THE EFFECT OF FOREIGN DIRECT INVESTMENT (FDI) ON GROSS DOMESTIC PRODUCT (GDP)
(Comparative Case Study of Indonesia and Malaysia 2010-2024)

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Muhammad Abia fadlullah

ABSTRACT

This study aims to analyze the effect of Foreign Direct Investment (FDI), exports, and labor on economic growth in Indonesia and Malaysia during the period 2010–2024. Economic growth is measured using Gross Domestic Product (GDP). This research is based on the Neoclassical Growth Theory, the Cobb-Douglas Production Function, and the Export-Led Growth Hypothesis. The study employs a quantitative approach using secondary data obtained from the World Bank and other official sources. Panel data regression analysis was conducted in EViews, preceded by stationarity testing using the Augmented Dickey-Fuller (ADF) test. The results indicate that exports and labor have a positive and significant effect on economic growth in both Indonesia and Malaysia. Labor is the most influential variable, with a coefficient of 1.025290, followed by exports with a coefficient of 0.556719. In contrast, FDI does not have a significant effect on economic growth, as indicated by the p-value of 0.5556. Furthermore, the interaction variable of FDI shows no significant difference in the impact of FDI on economic growth between Indonesia and Malaysia. These findings suggest that economic growth in both countries is driven more by labor productivity and export performance than by foreign direct investment. Therefore, policies aimed at improving labor quality and strengthening export competitiveness are essential to achieving sustainable economic growth.

Keywords: Foreign Direct Investment (FDI), Exports, Labor, Economic Growth, GDP, Panel Data, Indonesia, Malaysia.

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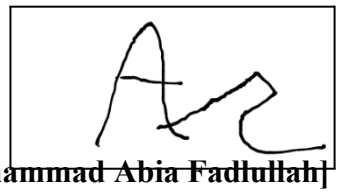
Yogyakarta, June 20, 2026



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CHAPTER I

INTRODUCTION

1.1 Background

Foreign direct investment (FDI) is a key pillar of economic development for developing countries because it can significantly contribute to increasing Gross Domestic Product (GDP) through various channels. FDI inflows not only provide additional capital to the economy but also encourage technology transfer, job creation, and skills development for the local workforce. Developing countries such as Indonesia and Malaysia utilize FDI as an instrument to strengthen their economic structures and improve economic performance. The differences in economic characteristics between the two countries create interesting dynamics in the patterns of foreign investment inflows. This situation makes a comparative analysis of Indonesia and Malaysia relevant for understanding how FDI influences Gross Domestic Product (GDP) in different economic development contexts.

Empirical data show that Indonesia's FDI inflows fluctuated significantly and were unstable during the 2010–2024 period. World Bank data indicate that Indonesia's FDI peaked at around 2.7 percent of Gross Domestic Product (GDP) in 2013, but this level was not maintained in subsequent years. A sharp decline occurred in 2015–2016, influenced by the global economic slowdown and falling commodity prices. Indonesia's dependence on natural resource-based sectors makes FDI inflows highly sensitive to external changes. This situation indicates that the stability of foreign investment remains a major challenge for Indonesia in maintaining sustainable Gross Domestic Product (GDP) (Rizkika, 2022).

Fluctuations in Indonesia's FDI inflows reflect unresolved structural issues related to maintaining consistent investment. Dependence on commodity-based sectors means that investment inflows are strongly influenced by global market dynamics beyond the government's direct control. Changes in commodity prices significantly affect investors' decisions. The COVID-19 pandemic further exposed the limited resilience of Indonesia's economic structure to external shocks. Although FDI inflows have shown signs of recovery since 2022, they have not yet demonstrated sustainable stability. Consequently, maintaining investment attractiveness remains a major challenge in supporting long-term Gross Domestic Product (GDP).

A different pattern is observed in Malaysia, where FDI inflows remained more stable during the same period, with relatively lower fluctuations. Malaysia's average FDI ranged between three and four percent of Gross Domestic Product (GDP) and reached approximately 4.5 percent in 2011. Although FDI declined during the COVID-19 pandemic, the decrease was less severe than in Indonesia, indicating greater economic resilience. This stability reflects stronger investor confidence in Malaysia's economic conditions. The consistency of FDI inflows is an important indicator in assessing the effectiveness of economic policies implemented by the government. This condition suggests that Malaysia has greater investment attractiveness, which supports the sustainability of Gross Domestic Product (GDP) (Nayla & Sukarniati, 2022).

The difference in FDI stability between the two countries is closely related to their respective economic structures. Indonesia remains heavily dependent on commodity-based sectors, such as mining and plantations, which are highly sensitive to fluctuations in global commodity prices. As a result, FDI inflows tend to be unstable when commodity prices decline. In contrast, Malaysia has developed an

export-oriented manufacturing sector as a key driver of its economy. The electronics industry has become one of the leading sectors that consistently attracts foreign investors. This diversification of economic sectors contributes to more stable investment inflows and supports Gross Domestic Product (GDP).

Domestic characteristics also reinforce the differences in FDI behavior between Indonesia and Malaysia in attracting foreign investment. Indonesia benefits from a large domestic market and abundant natural resources. However, these advantages are not fully supported by institutional quality capable of providing certainty for investors. Bureaucratic obstacles and inconsistent regulatory changes often discourage foreign investment. In contrast, Malaysia offers greater legal certainty and various fiscal incentives that enhance its investment attractiveness. These differences demonstrate that the quality of governance is a key factor in determining FDI stability and its contribution to Gross Domestic Product (GDP) (Nadia, 2021).

The orientation of investment sectors also shows significant differences between the two countries in their utilization of FDI. In Indonesia, FDI remains concentrated in the mining and plantation sectors, which generate relatively low value added. This concentration makes FDI inflows more vulnerable to fluctuations in global commodity prices. In contrast, Malaysia has successfully directed FDI toward medium- and high-technology manufacturing sectors, which generate higher value added. The strong linkages between the manufacturing sector and global export markets contribute to the stability of foreign investment inflows. This diversification of economic sectors enhances economic resilience and supports the sustainability of Gross Domestic Product (GDP) (Melati et al., 2021).

Several empirical studies have shown that FDI plays a significant role in promoting economic growth in developing countries. Research by Melati et al. (2021) found that FDI and exports have a significant positive effect on Indonesia's economic growth. Rizkika (2022) also found that FDI contributes positively to economic growth, although imports have a negative effect. Furthermore, Gandhi et al. (2022) reported that the impact of FDI in Indonesia tends to emerge over the medium term compared with that in other countries. These findings indicate that the effectiveness of foreign investment varies across countries, suggesting that FDI does not always produce the same economic impact.

Differences in the speed of FDI impacts across countries demonstrate the importance of domestic capacity in optimally absorbing the benefits of foreign investment. Countries with high-quality human resources and strong institutions tend to benefit more quickly from FDI. Malaysia has been able to respond more effectively than Indonesia in utilizing foreign investment inflows. This condition indicates that a country's domestic readiness strongly influences the effectiveness of FDI in supporting Gross Domestic Product (GDP). Therefore, understanding these differences provides an important basis for conducting a more comprehensive comparative analysis and formulating more effective economic policies.

A regional study by Nayla and Sukarniati (2022) confirms that governance significantly influences foreign investment inflows. The Corruption Perceptions Index and trade openness were found to have a positive effect on FDI inflows, while the financial sector was found to have a negative effect. These findings indicate that institutional quality plays a more important role than other economic factors in attracting foreign investment. Malaysia has consistently maintained good governance, enabling it to attract FDI more consistently. In contrast, Indonesia continues to face

challenges in improving institutional quality and ensuring regulatory certainty, which may affect its ability to sustain Gross Domestic Product (GDP) through foreign investment.

Economic theory provides an important foundation for understanding the relationship between FDI and Gross Domestic Product (GDP) in Indonesia and Malaysia. The Harrod–Domar theory explains that investment plays a key role in increasing production capacity, thereby supporting economic growth. Similarly, Solow's growth theory (1956) emphasizes that economic growth is determined not only by capital accumulation but also by technological progress. FDI often serves as a channel for technology transfer into developing countries, thereby enhancing productivity and national output. This theoretical framework is relevant for explaining how FDI contributes to Gross Domestic Product (GDP) in both countries. The integration of capital and technology is therefore essential for increasing economic productivity.

Keynes's (1936) perspective emphasizes that investment decisions are strongly influenced by economic actors' expectations regarding future economic conditions. Economic uncertainty can reduce investors' willingness to invest in a country. This is reflected in Indonesia's FDI inflows, which are highly sensitive to changes in global economic conditions. Therefore, macroeconomic stability is a crucial factor in maintaining investor confidence. Malaysia has demonstrated greater macroeconomic stability, enabling it to attract foreign investment more consistently than Indonesia. This theoretical perspective helps explain the differences in investor behavior between the two countries and their implications for Gross Domestic Product (GDP).

Romer's (1990) endogenous growth theory emphasizes the importance of domestic capacity to absorb technology and knowledge from foreign investment. FDI

will not have an optimal impact if a country lacks adequate absorptive capacity. The quality of human resources and innovation are key factors in maximizing the benefits of FDI. Malaysia has demonstrated a stronger capacity to utilize technology than Indonesia, which helps explain why the impact of FDI is more apparent in Malaysia. This theory strengthens the analysis of differences in the effectiveness of FDI in influencing Gross Domestic Product (GDP) between the two countries.

North's (1990) institutional approach emphasizes that institutional quality plays a significant role in determining economic development and investment decisions. Strong institutions create legal certainty and reduce uncertainty for investors. Indonesia still faces challenges related to bureaucratic inefficiency and regulatory inconsistency. In contrast, Malaysia demonstrates stronger institutional quality, enabling it to attract more stable FDI inflows. These institutional differences help explain the variation in investment flows between the two countries and their implications for Gross Domestic Product (GDP). Therefore, this theory is relevant for analyzing differences in economic structure and investment policies.

The differences in FDI behavior between Indonesia and Malaysia highlight a research gap that has not been thoroughly explored in the existing literature. Most previous studies have focused on a single country without conducting direct comparisons. Comparative studies of Indonesia and Malaysia remain limited. Furthermore, the use of interaction models to examine differences in the effect of FDI on Gross Domestic Product (GDP) between the two countries is still relatively rare. This situation indicates an important research opportunity. Therefore, this study seeks to fill this gap by adopting a more comprehensive comparative approach.

A comparative analysis between Indonesia and Malaysia is important because it provides a deeper understanding of the factors influencing FDI. Direct comparisons

allow for a clearer identification of each country's strengths and weaknesses. This approach also provides insight into the effectiveness of the investment policies implemented. Indonesia can utilize the research findings to improve institutional quality and promote economic diversification, while Malaysia can maintain its comparative advantages through continuous policy evaluation. The findings of this study are expected to contribute to the formulation of more effective economic policies.

The post-COVID-19 context further underscores the urgency of this research to comprehensively understand FDI dynamics. The global crisis led to a decline in foreign investment inflows across many countries. Indonesia experienced greater pressure due to its dependence on the commodity sector, whereas Malaysia demonstrated a faster recovery because of its more diversified economic structure. These differences highlight the importance of appropriate economic development strategies in responding to global crises. Therefore, an analysis covering the 2010–2024 period provides a more comprehensive and relevant picture of recent economic conditions.

Overall, the discussion indicates that FDI plays a strategic role in the economic development of Indonesia and Malaysia. Differences in investment behavior between the two countries highlight the importance of economic structure and institutional quality in determining the effectiveness of foreign investment. This study analyzes the effect of FDI, exports, and labor on Gross Domestic Product (GDP) using a comparative approach between Indonesia and Malaysia. The findings are expected to provide a clearer understanding of these relationships and contribute to the formulation of more effective economic policies in the ASEAN region.

1.2 Problem Formulation

1. Does FDI have a significant impact on the GDP of Indonesia and Malaysia?
2. How does the impact of FDI on GDP compare between Indonesia and Malaysia?

1.3 Research Objectives

1. Testing the influence of FDI on GDP in Indonesia and Malaysia.
2. Comparing the impact of FDI on GDP between the two countries.

1.4 Benefits of Research

- Theoretical:

  This research is expected to enrich the literature and knowledge on the relationship between *Foreign Direct Investment* (FDI) and GDP. The results can also help strengthen economic theories explaining the role of foreign investment in driving a country's economic development, particularly in Indonesia.

- Practical:

  Practically, this research can provide input to the Indonesian government in formulating more effective investment policies. By understanding the impact of FDI on economic growth, the government can develop strategies that encourage increased foreign investment and ensure its benefits for national development.

- Academic:

  Academically, this research can serve as a reference for students or other researchers interested in exploring similar topics. The results can also serve as learning materials and references for further research on investment and economic growth.

CHAPTER II

LITERATURE REVIEW

2.1 Theoretical Basis

2.1.1 Theory of Economic Growth

Economic growth describes a country's continuous increase in its capacity to produce goods and services. The Solow–Swan model emphasizes the interaction between capital accumulation, labor force growth, and technological progress as the primary determinants of long-run output. Technology is considered an exogenous factor influencing growth, while capital accumulation increases production capacity until it reaches a point of diminishing marginal returns. The efficiency of labor and capital use determines short-run output, while technological progress is the primary driver of long-run growth. In empirical analysis, economic performance and output are commonly represented by Gross Domestic Product (GDP), which is therefore used as the dependent variable in this study (Solow & Swan, 1956; Romer, 1990).

Endogenous Growth Theory emphasizes internal factors such as innovation, improvements in human resource quality, and interactions among economic actors. The spillover effects of knowledge generated by economic activity enable sustainable growth independent of external factors. This paradigm is relevant for analyzing FDI because foreign investment brings capital, new technology, and managerial practices, thereby increasing productivity and national output, which is reflected in Gross Domestic Product (GDP). Research by Irma Nur Aysah (2022) shows that FDI growth positively affects Malaysia's economic growth, confirming that foreign capital accumulation can contribute to higher national output.

The Harrod–Domar model provides an initial framework that emphasizes investment as the primary driver of growth. Capital accumulation through investment

increases production capacity, which leads to higher national output as measured by Gross Domestic Product (GDP). This model links the national savings rate to the growth rate, enabling countries with high investment to expand their productive capacity. Findings by Rima Melati et al. (2021) show that FDI has a significant positive effect on Indonesia's economic growth, confirming that capital accumulation through domestic and foreign investment is a key driver of economic growth.

2.1.2 Investment Theory

Investment is a crucial driver of economic growth. Keynesian theory explains that interest rates and *the marginal efficiency of capital influence investment decisions*. Firms tend to increase investment when the cost of capital is low or when profit expectations rise. The adjustment of investment to aggregate demand directly affects national output (Keynes, 1936).

Modern growth approaches highlight investment as a driver of long-term growth. The Solow model emphasizes capital accumulation as a determinant of output, while Aftalion and Clark's accelerator theory suggests that changes in demand drive corporate investment to adjust production capacity. Research by Rizkika Azizah (2022) found that FDI and exports significantly positively impacted Indonesia's economic growth, confirming that investment not only increases capital but also increases national demand and production capacity.

2.1.3 Foreign Investment Theory

Foreign investment is capital that flows into a country from abroad to build or buy an asset for production, or to earn profits from operations in the destination country. This capital flow is usually directed toward a country with higher profit prospects, such as a large market, cost-competitive labor, or a supportive investment policy. Foreign Direct Investment (FDI) differs from portfolio investment because

foreign companies have full control over their assets and operations. Research by Gandhi et al. (2022) shows that FDI affects economic growth in Indonesia with a two-year lag, while in Singapore, the effect is significant in both the short and long term. Shopia's (2022) findings also show that FDI has a positive effect on economic growth in Indonesia and Malaysia, confirming that foreign capital inflows not only increase production capacity but also improve technological efficiency and market access. FDI Theory:

2.1.4 OLI Paradigm (Ownership, Location, Internalization) by Dunning

Dunning's OLI paradigm explains the factors that motivate companies to undertake FDI. Ownership advantage refers to a company's competitive advantage, such as its technology, brand, or managerial capabilities. Location advantage refers to the advantages a host country possesses, such as a large market, skilled labor, or abundant natural resources. Internalization advantage holds that companies gain greater benefits from direct investment than from licensing, thereby maintaining control over assets and technology. Research by Alghifari Mahdi Igamo (2015) shows that real GDP and foreign exchange reserves of ASEAN countries positively influence FDI, indicating that a country's economic strength helps attract foreign capital. Research by Dede Ruslan et al. (2024) confirms that FDI in Malaysia improves industrial export performance, indicating that foreign investment not only increases capital but also drives economic growth by boosting production and enabling access to global markets.

2.2 Study Previously

Table 2.2.1 Research Previously

Number	Author & Year	Title Study	Method	Variable / focus study	Research result
1	Nadia Feby Artharini (2021)	Comparison of Foreign Direct Investment between Myanmar and Indonesia	Literature study (research law normative)	Comparing regulations, institutions, investment policies, open/closed business sectors, investor obligations, and FDI procedures between Myanmar and Indonesia	There are fundamental differences: Myanmar is governed by the Myanmar Investment Law 2016, while Indonesia is governed by Law No. 25/2007. Myanmar has MIFER, DICA, and FERD as its main institutions, while Indonesia has BKPM. Myanmar relies on SEZs, while Indonesia relies on KEKs. Both countries offer

					fiscal incentives, but differ in their mechanisms. This study emphasizes legal and institutional aspects, not the direct impact of FDI on economic growth.
2.	Gandhi, EA, Pasaribu, E., Ekaputri, RA, & Febriani, RE (2022)	Foreign Direct Investment and Economic Growth: An Empirical Comparison of Indonesia and Singapore	Granger Causality and Error Correction Model (ECM) with secondary data 1970–2020	Foreign Direct Investment (FDI), Growth Economy (GDP)	There is a one-way causal relationship between FDI and economic growth. In Indonesia, FDI impacts economic growth with a two-year lag. In Singapore, FDI has been shown to significantly impact economic growth in both the

					short and long term, with a greater impact than in Indonesia.
3.	Nayla Mu`adzah, Lestari Sukarniati	Analysis Determinants of Foreign Direct Investment (FDI): Case Studies (Indonesia, Malaysia, Singapore, Philippines, Thailand and Vietnam) 1997–2022	Seemingly Unrelated Regression (SUR) on panel data (ASEAN-6), period 1997–2022. Previously selected by FEM through the Chow & Hausman test then used SUR for overcome problem heteroscedasticity .	Dependent: FDI (flow enter net) / Independent: Economic Growth (EG), Corruption Perception Index (CPI), Trade Openness (TO), Market Size (MS), Financial Development (FD).	The results show that the CPI has an effect positive significant on FDI, Trade Openness also has an effect positive significant on FDI, while Financial Development has an influence negative significant towards FDI. Meanwhile that , Economic Growth and Market Size do not influential significant

					towards FDI.
4.	Rima Melati, Dewi Sartika, & Arif Budiman (2021)	The Influence of Foreign Direct Investment, Exports, and Labor to Indonesia 's Economic Growth 1990–2019	Multiple Linear Regression Analysis with Secondary Time Series Data 1990–2019	Dependent: Economic Growth (GDP) / Independent: FDI, Exports, Labor	The results show that FDI has a significant positive effect on economic growth, exports also have a significant positive effect, while labor does not have a significant effect on Indonesia's economic growth.
5.	Rizkika Azizah (2022)	The Influence of Foreign Direct Investment, Exports, and Imports to Indonesia 's Economic Growth	Multiple Linear Regression Analysis with 1990–2020 time series data	Dependent: Economic Growth (GDP) / Independent: FDI, Exports, Imports	The research results show that FDI has a significant positive effect on Indonesia's economic growth. Exports also have a significant positive effect,

		1990–2020			while imports have a significant negative effect.
6.	Alghifari Mahdi Igamo (2015)	The Influence of Economic Risk on Foreign Investment in ASEAN Countries (A Comparative Case Study Between Indonesia, Malaysia, Singapore, Thailand, the Philippines, Brunei and Myanmar)	Panel data regression with method *fixed-effect*	Independent Variables (Economic Risk): Real GDP (*PDBr*), Inflation (*I*), Exchange Rate (*NT*), Foreign Exchange Reserves (*CD*). Dependent Variable: Foreign Direct Investment (*FDI*).	F-test (Simultaneous): All independent variables simultaneously have a significant effect on FDI. T-test (Individual): Real GDP and Foreign Exchange Reserves have a positive and significant effect on FDI. Inflation and Exchange Rates do not have a significant effect on FDI.
7.	Akhmad Farhan (2015)	Comparison of	Empirical studies using	Main Focus: Competitive	Indonesia has the highest GDP in

		Indonesia's Competitiveness Among ASEAN Countries	secondary data, with a quantitative descriptive approach	ness Performance (Total trade, GDP, GDP per capita, FDI *inflow*) and Determinants of Competitiveness (CPI, Economic Freedom, Ease of Doing Business, GCI).	ASEAN, but lags behind Singapore, Malaysia, and Thailand in total trade, GDP per capita, FDI *inflow* , and all indicators of Competitiveness Determinants.
8.	Aya Shopia (2022)	The Influence of Foreign Direct Investment, Exports , and Foreign Debt	Panel Data Regression	Independent Variables: FDI, Exports, Foreign Debt. Dependent	FDI has a significant positive impact on the economic growth of Indonesia and Malaysia.

		on ASEAN Economic Growth (Study on Products Gross Domestic Product of Indonesia, Malaysia and Thailand Period 2007–2016)		Variable: Economic Growth (GDP).	
9.	Irma Nur Aysah (2022)	Determinant Economic Growth in Indonesia, Malaysia, and Thailand Through Growth Technology, Growth Foreign	Multiple Linear Regression	Independent Variable: FDI Growth, etc. Dependent Variable: Economic Growth.	FDI growth is not influential to Economic Growth in Indonesia, however influential positive in Malaysia.

		Direct Investment and Labor Force Participation Rate			
10.	Dede Ruslan, Febri Br Hutabarat, Tia Handani, & Tina Angelia (2024)	The Influence of Foreign Direct Investment and Labor on Industrial Export Performance : A Case Study of Malaysia	Multiple Linear Regression	Variables Independent variables: Foreign Direct Investment (FDI), Labor. Dependent variable: Industrial Export Performance.	Foreign Direct Investment (FDI) and labor have a positive impact on export performance in Malaysia. This means that increased FDI can increase performance Malaysian exports .

A previous study examined the influence of FDI, exports, and labor on economic growth. Actually show results that are not always mixed. In some countries, foreign investment and exports are the main drivers of the economy, but in others, their impact is small, depending on individual government policies. This demonstrates that these

variables cannot stand alone but are interrelated in influencing Gross Domestic Product (GDP).

The main focus of this research is to compare the conditions of Indonesia and Malaysia, which have different economic structures. Indonesia is much more dependent on the natural resources sector, while Malaysia is more advanced in manufacturing and technology. These differences in national characteristics mean that the effects of FDI and exports in the two countries will not produce uniform results. Through this direct comparison, the research aims to demonstrate which variables are most effective in driving economic growth in each country.

2.3 Description of Research Data

Table 2.3.1 Description of Research Data

No	Variables	Variable Types	Definition Operational	Unit	Data source
1.	GDP	Dependent	Gross Domestic Product (GDP) at constant prices transformed into the natural logarithm to describe the country's economic growth rate.	USD (Log)	Word Bank
2.	FDI	Independent	Foreign Direct Investment in the form of current enter	USD (Log)	World Bank, UNCTAD

			investment foreign direct transformed clean to in natural logarithm .		
3.	Export	Control	Total value of exports of goods and services transformed into the natural logarithm.	USD (Log)	Word Bank
4.	Labor Force	Control	The number of labor force participating in economic activities and transformed into the natural logarithm.	People (Log)	Word Bank
5.	Dummy Country	Moderation / Interaction	A categorical variable used to distinguish between Indonesia and Malaysia. Value 0 = Indonesia, 1 = Malaysia.	Dummy (Log)	Research Data

Table 2.3.2 Characteristics of Research Data

Information	Description
Data Types	Secondary Data

Data Form	Panel Data
Cross Section	Indonesia and Malaysia
Time Series	2010-2024
Number of Countries	2 Countries
Number of Years	15 years
Number of Observations	30 Observations
Research Approach	Quantitative
Analysis Software	EViews
Data source	World Bank, UNCTAD, BPS, DOSM

2.4 Framework of Thinking

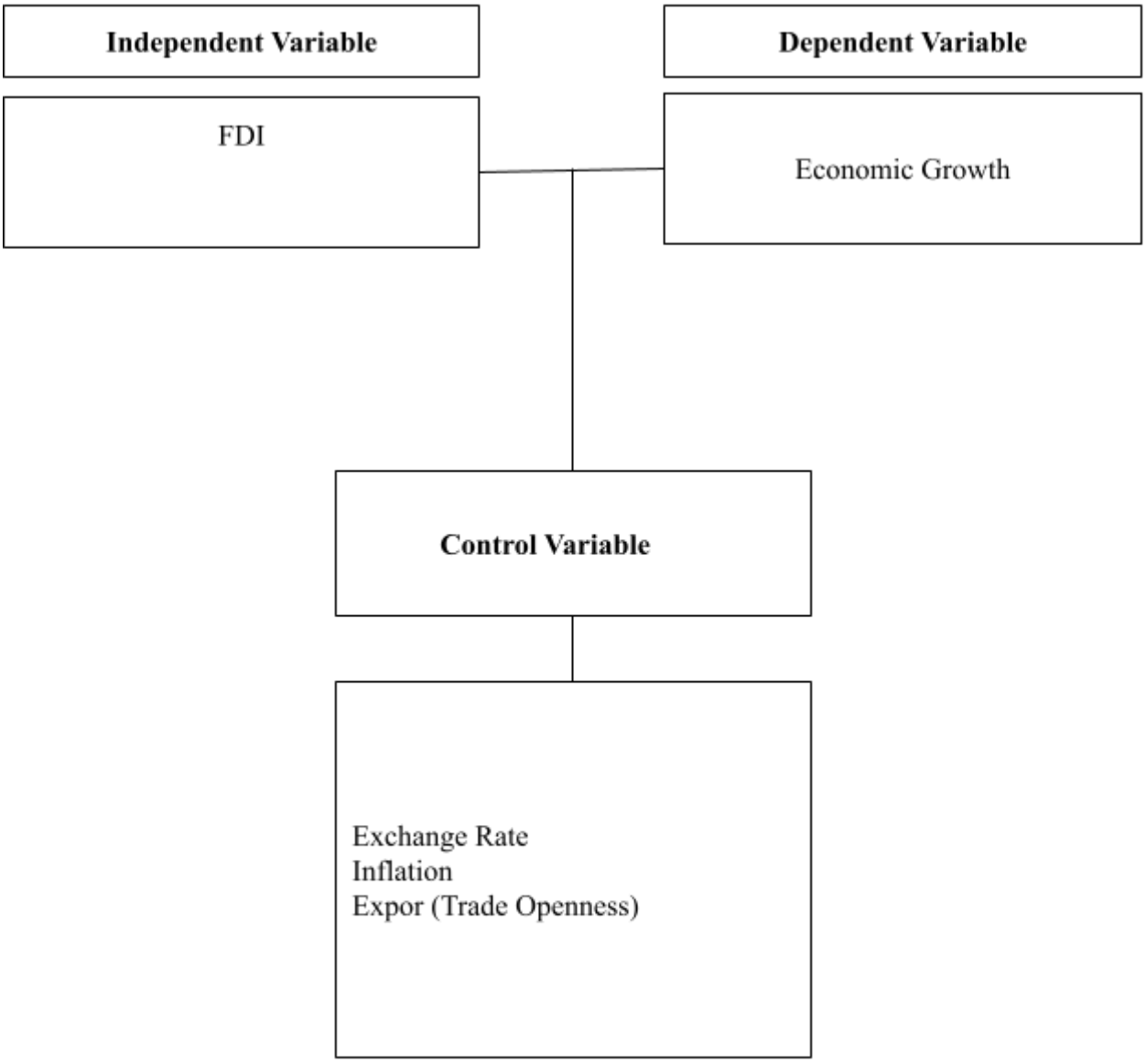

Figure 2.3.1 Scheme of Thought Framework

2.4 Hypothesis

The hypothesis in this study is based on the economic logic that investment, international trade, and human resources are the primary drivers of national output. The following is an explanation of the relationships between the variables and the proposed hypotheses:

1. H1: FDI has a significant positive effect on GDP

   Foreign direct investment plays a crucial role as a source of additional capital for developing countries. In addition to bringing physical capital, FDI also brings the transfer of technology and managerial skills, which can increase domestic industrial productivity. This increased productivity will ultimately drive an increase in the total value of national production.

2. H2: Exports have a positive effect on GDP

   Exports are a key component of national income. Through export activities, a country can expand its market reach internationally, thereby stimulating increased domestic production. Foreign exchange earnings from overseas sales strengthen the country's economic foundation.

3. H3: Labor has a positive effect on GDP

   Labor is a factor of production that determines the quantity of goods and services an economy can produce. Optimal utilization of the labor force will increase economic activity across various sectors. The more labor that is productively employed, the higher the level of national economic output.

4. H4: There are differences in the influence of FDI, Exports, and Labor on GDP between Indonesia and Malaysia.

    Indonesia and Malaysia have structural differences in their economic policies and industrial sectors. These differences mean that the effectiveness of FDI, exports, and labor in stimulating the economy will vary between the two countries. The use of interaction variables is necessary to determine the extent to which differences in country characteristics influence economic development outcomes.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Types of Research and Research Approaches

This study uses a quantitative approach and a panel-data econometric analysis. This quantitative approach is used because the study analyzes numerical data, which is processed using statistical models to test relationships between variables.

The panel data method was used because this study combines time series data (2010–2024) and cross-sectional data (two countries: Indonesia and Malaysia). This approach allows for a more comprehensive analysis by capturing variations across countries and over time simultaneously. This study is also comparative, examining the effect of Foreign Direct Investment (FDI) on economic growth in Indonesia and Malaysia using interaction dummy variables.

3.2 Objects and Subjects Study

Subject in study: Indonesia and Malaysia are two countries in Southeast Asia. These two countries were selected because they are developing countries with relatively comparable economic characteristics, particularly in their international trade structures, economic openness, and reliance on foreign direct investment (FDI). Furthermore, Indonesia and Malaysia have strong economic ties and are both actively attracting foreign investment as part of their national development strategies.

The object of this research is the relationship between Foreign Direct Investment (FDI), exports, and labor on economic growth as measured by Gross Domestic Product (GDP). This research specifically analyzes the influence of FDI on economic growth and examines whether the impact of FDI differs between Indonesia and Malaysia using country-dummy interaction variables.

This study uses an observation period from 2010 to 2024. This time span was chosen to describe the dynamics of the two countries' modern economies, including the post-global crisis recovery period, economic stabilization, and adjustments to international investment and trade policies.

3.3 Types and Sources of Data

This study uses secondary data from official, trusted institutions. The data used are panel data with 30 observations (15 years × 2 countries). The research period is 2010 to 2024. The data sources used are:

- World Bank
- UNCTAD
- Central Statistics Agency (BPS)
- Department of Statistics Malaysia (DOSM)

The data used is annual data.

3.4 Research Variables and Operational Definitions

This study uses consistently defined variables to avoid bias in estimation. In accordance with the research objectives, the dependent variable used is the GDP level, transformed into its natural logarithm (LN) to equalize units and reduce extreme (large-scale) data fluctuations.

Table 3.4.1 Research Variables and Operational Definitions

Variables	Definition Operational	Unit
LN_GDP	Gross Domestic Product (GDP) at constant prices, measured in the form	USD (log)

	LN_GDP. The use of the *level form* (in log) was chosen to see the accumulative effect of the independent variables on total economic output.	
Foreign Direct Investment (LN_FDI)	Net foreign capital inflows transformed into natural logarithm form.	USD (log)
LN_EXPORT	Total value of exports of goods and services in natural logarithm form.	USD (log)
LN_LABOR_FORCE	The total number of workers absorbed, also in natural logarithmic form to maintain the consistency of the estimation model.	Number of people (log)
Dummy	Variables category (0 = Indonesia, 1 = Malaysia)	Dummy
LN_FDIDUMMY	Interaction between DUMMY and LN_FDI	-

3.5 Dummy Variables and Effects Interaction

This study uses country *dummy variables to capture* the fundamental structural differences between the Indonesian and Malaysian economies. The use of

dummies is crucial because, despite being in the same region, the two countries have distinct investment policies and industrial strengths.

A dummy variable is assigned a value of 1 for Indonesia and 0 for Malaysia. This variable allows the model to determine whether there is a significant difference in the constant (*intercept*) between the two countries. Furthermore, this *dummy variable* is interacted with the independent variables (FDI, Exports, Labor) to determine whether the effectiveness of each production factor in driving GDP differs significantly between the two countries.

3.6 Research Model

The econometric model used in this study is a panel data regression in log-linear form as follows:

$$\Delta lnGDP_{it} = \beta_0 + \beta_1 lnFDI_{it} + \beta_2 \Delta lnEXPORT_{it} + \beta_3 \Delta lnLABOR_{it} + \beta_4 lnFDIDUMMY_{it} + \varepsilon_{it}$$

Information :

- i = country (Indonesia and Malaysia)
- t = period time (2010–2024)
- μ_i = fixed effects of each country
- Δ= first difference
- ε_i = error term

This model tests whether the influence of FDI on economic growth differs between Indonesia and Malaysia.

3.7 Data Analysis Techniques

The data analysis in this study was conducted using a panel-data econometric approach in EViews. The use of panel data allows combining time-series and cross-sectional dimensions, thereby increasing the number of observations, degrees of

freedom, and estimation efficiency compared to using time-series or cross-sectional data. The analysis is done in a way as systematic as follows:

1. **Descriptive Analysis**

   The initial analysis used descriptive statistics to characterize the four research variables: LN_GDP, LN_FDI, LN_EXPORT, and LN_LABOR_FORCE. The statistics analyzed included the average value (mean), maximum value, minimum value, and standard deviation.

   This analysis aims to provide an overview of the patterns of economic growth, foreign investment flows, exports, and labor in Indonesia and Malaysia during the study period. Furthermore, descriptive statistics also help identify potential data outliers or extreme fluctuations.

2. **Stationarity Test Unit Root Test (ADF / LLC)**

   Stationarity analysis is a fundamental prerequisite for panel data estimation, ensuring that all variables are free of unit-root problems. This procedure is rigorously implemented to mitigate the risk of spurious regression, where a high R-square coefficient of determination often indicates a pseudo-correlation due to data non-stationarity. Stationarity ensures that the statistical characteristics of variables, such as means and variances, remain constant over time, thereby providing the regression model with reliable scientific validity.

   The Augmented Dickey-Fuller (ADF) Fisher Chi-square method was applied in this study as a unit root test, with the advantage of accommodating heterogeneity across observation units. Significance criteria are determined based on the probability value (p-value), where data is classified as stationary if the probability value is below the threshold of 0.05 (5%). The success of variables in achieving stationarity, both at

the level and first-difference levels, provides the main justification for the consistency and efficiency of the parameter estimation results for long-term economic analysis.

3. Panel Data Regression Model Estimation

This study uses a log-linear panel data regression model. Natural logarithmic transformation is performed to:

- Reduce potential heteroscedasticity
- Stabilize data variance
- Interpreting the coefficient as elasticity

The estimated model includes :

a. Common Effect Model (Pooled OLS)

This model assumes that there are no specific differences in characteristics between countries. All data are combined and estimated without considering individual effects.

b. Fixed Effect Model (FEM)

The fixed effects model assumes that each country has specific characteristics that cannot be directly observed but can influence the dependent variable. Differences in country intercepts control for these characteristics. The fixed effects model is important because Indonesia and Malaysia differ in terms of institutional quality, levels of industrialization, and economic policies.

The Random Effect Model was not used because the study included only two countries, rendering random-effect estimation suboptimal.

4. Model Selection Test

Research using panel data requires careful determination of the *intercept* and *slope assumptions*. The *Common Effects model* assumes that data behavior across countries is consistent over time; thus, the *Ordinary Least Squares* (OLS) method is

considered sufficient. However, this assumption is often unrealistic in international economic studies because each country has its own unique policies, culture, and economic structure. Formal testing is needed to determine whether these differences are significant enough to warrant more complex models, such as *Fixed-Effects* or *Random-Effects*.

The selection procedure begins with the Chow Test, which compares a model without individual effects (CEM) with a model with individual fixed effects (FEM). This test uses the F distribution to determine whether adding different *intercepts for each country significantly contributes to the model's fit. If the results indicate* a better fit for the *fixed effects model, the next step is the Hausman Test. This test is crucial because it determines* whether individual-specific effects are fixed and correlated with the independent variables, or random and included in the *error component*. Determining the correct final model is crucial for accurately interpreting the regression coefficients, particularly in explaining the long-term effects of FDI and exports on GDP.

Statistical requirements for decision-making remain at the established 5% significance level (0.05). Rejection of the Null Hypothesis (H_0) in the Chow and Hausman Tests, respectively, will direct the research to use the Fixed Effects model consistently. The use of this model ensures that the resulting parameters are not distorted by variables not included in the model but that are inherent to each country's characteristics. Successfully passing this series of tests provides scientific legitimacy for the research model, ensuring it is free from specification errors that can mislead economic conclusions.

5. Parameter Significance Test

After the best model is determined, parameter significance testing is carried out as follows:

a. T-Test (Partial)

The t-test is used to determine whether each independent variable affects economic growth.

Criteria of testing :

- If the probability < 0,05 → the variable influences significantly
- If the probability > 0,05 → the variable does not influence significantly

b. F-Test (Simultaneous)

The F test is used to test whether all independent variables jointly influence the dependent variable. If the F-statistic is < 0.05, the model is overall significant.

c. Coefficient Determination (R^2)

The coefficient of determination measures the proportion of variation in economic growth that can be explained by the FDI, exports, and labor variables in the model. An R^2 value close to 1 indicates high model explanatory power.

6. Classic Assumption Test

To ensure that the model meets Best Linear Unbiased Estimator (BLUE) criteria, we carried out classic assumptions testing as follows:

a. Multicollinearity Test

This test is performed to determine whether there is a high correlation between the independent variables. The test is performed using the Variance Inflation Factor (VIF) value. If the VIF value is <10, then there is no serious multicollinearity.

b. Heteroscedasticity Test

The test uses the White Test to determine whether the error variance is constant. If the probability is > 0.05, then there is no problem with heteroscedasticity.

c. Autocorrelation Test

Conducted using the Breusch-Godfrey LM Test and supported by the Durbin-Watson value. A Durbin-Watson value approaching 2 indicates no autocorrelation.

d. Normality Test

Done using the Jarque-Bera Test to determine whether the residuals are normally distributed. If Probability > 0.05, then the residuals are normally distributed.

3.8 Hypothesis Study

Hypothesis in the study:

H1: FDI has an impact on economic growth.

H2: Exports have an impact on economic growth. H3: Labor has an impact on economic growth. H4: The impact of FDI in Malaysia is significantly different from that in Indonesia.

3.9 Statistical Hypothesis:

$H0_1$: $\beta_1 = 0$

$H1_1$: $\beta_1 \neq 0$

$H0_2$: $\beta_2 = 0$

$H1_2$: $\beta_2 \neq 0$

$H0_3$: $\beta_3 = 0$

$H1_3$: $\beta_3 \neq 0$

$H0_4$: $\beta_4 = 0$

$H1_4$: $\beta_4 \neq 0$

CHAPTER IV

RESULTS AND DISCUSSION

4.1 General Description

Economic growth is one of the main indicators used to assess a country's development. A high level of economic growth reflects an increase in an economy's production capacity for goods and services, thereby driving higher income, more employment opportunities, and greater welfare. In the era of globalization, a country's economic growth is influenced not only by domestic factors but also by international trade, foreign investment, and the mobility of production factors across countries (Todaro & Smith, 2020).

This research focuses on Indonesia and Malaysia, two Southeast Asian developing countries with distinct economic characteristics. Indonesia is supported by a large population and abundant natural resources, while Malaysia has a more diversified economy supported by manufacturing and technology industries. Despite their different economic structures, both countries are active in international trade and attract foreign investment, making them interesting for comparative analysis of economic growth (World Bank, 2024).

The research uses secondary panel data covering the period 2010–2024. The data were obtained from official institutional sources, namely the World Bank, the United Nations Conference on Trade and Development (UNCTAD), Statistics Indonesia (BPS), and the Department of Statistics Malaysia (DOSM). The use of panel data allows for more comprehensive analysis by combining dimensions of time and country differences,

providing a clearer picture of the condition of the Indonesian and Malaysian economies during the period studied, as well as the connection between the variables (Gujarati & Porter, 2009).

4.1.1 Direct Investment (FDI) Trends

Investment plays an important role as a source of capital financing in the economy in almost all countries worldwide, especially in developing countries that still lack capital to drive growth and economic development. One type of investment is foreign direct investment (FDI), a characteristic of the global economic system. FDI occurs when a company from one country invests its capital in other countries in the long term to establish new companies or acquire shares with at least a 10% ownership stake. FDI is seen as a key factor in accelerating economic growth and development, particularly in developing countries in the ASEAN region. Countries such as Malaysia and Indonesia have attracted attention for their relatively low labor costs and status as significant recipients of FDI over the past 30 years (Griffin et al., 2015, p. 3).

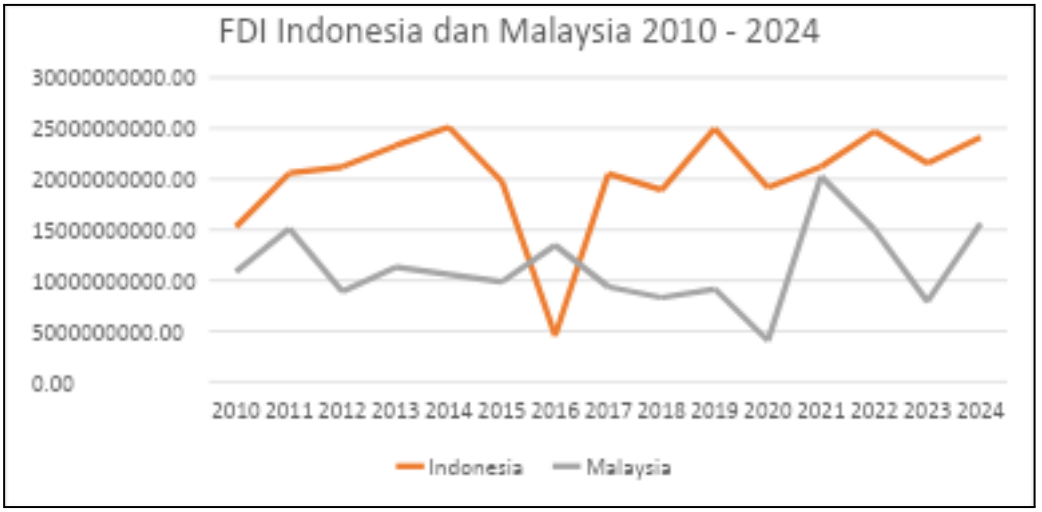

Figure 4.2.3.1 FDI Development Graph
Source: Word Bank (processed data, 2025)

Indonesia's foreign direct investment (FDI) trend shows an upward trend throughout the 2010–2024 period. Indonesia's FDI value surged from approximately US$152.9 billion in 2010 to over US$241 billion in 2024. This increase demonstrates the strong attractiveness of investment, coupled with improvements in the business climate and national economic stability. While minor fluctuations occur in certain years, the overall trend remains positive. This upward trend demonstrates the success of economic policies in creating a supportive environment for long-term investment.

Malaysia's FDI movements exhibit a more varied pattern than those in Indonesia. Investment values fluctuated between US$80 billion and US$150 billion during the observation period. 2016 saw a sharp decline, indicating the impact of global uncertainty and regional economic pressures. Despite a brief decline, Malaysia's FDI value rebounded in 2020 as the economy recovered from the pandemic. These fluctuations demonstrate greater sensitivity to global dynamics than those of regional partners like Indonesia.

A comparison between the two countries shows that Indonesia consistently receives larger FDI flows than Malaysia. The widening gap in FDI values began to emerge in 2012 and has persisted since then. This disparity can be attributed to Indonesia's larger market size, high population, and aggressive industrial policies. Malaysia continues to show a stable performance, although not as strong as Indonesia in terms of investment volume. The differences in national economic characteristics make the two countries' FDI receipt patterns unique and complementary in Southeast Asia.

The period from 2015 to 2017 demonstrated interesting dynamics for both countries. Indonesia experienced moderate fluctuations but maintained a positive trend, while Malaysia recorded a sharp decline in 2016, only to recover the following

year. This phenomenon demonstrates the influence of external conditions, such as global commodity prices and international trade policies, on investment flows. Government policy responses to maintain macroeconomic stability are a key factor in distinguishing the resilience of the two countries to global pressures. Indonesia's success in maintaining a positive trend underscores its role as a leading investment destination in ASEAN.

The increasing trend in FDI in Indonesia during the 2020–2024 period demonstrates significant potential for national economic growth. Post-pandemic economic recovery, bureaucratic reform, and the simplification of investment regulations are key drivers. Malaysia also recorded a significant recovery during the same period, although it has not yet achieved Indonesia's growth rate. The consistent increase in FDI in both countries demonstrates investor confidence in the region's economic stability. These trend results can form the basis for empirical analysis of the relationship between FDI and economic growth in Indonesia and Malaysia during the study period.

4.1.2 Development Export

International trade is a key indicator of a country's economic performance, particularly for developing countries like Indonesia and Malaysia. Export activity plays a crucial role in boosting economic growth, expanding domestic product markets, and strengthening national foreign exchange reserves. The close relationship between exports and economic development makes analyzing export trends crucial for understanding the dynamics of competitiveness between the two countries in Southeast Asia. The 2010–2024 period shows interesting developments in Indonesia and Malaysia's export volumes, reflecting the influence of global economic policies

and international market conditions. Analysis of these trends helps explain how changes in export values can contribute to national economic growth.

A comparison of Indonesian and Malaysian exports reveals differences in patterns and growth rates, reflecting the structural characteristics of each country's economy. Indonesia's export base is dominated by natural resource commodities such as coal, palm oil, and agricultural products. Malaysia's export structure is more diversified, encompassing electronics, palm oil, and mid-tech industrial components. These differences in export composition provide insight into the industrialization strategies and trade policies implemented by both countries. Observing export value trends over the past fourteen years reveals how both countries have adapted to global market dynamics.

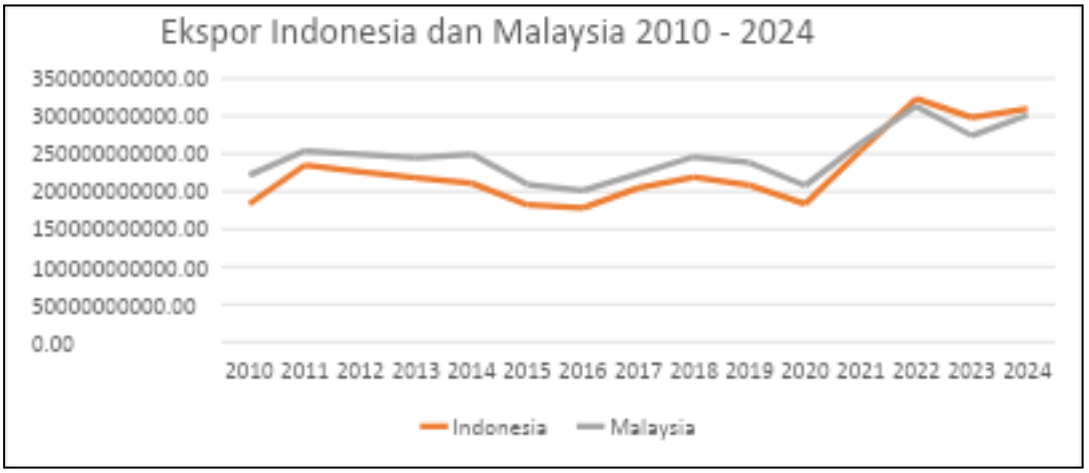

Figure 4.2.4.1 Graph Development Export

Source: Word Bank (processed data, 2025)

Indonesia's export performance shows an overall improvement, though fluctuations in some years punctuate it. Certain factors. Export value increased from approximately $1,834 trillion in 2010 to more than $3,097 trillion in 2024. This increase indicates a strengthening of national export competitiveness, supported by

industrial downstreaming policies and stable global demand (World Bank, 2023). A decline occurred in the 2015–2017 period due to weakening global commodity prices, but a recovery trend emerged after 2018. This pattern of rising exports demonstrates Indonesia's ability to maintain export performance amid global uncertainty.

Malaysia's export performance shows greater stability than Indonesia’s. Export value increased from approximately $2.216 trillion in 2010 to $3.010 trillion in 2024. Export fluctuations are moderate because Malaysia's economic structure has diversified into the manufacturing and technology sectors (Britannica, 2023). This export stability is the result of long-term policies that strengthen the export-oriented industrial sector. This condition demonstrates Malaysia's superior resilience to global commodity price shocks.

A comparison between the two countries shows that Malaysia dominated export value until around 2020, while Indonesia saw significant growth thereafter. Indonesia's surge in exports from 2021 to 2023 demonstrates the positive effects of downstreaming policies and increased global demand for energy raw materials. This sharp increase brought Indonesia closer to Malaysia's export value, even surpassing it in recent years (World Bank, 2022). This phenomenon reflects the structural transition of the Indonesian economy toward a stronger production base. This shift in position signifies Indonesia's increasing role as a major exporter in the ASEAN region.

The increase in exports in both countries during the 2020–2024 period reflects post-pandemic economic recovery. Stabilizing global demand has provided room for growth in industrial goods and commodity exports (Byjus, 2023). Indonesia has maintained export momentum by diversifying its markets into non-traditional countries such as India and the Middle East. Malaysia continues to show positive performance, despite a slight lag due to logistical pressures and rising production

costs. This positive movement demonstrates the resilience of both countries in the face of global economic challenges.

Improving export performance has boosted economic growth in both Indonesia and Malaysia. Exports' contribution to Gross Domestic Product (GDP) is a key driver of regional economic stability. Export growth reflects the success of international trade policies and structural reforms in the industrial sector. Both countries now face new challenges: the need to increase product added value to compete in the global market. Export performance from 2010 to 2024 demonstrates that international trade remains a key driver of economic development in Southeast Asia.

4.1.3 Labor Force Development

The labor force is a key indicator of a country's economic potential. A large workforce demonstrates productive capacity that can be utilized to support national economic growth. Labor availability is also closely related to investment levels, industrial productivity, and a country's ability to navigate global dynamics. An analysis of labor force trends from 2010 to 2024 provides an overview of changes in the demographic structure and economic development of Southeast Asia. Understanding these trends is crucial for assessing the role of the labor force in driving economic growth in Indonesia and Malaysia.

A comparison between Indonesia and Malaysia reveals significant differences in the workforce, reflecting the differences in population size between the two countries. Indonesia boasts a significantly larger workforce due to its large population, while Malaysia exhibits a smaller but relatively stable workforce. Differences in economic structures also influence labor force participation rates across countries. Data from 2010 to 2024 show an increasing workforce in both countries, though the growth rate

is not consistent year to year. This analysis helps understand the workforce's contribution to national productivity and each country's economic competitiveness.

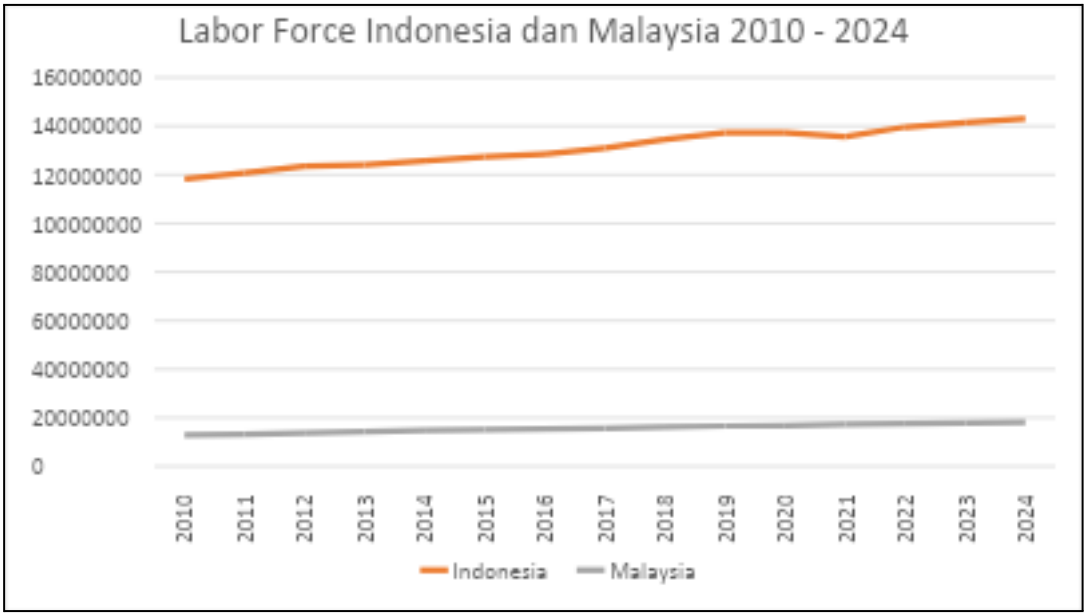

Figure 4.2.5.1 Graph Labor Force Development

Source: Word Bank (processed data, 2025)

Indonesia's labor force performance shows consistent improvement throughout the 2010–2024 period. The workforce will increase from approximately 118 million in 2010 to over 143 million in 2024. This increase reflects economic growth that drives job expansion and increased labor force participation (World Bank, 2023). The increase in the workforce aligns with year-over-year growth in the productive population. This situation indicates that Indonesia has significant potential to continue developing labor-intensive sectors of its economy.

Malaysia's labor force also shows steady growth, although the numbers are much smaller than those in Indonesia. The workforce is projected to increase from approximately 12.7 million in 2010 to over 18.2 million in 2024. This increase reflects Malaysia's economic expansion driven by the industrial, service, and

technology sectors (Britannica, 2023). The relatively stable growth in the labor force indicates efficient, well-planned labor-market management. This situation also demonstrates Malaysia's success in maintaining the national labor force participation rate.

A comparison between the two countries reveals significant differences in labor force size but similar growth patterns. Indonesia recorded a labor force increase of approximately 25 million people between 2010 and 2024, while Malaysia recorded an increase of approximately 5.5 million people. Malaysia's labor force growth rate is slower due to its smaller population and more capital-intensive economic structure (World Bank, 2022). However, Malaysia's labor productivity tends to be higher because the medium-tech industrial sector accounts for a larger share of employment. This difference illustrates two distinct but complementary economic development strategies in the ASEAN region.

The increasing number of workers in Indonesia presents a significant challenge in providing suitable jobs. The government faces the need to expand the formal sector to absorb the growing number of new workers each year. The imbalance between workforce growth and job availability could trigger rising unemployment if not balanced with appropriate economic policies (Byjus, 2023). This situation demands education and training reforms to ensure the workforce has the skills needed by modern industry. Indonesia's potential demographic dividend will be an advantage if it can be managed effectively to increase national productivity.

Malaysia's labor force growth demonstrates the country's ability to maintain a balance between labor force size and job availability. Innovation-based economic policies and investments in the information technology sector have created high-quality jobs. Increasing female labor participation has also contributed to the

stability of the national labor market (World Bank, 2023). This positive trend demonstrates Malaysia's success in creating an employment system that prioritizes quality over quantity. This situation makes Malaysia an example of a country capable of combining labor-market efficiency with improved worker welfare.

4.1.4 Gross Domestic Product (GDP) Growth Trends

Gross Domestic Product (GDP) growth reflects a country's level of prosperity and economic performance. This indicator shows the total value of goods and services produced over a specific period and is a key measure of economic development success (World Bank, 2023). Developing countries such as Indonesia and Malaysia use GDP as an important benchmark for assessing the effectiveness of fiscal, investment, and international trade policies. A comparison of GDP between the two countries from 2010 to 2024 provides insight into the dynamics of economic growth in Southeast Asia. Understanding these trends helps explain how national economic policies contribute to improving public welfare.

The GDP growth rates of Indonesia and Malaysia show positive trends despite being affected by global economic fluctuations. The financial crisis, changes in commodity prices, and the COVID-19 pandemic have impacted their growth rates. However, data demonstrate both countries' ability to maintain economic stability and sustain GDP growth (OECD, 2023). Comparing GDP figures also illustrates the much larger scale of Indonesia's economy compared to Malaysia's due to differences in population and national production capacity. This analysis is crucial for understanding the extent to which Indonesia and Malaysia's economies have developed over the past decade.

Figure 4.2.6.1 GDP Growth Trend Figure

Source: Word Bank (processed data, 2025)

Indonesia's GDP growth has been significant throughout the 2010–2024 period. GDP value increases from approximately US$7.55 trillion in 2010 to approximately US$13.96 trillion in 2024. This trend shows a steady average increase each year, despite a slowdown in 2014–2015 (World Bank, 2023). A significant surge is seen from 2016 to 2024, reflecting a strong economic recovery following the global downturn. This increase indicates improved productivity and a growing contribution from the industrial and service sectors to the national economy.

Malaysia's GDP growth also shows a steady increase, albeit on a smaller scale than Indonesia's. Malaysia's GDP rose from approximately US$2.55 trillion in 2010 to approximately US$4.21 trillion in 2024. This increase demonstrates sustained economic growth despite a slowdown during 2014–2016 (IMF, 2023). This positive trend is driven by the export sector, particularly electronics, palm oil, and high-tech manufacturing. This reflects Malaysia's development strategy, which focuses on economic diversification and increasing global competitiveness.

A comparison of the two countries reveals a significant difference in economic scale, yet relatively consistent growth. Indonesia exhibits a higher average annual GDP growth rate, supported by its broad economic base and large population. Malaysia, despite its smaller GDP, continues to demonstrate stable growth, supported by the efficiency of its industrial sector and foreign trade (Asian Development Bank, 2023). This stable growth ratio demonstrates Malaysia's ability to maintain economic performance despite external challenges. Both countries exhibit positive growth, strengthening the Southeast Asian economy.

Changes in GDP trends in 2020 demonstrate the impact of the COVID-19 pandemic on the economic activity of both countries. Indonesia experienced a sharp slowdown in growth due to a decline in domestic consumption and investment. Malaysia also faced a similar economic contraction due to disruptions to global supply chains (UNCTAD, 2022). Recovery began to emerge in 2021 when economic stimulus policies were implemented to encourage consumption and investment. The increase in GDP after that year demonstrates the success of both countries in stabilizing their economies post-pandemic.

Continued GDP growth through 2024 represents a positive trajectory for the future of the Indonesian and Malaysian economies. Foreign investment, exports, and the development of the digital sector are key factors driving this growth (World Bank, 2023). This performance demonstrates that both countries have successfully leveraged domestic economic potential to strengthen global competitiveness. GDP growth also reflects increased labor productivity and industrial efficiency. These results demonstrate that sustainable development strategies have positively impacted national economic growth in both countries.

4.1.5 Descriptive Statistical Analysis

Descriptive statistical analysis was conducted to provide an initial overview of the data used in this study. The data analyzed included Gross Domestic Product (GDP) as the dependent variable (Y), along with Foreign Direct Investment (FDI) as X_1, exports as X_2, and the labor force as X_3. The analysis used EViews software to facilitate data processing, including the calculation of the average, standard deviation, maximum, and minimum for each variable. The results of these descriptive statistics provide basic information on the distribution, central tendency, and variation of the data, which will later be used in the regression analysis.

Descriptive statistical analysis shows that both Indonesia and Malaysia have positive economic performance, but with different levels of stability, where Indonesia tends to be more volatile than Malaysia; this is seen from the higher standard deviation of FDI in Indonesia (5.13E+09) compared to Malaysia (3.98E+09), which indicates that foreign investment flows in Indonesia are more sensitive to changes in global and domestic conditions, such as policy uncertainty, exchange rate volatility, and dependence on commodity sectors that are vulnerable to international prices, thus causing significant fluctuations from year to year, while Malaysia is relatively more stable because it has a more diversified economic structure and is based on manufacturing industries and high value-added exports, supported by consistent economic policies and a more secure investment climate; in addition, the stability of Malaysian exports is also seen from the lower standard deviation compared to Indonesia, reflecting the resilience of the foreign trade sector which is stronger, while Indonesia still faces export variations due to fluctuations in global demand and commodity prices, so that overall this difference shows that although both countries

are experiencing economic growth, Indonesia faces higher dynamics in its economic variables, while Malaysia shows a more stable and controlled growth pattern.

4.1.5.1 Indonesia

Table 4.2.7.1.1 Analysis of Descriptive Statistical Results in Indonesia

Variables	N	Minimum	Maximum	Mean	Std. Dev
FDI (X1)	15	4.54E+09	2.51E+10	2.03E+10	5.13E+09
Export (X2)	15	1.78E+11	3.23E+11	2.29E+11	4.73E+10
Labor Force (X3)	15	1.18E+08	1.43E+08	1.31E+0.8	7.88E+0.6
GDP (Y)	14	7.55E+11	1.40E+12	1.40E+12	1.97E+11

Source: EViews output (processed data, 2025)

The statistical results show that the average FDI of 2.03E+10 indicates a significant level of foreign investment in Indonesia during the research period. The variation in FDI data is relatively high, with a standard deviation of 5.13E+09, indicating fluctuations in investment from year to year. The average export volume reached 2.29E+11, reflecting Indonesia's strong foreign trade performance, which remains strong despite significant differences across market periods. The average labor force value of 1.31E+08 indicates the stability of the national workforce, which continues to increase in line with economic growth. GDP averages 1.04E+12, indicating that national economic growth is fairly high throughout the observation period. Overall, these results show that the Indonesian economy is on a positive trend, with moderate variation in key variables.

4.1.5.2 Malaysia

Table 4.2.7.2.1 Analysis of Descriptive Statistical Results in Malaysia

Variables	N	Minimum	Maximum	Mean	Std. Dev
FDI (X1)	15	4.06E+09	2.02E+10	1.13E+10	3.98E+09

Export (X2)	15	2.01E+11	3.13E+11	2.47E+11	4.24E+10
Labor Force (X3)	15	1.28E+07	1.83E+07	1.57E+07	1.75E+06
GDP (Y)	14	2.55E+11	4.22E+11	3.41E+11	1.65E+10

Source: EViews output (processed data, 2025)

Descriptive statistics show that the average FDI value of 1.13E+10 reflects a relatively high level of foreign investment in Malaysia during the study period. The standard deviation of 3.98E+09 indicates moderate year-to-year variation in FDI inflows. The average export value reached 2.47E+11, indicating a significant contribution of the trade sector to the national economy and indicating stability with a standard deviation of 3.24E+10. The average labor value of 1.57E+07 indicates a stable workforce and consistent labor force growth. GDP averages 3.41E+11, indicating that Malaysian economic activity is at a high level with relatively low data variation. Overall, these results reflect the strong and stable condition of the Malaysian economy, showing positive developments in key indicators.

4.2 Stationarity Test Results

Stationarity testing is performed to ensure that the data used in the regression model does not contain a unit root. This is crucial to avoid spurious regression, characterized by a very high coefficient of determination but lacking valid economic meaning.

Based on initial testing at the *level*, it was found that the GDP and Export variables were non-stationary. Therefore, data were corrected using the first-difference method *to* achieve stationarity.

Table 4.3.1 Results of the Unit Root Test Panel

Variable	Definition	Transformation	Expected Sign	Stationarity Results (ADF-EViews)	Final Form for Regression
LN_GDP	Gross Domestic Product (proxy for economic growth)	Natural logarithm	Dependent Variable	Non-stationary at level	ΔLN_GDP
Foreign Direct Investment (LN_FDI)	Foreign Direct Investment inflows	Natural logarithm	Positive (+)	Stationary at level	Foreign Direct Investment (LN_FDI)
LN_EXPORT	Export value	Natural logarithm	Positive (+)	Non-stationary at level	ΔLN_EXPORT
LN_LABOR_FORCE	Labor force participation / labor supply	Natural logarithm	Positive (+)	Mostly non-stationary at level	ΔLN_LABOR_FORCE
LN_FDIDUMMY	Interaction/dummy representation of FDI effect across countries	Natural logarithm	Positive (+)	Depends on construction	LN_FDIDUMMY

Table 4.3.2

Results of the Stationarity Test Level

Variables	ADF Prob	Information
LN_GDP	0.7402	Non-stationary
Foreign Direct Investment (LN_FDI)	0.0013	Stationary
LN_EXPORT	0.6619	Non-stationary
LN_LABOR FORCE	0.0421	Stationary

Source: EViews output (processed data, 2026)

Based on the *panel-level unit root test, several variables remain non-stationary, so a first-difference transformation is needed to meet the stationarity assumptions.* Meanwhile, variables that have been stationary at the fixed level are used in their original form in the regression model. Therefore, the final regression model in this study is formulated as follows:

$$\Delta lnGDP_{it} = \beta_0 + \beta_1 lnFDI_{it} + \beta_2 \Delta lnEXPORT_{it} + \beta_3 \Delta lnLABOR_{it} + \beta_4 lnFDIDUMMY_{it} + \varepsilon_{it}$$

Table 4.3.2 Stationary Test of Data Using the ADF Method

Variable	ADF Prob
LNGDP	0.0024
LNEXPORT	0.0036

Source: EViews output (processed data, 2026)

Based on the stationarity test results at the *first-difference level, the variables ΔLNGDP and ΔLNEXPORT have p-values below 0.05, indicating they are stationary*. Thus, all variables in the study meet the stationarity assumption and are suitable for panel regression estimation.

4.3 Analysis Results of Panel Data Regression and Discussion

4.4.1 Model Selection Test

Model selection is an important step in panel data regression because it determines the most appropriate estimation model. Panel data regression generally consists of three estimation approaches, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The selection of the appropriate model is carried out through several statistical tests.

In this study, model selection was conducted using the Chow Test, which compares the Common Effect Model (CEM) and the Fixed Effect Model (FEM). Because this study only uses two cross-sectional units (Indonesia and Malaysia), the Random Effect Model (REM) was not estimated. Therefore, the Hausman Test was not performed, and the final model selection was based on the Chow Test results.

4.4.1.1 Chow Test (Pooled OLS vs Fixed Effect)

The Chow test is used to determine whether the fixed-effects model explains the variation in the dependent variable better than the pooled OLS model. Conceptually, this test examines whether there is a significant difference in intercepts between cross-sections.

Based on the results of data processing using EViews, the following results were obtained:

Table 4.4.1.1 Chow Test Output

Effects Test	Statistics	Prob.
Cross-section F	1.187778	0.2866
Cross-section Chi-square	1.449151	0.2287

Source: EViews output (processed data, 2026)

Cross-section F probability value is 0.2866, which is greater than the 0.05 significance level. Although the Chow Test results indicate that the *Common Effect Model* (CEM) can be used, this study still uses *the Fixed Effect Model* (FEM) because it accounts for differences in economic characteristics between Indonesia and Malaysia, making FEM more appropriate in this study

4.4.1 Data Model (FEM) Estimation Results

The estimate is obtained using the Panel Least Squares method, based on data for the period 2010–2024, with a total of 30 observations and two cross-sections.

Dependent Variable:

Independent LN_GDP Variable

Table 4.4.1.2 FEM Regression Results

Variables	Coefficient	Prob.
C	-4.798934	0.0337

Foreign Direct Investment (LN_FDI)	-0.022573	0.5556
LN_EXPORT	0.556719	0.0000
LN_LABOR_FORCE	1.025290	0.0000
LN_FDIDUMMY	-0.013746	0.7914

Source: EViews output (processed data, 2026)

4.4.2 Testing Assumptions Classic

Following is an assumption test classic for the EViews regression model:

$$lnGDP_{it} = \beta_0 + \beta_1 lnFDI_{it} + \beta_2 lnEXP_{it} + \beta_3 lnLABOR_{it} + \beta_4 (DUM \times lnFDI)_{it} + u_{it}$$

4.4.2.1 Multicollinearity Test (VIF)

The multicollinearity test checks for perfect linear correlation among the independent variables in the model. Multicollinearity was detected using the standard error of the estimate (SEE) and the *Variance Inflation Factors* (VIF).

Table 4. 4.2.1 Output Variance Inflation Factors (VIF)

Variable	**Coefficient Variance**	**Uncentered VIF**	**Centered VIF**
C	4.684144	14811.23	NA
Foreign Direct Investment (LN_FDI)	0.000812	215.1437	1.969329
LN_EXPORT	0.006045	1146,993	1.694238
LN_LABOR_FORCE	0.015536	134440	181.5725
LN_FDIDUMMY	0.000136	1.838575	186.0876

Source: EViews output (processed data, 2026)

Based on the test results in Table 4.3.1.2.1.1, *the Labor Force variable* and the *dummy interaction variable* had *Centered VIF values* of 181.57 and 186.08, respectively. Although these values exceeded the general limit of 10, the researcher retained these variables in the research model. This is based on the theoretical consideration that labor is a fundamental input in the production function, while the interaction variable is needed to capture structural differences between countries.

The high VIF value is a logical consequence of using a panel data model with macroeconomic variables that are highly correlated. Given that the export and labor variables still show very strong significance ($p < 0.01$) and that the coefficients' direction is consistent with economic theory, the presence of multicollinearity in this model does not affect the validity of the estimates. The researchers chose not to eliminate variables to avoid *omitted-variable bias*, which could undermine the overall model specification.

4.4.2.2 Heteroscedasticity Test

This test uses the *White test to* ensure the residuals' variance is constant (homoscedasticity).

Table 4.4.2.2 Heteroscedasticity Test Output

Statistics	**Value**	**Prob.**
Obs *R-squared	14.89287	0.2473

Source: EViews output (processed data, 2026)

Based on the results of the White test in the table, the Obs*R-squared value is 14.8928 with a significance value or Prob—chi-Square (12) of 0.2473. According to the testing criteria, if the p-value is greater than the significance level of 0.05 ($0.2473 > 0.05$), the model is declared free of heteroscedasticity. This means the

residual variance is constant (homoscedasticity), so the resulting estimator remains efficient and valid for long-term analysis.

4.4.2.3 Autocorrelation Test *(Breusch–Godfrey)*

The autocorrelation test assesses whether there is a correlation between the disturbance error in period t and the disturbance error in the previous period (t-1).

Table 4.4.2.3 Autocorrelation Result Output

Statistics	**Value**	**Prob.**
Obs *R-squared	11.94005	0.0026

Source: EViews output (processed data, 2026)

Based on the results estimate, t*he Durbin-Watson* (DW) value is 0.587. Statistically, this value is below the lower limit (*dL*), indicating positive autocorrelation in the model. This indicates a data dependency between the current and previous periods, a common characteristic of persistent long-term (*time-series) macroeconomic data.*

The researchers decided to retain this model, given that the primary objective of the study was to examine the long-term elasticity of the relationship between the variables, rather than for short-term forecasting. Furthermore, considering that the partial test results showed that the export and labor variables had a very strong level of significance ($p < 0.01$) with coefficient directions consistent with economic theory, the presence of this autocorrelation was deemed not to change the substantive conclusions of the study. The researchers chose to accept this limitation to maintain data authenticity and avoid the loss of important information that often occurs during data transformation.

4.4.2.4 Normality Test *(Jarque–Bera)*

The normality test assesses whether the residuals from a regression model are normally distributed. A good model has normally distributed residuals, so hypothesis testing using the t-test and F-test is valid and unbiased.

Table 4.4.2.4 Output of Normality Test Results

Statistics	**Value**
Jarque-Bera	0.609175
Probability	0.737427

Source: EViews output (processed data, 2026)

Based on the test results in the table above, *the Jarque-Bera statistic was 0.6091, with a p-value of* 0.7374. Based on the decision-making criteria, if the probability value is greater than the significance level of 0.05 (0.7374 > 0.05), then the null hypothesis (H_0), which states that the residuals are normally distributed, is accepted.

4.4.2.5 Linearity/ Specification Test *(Ramsey RESET)*

The Linearity Test aims to determine which model is used. In the study, do the specifications match the model? In other words, the question is whether the function used in the empirical study should be linear, quadratic, or cubic. Testing done with the *Ramsey RESET Test*.

Table 4.3.2.5 Output of Linearity Test Results

Statistics	Mark	Prob. F
F statistic	1.298735	0.2657

Source: EViews output (processed data, 2025)

Based on the test results in the table above, the *F-statistic was 1.2987, with a probability value (Prob. F)* of 0.2657. In accordance with the decision-making

criteria, if the probability value is greater than the significance level of 0.05 (0.2657 > 0.05), then the null hypothesis (H_0) is accepted.

4.4.2.6 Summary Assumptions Classic

Table 4.3.2.6 Summary Assumptions Classic

Assumption	Test	Results
Multicollinearity	Matrix Correlation	Does not matter
Homoscedasticity	White Test	Passed
n't any autocorrelation	Breusch–Godfrey	Passed
Correct Specifications	Ramsey RESET	Passed
Normality	Jarque–Bera	Passed

Source: EViews output (processed data, 2026)

4.4.2.7 Sub-chapter Conclusion

Classical assumption testing indicates that the regression model meets the assumptions of normality, homoscedasticity, absence of autocorrelation, and correct specification. Furthermore, no serious multicollinearity was detected among the explanatory variables. Therefore, the estimated coefficients can be considered unbiased, efficient, and reliable for inference.

4.5 Interpretation of Research Regression Results

Based on the results of panel estimation using the Fixed Effect Model (FEM), it was found that the variables *foreign direct investment* (LN_FDI), exports (LN_EXPORT), labor (LN_LABOR_FORCE), and dummy FDI (LN_FDI_DUMMY) have different effects on economic growth (LN_GDP) during the observation period 2010–2024. The use of FEM shows that the model has considered the specific characteristics of each cross-region (*cross-section*) that

cannot be observed directly, such as the quality of institutions, industrial structure, and the effectiveness of economic policies in each country.

Equality panel data regression obtained from the results estimate is:

$$\Delta \ln ln\, GDP_{it} = -\ 4.858586\ -\ 0.022573 lnFDI\_it\ +\ 0.556719 \Delta lnEXPORT\_it\ +\ 1.025290 \Delta lnLABO$$

The constant value of -4.858586 indicates that when all independent variables are assumed constant, economic growth is negative. This result is statistically significant because the p-value of 0.0337 is below the 5% significance level. In a macroeconomic context, this constant illustrates that without the contributions of the main variables, the economy will contract. Basic driving factors outside the model remain crucial in determining the minimum level of economic output before it is influenced by foreign capital and trade.

The coefficient of LN_FDI is −0.022573, indicating that a one percent increase in Foreign Direct Investment (FDI) is associated with a 0.0226 percent decrease in GDP, ceteris paribus. However, this coefficient is not statistically significant because the probability value (0.5556) is greater than the 5 percent significance level. Therefore, the study fails to reject the null hypothesis, indicating that FDI has no significant effect on economic growth in Indonesia and Malaysia during the observation period.

This finding suggests that the inflow of foreign investment has not yet been fully translated into higher economic growth. One possible explanation is that FDI in both countries is concentrated in sectors with relatively weak linkages to the domestic

economy, limiting technology spillovers, productivity improvements, and employment creation. In addition, the effectiveness of FDI depends on the host country's absorptive capacity, institutional quality, and human capital. Consequently, although FDI contributes additional capital, its impact on economic growth is not statistically evident in this study.

The insignificant impact of FDI may be due to several factors. First, FDI is likely to be concentrated in extractive and natural resource-based sectors with little linkage to the domestic industry. Second, some foreign investment may rely heavily on imported inputs, resulting in a relatively small multiplier effect on the national economy. Third, multinational corporations may repatriate most of their profits to their home countries, thereby limiting the benefits to the domestic economy. In developing countries, the quality of institutions, human resource capacity, and the readiness of domestic industries are crucial factors in determining whether FDI can generate positive effects or create economic dependency.

In contrast to FDI, the export variable (LN_EXPORT) shows a positive coefficient of 0.556719 and is highly statistically significant ($0.0000 < 0.05). This means that a 1 percent increase in exports can increase GDP growth by approximately 0.56 percent. These results indicate that exports are a major driver of economic growth in the study area.

Economically, increased exports have several simultaneous positive impacts. When exports increase, national production also increases because companies must meet international market demand. This encourages increased production capacity, employment, and foreign exchange earnings. Furthermore, involvement in international trade enables technology transfer and increased production efficiency through global competition. This finding aligns with the export-led growth theory,

which holds that trade openness can accelerate economic growth by expanding markets and boosting national productivity.

The labor force variable (LN_LABOR_FORCE) has a coefficient of 1.025290 and is significant at the 5 percent level ($0.0000 < 0.05$). This means that a 1 percent increase in the labor force will increase GDP by 1.03 percent. The relatively large coefficient indicates that the labor force plays a very important role in production and economic growth.

From a development economics perspective, labor is the primary factor of production that determines a country's output capacity. Labor growth typically increases national production capacity as more individuals enter the labor force. Furthermore, an increase in the labor force also boosts domestic consumption, thereby increasing aggregate demand. These results indicate that the economic structure remains highly dependent on labor-intensive activities, particularly in manufacturing, trade, and services.

Meanwhile, the LN_FDI_DUMMY variable has a negative coefficient of -0.013745 and is statistically insignificant (0.7914 > 0.05). This result indicates that there is no significant difference in FDI effectiveness across entities in the research panel. In other words, the impact of foreign investment is uniform because relatively similar domestic conditions across entities influence it.

4.6 Goodness of Fit

The estimation results show that the R-squared value is 0.993044, indicating that around 99.30 percent of the variation in GDP growth is explained by the model's variables: FDI, exports, labor, and the FDI dummy.

$$- R^2 = 0.993044$$

The coefficient value is sufficient to indicate that the model provides a good explanation of the change in economic growth during the period of observation. In

other words, the combination of external and domestic variables used in the study has explained most of the dynamics of economic growth in the study area.

However, approximately 0.70 percent of the GDP variation remains unexplained by factors outside the research model. These factors may include technological development, inflation, exchange rate stability, institutional quality, government spending, infrastructure, political conditions, and global economic changes not directly included in the regression model.

Furthermore, the Prob (F-statistic) value of 0.000000 indicates that all independent variables simultaneously have a significant effect on economic growth. This indicates that the regression model as a whole is adequate for explaining the relationships among FDI, exports, labor, and economic growth.

In general, research findings show that economic growth in developing countries is influenced not only by foreign capital flows but also by export capabilities and domestic labor capacity. Therefore, development policies should focus not only on increasing foreign investment but also on strengthening institutional quality, increasing labor productivity, and developing high-value-added export sectors.

4.7 Economic Implications

The research results show that exports and labor are important drivers of economic growth in Indonesia and Malaysia during the 2010–2024 period. The significant influence of exports indicates that increasing the competitiveness of domestic products in international markets can expand production, increase foreign exchange earnings, and strengthen economic growth. Therefore, policies on industrial downstreaming, export market diversification, and increasing product added value

need to be continuously strengthened so that the benefits of international trade can make a greater contribution to the economy.

Labor findings indicate that increasing the number of workers absorbed in productive economic activities can significantly increase national output. This indicates that the quality of human resources is a crucial factor in supporting long-term economic growth. Therefore, the government needs to strengthen investment in education, job training, skills development, and labor productivity to optimize the demographic dividend.

On the other hand, research indicates that Foreign Direct Investment (FDI) has not yet significantly affected economic growth. This situation suggests that the success of foreign investment is determined not only by the magnitude of capital inflows but also by the domestic economy's ability to absorb the benefits of those investments. Therefore, investment policies need to be directed at sectors with strong links to domestic industry, encouraging technology transfer, increasing the use of local inputs, and expanding job creation. Thus, foreign investment serves not only as a source of development financing but also as an instrument for sustainably increasing national economic productivity and competitiveness.

CHAPTER V

CONCLUSIONS AND SUGGESTIONS

This chapter presents a final summary of the overall research results outlined in the previous chapters. The conclusions drawn in this section are based on the descriptive analysis and panel-data model estimation conducted, thereby comprehensively reflecting the research's empirical findings. Furthermore, this chapter presents several recommendations intended to inform the thinking of relevant parties in formulating policies and to guide future researchers interested in similar topics. Thus, this section concludes by emphasizing the research's academic and practical implications.

6.1 Conclusions

1. The urgency of this research stems from the dynamics of economic growth in Indonesia and Malaysia, which have historically relied on capital flows and international trade. Based on this background, this study aims to examine the extent to which external variables (FDI and Exports) and internal variables (Labor Force) drive economic growth within the neoclassical growth theory framework during the period 2010–2024.
2. The theoretical basis of this study is the Cobb-Douglas Production Function and the Export-Led Growth hypothesis. Methodologically, this study employed the Fixed Effect Model (FEM) as the final panel data estimation model. Although the Chow test indicated that the Common Effect Model (CEM) could be considered, the Fixed Effect Model was selected because it better accommodates the different economic characteristics of Indonesia and Malaysia. The selected model demonstrated a very high level of fit, with an R-squared value of 0.9930, indicating that the independent

variables have strong explanatory power in explaining variations in Gross Domestic Product (GDP).

3. The labor force and export variables have been empirically proven to be the main drivers of economic growth in both countries. The labor force contributes the most, with a coefficient of 1.002, while exports have a coefficient of 0.570. These findings confirm that national economic growth remains highly dependent on the productive capacity of the local workforce and on trade performance in global markets.
4. The analysis of Foreign Direct Investment (FDI) indicates that foreign investment does not have a statistically significant effect on Gross Domestic Product (GDP), as indicated by a probability value of 0.5556. Furthermore, the interaction dummy variable (Prob. = 0.7914) shows that there is no significant difference in the impact of FDI between Indonesia and Malaysia.
5. Despite spurious-correlation concerns *arising* from the use of macro data with *trending variables*, the economic relationships in this study remain valid. This is because the estimation results are theoretically consistent and supported by strong statistical significance in the fundamental variables, thus ensuring the model remains reliable for policymaking.

6.2 Suggestions

1. For the Government
    a. For the Indonesian Government

        The government needs to evaluate and reduce its reliance on FDI in the mining/extractive sectors, which are *capital-intensive* but have few *linkages* to the domestic economy. Policies should be directed toward further downstream development to increase domestic value-added.

b. For the Malaysian Government

The Malaysian government should direct FDI flows more specifically to high-*tech industries* and digitalization to avoid *the middle-income trap* and maximize technology transfer to boost national production efficiency.

2. For the Community

The community, particularly the workforce, is expected to continue improving the quality of its skills and technical competencies (*human capital investment*). Given that the workforce is the most dominant variable driving economic growth (coefficient 1.025290), increasing local labor productivity is key to adapting to technology brought by foreign investors and becoming a key driver of sustainable national output.

3. For Investors

Investors are expected to focus not only on quantitative capital investment but also commit to the process of knowledge and technology transfer *to* local partners. Deeper integration with the domestic supply chain will create a more stable and sustainable business ecosystem, enabling foreign investment to have a tangible multiplier effect on economic growth in the host country.

4. For Further Researchers

Develop the study further by expanding the scope of the ASEAN Panel analysis to obtain more generalizable results at the regional level. Given the limitations on sample size (N=30) and the constraints of multicollinearity and autocorrelation in this study, dynamic methods such as the *Generalized Method of Moments* (GMM), *Vector Error Correction Model* (VECM), or ARDL are highly recommended. For a catch-up connection term, in addition to adding moderating variables such as institutional quality (*governance*) or digital infrastructure, it is

highly recommended to explore other factors that hinder FDI's effectiveness in promoting economic growth.

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Appendix 1

Table of FDI Development Trends

Year	Indonesia	Malaysia
2010	15292009410.51	10885801852
2011	20564938226.72	15119439204
2012	21200778607.87	8895774251
2013	23281742361.53	11296279514
2014	25120732059.51	10619431583
2015	19779127976.96	9857162112
2016	4541713739.24	13470089921
2017	20510310832.45	9368469823
2018	18909826043.51	8304480742
2019	24993551748.01	9154921685
2020	19175077747.81	4058769679
2021	21213080329.86	20245157327
2022	24702029705.09	15027992711
2023	21543358781.38	7918601050
2024	24107310607.22	15593246087

Source: Word Bank (processed data, 2025)

Development Trends Export

Year	Indonesia	Malaysia
2010	183480562961.32	221687585588.34
2011	235095129132.99	254020012398.68

2012	225744403267.74	249353066125.01
2013	218308408827.84	244490716805.85
2014	210820082831.81	249470799239.81
2015	182158298802.03	209287287856.54
2016	177886012744.87	201165058574.72
2017	204924485909.16	223413837325.06
2018	218905647886.56	245967590635.25
2019	208057763659.25	238379861290.49
2020	183546577017.38	207798540352.97
2021	254109508154.49	264015642139.89
2022	323218198016.36	313245857998.72
2023	298282074769.18	274125381554.23
2024	309745619367.11	301096580804.20

Source: Word Bank (processed data, 2025)

Labor Force Development Trends

Year	Indonesia	Malaysia
2010	118205102	12775608
2011	120648289	13110062
2012	123448397	13634474
2013	124097473	14171099
2014	125645513	14719087
2015	127301276	15100271
2016	128501300	15412226

2017	130940742	15776197
2018	134532894	16209365
2019	137425585	16633299
2020	137375390	16875265
2021	135672770	17243512
2022	139637843	17583325
2023	141349381	17923168
2024	143143940	18264000

Source: Word Bank (processed data, 2025)

GDP Growth Trend Table

Year	Indonesia	Malaysia
2010	755094157621.94	255017638455.59
2011	892969104563.17	297951668674.84
2012	917869913332.65	314443047642.11
2013	912524136718.02	323276235524.42
2014	890814755533.54	338066095097.25
2015	860854232686.21	301355266964.95
2016	931877364037.70	301256033870.33
2017	1015618744159.73	319109094160.34
2018	1042271532988.63	358788845712.53
2019	1119099871350.20	365177721021.52
2020	1059054842698.48	337456163961.21
2021	1186509691086.73	373784823672.95
2022	1319101183380.15	407605841348.24

2023	1371169301563.62	399705137434.07
2024	1396300098190.97	421972102253.57

Source: Word Bank (processed data, 2025)

Appendix 2 Analysis Statistics Descriptive

a. Analysis Statistics Descriptive Indonesia

	X1	X2	X3	Y
Mean	2.03E+10	2.29E+11	1.31E+08	1.04E+12
Median	2.12E+10	2.18E+11	1.31E+08	1.02E+12
Maximum	2.51E+10	3.23E+11	1.43E+08	1.40E+12
Minimum	4.54E+09	1.78E+11	1.18E+08	7.55E+11
Std. Dev.	5.13E+09	4.73E+10	7878603.	1.97E+11
Skewness	-2.022346	0.877656	-0.072158	0.568105
Kurtosis	7.127603	2.525659	1.744055	2.174994
Jarque-Bera	20.87290	2.066325	0.998890	1.232254
Probability	0.000029	0.355880	0.606867	0.540032
Sum	3.05E+11	3.43E+12	1.97E+09	1.57E+13
Sum Sq. Dev.	3.68E+20	3.14E+22	8.69E+14	5.43E+23
Observations	15	15	15	15

b. Analysis Statistics Descriptive Indonesia

	X1	X2	X3	Y
Mean	1.13E+10	2.47E+11	15695397	3.41E+11
Median	1.06E+10	2.46E+11	15776197	3.37E+11
Maximum	2.02E+10	3.13E+11	18264000	4.22E+11
Minimum	4.06E+09	2.01E+11	12775608	2.55E+11
Std. Dev.	3.98E+09	3.24E+10	1757263.	4.65E+10
Skewness	0.492982	0.554643	-0.198722	0.152873
Kurtosis	3.114213	2.656930	1.855755	2.282934
Jarque-Bera	0.615732	0.842632	0.917035	0.379790
Probability	0.735014	0.656183	0.632220	0.827046
Sum	1.70E+11	3.70E+12	2.35E+08	5.11E+12
Sum Sq. Dev.	2.21E+20	1.47E+22	4.32E+13	3.03E+22
Observations	15	15	15	15

Appendix 3

LN GDP, LN FDI, LN Export, LN Labor Force, LN FDIDUMMY Indonesia and Malaysia

Cross Section	Period	Foreign GDP	Foreign Direct Investment	LN EXPORT	Foreign Labor Force	LN FDIDUMMY
INDONESIA	2010	27.3501082	23.4505962	25.9353745	18.5879318	0
	2011	27.5178178	23.7468534	26.183256	18.6083901	0
	2012	27.5453215	23.7773037	26.1426692	18.6313337	0
	2013	27.5394803	23.8709353	26.1091746	18.6365778	0
	2014	27.5154023	23.9469593	26.0742709	18.6489751	0
	2015	27.481191	23.707893	25.9281419	18.662067	0
	2016	27.560467	22.2365702	25.9044088	18.6714495	0
	2017	27.6465191	23.7441935	26.0459073	18.6902554	0
	2018	27.6724236	23.6629475	26.1119066	18.7173192	0
	2019	27.7435457	23.9418836	26.0610815	18.7385931	0
	2020	27.6883979	23.6768772	25.9357342	18.7382278	0
	2021	27.802037	23.7778838	26.2610311	18.7257564	0
	2022	27.9079716	23.9301512	26.5015934	18.7545627	0
	2023	27.9466849	23.7933334	26.4213054	18.7667452	0
	2024	27.964847	23.9057809	26.4590172	18.7793612	0
MALAYSIA	2010	26.2645985	23.1107251	26.1245349	16.3630482	23.1107251
	2011	26.4201971	23.4392471	26.2606788	16.3888905	23.4392471
	2012	26.4740688	22.9088421	26.2421356	16.4281119	22.9088421
	2013	26.501773	23.1477392	26.2224431	16.4667151	23.1477392
	2014	26.5465072	23.0859513	26.2426077	16.5046556	23.0859513
	2015	26.4315556	23.0114641	26.0669737	16.5302232	23.0114641
	2016	26.4312263	23.3237375	26.0273915	16.5506716	23.3237375
	2017	26.4887988	22.9606156	26.1322916	16.5740128	22.9606156
	2018	26.6059998	22.840061	26.2284656	16.6010997	22.840061
	2019	26.6236499	22.9375574	26.1971312	16.6269172	22.9375574
	2020	26.5447014	22.1241457	26.0598348	16.6413594	22.1241457
	2021	26.6469461	23.7311814	26.2992741	16.6629465	23.7311814
	2022	26.7335664	23.4331804	26.4702542	16.6824615	23.4331804
	2023	26.7139929	22.7924803	26.3368514	16.7016047	22.7924803
	2024	26.768205	23.4701037	26.4306969	16.7204424	23.4701037

Appendix 4 Eviews Output (OLS-Panel)

Dependent Variable: LN_GDP
Method: Panel Least Squares
Date: 04/21/26 Time: 14:10
Sample: 2010 2024
Periods included: 15
Cross-sections included: 2
Total panel (balanced) observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.858586	2.156901	-2.252577	0.0337
LN_FDI	-0.022573	0.037765	-0.597707	0.5556
LN_EKSPOR	0.556719	0.078411	7.100008	0.0000
LN_LABOR_FORCE	1.025290	0.125935	8.141414	0.0000
LN_FDIDUMMY	-0.013745	0.051403	-0.267398	0.7914

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.993044	Mean dependent var	27.10260
Adjusted R-squared	0.991595	S.D. dependent var	0.587722
S.E. of regression	0.053881	Akaike info criterion	-2.827209
Sum squared resid	0.069677	Schwarz criterion	-2.546969
Log likelihood	48.40813	Hannan-Quinn criter.	-2.737558
F-statistic	685.2740	Durbin-Watson stat	0.556565
Prob(F-statistic)	0.000000		

Appendix 5 Assumption Test Output Classic (Eveiws)

1. Multicollinearity Test Output (Correlation Matrix)

Variance Inflation Factors
Date: 03/04/26 Time: 20:52
Sample: 1 30
Included observations: 30

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	4.684149	48042.46	NA
LN_FDI	0.000812	4553.812	1.969329
LN_EKSPOR	0.006045	42496.27	1.694238
LN_LABOR_FORCE	0.015536	49690.78	181.5725
LN_FDIDUMMY	0.000136	372.0813	186.0876

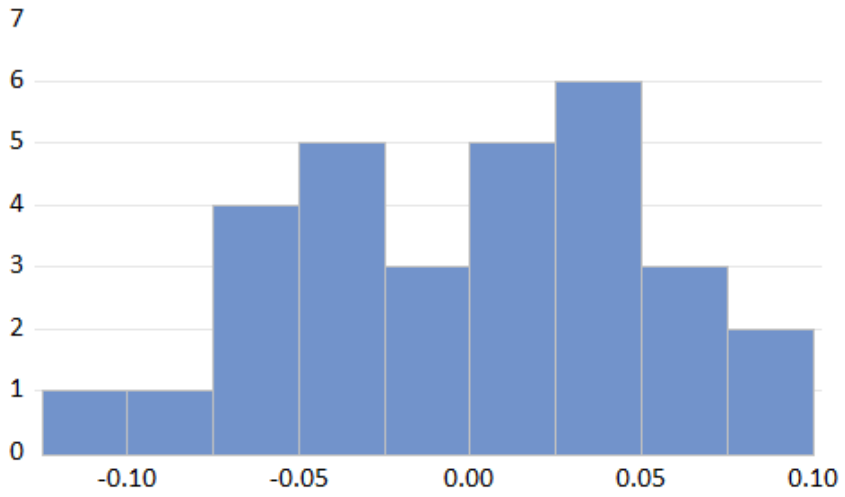
2. Heteroscedasticity Test Output (White)

Heteroskedasticity Test: White Null hypothesis: Homoskedasticity			
F-statistic	1.396575	Prob. F(12,17)	0.2575
Obs*R-squared	14.89287	Prob. Chi-Square(12)	0.2473
Scaled explained SS	6.732658	Prob. Chi-Square(12)	0.8748

3. Autocollinearity Output

Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	7.603047	Prob. F(2,23)	0.0029
Obs*R-squared	11.94005	Prob. Chi-Square(2)	0.0026

4. Normality Test (Jarque–Bera)



Series: Residuals	
Sample 1 30	
Observations 30	
Mean	-2.97e-16
Median	0.002490
Maximum	0.096989
Minimum	-0.101682
Std. Dev.	0.050215
Skewness	0.004822
Kurtosis	2.301969
Jarque-Bera	0.609175
Probability	0.737427

5. Linearity Test Output (Ramsey RESET)

Ramsey RESET Test
Equation: UNTITLED
Omitted Variables: Squares of fitted values
Specification: LN_GDP C LN_FDI LN_EKSPOR LN_LABOR_FORCE LN_FDIDUMMY

	Value	df	Probability
t-statistic	3.627782	24	0.0013
F-statistic	13.16080	(1, 24)	0.0013
Likelihood ratio	13.11602	1	0.0003

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.025898	1	0.025898
Restricted SSR	0.073125	25	0.002925
Unrestricted SSR	0.047227	24	0.001968

LR test summary:

	Value
Restricted LogL	47.68355
Unrestricted LogL	54.24156

Appendix 6: Output of Stationarity Test Evaluation

1. LN_GDP

A. Non- Stationary

Null Hypothesis: Unit root (individual unit root process)
Series: LN_GDP
Date: 04/16/26 Time: 01:22
Sample: 2010 2024
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Total (balanced) observations: 28
Cross-sections included: 2

Method	Statistic	Prob.**
ADF - Fisher Chi-square	1.97592	0.7402
ADF - Choi Z-stat	0.56557	0.7142

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Intermediate ADF test results LN_GDP

Cross section	Prob.	Lag	Max Lag	Obs
1	0.8199	0	2	14
2	0.4541	0	2	14

B. Stationary

Null Hypothesis: Unit root (individual unit root process)
Series: D(LN_GDP)
Date: 04/16/26 Time: 01:38
Sample: 2010 2024
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Total number of observations: 25
Cross-sections included: 2

Method	Statistic	Prob.**
ADF - Fisher Chi-square	16.5410	0.0024
ADF - Choi Z-stat	-3.02685	0.0012

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Intermediate ADF test results D(LN_GDP)

Cross section	Prob.	Lag	Max Lag	Obs
1	0.0109	0	2	13
2	0.0234	1	2	12

2. Foreign Direct Investment (LN_FDI)

Null Hypothesis: Unit root (individual unit root process)
Series: LN_FDI
Date: 04/16/26 Time: 01:34
Sample: 2010 2024
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Total (balanced) observations: 28
Cross-sections included: 2

Method	Statistic	Prob.**
ADF - Fisher Chi-square	17.8498	0.0013
ADF - Choi Z-stat	-3.18733	0.0007

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Intermediate ADF test results LN_FDI

Cross section	Prob.	Lag	Max Lag	Obs
1	0.0271	0	2	14
2	0.0049	0	2	14

3. LN_EXPORT

a. Non- Stationary

Null Hypothesis: Unit root (individual unit root process)
Series: LN_EKSPOR
Date: 04/16/26 Time: 01:40
Sample: 2010 2024
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Total (balanced) observations: 28
Cross-sections included: 2

Method	Statistic	Prob.**
ADF - Fisher Chi-square	2.40402	0.6619
ADF - Choi Z-stat	0.21828	0.5864

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Intermediate ADF test results LN_EKSPOR

Cross section	Prob.	Lag	Max Lag	Obs
1	0.6680	0	2	14
2	0.4500	0	2	14

b. Stationary

Null Hypothesis: Unit root (individual unit root process)
Series: D(LN_EKSPOR)
Date: 04/16/26 Time: 01:40
Sample: 2010 2024
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 1
Total (balanced) observations: 24
Cross-sections included: 2

Method	Statistic	Prob.**
ADF - Fisher Chi-square	15.5953	0.0036
ADF - Choi Z-stat	-2.88671	0.0019

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Intermediate ADF test results D(LN_EKSPOR)

Cross section	Prob.	Lag	Max Lag	Obs
1	0.0325	1	2	12
2	0.0126	1	2	12

4. LN_LABOR FORCE

Null Hypothesis: Unit root (individual unit root process)
Series: LN_LABOR_FORCE
Date: 04/16/26 Time: 01:42
Sample: 2010 2024
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Total (balanced) observations: 28
Cross-sections included: 2

Method	Statistic	Prob.**
ADF - Fisher Chi-square	9.90099	0.0421
ADF - Choi Z-stat	-1.20968	0.1132

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Intermediate ADF test results LN_LABOR_FORCE

Cross section	Prob.	Lag	Max Lag	Obs
1	0.7356	0	2	14
2	0.0096	0	2	14

Panel Data Model Selection Test Evaluation Output Appendix

Dependent Variable: LN_GDP
Method: Panel Least Squares
Date: 03/04/26 Time: 16:34
Sample: 2010 2024
Periods included: 15
Cross-sections included: 2
Total panel (balanced) observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.858586	2.156901	-2.252577	0.0337
LN_FDI	-0.022573	0.037765	-0.597707	0.5556
LN_EKSPOR	0.556719	0.078411	7.100008	0.0000
LN_LABOR_FORCE	1.025290	0.125935	8.141414	0.0000
LN_FDIDUMMY	-0.013745	0.051403	-0.267398	0.7914

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.993044	Mean dependent var	27.10260
Adjusted R-squared	0.991595	S.D. dependent var	0.587722
S.E. of regression	0.053881	Akaike info criterion	-2.827209
Sum squared resid	0.069677	Schwarz criterion	-2.546969
Log likelihood	48.40813	Hannan-Quinn criter.	-2.737558
F-statistic	685.2740	Durbin-Watson stat	0.556565
Prob(F-statistic)	0.000000		

a. Chow Test (Pooled OLS vs Fixed Effects)

- **Fixed Effects Test**

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.187778	(1,24)	0.2866
Cross-section Chi-square	1.449151	1	0.2287

- **Pooled OLS**

Dependent Variable: LN_GDP
Method: Panel Least Squares
Date: 05/18/26 Time: 20:51
Sample: 2010 2024
Periods included: 15
Cross-sections included: 2
Total panel (balanced) observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.475512	2.239572	-1.998379	0.0562
LN_EKSPOR	0.514219	0.073610	6.985746	0.0000
LN_LABOR_FORCE	1.000183	0.129449	7.726461	0.0000
LN_FDI_DUMMY	0.042071	0.012093	3.478958	0.0018

R-squared	0.991811	Mean dependent var	27.10260
Adjusted R-squared	0.990866	S.D. dependent var	0.587722
S.E. of regression	0.056171	Akaike info criterion	-2.797272
Sum squared resid	0.082034	Schwarz criterion	-2.610446
Log likelihood	45.95909	Hannan-Quinn criter.	-2.737505
F-statistic	1049.611	Durbin-Watson stat	0.641760
Prob(F-statistic)	0.000000		

- **FEM**

Dependent Variable: LN_GDP
Method: Panel Least Squares
Date: 05/18/26 Time: 21:15
Sample: 2010 2024
Periods included: 15
Cross-sections included: 2
Total panel (balanced) observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.858586	2.156901	-2.252577	0.0337
LN_FDI	-0.022573	0.037765	-0.597707	0.5556
LN_EKSPOR	0.556719	0.078411	7.100008	0.0000
LN_LABOR_FORCE	1.025290	0.125935	8.141414	0.0000
LN_FDI_DUMMY	-0.013745	0.051403	-0.267398	0.7914

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.993044	Mean dependent var	27.10260
Adjusted R-squared	0.991595	S.D. dependent var	0.587722
S.E. of regression	0.053881	Akaike info criterion	-2.827209
Sum squared resid	0.069677	Schwarz criterion	-2.546969
Log likelihood	48.40813	Hannan-Quinn criter.	-2.737558
F-statistic	685.2740	Durbin-Watson stat	0.556565
Prob(F-statistic)	0.000000		