Asian Development Policy Review
ISSN(e): 2313-8343
ISSN(p): 2518-2544
DOI: 10.55493/5008.v13i1.5307
Vol. 13, No. 1, 112-126

URL: www.aessweb.com

The influence of foreign debt, foreign direct investment, exports, and labor on economic growth in ASEAN member countries

Murbanto Sinaga[1]
Angelia Yosefira Manalu[2+]
Rika Surianto Zalukhu[3]
Daniel Collyn[4]
Rapat Piter Sony Hutauruk[5]

[1,2]*Faculty of Economics and Business, Universitas Sumatera Utara, Indonesia.*
[1]*Email: sinagamurbanto@gmail.com*
[2]*Email: angeliayosefiramanalu@gmail.com*
[3,4,5]*Sekolah Tinggi Ilmu Ekonomi, Bina Karya Tebing Tinggi, Indonesia.*
[3]*Email: rikasuriantozalukhu@gmail.com*
[4]*Email: daniel.collyn@gmail.com*
[5]*Email: piter.pospos@gmail.com*

(+ Corresponding author)

Article History
Received: 22 October 2024
Revised: 31 December 2024
Accepted: 24 January 2025
Published: 20 February 2025

Keywords
ASEAN
Economic growth
Exports
Foreign debt
Foreign direct investment
Labor.

ABSTRACT

This study aims to analyze the impact of foreign debt, foreign direct investment (FDI), exports, and labor on economic growth measured by gross domestic product (GDP) in five ASEAN member countries, including Indonesia, Malaysia, Thailand, Vietnam, and the Philippines. This quantitative research uses panel data regression methods, combining time series and cross-sectional data from 2008 to 2018. The data were analyzed using the Common Effect Model (CEM) method. The results show that simultaneously, foreign debt, foreign direct investment, exports, and labor have a significant effect on economic growth. The analysis reveals that foreign debt and FDI have positive and significant impacts, exports have a significantly negative impact, and labor has a statistically insignificant impact on economic growth. The findings suggest that effective management of foreign debt, promotion of FDI, and investment in exports and labor development are key to sustaining economic growth in the ASEAN region. This study provides insights for policymakers to balance foreign debt with productive investments and to attract FDI to sectors that enhance export potential and labor productivity. It further provides references for ASEAN countries in managing debt, attracting investment, optimizing exports, and improving the quality of the workforce to achieve sustainable and inclusive economic growth.

Contribution/Originality: This study is the first in the literature to examine the effects of the four variables simultaneously on the economic growth of half of ASEAN countries. It brings to light the need to carefully manage the four variables in order to achieve stable economic growth.

1. INTRODUCTION

Economic growth is a critical indicator of a nation's economic performance and is often considered a primary goal for enhancing economic activity. Economic expansion is essential for emerging nations to catch up with economic progress and provide wealth for their citizens. Economic growth plays a role in increasing public welfare, creating new jobs, enhancing productivity, developing infrastructure, and increasing participation in globalization and economic cooperation. This study examines the role of several determinants of economic growth, including foreign debt, foreign direct investment, exports, and labor in the context of the ASEAN—Association of Southeast Asian

Nations countries. The goal is to ascertain how much these research variables have contributed to the economic growth of the chosen ASEAN members.

To assess economic growth, measuring a country's Gross Domestic Product (GDP) is crucial, as the GDP formula highlights the key factors that drive expansion (Trinh, 2017). A widely recognized metric, the GDP evaluates a nation's economic well-being and prosperity. The higher the GDP, the more prosperous that country is. Increased welfare raises consumption, which then positively affects economic growth (Machmud, 2016). At the individual level, higher per capita income provides better life opportunities in countries experiencing strong economic growth. With increased income, individuals can enjoy improved living conditions, while countries with higher living standards also tend to offer better education, healthcare, and services (KÖSE, 2020).

Since its founding in 1967, ASEAN has served as a platform for collaboration between Southeast Asian nations. Due to its rapid and consistent expansion over the past 20 years, ASEAN has drawn attention from all around the world. Because of its enormous population, good demographics, strong purchasing power, and wealth of natural resources, ASEAN is a desirable destination for investment. (Nguyen, 2020, 2022) expects this region to emerge as one of the world's five largest economies in the near future. Despite this, we still classify the majority of ASEAN member countries as developing nations. While income per capita in developed countries has reached its peak, many ASEAN member countries are still lagging, and their economic growth is slower. Citing the Ministry of Foreign Affairs of the Republic of Indonesia (Kementerian Luar Negeri Republik Indonesia--Kemlu, 2015), despite their economic and social progress, these countries still face challenges such as poverty, economic inequality, access to education and healthcare, and environmental issues.

The five ASEAN member countries considered in this study—Indonesia, Malaysia, Thailand, Vietnam, and the Philippines—have interesting economic features to study. They particularly have the potential to create consumer markets for business growth. Cities like Jakarta, Kuala Lumpur, Bangkok, Ho Chi Minh City, and Manila are significant business and financial hubs in Southeast Asia (Yana, Nizar, & Yulisma, 2021). These countries, in general, aim for stable and sustainable economic growth to improve public welfare, create jobs, and strengthen their position in the global arena. However, economic growth in these five ASEAN member countries has been inconsistent and has not yet been able to match the pace of growth seen in developed nations.

The data in Table 1 shows the GDP growth over the past five years for Indonesia, Malaysia, Thailand, Vietnam, and the Philippines. Thailand has the lowest average GDP over the last five years, while Vietnam has shown the best and most significant GDP growth compared to the other four countries. Over the last few years, Vietnam's economy has witnessed a rapid expansion, as indicated by its notable rise in GDP per capita, as the government has set an ambitious objective of achieving a certain high level of GDP per capita (Raihan, 2024).

Table 1. Gross domestic product of five ASEAN member countries for 2017-2021.

Year	Indonesia	Malaysia	Thailand	Vietnam	Philippines
2017	5.070	5.813	4.178	6.940	6.931
2018	5.174	4.843	4.223	7.465	6.341
2019	5.019	4.413	2.114	7.359	6.118
2020	-2.065	-5.457	-6.070	2.865	-9.518
2021	3.703	3.298	1.492	2.561	5.715
Average	3.380	2.582	1.188	5.438	3.117

Source: World bank.

According to Todaro (2000) economic growth is driven by three primary factors: capital accumulation, population growth, and advancements in technology. Capital accumulation and technological progress often manifest through foreign debt, making it a crucial factor in increasing a country's economic growth. Governments often need to make foreign debt to finance large infrastructure projects and cover budget deficits. In the context of ASEAN countries, most of which are developing economies and rely on external financing, foreign debt plays a

critical role in funding economic development. However, the use of foreign debt must be managed carefully, as it may entail financial risks if used for unproductive purposes or if not repaid on time (Kurnia, 2017).

In addition to foreign debt, foreign direct investment (FDI) is also an important driver of economic growth in a country, as it brings capital, technology, and advanced management into the country. Theoretically, countries with higher investment levels will grow faster compared to those with lower investment levels (Kurniasih, 2020). With increased FDI, the economy of a country will improve, and the welfare of its people will rise. FDI plays a significant role in developing countries by driving technological innovation, which in turn enhances organizational and managerial capabilities. This process encourages domestic investment, leading to increased productivity, greater efficiency in local industries, and the creation of new job opportunities (Reddy, Sasidharan, & Doytch, 2022). The role of FDI in promoting growth, particularly through capital infusion and technology transfer, is critical in ASEAN economies that are moving toward higher-value industries. At the same time, ASEAN member countries, with their large markets, are lucrative destinations for foreign investors.

Exports also play a crucial role in the economy since they allow countries to exploit their comparative advantages in producing certain goods and services. Not only expanding markets abroad through exports, but countries can also generate income in the form of foreign exchange, which can be used to finance imports, repay foreign debt, and increase foreign exchange reserves, all of which support economic growth (Wijayanto, 2022). Countries like Vietnam and Thailand have particularly demonstrated success in increasing their exports, which has positively impacted their national economic growth.

Labor plays an equally important role in economic growth, as it constitutes one of the key production factors in the economy. While labor encompasses all individuals who work or seek employment, economic growth is primarily driven by productive and skilled labor because they can produce goods and services more efficiently and innovatively. Therefore, not only the labor quantity but also labor quality plays a pivotal part in defining a country's economic growth (Sapthu, 2023). ASEAN member countries have large and diverse populations, which can be a strong human resource if managed properly. Investment in education and job training is crucial to ensure that the workforce can meet the demands of therapidly evolving market.

This study is important because the five ASEAN member countries included have strong economic ties, both bilaterally and multilaterally. Understanding the factors influencing economic growth in this region can enhance this tie. Furthermore, the results of this study can provide insights for policymakers in the five ASEAN member countries on managing their foreign debt, attracting more foreign investors, increasing exports, and optimizing the workforce to drive economic growth in their countries.

The key contributions of this study are threefold. Firstly, this research is the first to quantitatively analyze the impact of foreign debt, FDI, exports, and labor on economic growth, covering half of the ASEAN member countries. ASEAN countries have varying degrees of dependence on exports, FDI, and labor. For example, countries like Malaysia have developed export sectors and significant FDI flows, while countries like Vietnam and Indonesia rely more on cheap labor and foreign debt to drive infrastructure and industrial development. Examining the relationship between these variables could provide a clearer picture of the driving forces behind their economic growth, allowing them to devise effective growth strategies. Secondly, the empirical analysis utilizes panel data from five ASEAN member states covering the period from 2008 to 2018. This approach allows the study to account for significant regional variations in economic and social development over time. Not only that, but this study is the first to look at the effects of all four variables together, looking at the relationships between foreign debt, FDI, exports, and labor using real-world data. As a result, it offers a holistic perspective on the key factors influencing economic growth in the region.

2. LITERATURE REVIEW

In existing research, economists place great emphasis on foreign debt, foreign direct investment (FDI), exports,

and labor. Numerous studies have explored the significance of each of these four factors, as well as their interrelationships. To date, relevant research can be broadly categorized into several areas, with a substantial portion of the literature highlighting the pivotal role of FDI in driving economic growth.

The first category is research on the relationship between renewable energy consumption, economic growth, and foreign direct investment in China by Fan and Hao (2020). Although its focus is on renewable energy, the mechanisms by which FDI supports economic growth are relevant for ASEAN countries, particularly those heavily reliant on foreign investments in their manufacturing and technology sectors. Fan and Hao (2020) claim that China's ability to attract foreign investors has an impact on the energy crisis and environmental pollution, while at the same time, improving the current energy mix and increasing the renewable energy ratio could come at the expense of economic growth. They explore how renewable energy consumption, economic growth, and FDI interact, focusing on how these factors influence each other and contribute to sustainable development. They suggest that a balanced approach between economic growth and renewable energy development is essential for sustainable growth. Being the first study to investigate the relationship between those factors in China quantitatively, the study uses data up to 2015, which is less relevant given the rapid changes in the renewable energy sector in China. Moreover, the study misses several potential factors, such as technological advances.

Fan and Hao (2020) show that FDI has a positive long-term relationship with economic growth. This is also true for ASEAN, where FDI is an important driver of economic growth by supporting technological progress, building up labor capacity, and the growth of the export industry. When put in the ASEAN context, FDI directed toward green sectors and renewable energy can help countries manage environmental impacts arising from increased industrial activity and trade. ASEAN countries like Vietnam and Indonesia have been major destinations for FDI, leading to enhanced industrialization and infrastructure development.

Yet, within the framework of growth and sustainability in China, Udemba, Magazzino, and Bekun (2020) also investigate the relationship between FDI, economic growth, energy consumption, and environmental impact. Industrial activity in China has been identified as a major contributor to China's economic output, and FDI is one of the factors contributing to the expansion of the industrial sector. In order to find out how industrial and economic activities affect the environment, especially through FDI, Udemba et al. (2020) talk about the trade-offs between economic growth and environmental degradation because of higher energy use and pollution caused by FDI. Their study highlights the important role of FDI in driving economic growth by increasing production capacity. Nevertheless, they also suggest that China needs to urgently shift to low-carbon energy sources and adopt stricter environmental regulations for FDI as well as energy consumption to reduce CO_2 emissions while maintaining economic growth. While this contrasts with the broader focus on labor and exports in ASEAN countries we consider in this study, it highlights the need for policies that balance growth with sustainability, especially in regions where FDI plays a significant role in driving industrial development.

Kumari et al. (2023) conducted an empirical analysis of foreign direct investment, trade openness, and economic growth using data from the Indian economy. Their study utilizes annual time series data from 1985 to 2018 and applies the Johansen cointegration and vector autoregression (VAR) models. The Johansen cointegration results show that the three variables do not have a long-term relationship. However, the VAR Granger causality analysis shows that FDI leads to economic growth and that economic growth leads to FDI. This shows that there is a two-way causality. They particularly argue that over the last two decades, despite the increasing trend of FDI inflows in India due to its liberalized trade policies, FDI and trade openness have had limited impacts on the country's economic growth. They, therefore, suggest that policies that focus solely on increasing FDI and trade openness may not be sufficient to promote sustainable economic growth without considering other factors such as market size, human capital, and infrastructure. Using the latest datasets and providing an important first step for further empirical research, the study serves as a valuable reference for ASEAN countries. It emphasizes that while FDI can boost economic growth in a country, it is also crucial to observe its effectiveness and identify the sectors that have

benefited from the investment.

Evidently, related studies in the Southeast Asian context are rather sparse. Among the limited research in this area is that by Triatmanto, Bawono, and Wahyuni (2023) who focus specifically on the relationship between foreign debt, FDI, and human capital (measured through education and health variables) in four ASEAN countries, Indonesia, Thailand, Vietnam, and the Philippines, using the Panel Vector Auto Regression (PVAR) model. It reveals nuanced relationships—such as a negative correlation between GDP and FDI in some instances—and highlights the importance of human capital. In particular, they show that there is a strong negative relationship between GDP and FDI. This means that an increase in FDI does not always lead to higher economic growth in the four countries. On the other hand, GDP has a negative relationship with both total external debt and human capital. They further recommend that the countries studied improve the investment climate conducive to FDI, manage foreign debt and debt repayments wisely, and increase budget allocations for education and health. While Triatmanto et al. (2023) add to the little research that has been done on the relationships between these variables in ASEAN countries, they also have some flaws that our study aims to fix. In addition to covering fewer countries, focusing on variables like human capital provides a narrower empirical focus compared to our study, which provides a broader view of the influence on regional economics.

In a broader context of developing countries from 2000 to 2016, Saidi, Mani, Mefteh, Shahbaz, and Akhtar (2020) study the connection between transport, logistics, foreign direct investment (FDI), and economic growth. The research highlights the critical role of transport and logistics infrastructure in attracting FDI and driving economic growth, illustrating how these elements lower business costs and enhance regional connectivity. Motivated by the fierce competition among developing countries in attracting foreign direct investment (FDI), the study establishes a long-run positive and significant relationship between transport, logistics, FDI, and economic growth. It also investigates whether infrastructure can cooperate to increase economic growth by attracting FDI into a country. The study concludes that, especially in developing countries, the transport system is one of the main factors in improving the country's economic growth, as the smooth flow of transport and profitability are closely interlinked. The focus on developing countries is unarguably an important contribution of Saidi et al. (2020) in studying the dynamic relationship between foreign direct investment (FDI) and economic growth in developing countries. Our study complements Saidi et al. (2020) by using more recent data, and instead of accounting for logistics and transport, we highlight the roles of exports and labor in determining economic growth.

Asongu and Odhiambo (2020) explore how information and communication technology (ICT) influences the impact of foreign direct investment (FDI) on economic growth in 25 Sub-Saharan African countries between 1980 and 2014. The study uses a dynamic approach to look into the long-term effects of foreign direct investment (FDI) on economic growth through ICT. It does this by using GMM regression with a set of conditioning information that is consistent with the conditional modeling exercise. Their findings reveal that increased internet and mobile phone penetration significantly enhances FDI's ability to generate positive overall effects on all three aspects of economic growth. The authors argue that ICT is relevant in increasing the absorption capacity of foreign investment and, thus, the relevance of foreign investment in driving economic growth progress. The results, therefore, suggest that to obtain sustainable economic growth in developing countries, attracting FDI alone is not enough; they must also have adequate supporting infrastructure, such as ICT. They conclude that to maximize the growth impact of FDI, Sub-Saharan African countries should not only focus on ICT development alone but also implement supportive policies, such as human resource development. Their study reveals an intriguing influence of ICT on the FDI growth relationship, suggesting that policymakers should strive to implement policies that are beneficial to economic and human development. Although their approach is focused on sub-Saharan Africa, insights into how technological infrastructure can enhance FDI's impact on growth resonate with broader economic analyses in ASEAN countries. However, in the ASEAN context, additional factors like foreign debt, exports, and labor composition further shape the growth trajectory, which our study attempts to explore.

The reviewed literature consistently shows that foreign debt, FDI, exports, and labor are critical components that shape economic growth. People view FDI and exports as particularly positive drivers that contribute to technological advancement and increase productivity. However, there seems to be limited literature suggesting the potential risks of high foreign debt levels, which, therefore, need careful management to avoid hindering long-term growth prospects. Our study aims to bridge this gap, suggesting that future economic policies in ASEAN countries should prioritize a balanced approach that utilizes external resources and invests in domestic labor capabilities to maintain growth. Moreover, while many studies have examined the effect of foreign debt, FDI, exports, and labor individually on economic growth, our study is different in that it examines all four variables simultaneously in the same model. We can look at how these variables affect economic growth as a whole by analyzing them all at the same time. This gives us a fuller picture of how these variables affect the economies of ASEAN countries. The new findings in this paper could help us understand how these factors affect each other more deeply. They could also help us figure out what factors in ASEAN countries make the benefits of foreign debt, FDI, exports, and labor stronger or weaker.

3. RESEARCH METHODS

This study uses a quantitative approach, using economic growth as the dependent variable and four other economic indicators as the independent variables, including foreign debt, foreign direct investment (FDI), exports, and labor. GDP was chosen as the measure of economic growth because the literature and the traditional convention recognize it as the main indicator of a country's economic performance. This fits with the research goal of finding out how much the independent variables affect economic growth in these five ASEAN countries, which is measured by GDP.

Foreign debt was chosen as an independent variable because the five ASEAN countries that were studied are all developing countries that usually run deficit budgets because they often do not have enough savings to pay for their own growth (Baharumshah, Lau, & Fountas, 2003; Bon Nguyen, 2015; Marimuthu, Khan, & Bangash, 2021). They borrow money to cover their budget deficits. For this reason, we chose foreign debt as a variable to examine the contribution that it makes to economic growth in these five ASEAN countries. Foreign Direct Investment (FDI) was chosen because, for obvious reasons, FDI not only brings investment capital but also transfers technology and managerial skills, which ultimately accelerates economic growth in these five ASEAN countries. In other words, as the literature also acknowledges, FDI is pivotal in the economies of these countries and, hence, is worth examining further. Exports are chosen as one of the independent variables because the five ASEAN countries rely heavily on exports to boost their GDP due to the foreign exchange earned from exports (Ismail & Harjito, 2003; Lam, 2016; Pheang, Liu, Sirisrisakulchai, Chaiboonsri, & Sriboonchitta, 2017). The large population in these five ASEAN countries is self-explanatory in justifying why labor was chosen as one of the independent variables. A large population with high productivity significantly affects the increase in production capacity, which in turn boosts the GDP.

The type of data used is a combination of time series and cross-sectional data, referred to as panel data, obtained from sources such as reports published by the World Bank, ASEAN Exchanges, Our World in Data, and the International Monetary Fund (IMF). The panel data combines time series data with cross-sectional data from five ASEAN member countries, Indonesia, Malaysia, Thailand, Vietnam, and the Philippines, over eleven years, from 2008 to 2018. Apart from data availability reasons, the choice of these five countries is based on the consideration that these countries' economies are relatively larger than those of other ASEAN member countries and tend to attract a huge influx of FDI, especially Indonesia and Vietnam.

We chose to use time series data from 2008 to 2018 as the sample period because data on the dependent and independent variables for the regression model of these five ASEAN countries is fully available during this period. The year 2008 marks the period after the global financial crisis, and 2018 is a year before the onset of the COVID-19 pandemic; hence, avoiding anomalies arising from disruptions that may affect GDP through factors that are not

included in the analysis. Therefore, we consider this period important for analyzing how foreign debt and foreign direct investment (FDI) influenced economic growth in these five ASEAN countries with minimal global economic fluctuations. At the same time, the years 2008–2018 were years of big changes in the economies of ASEAN countries. These changes were caused by changes in the variables that were used to look at economic growth, such as more investment coming into the region and changes in trade patterns and labor markets.

This research employs panel data regression analysis as its methodology. We chose to use panel data because it offers the combined advantages of both time series and cross-sectional data types. This benefit allows for more detailed information and a better understanding of the data by seeing how the outcomes change over time based on changes in the explanatory variables. Panel data can also reduce bias caused by variables that were not observed and were not included in the model. It can also deal with issues of heterogeneity that cannot be measured directly. In summary, our reason for using panel data is that it results in a stronger and more informative regression model. Foreign debt, foreign direct investment, exports, and labor are the four independent variables that we can look at together to see how they affect economic growth (GDP) over time in the five ASEAN countries.

To test model specifications, the data went through several steps, including the Chow Test, the Hausman Test, and the Lagrange Multiplier (LM) Test. We ultimately chose the Common Effect Model (CEM) as the best estimation model. Following the steps, we conducted classical assumption testing, and in the final stage, we performed hypothesis testing, which included partial and simultaneous significance tests.

The panel data regression equation tested in this study is as follows:

$$Growth_{it} = \alpha_0 + \alpha_1 Debt_{it} + \alpha_2 FDI_{it} + \alpha_3 Export_{it} + \alpha_4 Labor_{it} + \epsilon_{it}$$

Subscripts $i = 1,2,\ldots n$, represent the number of cross-sectional individual countries, and $t = 1,2,\ldots T$, the time series dimension. The dependent variable, $Growth_{it}$, is the economic growth of country i in year t in percentage. The independent variables consist of $Debt_{it}$, FDI_{it}, $Export_{it}$, and $Labor_{it}$, respectively, representing the foreign debt, foreign direct investment, exports, and the labor of country i in year t. The first three independent variables are measured as a percentage of GDP, whereas the last one is measured as a total number. α are regression coefficients, and ϵ_{it} is the error term. The Panel Data Regression Analysis was performed with the assistance of the statistical program E-Views 10.

4. RESULTS AND DISCUSSION

4.1. Selection of Estimation Model

The estimation methodology in this study is mostly based on Widarjono (2009). There are three main models used for estimation in panel data regression analysis: the Fixed Effects Model (FEM), the Random Effects Model (REM), and the Pooled Ordinary Least Squares Model (Pooled OLS). For the selection of the estimation model, we performed three model specification tests: the Chow Test, the Hausman Test, and the Lagrange Multiplier (LM) Test. To determine the best model between the Common Effect Model and the Fixed Effect Model, the Chow Test was applied. If the probability value of the cross-section F is smaller than the significance level of $\alpha = 5\%$ (0.05), the Fixed Effect Model is used. Otherwise, if the probability value exceeds 0.05, the Common Effect Model is selected. The Hausman Test was used to determine the appropriate model between the Fixed Effect Model and the Random Effect Model. If the probability value of the cross-section random is smaller than the significance level of $\alpha = 5\%$, the Fixed Effect Model is used. Otherwise, if the probability value exceeds the significance level of 0.05, the Random Effect Model is employed. To select the best model between the Common Effect Model and the Random Effect Model, the LM Test was conducted. Based on the probability value of the cross-section Breusch-Pagan, the best model can be determined. If the probability value of the cross-section Breusch-Pagan is less than 0.05, the Random Effect Model is chosen. Conversely, if the value is greater than 0.05, the Common Effect Model is used.

Table 2's Chow Test results reveal a probability value of 0.556 for the cross-section Chi-square. This value is greater than 0.05, indicating that the Common Effect Model prevails over the Fixed Effect Model. The Hausman Test yielded a probability value of the cross-section random of 0.629, which is also greater than 0.05. This result suggests that the Random Effect Model is more suitable than the Fixed Effect Model for the analysis. Finally, the LM Test results indicated a probability value of 0.142 for the cross-section Breusch-Pagan, which is greater than 0.05, indicating the superiority of the Common Effect Model over the Random Effect Model. Therefore, the best model for this study is the Common Effect Model.

Table 2. Summary of the test results for selection of estimation model.

Chow test results		
Effects test	**Statistic**	**Prob.**
Cross-section F	0.646	0.632
Cross-section chi-square	3.010	0.556
Hausman test results		
Test summary	Chi-sq. statistic	Prob.
Cross-section random	2.587	0.629
Lagrange multiplier test results		
Test summary	Statistic	Prob.
Cross-section Breusch-Pagan	2.160	0.142

4.2. Classical Assumption Testing

Classical assumption tests are essential in research to ensure that the regression model produces estimators that are reliable, unbiased, and efficient. In this study, the classical assumption tests include normality tests, multicollinearity tests, and heteroscedasticity tests. The normality test is used to determine whether the data for both independent and dependent variables—or both—are normally distributed within the regression model.

The normality assumption ensures that the estimations of parameters and hypothesis testing are accurate and valid. Specifically, the statistical significance tests may not yield accurate results if the data or residuals lack normality, leading to incorrect conclusions. The probability value, if greater than 0.05, indicates a normal distribution of the data. However, if the probability value is less than 0.05, then the data is not normally distributed. We used the Jarque-Bera test in the study analysis to assess normality.

Based on Figure 1, it is known that the Jarque-Bera statistic value for the analysis is 3.643457 with a probability value of 0.161746, which is greater than alpha 0.05. Therefore, we can infer that the data in this study follows a normal distribution.

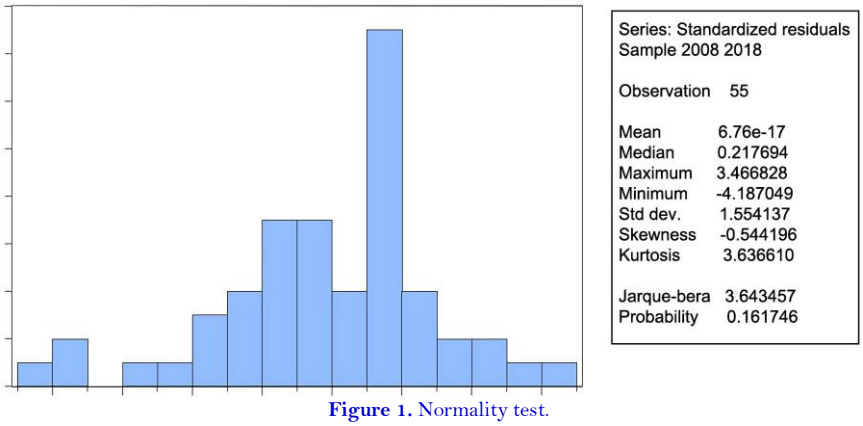

Figure 1. Normality test.

When two or more predictor variables in a multiple regression model are strongly linked, this is called multicollinearity or near-linear dependence. When no such linear relationship exists between predictor variables, they

are considered orthogonal (Jensen & Ramirez, 2013). It is crucial to avoid multicollinearity to maintain the accuracy and clarity of the regression model. A common rule for detecting multicollinearity is that if the correlation coefficient between independent variables exceeds 0.8, multicollinearity is present.

This study tested multicollinearity by examining the correlation between independent variables. Table 3 shows that the correlation results among independent variables are less than 0.8, indicating that there is no high correlation among the independent variables. So, none of the independent variables had correlations higher than 0.8. This means that the data did not have multicollinearity, and our model passed the test for multicollinearity.

Table 3. Summary of multicollinearity test results.

Variables	Foreign debt.	FDI	Exports	Labor
Foreign debt.	1.000	0.113	0.399	0.686
FDI	0.113	1.00	0.457	0.179
Exports	0.399	0.457	1.000	0.690
Labor	-0.686	-0.179	-0.690	1.000

Heteroskedasticity is when the error term or the variance of the dependent variable in a regression model is different for different groups or observations in a dataset (Greene, 2003). In other words, it indicates that the spread or variability of the errors fluctuates at different levels of the independent variables. The presence of heteroscedasticity can lead to inefficient estimates and invalid hypothesis tests. In this study, heteroscedasticity was tested using the White test by regressing the squared residual value with the independent variable.

The identification of heteroscedasticity is based on the probability value from this test, where a probability value greater than 0.05 indicates the absence of heteroscedasticity. Table 4 below presents the results of the heteroscedasticity test. The test reveals that the Chi-square probability for *Obs*R-squared* has a value of 0.203, which is greater than 0.05, indicating that there was no heteroscedasticity in the model. Therefore, it can be concluded that our model passed the heteroscedasticity test.

Table 4. Summary of heteroscedasticity test results.

F-statistic	1.399	Prob. F (14,40)	0.198
Obs*R-squared	18.081	Prob. Chi-square	0.203
Scaled explained ss	19.670	Prob. Chi-square	0.140

4.3. Hypothesis Testing

Hypothesis testing is used to determine whether independent variables have a significant influence on the dependent variable. The regression results are tested using the *t-test* at a confidence level of $\alpha = 5\%$. If the *t-statistic* value is greater than the critical *t-value*, the independent variable significantly affects the dependent variable. Conversely, if the *t-statistic* value is smaller than the critical *t-value*, the independent variable does not have a significant effect on the dependent variable. The *t-test* results for the hypothesis testing are provided in Table 5.

Table 5. Summary of analysis results with common effects model.

Variable	Regressioncoefficient	t-statistic	Prob.
Foreign debt	0.078	2.687	0.010***
FDI	0.675	4.720	0.000***
Exports	-0.042	-2.894	0.006***
Labor	0.000	0.977	0.333
F-statistic	8.598		0.000***
R-squared	0.407		
Adjusted R-squared	0.360		

Note: Dependent variable: Economic growth. *** denotes significance at the 5% level.

Based on the *t-test* results, the influence of each independent variable on the dependent variable can be explained as follows. The coefficient of external debt is 0.078 (rounded to three decimal places), with a *t-statistic* of 2.684, which is greater than the critical *t-value* of 2.006, and a probability value of 0.010, which is less than 0.05. This indicates that external debt has a positive and significant effect on economic growth. The FDI variable has a coefficient of 0.675 and a *t-statistic* of 4.720, which is greater than the critical *t-value*, and a probability value of 0.000. This shows that FDI has a positive and significant effect on economic growth. Meanwhile, the exports variable has a coefficient of -0.0423 with *t-statistic* and probability values of, respectively, -2.893 and 0.006, which implies that the exports variable has a negative and significant effect on the economic growth variable. The labor variable has a statistically insignificant effect on the economic growth variable, as shown by the nil coefficient and the *t-statistic* value of 0.977, which is less than the critical *t* of 2.006, as well as the probability value of 0.333, which is larger than 0.05.

The *F-statistic* probability value is 0.000, which is less than the significance level of 0.05. This indicates that external debt, FDI, exports, and labor force simultaneously influence the economic growth variable in the five ASEAN member countries. This is confirmed by the coefficient of determination, or the adjusted R-squared value, of 0.360, or 36.01%, while the remaining percentage is explained by other variables not included in this study.

5. DISCUSSION

5.1. Effect of Foreign Debt on Economic Growth

Foreign debt is a loan obtained by the government, public institutions, or companies from foreign creditors. It includes various forms of financing, such as bilateral, multilateral, and commercial loans. Foreign debt is often used to finance large infrastructure projects that cannot be immediately funded from domestic revenues. Infrastructure development, such as roads, bridges, ports, and electrical grids, enhances economic efficiency and productivity. Funds from foreign debt can also be used to finance investments in strategic sectors and to adopt new technologies that increase production capacity and international competitiveness. Additionally, foreign debt can help stabilize the macroeconomy by providing sufficient foreign exchange reserves to maintain exchange rates and manage economic crises.

The regression coefficient for the foreign debt variable shows a positive value, and the probability value is less than 0.05, indicating that foreign debt has a positive significant effect on economic growth. This means that an increase in foreign debt is associated with an increase in Gross Domestic Product (GDP), suggesting that foreign debt consistently affects economic growth in the five ASEAN member countries such that when these countries take on more foreign debt, their GDP tends to increase.

A study by Dawood, Biqiong, Al-Asfour, and Nilofar (2021) yields similar results, demonstrating that total external debt has a significant and positive impact on economic growth. However, when they look at public and private external debt separately, the effect model, FGLS (Feasible Generalized Least Squares), and DKSE estimators all show that the two types of debt hurt economic growth in the countries that were studied. This suggests that foreign debt, if well-managed, can be an important tool for driving economic development and improving public welfare. However, countries must ensure that they use the debt productively and that their economic policies support long-term stability.

Reflecting on this finding, the governments of the five ASEAN countries need to manage their external debt prudently, credibly, and accountably. We should allocate external debt to finance productive sectors, prioritize spending, and develop infrastructure. The governments of the five ASEAN countries can also take on more foreign debt, especially soft loans with low interest rates, long repayment terms, and grace periods. They can further keep the external debt structure healthy by maintaining the Debt Service Ratio (DSR) and the ratio of external debt to GDP at levels that can be maintained. For countries whose DSR has exceeded 20 percent, which is considered the safe threshold, such as Indonesia, measures to reduce the external debt burden can be taken by increasing the

country's revenue and spending efficiency, focusing on increasing FDI, diversifying the economy, renegotiating debt, improving financial management, and strengthening the currency and trade balance.

5.2. Effect of Foreign Direct Investment on Economic Growth

The study results indicate that an increase in FDI tends to be followed by an increase in economic growth in the five ASEAN countries. Among the independent variables, FDI appears to have the strongest impact on economic growth, as indicated by its significance level. The regression coefficient of 0.675 suggests that, on average, for every percentage point increase in FDI as a share of GDP, a country's economic growth improves by 67.5 percent. This occurs because FDI can create new jobs, both directly through the opening of new factories and offices and indirectly through increased demand for local products and services. Additionally, FDI can provide technological advancements to a country because of foreign capital investment, which is usually accompanied by technology transfer.

Investment is a key component of aggregate spending, meaning that a rise in investment leads to higher aggregate and national income. This study confirms that foreign direct investment (FDI) has a positive effect on economic growth. It shows that higher FDI inflows have a real and statistically significant effect on the economic growth of five ASEAN member countries. This suggests that FDI plays a crucial role in driving economic growth in the region, with its positive effects being consistently evident across these nations.

Although a few previous studies show that the relationship between foreign direct investment and economic growth could be negative or even null (Almfraji & Almsafir, 2014), most agree that foreign direct investment with economic growth relations is significantly positive. For instance, research conducted by Noori (2019) finds that foreign investment positively influences economic growth in Jordan, with a positive short-term correlation between FDI and GDP. Therefore, FDI plays a crucial role in driving the economy forward and enhancing the nation's economic performance.

Based on this finding, the governments of the five ASEAN countries included in this study should make more attempts to maximize FDI inflows by optimizing economic policies, including fiscal and monetary policies. FDI should facilitate technology transfer in the form of new types of capital inputs that cannot be achieved through financial investment or trade in goods and services. Fiscal policies to encourage FDI inflows may include tax holiday policies for newly established foreign-invested companies and reduced import tariffs for heavy equipment or machinery needed to set up businesses. Infrastructure development is also very important, such as the construction of toll roads, ports, airports, power plants, and communication facilities needed to support industries in these countries, which are their priorities.

Governments in the five ASEAN countries should also direct FDI-financed industries to focus on environmentally friendly and labor-intensive downstream or finished goods industries. This will not only increase value-added production in boosting national income and economic growth but also maintain environmental balance and address unemployment issues in each country. Monetary policies, which ensure currency stability and maintain interest rates to prevent excessive fluctuations, are also necessary to further increase FDI inflows. In addition to economic policies, the governments of the five ASEAN countries can take steps to simplify and make investment licenses more transparent. Finally, each country should maintain political stability, particularly by managing labor unions to prevent frequent labor strikes that disrupt the production process.

5.3. Effect of Exports on Economic Growth

Our panel data regression analysis reveals that economic growth does not always follow an increase in exports. More specifically, our regression coefficient of -0.042 implies that, on average, a percentage-point increase in exports as a share of GDP is associated with a 4.2% decrease in economic growth. While exports are an important component of the economy, various factors can lead to such negative impacts. One such factor is the decline in global commodity

prices, which can lead to lower export revenues even if export volumes increase. Many ASEAN countries rely on the export of raw commodities such as oil, gas, and agricultural products, the prices of which are often volatile. When global prices of these commodities fall, export revenues decrease even if their export volumes remain stable or increase, which hinders a country's economic growth. Therefore, countries that heavily depend on exports are often vulnerable to fluctuations in international markets. Indonesia, as a major exporter of palm oil and coal, for example, often experiences a decline in export revenues when the prices of these commodities fall in international markets.

An increase in exports can also cause an appreciation of the exchange rate, making domestic goods relatively more expensive in international markets, which can reduce the competitiveness of export products and harm export-oriented domestic sectors. Furthermore, an increase in exports is often at the expense of the domestic sector. Resources allocated for export production will also reduce domestic investment and consumption. All these factors channel the negative effect that exports may have on economic growth.

To solve this problem, these countries should make it easier for industries that make raw materials to shift to industries that make finished goods slowly. This is because the supply of finished goods is more flexible than the supply of raw materials. This is to allow domestic finished goods producers to more easily respond to changes in international prices and demand. To prevent negative impacts on the export-oriented domestic sector, downstream industrial policy should strike a balance between export-oriented and import-substitution industries. Therefore, we recommend that ASEAN governments in each country balance exports with robust domestic economic policies.

A study by Eberhardt and Presbitero (2015) using a dynamic model, identifies and shows that dependence on exports in some Asian countries, including ASEAN member countries, can have negative effects on economic growth, especially if they are not balanced with strong domestic economic policies. While exports play a significant role in economic growth, it requires appropriate management and policies to guarantee their support for sustainable and stable growth. Economic diversification and increasing the added value of export products can help ASEAN countries overcome the negative impacts of export dependence and support more stable and sustainable economic growth. Noori (2019) discovered a positive correlation between economic growth and trade openness, indicating a short-term link between the two variables. This is different from what our paper and Eberhardt and Presbitero (2015) found about the role of exports. The reason for this difference is that we consider export value alone, whereas Noori's measure of trade openness may correspond to a range of trade barriers.

5.4. Effect of Labor on Economic Growth

The study results show that the labor variable has an insignificant effect on economic growth in the five ASEAN member countries. This is potentially because the quality of labor (education and skill levels) is inadequate, so even if the number of workers increases, its contribution to economic growth is limited. Unless there is a significant improvement in knowledge and innovation alongside skilled labor, unskilled labor may not be able to boost productivity significantly.

In some ASEAN countries, especially the five ASEAN member countries, although there has been an increase in the labor force, the quality of education and training still needs to be improved to make a significant economic impact. Sometimes, an increase in labor can lead to disguised unemployment, a situation where a greater number of people work, but not all of them are contributing to the economy. This reduces the effectiveness of labor increment on economic growth. Without such improvements, the potential for innovation and productivity may remain underutilized, leading to stagnation in economic development despite an apparent increase in employment figures.

Three of the countries included in this study—Indonesia, the Philippines, and Vietnam—have large populations, with each country's population exceeding 100 million. Indonesia, in particular, is the most populous country in ASEAN, with a population of more than 284 million by mid-2024, with around 70% of them being in the productive age range of 15–64 years. Like other countries, Indonesia is experiencing a demographic bonus, which can be utilized if the quality of the workforce is improved, both in terms of education and skills. The quality of labor, economic

structure, employment sectors, and economic absorption capacity play important roles in determining the extent to which labor growth can contribute to economic growth. To maximize the positive impact of labor on growth, investment in education, training, and productive sectors is essential.

The policy paradigm in the formal education sector must also be changed. Graduates from formal education institutions must not only be knowledgeable but also have the character to be ready to work. The principle of 'Link and Match' must be applied to formal education graduates and adapted to changes in economic structure and technological advances, especially information technology. Vocational education in secondary schools and polytechnics, as well as vocational study programs, should also become a priority in the education sector. Likewise, the provision of labor training in non-formal training institutions should focus on livelihood-based training to create a skilled workforce with high productivity levels, which in turn can contribute positively and significantly to economic growth in the country.

6. CONCLUSION

This study examines the influence of foreign debt, foreign direct investment (FDI), exports, and labor on economic growth, represented by gross domestic product (GDP), in five ASEAN member countries: Indonesia, Malaysia, Thailand, Vietnam, and the Philippines, over the period from 2008 to 2018. Through a panel data analysis, the findings indicate that these factors collectively have a significant impact on economic growth in these nations. More specifically, we find that both foreign debt and FDI have a positive and significant effect on economic growth, with FDI demonstrating the strongest influence. In contrast, exports exhibit a negative and significant effect on economic growth, while labor shows no significant effect on economic growth during the period studied.

Foreign debt, if well managed, can be used to finance productive investments such as infrastructure, which in turn drives economic growth. Therefore, ASEAN countries must ensure the effective use of foreign debt for productive investments and steer clear of excessive debt burdens. Similarly, FDI brings capital, technology, and new knowledge that increase productivity and production capacity and create jobs that are essential for long-term economic growth. For ASEAN countries, FDI should be strengthened to attract more capital and technology to these countries, reduce dependence on commodity exports by developing high-value-added sectors, and increase the competitiveness of export products. In contrast, although exports are often considered the main driver of economic growth, excessive dependence on low-value-added commodity exports and global price fluctuations can hinder economic growth. This highlights the need for ASEAN member countries to attempt economic diversification and increase the added value of export products to reduce the risks associated with export dependence.

Finally, the insignificant effect of labor on economic growth could be due to the quality of the workforce that still needs improvement or because the increase in labor occurs in sectors with low productivity. Investment in education and training to improve labor skills and productivity is essential to ensure a greater contribution to economic growth.

Funding: This study did not receive any dedicated financial support.
Institutional Review Board Statement: Not applicable.
Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
Data Availability Statement: Upon a reasonable request, the supporting data of this study can be provided by the corresponding author.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

REFERENCES

Almfraji, M. A., & Almsafir, M. K. (2014). Foreign direct investment and economic growth literature review from 1994 to 2012. *Procedia-Social and Behavioral Sciences, 129*, 206-213. https://doi.org/10.1016/j.sbspro.2014.03.668

Asongu, S. A., & Odhiambo, N. M. (2020). Foreign direct investment, information technology and economic growth dynamics in Sub-Saharan Africa. *Telecommunications Policy*, *44*(1), 101838. https://doi.org/10.1016/j.telpol.2019.101838

Baharumshah, A. Z., Lau, E., & Fountas, S. (2003). On the sustainability of current account deficits: Evidence from four ASEAN countries. *Journal of Asian Economics*, *14*(3), 465-487. https://doi.org/10.1016/S1049-0078(03)00038-1

Bon Nguyen, V. (2015). Effects of fiscal deficit and money M2 supply on inflation: Evidence from selected economies of Asia. *Journal of Economics, Finance and Administrative Science*, *20*(38), 49-53. https://doi.org/10.1016/j.jefas.2015.01.002

Dawood, M., Biqiong, Z., Al-Asfour, A., & Nilofar, M. (2021). External debt and economic growth: A heterogeneous static panel study in Asian developing and transition economies. *Studies of Applied Economics*, *39*(3), 1–17. https://doi.org/10.25115/eea.v39i2.4019

Eberhardt, M., & Presbitero, A. F. (2015). Public debt and growth: Heterogeneity and non-linearity. *Journal of International Economics*, *97*(1), 45-58. https://doi.org/10.1016/j.jinteco.2015.04.005

Fan, W., & Hao, Y. (2020). An empirical research on the relationship amongst renewable energy consumption, economic growth and foreign direct investment in China. *Renewable Energy*, *146*, 598-609. https://doi.org/10.1016/j.renene.2019.06.170

Greene, W. H. (2003). *Econometric analysis*. India: Pearson Education.

Ismail, A. G., & Harjito, D. A. (2003). Exports and economic growth: the causality test for ASEAN countries. *Economic Journal of Emerging Markets*, *8*(2), 89–95. https://doi.org/10.20885/ejem.v8i2.629

Jensen, D. R., & Ramirez, D. E. (2013). Revision: Variance inflation in regression. *Advances in Decision Sciences*, *1–15*, 671204.

Kementerian Luar Negeri Republik Indonesia--Kemlu. (2015). *ASEAN socio-cultural community in English: ASEAN socio-culture society*. Jakarta, Indonesia: Ministry of Foreign Affairs Republic of Indonesia

KÖSE, Z. (2020). The determinants of economic growth in Turkey: An empirical analysis of endogenous growth theory. *Theoretical and Applied Studies on Turkish Economy*, *1*, 309.

Kumari, R., Shabbir, M. S., Saleem, S., Yahya Khan, G., Abbasi, B. A., & Lopez, L. B. (2023). An empirical analysis among foreign direct investment, trade openness and economic growth: Evidence from the Indian economy. *South Asian Journal of Business Studies*, *12*(1), 127-149. https://doi.org/10.1108/SAJBS-06-2020-0199

Kurnia, D. (2017). Effects of foreign debt and foreign investment on economic growth. *JAK (Jurnal Akuntansi) Kajian Ilmiah Akuntansi*, *4*(1), 11–21. https://doi.org/10.30656/jak.v4i1.216

Kurniasih, E. P. (2020). *Development of foreign investment in ASEAN countries*. Paper presented at the Annual Academic Seminar on Economics and Development Studies, pp. 362-370.

Lam, T. D. (2016). An empirical analysis of the ASEAN-4's causality between exports and output growth. *International Journal of Economics and Financial Issues*, *6*(2), 497-502.

Machmud, A. (2016). *Indonesian economy: Post-Reform—a book*. Indonesia: Erlangga.

Marimuthu, M., Khan, H., & Bangash, R. (2021). Is the fiscal deficit of ASEAN alarming? Evidence from fiscal deficit consequences and contribution towards sustainable economic growth. *Sustainability*, *13*(18), 10045. https://doi.org/10.3390/su131810045

Nguyen, Q. K. (2020). Ownership structure and bank risk-taking in ASEAN countries: A quantile regression approach. *Cogent Economics & Finance*, *8*(1), 1809789. https://doi.org/10.1080/23322039.2020.1809789

Nguyen, Q. K. (2022). Audit committee structure, institutional quality, and bank stability: Evidence from ASEAN countries. *Finance Research Letters*, *46*, 102369. https://doi.org/10.1016/j.frl.2021.102369

Noori, S. (2019). Impact of foreign direct investment on economic growth in Jordan. *Journal of Administration and Economics*, *44*(119), 77-94.

Pheang, P., Liu, J., Sirisrisakulchai, J., Chaiboonsri, C., & Sriboonchitta, S. (2017). Foreign direct investment, exports and economic growth in ASEAN region: Empirical analysis from panel data. *Robustness in Econometrics*, 691-705. https://doi.org/10.1007/978-3-319-50742-2_43

Raihan, A. (2024). Influences of foreign direct investment and carbon emission on economic growth in Vietnam. *Journal of Environmental Science and Economics*, *3*(1), 1-17. https://doi.org/10.56556/jescae.v3i1.670

Reddy, K., Sasidharan, S., & Doytch, N. (2022). Outward foreign direct investment and domestic innovation efforts: Evidence from India. *Journal of Economics and Business*, *122*, 106084. https://doi.org/10.1016/j.jeconbus.2022.106084

Saidi, S., Mani, V., Mefteh, H., Shahbaz, M., & Akhtar, P. (2020). Dynamic linkages between transport, logistics, foreign direct Investment, and economic growth: Empirical evidence from developing countries. *Transportation Research Part A: Policy and Practice*, *141*, 277-293. https://doi.org/10.1016/j.tra.2020.09.020

Sapthu, A. (2023). Electricity and Its impact on economic growth in Maluku province. *Jurnal Cita Ekonomika*, *17*(2), 199-207. https://doi.org/10.51125/citaekonomika.v17i2.11315

Todaro, M. P. (2000). *Development economics in the third world* (7th ed.). Jakarta: Erlangga.

Triatmanto, B., Bawono, S., & Wahyuni, N. (2023). The contribution and influence of total external debt, FDI, and HCI on economic growth in Indonesia, Thailand, Vietnam, and Philippines. *Research in Globalization*, *7*, 100163. https://doi.org/10.1016/j.resglo.2023.100163

Trinh, T. H. (2017). A primer on GDP and economic growth. *International Journal of Economic Research*, *14*(5), 13-24.

Udemba, E. N., Magazzino, C., & Bekun, F. V. (2020). Modeling the nexus between pollutant emission, energy consumption, foreign direct investment, and economic growth: New insights from China. *Environmental Science and Pollution Research*, *27*(15), 17831-17842. https://doi.org/10.1007/s11356-020-08180-x

Widarjono, A. (2009). *Introduction to econometrics and its application* (3rd ed.). Yogyakarta: Ekonesia.

Wijayanto, A. (2022). Analysis of the impact of exports and imports on Indonesia's foreign exchange reserves. *Yos Soedarso Economic Journal*, *4*(1), 12-27.

Yana, S., Nizar, M., & Yulisma, A. (2021). Main prospects of developing sustainable energy in ASEAN countries. *Jurnal Serambi Engineering*, *6*(2), 160–168. https://doi.org/10.32672/jse.v6i2.2866