nations (ASEAN) as a forum to connect economies in investment, trade, cultural exchange and thereby strengthen the relationship between member countries. It can be said that thanks to ASEAN, countries have become more open in their economic integration policies and have brought ASEAN countries closer together in many economic and political activities. Furthermore, the ASEAN Economic Community (AEC) was officially established in 2015 with high commitments to build ASEAN into a production, trade and investment bloc, creating a common market for the region with a population of over 600 million people and a total GDP of over USD 2000 billion and equivalent to a large economy in the world with a high level of competitiveness (Ishikawa, 2021). In the spirit of the AEC, the AEC allows free movement of investment capital, goods, services, investment and skilled labor. Indeed, the establishment of the AEC is able to lead to a reduction in import and service taxes from member countries to 0% in all economic sectors, and businesses in the AEC are treated fairly with regard to local businesses (Macdonald, 2019; Ishikawa, 2021). Therefore, the AEC is truly a region with a comprehensive level of connectivity, creating a strong driving force for economic development among member countries.

Integration policy is associated with the process of opening up the economy and welcoming FDI flows (Gunby et al., 2017; Zeeshan et al., 2022; Triatmanto et al., 2023; Ganić, 2024). Research on the impact of integration policy on economic growth has been conducted by a number of authors. Specifically, studies on specific countries have been conducted by Erkişi (2018), Bazán Navarro et al. (2024), Srdelić and Dávila-Fernández (2024). Specifically, FDI has no impact on growth but trade has an impact on growth (Erkişi, 2018); FDI has an impact on growth but the level of impact decreases with the size of the economy (Gunby et al., 2017). Bazán Navarro et al. (2024) argued that international integration increases the two-way relationship between trade openness and growth. For transition countries, economic integration brings more benefits as integration improves R&D and human capital accumulation while attracting foreign investment and international trade to growth (Srdelić & Dávila-Fernández, 2024). Furthermore, regional and global studies have shown the impact of integration policies on economic growth. Muhammad and Khan (2019) conducted a study in the Asian region and argued that FDI inflows play an important role in Asian economic growth because they can promote technology transfer and productivity, consistent with Triatmanto et al. (2023), who studied the ASEAN region, or Banday et al. (2021) studying BRICS, who found that FDI and trade openness have a positive impact on long-term economic growth, but the impact of openness is quite weak and not really clear.

The aims of the paper are to investigate the impact of economic integration on economic growth in the light of economic integration. In fact, the study has inherited the above studies and developed the study thanks to the following new points. Firstly, this study is conducted in selected Southeast Asian countries and this region has a rapid economic development level and a close-knit community between countries in terms of investment, trade and economy; this makes Southeast Asia relatively different from other economic regions with a looser level of cohesion. Southeast Asia has formed the ASEAN Economic Community since 2015 based on high commitments to build ASEAN into a production, trade and investment bloc, and skilled labor mobility. At the same time, the level of unity

of the AEC is higher than that of other regions such as Latin America and the Caribbean. Secondly, the level of integration in the Southeast Asian region has become closer since the establishment of the AEC in 2015, and previous studies have not yet assessed the role of AEC formation and its impact on economic growth.

The novelties of the paper are follows. [Triatmanto et al. \(2023\)](#) have conducted research in ASEAN; they have only confirmed that FDI has a positive impact on growth. Thirdly, this study assessed the short-term and long-term impacts to clarify the long-term impact of integration policies on economic growth in the ASEAN region, and this assessment is the basis for considering the role of AEC in the economies of Southeast Asian countries, thereby helping to improve the effectiveness of economic integration and the AEC in the future. Fourthly, previous studies have only stopped at assessing economic integration through FDI ([Gunby et al., 2017](#); [Erkişi, 2018](#); [Muhammad & Khan, 2019](#)) or through trade openness ([Bazán Navarro et al., 2024](#)), while economic integration is associated with the process of opening the economy to foreign countries, and this process improves FDI and at the same time international trade. Finally, economic and trade activities in the Southeast Asian region seem to be concentrated in a group of countries in ASEAN6 (typically Vietnam, Thailand, Philippines, Indonesia, Malaysia and Singapore), while countries such as Myanmar, Laos, Cambodia or Timor Leste have a very small economic scale and the rate of commercialization and foreign investment attraction accounts for a very small proportion in the region ([ASEANSTATS, 2024](#)). Therefore, this study focuses on the group of ASEAN6 countries, which are typical representatives in the Southeast Asian region.

The research questions should be stated as follows:

R1: Does economic integration have a positive and significant impact on economic growth?

The contribution of the paper is as follows. FDI has a positive impact on economic growth in the short term and the positive impact is stronger in the long term. This result confirms the very positive impact of FDI on economic growth in selected ASEAN countries in the long term. At the same time, trade openness has a negative impact on growth in the short term, but this effect is no longer in the long term. This result shows that ASEAN countries need to have solutions to implement appropriate economic integration policies, harmonizing growth targets and development targets to maximize benefits for the economy. It is evident that the result affirms the very positive nature of the AEC for international integration and contribution to economic growth in the Southeast Asian region.

Apart from the above introduction, the rest of the study is as follows. The next section discusses previous studies, followed by data collection and research methodology, and finally, the study discusses the results and draws general conclusions.

2. Literature Review

Economic growth is an increase in gross domestic product (also known as GDP) or gross national product (also known as GNP), or economic growth can be through an increase in per capita income ([Triatmanto et al., 2023](#)). Promoting high economic growth is a goal pursued by countries on the path to prosperity. There are many factors that affect growth, which can come from increasing capital or capital efficiency, from using human resources effectively with the required quantity and quality, from technological factors, or from international economic integration policies. Indeed, economic integration policies make countries more closely linked together and develop based on complementing each other's advantages with national comparative advantages.

[Stiglitz and Yusuf \(2001\)](#) in their work "East Asia Miracle" argued that integration policies based on export orientation and import liberalization have an impact on growth, creating miraculous development in East Asian countries. Integration policy is associated

with the process of opening up the economy and welcoming FDI inflows (Ganić, 2024; Triatmanto et al., 2023). Zeeshan et al. (2022) argued that there are two reasons that require a country to achieve economic growth goals: creating jobs for its people and attracting investment capital flows. According to Ganić (2024), foreign direct investment is associated with technological innovation and is a driving force for economic growth, and this is confirmed in the case of EU-12 countries. Indeed, technological innovation is an important component of economic growth that has an impact on improving the competitiveness of the country. In addition, businesses are facing pressure to develop technological efficiency and improve production efficiency to maintain competitiveness in the global market; technological innovation is becoming increasingly important to maintain growth and development. Therefore, the government always has incentives to encourage the participation of FDI capital flows because this capital flow has the ability to provide additional technology, management capacity, marketing and talent, thereby changing domestic production capacity and economic growth. Gao (2005), Li and Liu (2005) argued that there is an endogenous relationship between FDI and economic growth. In fact, FDI not only creates economic growth but also indirectly promotes it through interactions with technology and human capital, thereby promoting growth. Borensztein et al. (1998) argued that FDI contributes to growth when high technology absorptive capacity is always available in the host country. Liu et al. (2009) indicated that there is a relationship between exports, imports, FDI and economic growth, thereby affirming that integration policy has an impact on growth.

Economic integration can come from implementing policies or project programs and thus connecting economies that are linked in economic and political activities. The Belt and Road Initiative (BRI) is one of them to realize the global monetary ambition proposed by China in the fall of 2013. China promotes provincial-level integration between China and Asian, African and European countries through upgrading frameworks and institutional linkages. Zaman et al. (2021) argued that the BRI has succeeded in creating a network with common interests that is capable of connecting 64 countries and 4.4 billion people, corresponding to 30% of global GDP. Moreover, economic integration policies entail FDI and trade openness as factors that bring about sustainable economic growth. Zaman et al. (2021) found that FDI has a significant positive impact on economic growth, while trade openness has a negative impact. Specifically, China's outward FDI promoted economic growth in countries, while trade openness has an insignificant impact because most developing countries need to invest in industry and encourage export-led growth.

There have been a number of studies that are linked to certain economic regions, such as the study by Triatmanto et al. (2023) in the ASEAN region or the study by Bandy et al. (2021) in the BRICS countries, or Santos and Bittencourt (2024) in Latin American and Caribbean countries. These regions have close relationships with each other based on many similarities in economics, culture, politics and economic integration, which makes countries in the same group implement integration policies that are mutually linked in investment, trade, consumption, and labor mobility. However, the research results showed that the impact of economic integration on growth is relatively different and depends on the implementation effectiveness of integration policies and the economic and social foundations of each country. Specifically, Triatmanto et al. (2023) argued that improving the welfare of the people is the way to establish an economically rich society. Therefore, the ASEAN region pursues a growth policy that helps the country reach prosperity, in which the integration policy encourages international capital flows as an additional source of finance for growth. The study used a panel vector autoregression (PVAR) model for the period from 2000 to 2020 in four countries, for example, Indonesia, Thailand, Vietnam and the Philippines. Triatmanto et al. (2023) argued that foreign direct investment has a significant

positive relationship with GDP; however, if foreign resources are financed through debt channels, it has a negative impact on economic growth. The study also suggested that ASEAN countries should identify appropriate integration policies to increase the efficiency of using foreign direct investment flows to meet growth requirements.

Sharing the same view, [Banday et al. \(2021\)](#) argued that globalization entails the integration of economies through international trade and capital transfers, promoting global economic growth. Indeed, FDI acts as a means of transferring innovation, increasing domestic investment, and improving the quality of human resources. At the same time, increased exports encourage increased output due to economies of scale. Previous studies have shown that FDI and trade have a positive impact on economic growth, but the extent of the impact may vary depending on the implementation of integration policies and domestic socio-economic conditions. In a case study of BRICS countries, [Banday et al. \(2021\)](#) found that FDI and trade openness have a positive impact on long-term economic growth, and a bidirectional relationship from FDI to growth may exist. The impact of trade openness on growth is quite weak, but the impact of trade openness on FDI and FDI on growth is more obvious, so it can be seen that trade itself has a close relationship with foreign direct investment and thereby promotes economic growth. Regarding another possibility, [Hornstein \(2024\)](#) indicated that FDI may represent an expansion in domestic capital, which could increase GDP growth through investment and consumption.

Unlike the study of [Triatmanto et al. \(2023\)](#) in the ASEAN region or the study of [Banday et al. \(2021\)](#) in the BRICS countries, the study of [Santos and Bittencourt \(2024\)](#) suggested that Latin American and Caribbean countries do not have income convergence among countries in the region, but there is, however, a positive and significant impact of trade policy on growth, and this result is not consistent among countries within the bloc. Regarding another possibility, [Santos and Bittencourt \(2024\)](#) argued that the current development trend has significantly increased economic relations between countries through bilateral or multilateral agreements. In the process of economic integration, countries are heavily dependent on goods produced in other countries and as inputs for domestic production. At the same time, the benefits of trade openness translate into better performance and thus faster growth in the long run.

There are also some studies conducted in a large regional scope, especially the Asian study by [Muhammad and Khan \(2019\)](#) to find out the relationship of integration policy to growth on a broader scale, and the authors argued that emerging and developing economies are increasingly attracting FDI, in which most companies invest in countries with a similar level of development as their own country or other developed and emerging economies. [Muhammad and Khan \(2019\)](#) argued that FDI inflows and FDI outflows play an important role in Asian economic growth, so Asian countries should encourage foreign investors to come to their countries and invest in other countries to promote technology transfer and improve the productivity of the economy to promote growth. Regarding another possibility, [Li and Liu \(2005\)](#) and [Borensztein et al. \(1998\)](#) also argued that economic integration increases the positive impact of FDI on growth through the mechanism of technology transfer and interaction; the quality of human resources improves productivity in the investment recipient country.

In addition, there are a number of other studies assessing the impact of integration policy on economic growth conducted in individual countries such as [Erkişi \(2018\)](#) in Turkey, [Gunby et al. \(2017\)](#) in China, or [Bazán Navarro et al. \(2024\)](#) in Peru and the research results are also quite diverse. Specifically, [Erkişi \(2018\)](#) argued that economic growth is explained by GDP at 75%, imports at 15%, foreign direct investment at 5% and exports at 5%. However, the impact of FDI and exports on economic growth is not statistically significant, while GDP and imports are statistically significant in the first two quarters

but have no significant impact in the following quarters. In other words, imports and GDP have an impact on growth in the short term while there is no significant impact of FDI and exports on economic growth in Türkiye. [Gunby et al. \(2017\)](#) asserted that firm-level productivity spillovers are a key factor in the process of FDI stimulating economic growth and there is evidence of productivity spillovers associated with FDI in China. In the case of Peru, [Bazán Navarro et al. \(2024\)](#) showed that there is a bidirectional causal relationship between international trade and growth. Specifically, expanding international trade through economic integration policies has boosted growth in Peru in the short and long term, while economic growth in turn has created additional incentives for production in the economy and thus promoted investment flows and expanded international trade.

For transition economies, especially transition under political turmoil, the economy in transition economies has been severely affected, leading to a sharp decline in production and supply chains with economic instability, as in the case of Croatia. [Srdelić and Dávila-Fernández \(2024\)](#) argued that the economic transition process through integration policy reforms to attract FDI and promote private sector development has made the country approach the market. The economic integration process began with becoming a member of the World Trade Organization (WTO) in 2000 and the Central European Free Trade Agreement (CEFTA) in 2003 and especially becoming a member of the European Union (EU). Economic integration has shown that Croatia is able to catch up with the living standards of the EU through maintaining high economic growth. [Srdelić and Dávila-Fernández \(2024\)](#) emphasized that Croatia's growth is deeply related to the dynamics of international trade. Economic integration leads to the attraction of international investment and trade, which improves R&D and human capital accumulation, and this makes it possible for the country to achieve a balanced growth path.

Thus, previous studies show that integration policy has an impact on economic growth, but the results of this impact are relatively different depending on the case of each country and region. Specifically, FDI has no impact on economic growth, but imports have a positive impact on growth ([Erkişi, 2018](#)), or FDI has an impact on growth but the impact is decreasing ([Gunby et al., 2017](#)), or there is a bidirectional relationship between international trade and growth ([Bazán Navarro et al., 2024](#)). In the case of transition countries, economic integration entails the process of attracting investment capital and international trade, which improves R&D and human capital accumulation, and this helps the country to achieve the growth path ([Srdelić & Dávila-Fernández, 2024](#)).

Furthermore, regional and global studies showed that the impact of integration policies on economic growth is relatively diverse. It is evident that FDI inflows play an important role in Asian economic growth because they can promote technology transfer and productivity ([Muhammad & Khan, 2019](#)), and the result is in line with [Triatmanto et al. \(2023\)](#) in the ASEAN region or [Banday et al. \(2021\)](#) in the BRICS countries, for which it was found that FDI and trade openness have a positive impact on long-term economic growth, but the impact of openness is quite weak and not really clear. Similar results are also confirmed by [Rassekh \(2007\)](#) when indicating that international trade benefits developing countries more than highly developed countries.

It can be indicated that the relationship between economic integration and economic growth has not been conducted in the Southeast Asian region. In fact, [Singh \(2010\)](#) argued that the integration policy brings trade and growth benefits; in particular, integration into the WTO helps countries to participate in a common trade organization on a global scale. Basically, economic integration policy is associated with attracting international capital flows ([Li & Liu, 2005](#); [Triatmanto et al., 2023](#); [Ganić, 2024](#)) and international trade ([Zaman et al., 2021](#); [Banday et al., 2021](#); [Santos & Bittencourt, 2024](#)). As mentioned above, the Southeast Asian region has a high level of economic integration with its large trade

openness and high FDI flows. In addition, [Triatmanto et al. \(2023\)](#), [Rao et al. \(2023\)](#) only assessed the impact of FDI on growth; there was no more comprehensive assessment of integration policy on growth, especially in the situation where the ASEAN Economic Community (AEC) was officially established in 2015, creating a highly unified bloc on the basis of freer movement of investment and labor, which is the reason to reaffirm the necessity of conducting this study.

It is evident that economic integration policies are consistent with institutions, government quality, and financial regulations, which could enhance economic growth. Indeed, [Stiglitz and Yusuf \(2001\)](#) argued that political policies and institutions determine the ability of economies to integrate. In particular, the governance capacity of a country has an impact on the implementation of integration policies; a country is able to create a favorable business environment, reduce taxes, fees, and informal costs, and thereby promote the integration process faster. At the same time, integration is closely linked to trade and attracting foreign investment flows ([Zeeshan et al., 2022](#); [Ganić, 2024](#)), and therefore, national financial regulations have the ability to strongly support the attraction of investment flows.

3. Data and Methodology

3.1. Data

This study uses data from selected Southeast Asian countries, which are large economies, have a fairly high level of trade and capital flows and are the main pillars of the regional economy. The selected countries include Vietnam, Thailand, Philippines, Indonesia, Malaysia and Singapore. The dataset is collected from the World Bank (accessed at <https://databank.worldbank.org/source/world-development-indicators>, accessed on 1 November 2024) or the International Monetary Fund (accessed at <https://betadata.imf.org/>, accessed on 1 November 2024); some missing data can be collected from the statistical offices of each country published annually. The data collection period is from 1970 to 2022. More details are as follows.

Per capita income, FDI, and trade openness are collected from the World Bank and the International Monetary Fund. And the number of foreign tourists and renewable energy consumption are collected from the World Bank.

In order to solve the regression, this paper uses Stata version 16.

3.2. Methodology

Economic integration reflects the level of economic integration of each country. Economic integration is associated with investment integration, attracting direct and indirect investment flows, trade, labor mobility or other open economic activities. In this study, economic integration is measured through attracting FDI flows or through trade of the economy, as discussed by studies of [Gao \(2005\)](#), [Li and Liu \(2005\)](#), [Liu et al. \(2009\)](#), [Zaman et al. \(2021\)](#), [Banday et al. \(2021\)](#), [Triatmanto et al. \(2023\)](#), [Ganić \(2024\)](#). Based on previous research, the regression equation is as follows:

Equation (1):

$$GDP_{it} = \beta_0 + \beta_1 FDI_{it} + \beta_2 TO_{it} + \beta_3 TOU_{it} + \beta_4 REN_{it} + \varepsilon_{it} \quad (1)$$

To assess the impact of integration policy, the study uses the following regression equations: Equation (2):

$$GDP_{it} = \beta_0 + \beta_1 FDI_{it} + \beta'_1 FDI_{it} INTE + \beta_2 TO_{it} + \beta_3 TOU_{it} + \beta_4 REN_{it} + \varepsilon_{it} \quad (2)$$

Equation (3):

$$GDP_{it} = \beta_0 + \beta_1 FDI_{it} + \beta_2 TO_{it} + \beta'_2 TO_{it} * INTE + \beta_3 TOU_{it} + \beta_4 REN_{it} + \varepsilon_{it} \quad (3)$$

in which GDP is the dependent variable, taken as per capita income, measuring the economic growth factor. The variable GDP follows [Liu et al. \(2009\)](#) and [Zaman et al. \(2021\)](#). The dataset is collected from the World Bank or the International Monetary Fund.

FDI is the independent variable, taken as %GDP, and TO is the independent variable, taken as export and import compared to GDP, representing the integration policy. The variable FDI follows [Zaman et al. \(2021\)](#) and [Triatmanto et al. \(2023\)](#) while the variable TO follows [Zaman et al. \(2021\)](#). The dataset is collected from the World Bank or the International Monetary Fund.

INTE is a dummy variable, taking the value 0 for the year 2015 onwards, otherwise taking the value 0.

In addition, tourism development and renewable energy consumption also have an impact on economic growth, as discussed through the studies of [C.-V. Nguyen \(2024\)](#), [T. T. Nguyen and Nguyen \(2021\)](#), more specifically as follows:

TOU is the independent variable, measured by the number of foreign tourists. The variable TOU follows [C.-V. Nguyen \(2024\)](#). The dataset is collected from the World Bank.

REN is the independent variable, measuring renewable energy consumption in total energy demand. The variable TOU follows [T. T. Nguyen and Nguyen \(2021\)](#). The dataset is collected from the World Bank.

All variables are shown in the following Table 1.

Table 1. Variables.

Variable	Explanation	Source
GDP	Per capita income	Liu et al. (2009) , Zaman et al. (2021)
FDI	FDI as %GDP	Zaman et al. (2021) , Triatmanto et al. (2023)
TO	Export and import compared to GDP	Zaman et al. (2021)
TOU	The number of foreign tourists	C.-V. Nguyen (2024)
REN	Renewable energy consumption in total energy demand	T. T. Nguyen and Nguyen (2021)

Regarding the methodology, all steps can be explained as follows.

First, we use the common quantitative analysis methods on panel data, which are ordinary least squares, fixed effects and random effects. According to [V. C. Nguyen and Huynh \(2023\)](#), these analytical methods are suitable when performing regression on panel data. To make the choice of the most suitable regression method, the study uses tests. Specifically, the study conducts F and Hausman tests to determine the best regression model among OLS, FEM and REM. The F test is used to choose between OLS and FEM, while the Hausman test is used to choose between FEM and REM. Then, the study conducts an assessment of autocorrelation and heteroscedasticity; if there are defects, FGLS regression is used to correct these defects.

In addition, the VIF is checked in the model to confirm that there is no possibility of multicollinearity when VIF is less than 10 ([V. C. Nguyen & Huynh, 2023](#)). The paper also checks for structural breaks. A structural break is an unexpected change over time in the parameters in the model, which can lead to forecasting errors ([Mhd Ruslan & Mokhtar, 2020](#)).

Second, to assess the long-term impact, the study conducts a test for the stationarity of the data series and co-integration. Then, panel ARDL regression is performed for panel data. The results of this study both check the robustness of the research results and evaluate the long-term impact. According to [T. T. Nguyen and Nguyen \(2021\)](#), this method is suitable for cases where the research period is long and takes into account the stationarity

of the data series, and can ensure the uniformity of the analysis results (Sek et al., 2023). According to Roodman (2009), GMM estimators are increasingly popular and designed for situations of small T, large N, meaning few periods, and many individuals. Therefore, in this case, the problem of endogeneity is not an issue.

Third, there may be a moderating effect of the integration process on growth opportunities. In particular, integration into the ASEAN economic community has brought many development spaces for countries. Therefore, the study needs to evaluate the moderating effect of the integration process on growth; at the same time, this result shows the robustness of the estimated model. The study performed a regression according to the following equation:

Equation (4):

$$GDP_{it} = \beta_0 + \beta_1 FDI_{it} + \beta'_1 FDI_{it} INTE + \beta_2 TO_{it} + \beta_3 TOU_{it} + \beta_4 REN_{it} + \beta_5 M2_{it} + \varepsilon_{it} \quad (4)$$

Equation (5):

$$GDP_{it} = \beta_0 + \beta_1 FDI_{it} + \beta_2 TO_{it} + \beta'_2 TO_{it} * INTE + \beta_3 TOU_{it} + \beta_4 REN_{it} + \beta_5 M2_{it} + \varepsilon_{it} \quad (5)$$

4. Regression Results

Table 2 describes the statistical results describing the variables used in the regression model. Regarding GDP per capita, it can be seen that the average value is USD 6,627,394/person/year; however, there is a large difference in GDP per capita in the research group. Regarding FDI, this index reaches 4.484814% of GDP and is quite a large value, which reflects the level of success of countries in the Southeast Asian region in attracting FDI capital flows. In particular, Singapore is the country that is assessed to have the leading ability to attract FDI in the region when the ability to attract accounts for 32.69% of its GDP. Regarding trade openness, this index reaches a high average of about 136.1094% of GDP. In particular, Singapore can reach 437.3267% of GDP.

Table 2. Descriptive statistics.

Variable	Obs.	Mean	Std. Dev.	Min	Max
GDP	303	6627.394	13,574.28	78.86576	88428.7
FDI	303	4.484814	5.876291	−2.75744	32.69117
TO	291	136.1094	106.8045	18.95049	437.3267
TOU	155	1.04×10^7	8,263,575	1,351,000	3.99×10^7
REN	192	24.77391	19.4583	0.19	75.91

Table 3 is the result of correlation matrix analysis of independent and dependent variables. The results of correlation analysis show that the independent variables have a low correlation level so there is no possibility of multicollinearity. However, the variable related to economic integration (INTE) should be regressed separately to limit the effect of multicollinearity.

Table 4 checks the VIF in the model and indicates that when performing regression of two variables FDI and FDI*INTE, there is a possibility of multicollinearity; the cases for TO and TO*INTE do not have this phenomenon.

Table 5 showed that FEM is better than OLS, and FEM is better than REM; therefore, FEM is the best selection. In addition, the model meets the heteroskedasticity and autocorrelation requirements. Hence, FGLS should be performed. The results indicate that the regression coefficients of FDI and TOU are positive and statistically significant, while the regression coefficients of TO and REN are negative and statistically significant.

Table 3. Correlation matrix.

	GDP	FDI	TO	TOU	REN	TO*INTE	FDI*INTE
GDP	1.0000						
FDI	0.5186	1.0000					
TO	0.6938	0.7013	1.0000				
TOU	0.6243	0.1088	0.3395	1.0000			
REN	−0.8984	−0.6082	−0.8382	−0.4262	1.0000		
TO*INTE	0.4496	0.3737	0.5840	0.3130	−0.4794	1.0000	
FDI*INTE	0.5250	0.9569	0.6816	0.1478	−0.5880	0.5699	1.0000

Table 4. VIF analysis.

Variable	VIF	1/VIF	Variable	VIF	1/VIF
FDI	13.22	0.075621	TO	4.84	0.206703
FDIINTE	12.19	0.082057	REN	3.70	0.270221
TO	4.20	0.237926	FDI	2.07	0.482796
REN	3.70	0.270348	TRADEINTE	1.56	0.640701
TOU	1.31	0.760599	TOU	1.31	0.760737
Mean VIF	6.93		Mean VIF	2.70	

Table 5. Regression results 1 (Equation (1)).

Variable	OLS	FEM	REM	FGLS
FDI	0.1308 *** (0.008)	0.0425 (0.323)	0.0553 (0.195)	0.1308 *** (0.006)
TO	−0.5013 *** (0.000)	−0.4003 ** (0.016)	−0.3341 ** (0.033)	−0.5013 *** (0.000)
TOU	0.4887 *** (0.000)	0.7634 *** (0.000)	0.7273 *** (0.000)	0.4887 *** (0.000)
REN	−0.7400 *** (0.000)	−0.3010 ** (0.016)	−0.4624 *** (0.000)	−0.7400 *** (0.000)
_cons	1.9824 *** (0.000)	−0.5252 (0.367)	−0.2599 (0.650)	1.9824 *** (0.000)
Prob > F	0.000	0.000	0.000	0.000
Adj R-squared	0.8906	0.6777	0.6729	
F test	F (5, 140) = 23.71 Prob > F = 0.0000			
Hausman test	chi2(4) = 9.11 Prob > chi2 = 0.0585			
Modified Wald test for groupwise heteroskedasticity	chi2 (6) = 35.64 Prob > chi2 = 0.0000			
Wooldridge test for autocorrelation	F (1, 5) = 99.254 Prob > F = 0.0002			

Note: ***, **, are significance levels corresponding to 1%, and 5%.

Table 6 showed that FEM is better than OLS, and FEM is better than REM; therefore, FEM is the best selection. In addition, the model meets the heteroskedasticity and autocorrelation requirements. Hence, FGLS should be performed. Further, the regression coefficients

of TO and REN are negative and statistically significant; the regression coefficient of TOU is positive and statistically significant. At the same time, the interaction effect of FDI and INTE shows that the regression coefficient is positive and statistically significant.

Table 6. Regression results 2 (Equation (2)).

Variable	OLS	FEM	REM	FGLS
FDI*INTE	0.1427 *** (0.002)	0.0555 (0.159)	0.0640 (0.103)	0.1427 *** (0.001)
TO	−0.5141 *** (0.000)	−0.4127 ** (0.013)	−0.3460 ** (0.027)	−0.5141 *** (0.000)
TOU	0.4811 *** (0.000)	0.7579 *** (0.000)	0.7198 *** (0.000)	0.4811 *** (0.000)
REN	−0.7424 *** (0.000)	−0.2986 ** (0.017)	−0.4650 *** (0.000)	−0.7424 *** (0.000)
_cons	2.0614*** (0.000)	−0.4695 (0.418)	0.1837 (0.747)	2.0614 *** (0.000)
Prob > F	0.000	0.000	0.000	0.000
Adj R-squared	0.8924	0.6800	0.6750	
F test	F (5, 140) = 23.23 Prob > F = 0.0000			
Hausman test	chi2(4) = 10.72 Prob > chi2 = 0.0299			
Modified Wald test for groupwise heteroskedasticity	chi2 (6) = 29.26 Prob > chi2 = 0.0001			
Wooldridge test for autocorrelation	F (1, 5) = 96.727 Prob > F = 0.0002			

Note: ***, ** are significance levels corresponding to 1%, and 5%.

Table 7 showed FEM is better than OLS, and FEM is better than REM; therefore, FEM is the best selection. In addition, the model meets the heteroskedasticity and autocorrelation requirements. Hence, FGLS should be performed. In addition, the regression coefficients of FDI and TOU are positive and statistically significant; the regression coefficient of REN is negative and statistically significant. At the same time, the interaction effect of TO and INTE shows that the regression coefficient is negative and insignificant.

Table 7. Regression results 3 (Equation (3)).

Variable	OLS	FEM	REM	FGLS
FDI	0.1321 *** (0.007)	0.0429 (0.320)	0.1321 *** (0.006)	0.1321 *** (0.005)
TO	−0.5456 *** (0.000)	−0.4266 ** (0.014)	−0.5456 *** (0.000)	−0.5456 *** (0.000)
TO*INTE	0.0391 (0.314)	0.0153 (0.609)	0.0391 (0.313)	0.0391 (0.303)
TOU	0.4811 *** (0.000)	0.7581 *** (0.000)	0.4811 *** (0.000)	0.4811 *** (0.000)

Table 7. Cont.

Variable	OLS	FEM	REM	FGLS
REN	−0.7427 *** (0.000)	−0.2973 ** (0.018)	−0.7247 *** (0.000)	−0.7247 *** (0.000)
_cons	2.0508 *** (0.000)	−0.4681 (0.430)	2.0508 *** (0.000))	2.0508 *** (0.000)
Prob > F	0.000	0.000	0.000	0.000
Adj R-squared	0.8906	0.6783	0.6106	
F test	F (5, 139) = 23.27 Prob > F = 0.0000			
Hausman test	chi2(5) = 112.68 Prob > chi2 = 0.0000			
Modified Wald test for groupwise heteroskedasticity	chi2 (6) = 30.54 Prob > chi2 = 0.0005			
Wooldridge test for autocorrelation	F (1, 5) = 98.501 Prob > F = 0.0002			

Note: ***, ** are significance levels corresponding to 1%, and 5%.

Table 8 shows that there is no structural break in the model.

Table 8. The Chow structural break test.

Test	
Chow test	F (1, 295) = 25.98 Prob > F = 0.1008

The panel unit root test based on IPS test (Im, Pesaran and Shin) (Table 9) shows that all variables are stationary at either I(0) or I(1), thus ensuring the stationarity of the data series. Table 10 shows that there is a possibility of long-run effects between variables in the estimated model based on the IPS test.

Table 9. Panel unit root test.

Variable	Order of Integration	IPS Test	IPS Test with Trend	Hypothesis
GDP	I (0)	−1.4673 *	−2.2549 **	Rejected
	I (1)	−7.9025 ***	−8.3231 ***	Rejected
FDI	I (0)	−5.7308 ***	−7.2249 ***	Rejected
	I (1)	−12.3560 ***	−12.3476 ***	Rejected
TO	I (0)	−1.7525 **	−1.1409	Not Rejected
	I (1)	−9.4414 ***	−9.7108 ***	Rejected
FDI*INTE	I (0)	−6.3930 ***	−6.4914 ***	Rejected
	I (1)	−12.1425 ***	−12.1562 ***	Rejected
TO*INTE	I (0)	−1.0180	−0.8346	Not Rejected
	I (1)	−10.0515 ***	−10.0824 ***	Rejected

Note: ***, **, * are significance levels corresponding to 1%, 5% and 10%.

Table 11 shows the long-term relationship among variables. In addition, the value of ECM ranges from 6.96% to 9.26%; therefore, the ECM helps to understand the speed at which the variables adjust to the long-term equilibrium relationship.

Table 10. Panel cointegration test.

Model	Method	Cointegration Test	Statistics	Hypothesis
Equation (1)	Pedroni	Modified Phillips–Perron t	2.2507 **	Rejected
		Phillips–Perron t	1.3640 *	Rejected
		Augmented Dickey–Fuller t	1.0544	Not Rejected
	Kao	Modified Dickey–Fuller t	0.2787	Not Rejected
		Dickey–Fuller t	2.1192 **	Rejected
		Augmented Dickey–Fuller t	2.1710 **	Rejected
		Unadjusted modified Dickey–Fuller t	−0.2609	Not Rejected
		Unadjusted Dickey–Fuller t	1.6789	Not Rejected
	Pedroni	Modified Phillips–Perron t	2.2272 **	Rejected
		Phillips–Perron t	1.3214 *	Rejected
		Augmented Dickey–Fuller t	1.1404	Not Rejected
Equation (2)	Kao	Modified Dickey–Fuller t	0.1713	Not Rejected
		Dickey–Fuller t	2.0265 **	Rejected
		Augmented Dickey–Fuller t	2.0782 **	Rejected
		Unadjusted modified Dickey–Fuller t	−0.2609	Not Rejected
		Unadjusted Dickey–Fuller t	1.6789 **	Rejected
Equation (3)	Pedroni	Modified Phillips–Perron t	2.8343 ***	Rejected
		Phillips–Perron t	2.2460 **	Rejected
		Augmented Dickey–Fuller t	1.7164 **	Rejected
	Kao	Modified Dickey–Fuller t	−0.4157	Not Rejected
		Dickey–Fuller t	1.5637 *	Rejected
		Augmented Dickey–Fuller t	1.6143 *	Rejected
		Unadjusted modified Dickey–Fuller t	−0.2609	Not Rejected
		Unadjusted Dickey–Fuller t	1.6789 **	Rejected

Note: ***, **, * are significance levels corresponding to 1%, 5% and 10%.

Table 11. Long-run relationship.

Variable	ARDL (1)	ARDL (2)	ARDL (3)
FDI	0.2090 ** (0.005)		0.4698 *** (0.005)
FDI*INTE		0.36831 ** (0.030)	
TO	−0.9249 ** (0.017)	1.7299 ** (0.030)	0.7263 (0.237)
TO*INTE			0.9393 *** (0.0014)
TOU	0.5960 *** (0.001)	1.2958 *** (0.000)	1.2432 *** (0.000)
REN	−0.1278 (0.361)	0.1463 (0.557)	0.0401 (0.868)
ECM	−0.0884 (0.273)	−0.0696 ** (0.042)	−0.0926 (0.027) **
_cons	0.1360 (0.306)	−0.6434 ** (0.049)	−0.8178** (0.033)

Note: ***, ** are significance levels corresponding to 1%, and 5%.

Table 11 also shows that the regression coefficients of FDI, TOU are positive and statistically significant, while the interaction effect of TO or FDI with INTE is positive and statistically significant. However, the regression coefficient of REN is not statistically significant. The results are also checked by the robustness test, as shown in Tables 12 and 13. The robustness check results showed that the results obtained are reliable.

Table 12. Robustness test for the long-run relationship.

Variable	FGLS (1)	FGLS (2)	FGLS (3)	ARDL (1)
FDI	0.1829 *** (0.007)		0.1828 *** (0.000)	0.2483 *** (0.000)
FDI*INTE		0.1745 *** (0.000)		
TO	−0.8122 *** (0.000)	−0.7779 *** (0.000)	−0.8386 *** (0.000)	−1.0184 *** (0.001)
TO*INTE			0.0289 (0.432)	
TOU	0.3667 *** (0.000)	0.3659 *** (0.000)	0.3635 *** (0.000)	0.6240 *** (0.000)
REN	−0.7699 *** (0.000)	−0.7715 *** (0.018)	−0.7714 *** (0.000)	−0.0693 *** (0.560)
M2	0.1989 *** (0.001)	0.1786 *** (0.002)	0.1949 *** (0.000)	0.2879 ** (0.029)
_cons	2.5981 *** (0.000)	2.6314 *** (0.000)	2.6362 *** (0.000)	0.0043 (0.897)
Prob > F	0.000	0.000	0.000	0.000

Note: ***, ** are significance levels corresponding to 1%, and 5%.

Table 13. Robustness test for the institutional quality.

Variable	OLS	FEM	REM	FGLS
FDI	0.1325 ** (0.011)	0.0551 (0.233)	0.1325 * (0.010)	0.1325 * (0.008)
TO	−0.4612 *** (0.000)	−0.5829 *** (0.006)	−0.4612 *** (0.000)	−0.4612 *** (0.000)
TOU	0.4658 *** (0.000)	0.7098 *** (0.000)	0.4658 *** (0.000)	0.4658 *** (0.000)
REN	−0.4685 *** (0.000)	−0.2784 * (0.062)	−0.4685 *** (0.000)	−0.4685 *** (0.000)
IP	0.0095 *** (0.003)	0.0007 (0.812)	0.0095 *** (0.003)	0.0095 *** (0.002)
_cons	1.2998 ** (0.017)	0.1726 (0.837)	1.2998 ** (0.016)	1.2998 ** (0.014)
Prob > F	0.000	0.000	0.000	0.000
Adj R-squared	0.8950	0.5885	0.8950	
F test	F (5, 119) = 18.12 Prob > F = 0.0000			
Hausman test	chi2(5) = 21.41 Prob > chi2 = 0.0007			
Modified Wald test for groupwise heteroskedasticity	chi2 (6) = 17.45 Prob > chi2 = 0.0078			
Wooldridge test for autocorrelation	F (1, 5) = 451.760 Prob > F = 0.0000			

Note: ***, **, * are significance levels corresponding to 1%, 5% and 10%. IP denotes institutional quality.

5. Discussion

It can be seen that integration policy can have different impacts on economic growth and it depends on specific situations. It is evident that a higher level in economic integration is consistent with a higher level of economic growth. Specifically, if a country implements appropriate integration policy, it is likely to increase the positive impact of FDI on economic growth, meaning that attracting foreign direct investment is likely to create more growth momentum; moreover, this positive impact becomes larger in the long run. Indeed, appropriate economic integration policy can attract FDI inflows in the short run and have a positive impact on economic growth. In the early period, FDI enterprises have spillovers of productivity and knowledge to domestic enterprises through upstream spillovers and downstream spillovers, so FDI capital flows have a greater impact on the economies of ASEAN countries in the long run.

It is evident that this research result is similar to the study of [Muhammad and Khan \(2019\)](#) in Asia or the study of [Banday et al. \(2021\)](#) in BRICS, which shows that FDI has a positive impact on short-term economic growth, and this effect is stronger in the long term. It can be explained that the policy of attracting FDI to create resources for domestic economic development is correct, thereby helping countries in the region have more resources for economic development, narrow the development gap with developed economies and succeed on the path to prosperity. However, the novelty of this study has confirmed that the impact of FDI on economic growth is larger in the long run and is different from the studies of [Muhammad and Khan \(2019\)](#), [Banday et al. \(2021\)](#), [Triatmanto et al. \(2023\)](#). It is evident that FDI is a source of additional capital and creates short-term growth; however, FDI capital increases technological interaction between FDI enterprises and domestic enterprises and thereby improves productivity for domestic enterprises and long-term growth in the economy ([Arif-Ur-Rahman & Inaba, 2021](#)). In addition, the regression coefficient of IP is positive and statistically significant, meaning that institutional quality has a positive impact on economic growth in ASEAN. This result also explains that the economic integration process in countries in the region is associated with the process of opening up to foreign direct investment flows. In the early period, FDI flows were associated with import substitution policies, and when production capacity increased, ASEAN countries gradually shifted to export-oriented FDI attraction policies as suggested by [Stiglitz and Yusuf \(2001\)](#). Therefore, improving the business environment, reducing informal costs, corruption, or generally improving institutional quality increases investment efficiency and contributes to economic growth.

Specifically, the research results showed that international trade has a negative impact on economic growth in the short run; however, this effect is insignificant in the long run. This result is consistent with [Hausmann et al. \(2007\)](#), who indicated that trade openness may impact economic growth negatively when specializing in the production of low-quality products. For the case of Southeast Asia, this area has a large market with a population of over 675 million, and is considered to be able to become the cradle of technological and industrial development in the near future. However, trade openness in this region may strongly depend on the production of low-quality products, and the production is gradually changing to high-quality products at a low speed. Moreover, except for Singapore, the remaining countries in Southeast Asia have a low level of development, so these countries often choose policies that prioritize attracting FDI inflows such as import substitution policies to create jobs in the economy and at the same time ensure goods for the domestic market ([Irwin, 2021](#); [Mustafin et al., 2022](#)). Therefore, trade openness has not had a positive impact on growth in the short term, and this result is consistent with [Rigobon and Rodrik \(2005\)](#). [Rigobon and Rodrik \(2005\)](#) argued that trade openness can have a negative impact on growth, especially when the effectiveness of the integration process is closely linked to

the quality of legal policies and the institutional environment. Another similar result was found by [Vlastou \(2010\)](#) in 34 countries in Africa, where the economies are in the group of developing countries and have similar economic relations and integration as Southeast Asia. The study found that international trade has a negative impact on growth. However, the positive impact between trade and growth in the long term is typically confirmed by studies such as [Banday et al. \(2021\)](#) in BRICS. However, the study confirmed that this impact is relatively weak. Regarding another possibility, [Keho \(2017\)](#), [Esaku \(2021\)](#) indicated that if the economy implements an integration and opening policy, attracting FDI helps the country accumulate capital, technology and at the same time improve international trade, and there are more domestic enterprises participating in the global value chain, creating a trade expansion effect and increasing contribution to growth in the long term.

The research results also showed that tourism development has a positive impact on growth and this effect is maintained in the long term in Southeast Asian countries. This result reflected the correct policy in attracting tourism in Southeast Asian countries and maintaining this policy has created high economic growth potential in the region. However, the research results indicated that renewable energy consumption has not brought about a positive effect on growth; this result explained the economic development model that is too dependent on fossil energy sources because many countries such as Singapore, Malaysia have almost no renewable energy sources, and Vietnam and Laos have a decreasing proportion of renewable energy in total energy demand ([T. T. Nguyen & Nguyen, 2021](#)). In fact, [T. T. Nguyen and Nguyen \(2021\)](#) indicated that the renewable energy consumption partly contributes to the energy consumption demand in ASEAN countries, especially Singapore, Malaysia, Brunei, which have very modest renewable energy sources. Laos is considered to have the largest renewable energy source in the region, but the contribution rate of this energy source is decreasing and it is difficult to meet the increasing energy consumption demand. Therefore, fossil energy sources still play an important role in the ability to meet the energy consumption demand and economic development in ASEAN.

From the above research results, some conclusions on policy implications are drawn as follows. First, Southeast Asian countries implementing AEC connectivity will be more substantial, creating more favorable conditions for labor movement, trade and investment. Second, Southeast Asian countries should improve trade policies towards increasing positive trade activities, and to create a favorable business environment to exploit benefits from the integration process and minimize risks and shocks that may negatively affect the domestic market. Third, Southeast Asian countries prioritize green and clean FDI capital flows and gradually replace FDI projects that can affect the environmental quality. Fourth, Southeast Asian countries need to have a renewable energy development policy to meet economic development requirements while gradually reducing dependence on fossil energy sources, and creating sustainable development.

6. Conclusions

Economic development is the goal that most countries pursue to put the country on the path to prosperity, especially the goal of economic growth. In the trend of globalization, economies are closely linked together through investment projects, trade, and labor movement, especially implementing integration policies that become important to help connect economic activities between countries. Based on research on the impact of economic integration and the role of implementing the AEC economic community in economic growth in the Southeast Asian region during the period 1970–2022, and by quantitative analysis using OLS, FEM, REM, and ARDL panel analysis to analyze the long-term impact, the research results showed that a higher level in economic integration is constant with a higher level of economic growth. Specifically, FDI has a positive impact on economic

growth in the short term and the positive impact is greater in the long term. Trade openness has a negative impact on growth in the short term, but in the long term, this impact is no longer found. The results also confirmed the favorable geographical location, economic and political conditions that have united the countries of the Southeast Asian region into the Association of Southeast Asian Nations, which became the ASEAN Economic Community in 2015, which has expanded the connectivity and complementarity between the economies in Southeast Asia in maintaining a cohesive and developing AEC economic bloc.

The study has some limitations and suggestions for future research. First, the study has not assessed the impact of other factors on growth such as interest rates, population size, inflation and other factors. Indeed, the process of international economic integration always has a balance between good and bad sides. The positive side is reflected in the ability to integrate, attracting investment, expanding trade, creating jobs and contributing to the national economy. The negative side is reflected in the risks and shocks that can affect the economy. Second, although the study was conducted from 1970 to present, some data are incomplete in Vietnam because this country has only really integrated since 1990, while Laos, Cambodia, Myanmar do not have enough data for analysis, and this affects the short-term and long-term analysis of the study. Third, the integration policy only stops at analyzing FDI capital flows and trade openness, but does not consider political integration, labor mobility and other factors, especially inflation and interest rates. Fourth, this study has not assessed the risks that may be encountered when implementing the integration policy. Indeed, integration can increase investment and trade in the host country, but may not increase the productivity of domestic enterprises, and therefore, production activities depend heavily on FDI enterprises. When FDI enterprises withdraw from the country, it can create a negative shock to economic growth. Similarly, when a trade war occurs, it can adversely affect exports and thereby affect investment attraction and growth. Finally, due to the data structure, this study does not use GMM regression to assess the endogeneity of the research model. However, expanding the number of analyzed countries N and reducing the number of research years T , GMM regression should be performed.

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