

## Determinants of Economic Growth in ASEAN-5: A Sharia Economics Analytical Perspective

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#### Abstract

Economic growth in ASEAN countries faces persistent challenges from macroeconomic instability and structural constraints. This study examines labor, inflation, exchange rates, and foreign direct investment (FDI) as determinants of economic growth in the ASEAN-5, namely Indonesia, Vietnam, Malaysia, the Philippines, and Thailand. Employing a quantitative associative method, the research uses panel data from the World Bank period 2004 until 2023 with a total of 100 observations and applies a Fixed Effect Model using Eviews 12. The results indicate that inflation, exchange rates, and FDI significantly determine economic growth, whereas labor does not. The key empirical contribution is to provide robust, country-specific evidence that can guide policymakers in prioritizing macroeconomic stability and investment climate reforms over labor quantity expansion to sustain regional growth. From a Sharia economics perspective, growth must uphold justice, balance, and holistic welfare.

#### Keywords

*Labor, Inflation, Exchange Rate, Foreign Direct Investment, and Economic Growth*

## INTRODUCTION

The economic growth of Indonesia, Vietnam, Malaysia, the Philippines, and Thailand is shaped by inflation, exchange rate stability, FDI, and workforce quality. Although inflation fluctuated during the 2008 global crisis and COVID-19 pandemic, it remained generally stable, with Indonesia recording higher inflation due to import dependence, while Vietnam and Thailand maintained lower inflation through effective monetary management. Exchange rates were more

volatile in Indonesia and the Philippines, whereas Vietnam and Thailand were relatively stable through market intervention (Chontanawat, 2020). FDI increased across the region, with Thailand and Malaysia attracting manufacturing and electronics investment, while Vietnam and Indonesia focused on infrastructure and technology. Labor productivity improved in Thailand and Malaysia, while Indonesia and the Philippines still faced skill gaps. Overall, stable macroeconomic conditions, productive FDI, and skilled labor are key drivers of ASEAN economic growth (Marimuthu et al., 2021).

Indonesia and the Philippines face persistent constraints in economic growth due to disparities in skilled labor quality, which weaken manufacturing competitiveness, industrial innovation, and productivity relative to other ASEAN economies. During 2004 until 2023, growth optimization across ASEAN was further limited by macroeconomic and structural imbalances, including inflation volatility, exchange rate fluctuations, uneven FDI inflows, and labor quality gaps. High inflation reduced purchasing power, increased production costs, and weakened external competitiveness, as reflected in Indonesia's inflation surge of 8.38% in 2013 and 5.51% in 2022 (Coibion et al., 2020). Exchange rate instability also created uncertainty in international trade and raised transaction costs for exporters and importers. Although FDI is expected to stimulate growth, Indonesia and the Philippines faced obstacles from political uncertainty, bureaucratic complexity, and inconsistent policies, unlike Vietnam and Thailand, which recorded stronger FDI performance. Therefore, improving macroeconomic stability, investment governance, and workforce skills is essential to strengthening long-term economic growth in ASEAN (Batrancea, 2023).

This study is urgent because ASEAN economies faced global financial crises, commodity price volatility, trade tensions, inflation, and exchange rate instability, which affected growth and competitiveness. The post-pandemic period reinforces the relevance of this study because persistent inflationary pressures, sharp exchange rate fluctuations, and FDI uncertainty create new dynamics that directly affect macroeconomic stability and labor quality in ASEAN-5 countries. Despite similar socio-economic backgrounds, Indonesia and the Philippines still face labor quality and macroeconomic constraints, while Vietnam and Thailand are more competitive in attracting FDI through pro-investment policies and stronger workforce capacity. Since FDI promotes productivity and growth, whereas inflation and exchange rate volatility may weaken economic stability, this study examines how inflation, exchange rates, FDI, and labor interact in shaping ASEAN economic growth. Its findings are expected to support policies for macroeconomic stability, labor productivity, sustainable investment, and long-term regional competitiveness (Haider et al., 2023).

The research gap lies in the limited studies examining the joint effects of inflation, exchange rates, FDI, and labor on economic growth in ASEAN developing countries. Prior studies mostly focus on developed European economies, use shorter periods, and rarely cover 2004 until 2023, a crucial phase marked by the global financial crisis, economic transformation, and post-pandemic recovery (Olamide et al., 2022). Methodologically, the majority of previous research still relies on single-country time-series or cross-sectional data, which fails to capture cross-country heterogeneity and dynamic interactions among ASEAN economies. This methodological limitation motivates the use of panel data analysis in this study to produce more robust and generalizable findings. Moreover, these variables are often analyzed separately and have not been sufficiently linked to Solow growth theory, Keynesian growth theory, and Purchasing Power Parity theory. Thus, this study fills the gap by providing an integrated empirical and theoretical analysis of macroeconomic stability, capital inflows, labor quality, and economic growth in ASEAN countries (Rauf et al., 2023).

This study integrates inflation, exchange rates, FDI, and labor into a unified framework to explain economic growth in Indonesia, Vietnam, Malaysia, the Philippines, and Thailand during 2004 until 2023. Its novelty lies in examining these variables through Solow growth theory, Keynesian growth theory, and Purchasing Power Parity theory, which together explain the roles of capital accumulation, technological progress, skilled labor, aggregate demand, fiscal policy,

and exchange rate stability in long-term growth (Baerlocher et al., 2021). Unlike prior studies that often analyze these factors separately, this research offers a comparative ASEAN perspective across five economies with different structural characteristics and policy responses. The selection of ASEAN-5 is based on the consideration that these five countries represent the largest and most diverse economies in Southeast Asia, naturally reflecting variations in industrialization levels, labor market structures, and macroeconomic policy regimes. This structural diversity forms a rich comparative laboratory to test how different domestic contexts moderate the influence of inflation, exchange rates, FDI, and labor on economic growth. The use of panel data further strengthens the study design as it allows the simultaneous exploitation of cross-country variation and time dynamics, controls for unobserved country-specific effects, and increases the efficiency of parameter estimates. Therefore, it contributes by providing a broader empirical understanding of how macroeconomic stability, investment inflows, and labor quality interact in shaping economic growth in Southeast Asia (Rehman et al., 2022).

This study offers a comprehensive analysis of how inflation, exchange rates, FDI, and labor influence economic growth in five ASEAN developing economies by integrating Neoclassical, Keynesian, and Islamic economic perspectives. The Solow framework explains growth through capital accumulation, technological progress, and labor force development, while the Keynesian approach emphasizes aggregate demand, price stability, and government intervention (Ahmad et al., 2022). Islamic economics further enriches the analysis by highlighting justice, welfare, and balanced policy outcomes. This theoretical integration provides added value because it links macroeconomic stability, investment, and labor productivity with ethical and developmental considerations. Therefore, the study contributes to a more holistic understanding of appropriate monetary and fiscal policy frameworks for sustaining economic growth in ASEAN countries (Cylus & Al Tayara, 2021).

## LITERATURE REVIEW

### **Solow-Swan Neoclassical Economic Growth Theory**

Solow-Swan Neoclassical Growth Theory, developed by Solow (1956) and Swan (1956), explains long-term economic growth through capital accumulation, labor growth, technological progress, and diminishing returns to capital. In this framework, FDI and labor become important growth channels because FDI increases capital stock and technology transfer, while skilled labor improves productivity and strengthens technology absorption. Empirical evidence shows that FDI contributes more strongly to economic growth when host countries have qualified labor and sufficient absorptive capacity, especially in developing economies where capital deepening and technology adoption are essential for productivity improvement (Johansyah et al., 2024).

### **Purchasing Power Parity (PPP) Exchange Rate Theory**

Purchasing Power Parity Theory, introduced by Cassel (1918), explains that exchange rates tend to adjust according to relative price differences between countries. This theory is relevant to economic growth because exchange rate movements affect purchasing power, export competitiveness, import costs, inflation, and investment decisions. Empirical studies indicate that exchange rate stability supports growth by reducing price uncertainty, strengthening trade performance, and improving investor confidence, while persistent exchange rate misalignment can weaken competitiveness, raise imported inflation, and disrupt macroeconomic stability (Siddharth et al., 2024).

### **Keynesian Theory of Economic Growth**

Keynesian Theory, developed by Keynes (1936), emphasizes aggregate demand as a key driver of output, employment, and economic growth. Consumption, investment, and government spending determine economic activity, while weak demand can reduce output and excessive demand can create inflationary pressure when production capacity is limited. Empirical literature supports this view by showing that fiscal and monetary policy can influence growth through

demand management, employment creation, and price stability, making inflation an important macroeconomic factor in explaining growth performance (Ogujiuba & Mngometulu, 2022).

### **Economic growth**

Economic growth refers to the increase in real economic output over time, reflecting the expansion of an economy's capacity to produce goods and services. In empirical studies, economic growth is commonly measured through GDP growth, GDP per capita, or real output per capita because these indicators capture changes in aggregate production and overall economic performance. (Plikas & Kenourgios, 2026) measure economic growth by the annual percentage change in Gross Domestic Product to represent macroeconomic performance. (Chaitarin et al., 2026) use GDP per capita as an empirical indicator of economic growth in assessing economic performance across ASEAN countries. (Xu & Gui, 2026) measure regional economic growth through the real GRDP growth rate per capita to capture output growth at the provincial level.

### **Labor**

Labor refers to the workforce that contributes to the production process through participation, working hours, education, skills, and productivity. In empirical studies, labor is measured not only by the number of workers, but also by labor quality and productive capacity. (S. Cao et al., 2020) use the educational level of labor as an indicator of labor quality in explaining sustainable economic growth. (J. Cao et al., 2020) measure effective labor supply through participation rates, hours worked, and skills across demographic groups. (Hintzmann & Llad, 2021) measure labor productivity through real value added per hour worked to capture the contribution of labor to output performance.

### **Inflation**

Inflation refers to a sustained increase in the general price level that reduces the purchasing power of money. In empirical studies, inflation is commonly measured through the Consumer Price Index (CPI) or annual consumer price growth because it captures changes in the prices of goods and services in an economy. (Razia et al., 2023) define inflation as an increase in the prices of goods, services, and products, accompanied by a decline in currency value, and measure it through annual CPI growth. (Brobbe et al., 2025) use CPI as the empirical indicator of inflation in examining inflation-growth dynamics across emerging European economies. (Moridian et al., 2025) also define inflation as a continuous increase in the general price level and use annual consumer price inflation as a macroeconomic indicator

### **Exchange rate**

Exchange rate refers to the value of one currency relative to another currency in international transactions, commonly measured through nominal exchange rate, real exchange rate, exchange rate regime, or real effective exchange rate. (Ha, 2020) use Reinhart and Rogoff's exchange rate regime classification to capture exchange rate policy, ranging from fixed regimes to more flexible regimes, in examining economic growth across Asian countries. (Hatmanu et al., 2020) measure the real exchange rate by adjusting the nominal exchange rate with domestic and foreign price indices to reflect currency competitiveness. (Shuabiu et al., 2021) use the real effective exchange rate index to assess how exchange rate competitiveness relates to trade performance and economic growth in Turkey. Exchange rate reflects currency value, price competitiveness, and external economic conditions in empirical macroeconomic analysis

### **Foreign Direct Investment (FDI)**

Foreign Direct Investment refers to net investment inflows from foreign investors to acquire a lasting management interest in an enterprise operating outside the investor's economy, commonly indicated by ownership of at least 10 percent of voting stock. In empirical studies, FDI is often measured as net FDI inflows as a percentage of GDP because it captures foreign capital

participation, equity capital, reinvested earnings, and other cross-border investment flows. (Hagan & Amoah, 2020) measure FDI as net inflows to GDP ratio and link it to capital stock, technology transfer, managerial practices, and productive knowledge. (Osei & Kim, 2020) define FDI as net inflows used to acquire lasting interest of at least 10 percent voting power, including equity capital, reinvested earnings, and other long-term capital. (Shittu et al., 2020) also measure FDI as net investment inflow less disinvestment, divided by GDP, to capture foreign investors' lasting management interest in the host economy.

### **Labor and Economic Growth in ASEAN-5 countries**

Research results by (Soava et al., 2020) show that labor force participation has a significant positive effect on economic growth because an active workforce increases production capacity and supports investment. (Beltozar-clemente et al., 2023) further explain that digital transformation strengthens job creation, labor productivity, and sectoral efficiency, while (Umair et al., 2024) confirm that labor force participation significantly improves economic growth in both the short and long run, especially when supported by education and health. In line with this, (Du & Fang, 2026) also find that labor contributes positively to economic growth. Based on the information and theoretical framework that have been provided, hypotheses have been developed in this study:

H1: Labor has a positive effect on economic growth in ASEAN-5 countries.

### **Inflation and Economic Growth in ASEAN-5 countries**

Research results by (Hayat et al., 2021) show that inflation and economic growth have dynamic causal linkages, so price stability becomes important for maintaining output growth across different time horizons. (Girdzijauskas et al., 2022) further explain that inflation is a crucial macroeconomic indicator for sustainable economic growth because uncontrolled inflation can reduce purchasing power, increase production costs, and disturb economic stability. Research results by (Sisay et al., 2022) show that inflation may support economic activity when it remains within an optimal level, since moderate inflation can reflect demand expansion, sectoral growth, and active economic transactions. In line with this, (Olusola et al., 2022) explain that inflation can influence consumption behavior because households may increase current spending when they expect prices to rise in the future. This condition can stimulate aggregate demand and support economic growth. Based on the information and theoretical framework that have been provided, hypotheses have been developed in this study:

H2: Inflation has a positive effect on economic growth in ASEAN-5 countries.

### **Exchange Rate and Economic Growth in ASEAN-5 countries**

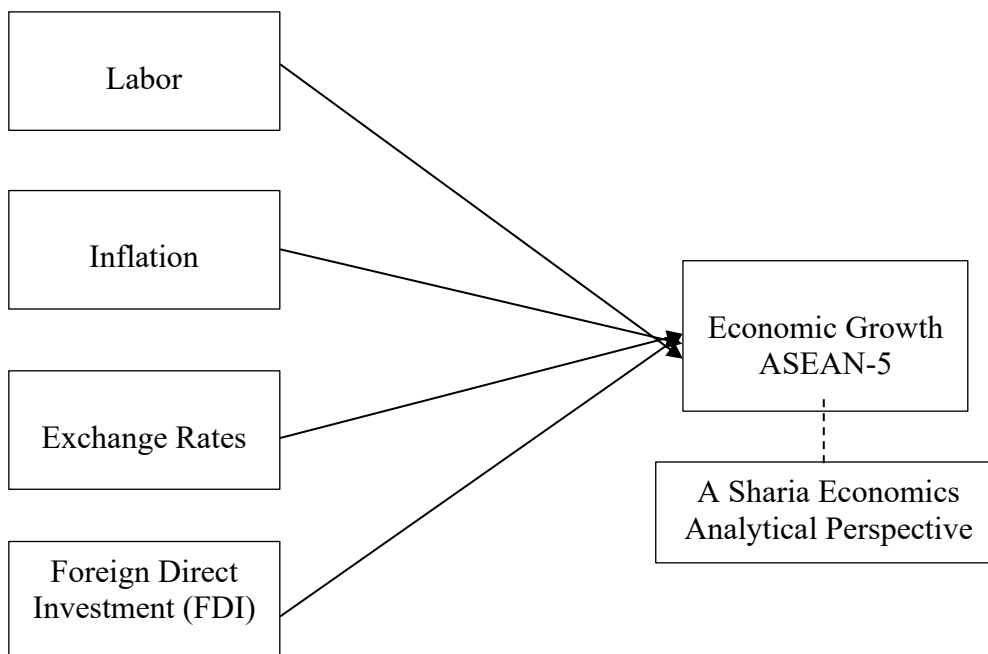
Research results by (Usman, 2023) show that exchange rate movements are closely linked to economic growth through trade openness, remittances, and agricultural output, but the direction of causality differs across short-, medium-, and long-term frequencies. This indicates that exchange rate effects on growth are dynamic and depend on the economic transmission channel. In line with this, (Odoom et al., 2025) explain that exchange rate fluctuations can affect economic growth through import demand, export performance, inflation, and macroeconomic stability, while a stable exchange rate supports household income, consumption, fiscal policy, monetary policy, and trade balance. Meanwhile, (Berko et al., 2026) find that exchange rate has a positive effect on economic growth, showing that exchange rate instability can transmit pressure to growth performance in small open economies. Based on the information and theoretical framework that have been provided, hypotheses have been developed in this study:

H3: Exchange rate has a positive effect on economic growth in ASEAN-5 countries.

## Foreign Direct Investment (FDI) and Economic Growth in ASEAN-5 countries

Research results by (Anetor, 2025) show that foreign direct investment can support economic growth through capital financing, technology transfer, productivity gains, employment creation, and managerial capabilities, although its effect depends on the type and quality of investment. (Xuan, 2025) further explains that FDI contributes to economic expansion in Vietnam, but its long-term benefit depends on whether investment is directed toward cleaner technology and productive sectors. In line with this, (Poland et al., 2026) find that FDI supports long-term economic expansion through infrastructure development, job creation, technology transfer, and productivity improvement, although the effect differs across countries due to institutional quality and macroeconomic shocks. Meanwhile, (Chtioui & Boushib, 2026) confirm that FDI becomes growth-enhancing when supported by human capital and technology transfer, while (Dawai & Zakaria, 2026) emphasize that the FDI-growth relationship is conditional on institutional quality and absorptive capacity. Based on the information and theoretical framework that have been provided, hypotheses have been developed in this study:

H4: Foreign Direct Investment has a positive effect on economic growth in ASEAN-5 countries.



**Figure 1. Conceptual Framework to Economic Growth in the ASEAN-5**

The conceptual framework positions economic growth in ASEAN-5, namely Indonesia, Vietnam, Malaysia, the Philippines, and Thailand, as explained by four measurable macroeconomic variables: labor, inflation, exchange rates, and Foreign Direct Investment. Labor reflects human productive capacity, inflation represents price movements and purchasing power, exchange rates capture currency value in international transactions, and FDI indicates foreign capital inflows that support investment and production. The dashed line toward the Sharia economics analytical perspective shows that Islamic economics is used to discuss each variable through the Qur'an, Hadith, and DSN-MUI fatwas, but it is not included as an estimated variable in the econometric model. This framework allows the study to combine empirical macroeconomic analysis with a

Sharia-based discussion of labor, inflation, exchange rates, FDI, and economic growth without mixing religious analysis into the statistical estimation.

## METHOD

This study employs a quantitative approach with an associative research design to examine economic growth in ASEAN-5 countries, namely Indonesia, Vietnam, Malaysia, the Philippines, and Thailand, during the period 2004 to 2023. The study uses secondary data obtained from the World Bank in the form of balanced panel data, which combines cross-sectional data from five selected countries and annual time series data over twenty years. The total data used in this research consist of 100 observations, derived from the total number of selected countries and years. Economic growth is used as the dependent variable, while labor, inflation, exchange rate, and Foreign Direct Investment are used as independent variables. The data are analyzed using panel data regression with EViews 12 (Robert S. Pindyck, 1998). The operational definition, measurement, and references for each variable are presented in the variable measurement table to clarify the empirical basis of the research variables.

**Table 2. Operational Variables**

Variable	Symbol	Operational Definition	Measurement Indicator	Source
Economic Growth	EG	Economic growth refers to the increase in real economic output over time, reflected in changes in aggregate production and overall economic performance (Plikas & Kenourgios, 2026; Chaitarin et al., 2026; Xu & Gui, 2026).	$\text{GDP Growth Rate} = \frac{\text{Current Year GDP} - \text{Previous Year GDP}}{\text{Previous Year GDP}} \times 100\%$	World Bank
Labor	LAB	Labor refers to the workforce involved in producing goods and services, reflecting human productive capacity through labor participation, skills, and productivity (Cao et al., 2020a; Cao et al., 2020b; Hintzmann et al., 2021).	Labor = Total Labor Force	World Bank
Inflation	INF	Inflation refers to a sustained increase in the general price level, commonly reflected through changes in the Consumer Price Index and annual consumer price inflation (Razia et al., 2023; Brobbey et al., 2025; Moridian et al., 2025).	$\text{Inflation Rate} = \frac{\text{Current Year CPI} - \text{Previous Year CPI}}{\text{Previous Year CPI}} \times 100\%$	World Bank
Exchange Rate	EXR	Exchange rate refers to the value of a domestic currency relative to a foreign currency and reflects currency value, price competitiveness, and external economic conditions (Ha & Hoang,	Exchange Rate = Official exchange rate, local currency unit per US dollar, period average	World Bank

		2020; Hatmanu et al., 2020; Shuabiu et al., 2021).		
Foreign Direct Investment	FDI	Foreign Direct Investment refers to net foreign investment inflows intended to obtain a lasting management interest in a domestic enterprise (Hagan & Amoah, 2020; Osei & Kim, 2020; Shittu et al., 2020).	$FDI = FDI \text{ Net Inflows} / GDP \times 100\%$	World Bank

The panel data equation model which is a combination of cross-section data and time series data can be written as follows:

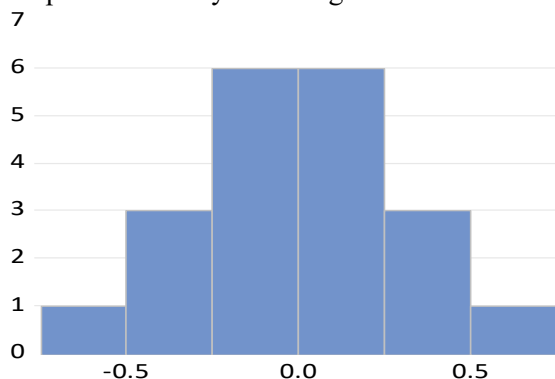
$$Y = \alpha + b_1X_{1it} + b_2LnX_{2it} + b_3LnX_{3it} + b_4LnX_{4it} + e$$

Where  $EG_{it}$  denotes economic growth in country  $i$  during year  $t$ ,  $LAB_{it}$  denotes labor,  $INF_{it}$  denotes inflation,  $EXR_{it}$  denotes exchange rate, and  $FDI_{it}$  denotes Foreign Direct Investment. The symbol  $\alpha$  represents the constant, while  $\beta_1, \beta_2, \beta_3$ , and  $\beta_4$  represent the regression coefficients of each independent variable. The symbol  $i$  refers to the selected ASEAN-5 countries, namely Indonesia, Vietnam, Malaysia, the Philippines, and Thailand. The symbol  $t$  refers to the research period from 2004 to 2023, while  $\varepsilon_{it}$  represents the error term. The study uses 100 observations, derived from the total number of selected countries and years.

Data analysis was conducted systematically to determine the appropriate panel regression model and ensure statistical validity. Model selection used the Chow, Hausman, and Lagrange Multiplier (LM) tests to choose among the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) based on panel data characteristics (Griliches, 1998). After the optimal model was selected, classical assumption tests were applied, including normality, multicollinearity, heteroscedasticity, and autocorrelation tests, to ensure unbiased, efficient, and reliable estimates. Hypothesis testing was then performed using the t-test for partial effects, F-test for simultaneous effects, and coefficient of determination ( $R^2$ ) to measure the explanatory power of labor, inflation, exchange rates, and FDI on ASEAN economic growth during 2004 until 2023 (Damodar N. Gujarati, 2009).

## RESULT AND DISCUSSION

The normality test is a statistical approach used to determine whether the distribution of data from the variables being examined follows a normal distribution pattern. This test is important in statistical analysis, especially in regression models and other data analysis that require the assumption of normal distribution. If the data is not regularly distributed, the results of the statistical test performed may be wrong or inaccurate



Series: Residuals	
Sample	2004 2023
Observations	20
Mean	1.37e-15
Median	-0.008311
Maximum	0.653156
Minimum	-0.723065
Std. Dev.	0.293693
Skewness	-0.178734
Kurtosis	3.912181
Jarque-Bera	0.799881
Probability	0.670360

### Graph 3. Normality Test Results

Source: Data Processing Results (2026)

The normality test was conducted to ensure that the data met the basic assumptions required for statistical analysis. In this study, which examines the effects of labor, inflation, exchange rates, and FDI on economic growth in Indonesia, Vietnam, Malaysia, the Philippines, and Thailand during 2004 until 2023, the Jarque–Bera test showed a probability value of 0.670360, exceeding the 0.05 significance level. This indicates that the data are normally distributed and do not show significant deviations from normality. Therefore, further statistical analyses, including regression testing, can be performed reliably, supporting the validity of the model estimates and interpretations.

**Table 4. Multicollinearity Test Results**

	Labor	Inflation	Exchange rate	Foreign Direct Investment
Labor	1,000,000	-0.281887	0.510921	0.547285
Inflation	-0.281887	1,000,000	-0.213950	-0.068949
Exchange rate	0.510921	-0.213950	1,000,000	0.242698
Foreign Direct Investment (FDI)	0.547285	-0.068949	0.242698	1,000,000

Source: Data Processing Results (2026)

The multicollinearity test was used to ensure that the independent variables were not highly correlated. All correlation coefficients are below the critical threshold of 0.85, including labor–inflation (-0.281887), labor–exchange rate (0.510921), labor–FDI (0.547285), inflation exchange rate (-0.213950), and inflation–FDI (-0.068949). These results indicate the absence of serious multicollinearity in the model. Therefore, the regression estimates are considered stable and reliable for assessing the effects of labor, inflation, exchange rates, and FDI on economic growth.

**Table 5. Results of Heteroscedasticity Test**

F-statistic	0.243641	Prob. F(14,65)	0.9973
Obs*R-squared	3.988796	Chi-Square Prob.(14)	0.9955
Scaled explained SS	16.85016	Chi-Square Prob.(14)	0.2643

Source: Data Processing Results, (2026)

The heteroscedasticity test was used to assess whether the regression residuals had constant variance. The Chi-Square probability value of 0.9955 exceeds the 0.05 significance level, indicating that the null hypothesis of homoscedasticity cannot be rejected. This result shows that the model is free from heteroscedasticity problems. Therefore, the regression estimates are considered reliable and can be interpreted without distortion from unequal residual variance.

**Table 6. Autocorrelation Test Results**

F-statistic	0.501192	Prob. F(2,73)	0.6079
Obs*R-squared	1.083623	Chi-Square Prob.(2)	0.5817

Source: Data Processing Results, (2026)

The autocorrelation test was used to ensure that regression residuals were not correlated across observations. The Chi-Square probability value of 0.5817 exceeds the 0.05 significance level, indicating that the null hypothesis of no autocorrelation cannot be rejected. This result shows that the model is free from autocorrelation problems. Therefore, the regression estimates are considered reliable and efficient for explaining ASEAN economic growth.

**Table 7. Chow Test Results**

Effects Test	Statistics	df	Prob.
Cross-section F	2.579378	(4.91)	0.0425
Cross-section Chi-square	10.739977	4	0.0296

Source: Data Processing Results, (2026)

The Chow test was used to select the appropriate panel data model between CEM and FEM. The Cross-section Chi-square probability value of 0.0296 is below the 0.05 significance level, indicating that the Common Effect Model is rejected and the Fixed Effect Model is preferred. This result shows significant differences across countries. Therefore, FEM is more suitable because it captures country-specific characteristics that may influence ASEAN economic growth.

**Table 8. Hausman Test Results**

Test Summary	Chi-Sq. Statistics	Chi-Sq. df	Prob.
Random cross-section	10.317512	4	0.0354

Source: Data Processing Results, (2026)

The Hausman test was used to select the appropriate panel data model between FEM and REM. The random cross-section probability value of 0.0354 is below the 0.05 significance level, indicating that the Random Effect Model is rejected and the Fixed Effect Model is preferred. This result shows that country-specific effects are significant and correlated with the explanatory variables. Therefore, FEM is the most suitable model because it provides more consistent and reliable estimates for explaining ASEAN economic growth.

**Table 9. Results of Partial Significance Test (t-Test)**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.452365	3.635473	1.224700	0.2238
Labor	0.491362	0.861586	0.570300	0.5699
Inflation	0.247487	0.114359	2.164115	0.0331
Exchange rate	-1.164357	0.412572	-2.822189	0.0059
Foreign Direct Investment (FDI)	0.462638	0.110280	4.195115	0.0001

Source: Data Processing Results, (2026)

The t-test assesses the partial effect of each independent variable on economic growth by comparing its probability value with the 0.05 significance level. Based on the Fixed Effect Model results, labor has no significant effect on economic growth, as its probability value is 0.5699. In contrast, inflation, exchange rates, and FDI have significant effects, with probability values of 0.0331, 0.0059, and 0.0001, respectively. These findings indicate that macroeconomic stability and foreign investment are more influential in explaining ASEAN economic growth than labor during the observed period.

**Table. 10 Simultaneous Test Results (F Test)**

R-squared	0.380366
Adjusted R-squared	0.325893
S.E. of regression	2.385410
Sum squared resid	517.8065
Log likelihood	-224.1154
F-statistic	6.982614
Prob(F-statistic)	0.000000

Source: Data Processing Results, (2026)

The F-test assesses the simultaneous effect of all independent variables on economic growth by comparing the probability value of the F-statistic with the 0.05 significance level. The result shows an F-statistic value of 6.982614 with a probability value of 0.000000. Since the probability value is lower than 0.05, labor, inflation, exchange rates, and FDI jointly have a significant effect on economic growth in ASEAN countries during the observed period. This finding indicates that economic growth is not explained by a single macroeconomic factor, but by the combined role of labor conditions, price stability, currency movements, and foreign investment. Therefore, the model is statistically valid in explaining the collective influence of the selected independent variables on ASEAN economic growth.

**Table 11. Results of the Determination Coefficient Test ( $R^2$ )**

Adjusted R-squared	0.325893
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Source: Data Processing Results, (2026)

The coefficient of determination measures the extent to which the independent variables explain variations in economic growth. The  $R^2$  value of 0.325893 indicates that labor, inflation, exchange rates, and foreign direct investment explain 32.58% of the variation in economic growth across ASEAN countries during 2004 to 2023, while the remaining 67.42% is explained by factors outside the model. This result shows that the model has limited but still meaningful explanatory power. In macroeconomic research, a relatively moderate  $R^2$  is common because economic growth is shaped by many structural, institutional, and external factors that cannot be fully captured by a limited set of macroeconomic variables. These factors may include fiscal policy, monetary policy, trade openness, institutional quality, infrastructure, technological progress, political stability, and global economic shocks.

The relatively low Adjusted  $R^2$  also indicates that the explanatory power of the model decreases after accounting for the number of independent variables and the structure of the panel data. This finding does not necessarily indicate that the model is weak, but it suggests that labor, inflation, exchange rates, and FDI only explain part of the economic growth dynamics in ASEAN countries. Therefore, the model remains useful for identifying selected macroeconomic determinants, although it does not capture the full complexity of growth formation. From a macroeconomic perspective, the result implies that ASEAN economic growth is influenced by the interaction between domestic capacity, price stability, external competitiveness, and foreign capital inflows. Labor represents productive capacity, inflation reflects macroeconomic stability, exchange rates capture external price competitiveness, and FDI reflects the role of foreign capital in supporting investment and production. However, these variables operate within broader economic systems, so their explanatory power may differ across countries and periods.

The moderate  $R^2$  also reflects heterogeneity among ASEAN-5 economies. Indonesia and the Philippines have large domestic markets and strong labor absorption, Vietnam and Thailand rely more heavily on exports and manufacturing integration, while Malaysia has a more advanced industrial and financial structure. These differences may cause the same variable to produce different effects across countries. As a result, the common panel model explains part of the shared growth pattern, but it may not fully capture country-specific economic characteristics. In terms of robustness, the model remains statistically relevant because the F-test confirms that the independent variables jointly affect economic growth. The t-test results also show that inflation, exchange rates, and FDI have significant partial effects. This means that the model is still able to explain important macroeconomic channels, even though its explanatory power is not dominant. Future studies may strengthen the model by adding variables such as trade openness, government expenditure, financial development, institutional quality, infrastructure, or human capital.

## Labor and Economic Growth of ASEAN-5

The statistical result shows that labor has no significant effect on economic growth, as indicated by a probability value of 0.5699, which is higher than the 0.05 significance level. This finding indicates that labor quantity does not directly explain economic growth in ASEAN-5 countries during 2004 to 2023. Labor remains an important production factor, but its contribution to growth depends on productivity, education, skills, technology adoption, and the ability of workers to support higher value-added economic activities. From a macroeconomic perspective, this result implies that ASEAN-5 economic growth during the observed period was not mainly driven by the expansion of the labor force. A larger labor force does not automatically increase output when workers are concentrated in low-productivity sectors, informal employment, or labor-intensive activities with limited technological upgrading. Growth in ASEAN-5 appears to depend more on productivity improvement, capital formation, foreign investment, industrial transformation, price stability, and external competitiveness than on labor quantity alone.

The policy implication is that ASEAN-5 countries need to shift from labor absorption policies toward labor productivity policies. Governments should strengthen human capital through vocational education, reskilling, digital skills, industrial training, and stronger links between education systems and labor market demand. Labor policy should also support industrial upgrading, technology-based employment, and formal sector expansion. Without improvements in labor quality and productivity, employment growth may increase the number of workers but fail to generate stronger economic growth. The insignificant effect of labor also reflects the heterogeneity of ASEAN-5 economies. Indonesia and the Philippines have large labor forces and strong domestic demand, but both countries still face challenges related to informal employment and uneven labor productivity. Vietnam and Thailand are more dependent on export-oriented manufacturing, so labor contribution depends on industrial upgrading, production networks, and integration into global value chains. Malaysia has a more advanced industrial and service structure, where growth depends more on skilled labor, innovation, and capital intensity. These structural differences may cause labor to have different effects across countries, making its overall effect insignificant in the ASEAN-5 panel model.

Theoretically, this finding is not fully consistent with Solow-Swan Neoclassical Growth Theory, developed by Solow (1956) and Swan (1956), which explains that labor contributes to output together with capital accumulation and technological progress. However, the result does not reject the relevance of the theory. It shows that labor can support growth only when combined with capital deepening, technological progress, and productivity improvement. In this context, labor expansion without sufficient technology and capital may face diminishing returns and fail to produce significant growth effects. Purchasing Power Parity Theory, introduced by Cassel (1918), also helps explain this result from a broader macroeconomic environment. PPP theory emphasizes price levels, purchasing power, and exchange rate adjustment. Although labor is not the main variable in PPP theory, labor productivity and real wages can be affected by inflation, exchange rate movements, and changes in purchasing power. When price instability or exchange rate pressure increases production costs and reduces real income, labor absorption may not translate into stronger output growth. Therefore, the labor-growth relationship can weaken when macroeconomic price and currency conditions are unstable.

Keynesian Theory, developed by Keynes (1936), provides another explanation. Keynesian theory emphasizes aggregate demand as the driver of output and employment. From this perspective, labor can contribute to economic growth only when firms face sufficient demand to expand production. If consumption, investment, government spending, or export demand is not strong enough, additional labor will not automatically increase output. This explains why labor may be statistically insignificant in ASEAN-5, because employment and labor availability need to be supported by effective demand, investment activity, and business confidence. This finding is consistent with previous studies showing that labor does not always have a significant effect on economic growth (Asrinda & Setiawati, 2022) and (Martadinata, 2022). The result confirms that labor should not be viewed only as the number of workers, but as human capital that must be supported by education, productivity, technology, and industrial transformation. In the ASEAN-

5 context, labor becomes a stronger growth driver when it is linked to capital accumulation, stable macroeconomic conditions, effective demand, and higher value-added production.

### **Inflation and Economic Growth of ASEAN-5**

The statistical result shows that inflation has a significant effect on economic growth, as indicated by a probability value of 0.0331, which is lower than the 0.05 significance level. This finding indicates that inflation plays an important role in explaining economic growth in ASEAN-5 countries during 2004 to 2023. Inflation affects economic growth through purchasing power, production costs, consumption, investment decisions, and macroeconomic expectations. Controlled inflation can support economic activity by maintaining price stability and encouraging consumption and investment, while high and volatile inflation can weaken real income, increase business uncertainty, raise production costs, and reduce investment confidence. From a macroeconomic perspective, this result implies that price stability is a key condition for sustaining economic growth in ASEAN-5. Inflation influences both demand-side and supply-side channels. On the demand side, rising prices reduce household purchasing power and can weaken consumption. On the supply side, inflation increases input costs, wage pressure, and production uncertainty, especially for firms that rely on imported raw materials and energy. Since ASEAN-5 economies are open and strongly connected to trade, investment, and global supply chains, inflationary pressure can quickly affect output, competitiveness, and investment behavior.

The policy implication is that ASEAN-5 countries need credible and coordinated macroeconomic policies to keep inflation within a growth-supporting range. Monetary authorities should maintain price stability through effective interest rate policy, liquidity management, and inflation expectations control. At the same time, fiscal policy should reduce supply-side inflation by improving food security, energy affordability, logistics efficiency, and targeted subsidies for vulnerable groups. Inflation control should not only focus on suppressing demand, but also on strengthening supply capacity so that price stability can support sustainable output growth. The significant effect of inflation also reflects heterogeneity among ASEAN-5 economies. Indonesia and the Philippines often face inflationary pressure from food prices, fuel prices, domestic demand, and exchange rate movements. Vietnam and Thailand are more exposed to export performance, manufacturing costs, and global supply chain disruptions, so inflation can influence competitiveness and production decisions. Malaysia has stronger industrial and financial structures, but inflation can still affect household consumption, imported input costs, and investment confidence. These differences show that inflation affects ASEAN-5 growth through different national channels, although its overall effect remains statistically significant in the panel model.

Theoretically, this finding can be linked to Solow-Swan Neoclassical Growth Theory, developed by Solow (1956) and Swan (1956). This theory emphasizes capital accumulation, labor growth, and technological progress as key sources of long-term growth. Inflation is not a core production input in the Solow-Swan model, but it can influence the efficiency of capital accumulation and investment. High inflation can reduce savings, distort investment decisions, and weaken capital formation. Therefore, the significant effect of inflation in this study complements the Solow-Swan framework by showing that macroeconomic stability is needed to support productive investment, capital deepening, and long-term growth. Purchasing Power Parity Theory, introduced by Cassel (1918), provides a direct explanation of the relationship between inflation, purchasing power, exchange rates, and growth. PPP theory explains that price differences between countries influence currency values and international purchasing power. In ASEAN-5, inflation can affect economic growth by changing real purchasing power, export competitiveness, import costs, and exchange rate stability. When domestic inflation rises faster than that of trading partners, purchasing power declines and external competitiveness may weaken. This condition can reduce trade performance and increase macroeconomic vulnerability. Therefore, PPP theory supports the view that inflation matters for growth because it affects both domestic price stability and external economic balance.

Keynesian Theory, developed by Keynes (1936), offers the strongest explanation for this finding. Keynesian theory emphasizes aggregate demand as a driver of output, employment, and economic growth. Inflation affects aggregate demand through consumption, investment, government spending, and expectations. Moderate and stable inflation may support growth when it reflects healthy demand expansion and productive economic activity. However, excessive inflation can reduce real income, weaken consumption, increase production costs, and create uncertainty for investors. This study is consistent with the Keynesian view because inflation significantly influences growth through demand management, price stability, and policy credibility. This finding is consistent with previous studies showing that inflation has a significant relationship with economic growth in different country contexts and development settings. Prior studies found that inflation influences economic growth in Pakistan, Ethiopia, Ghana, and broader sustainable growth contexts by affecting purchasing power, investment, macroeconomic stability, and economic expectations (Hayat et al., 2021; Girdzijauskas et al., 2022; Sisay et al., 2022; Olusola et al., 2022). In the ASEAN-5 context, the result confirms that inflation is not only a price indicator, but also a macroeconomic variable that shapes consumption, investment, competitiveness, and long-term growth performance.

### **Exchange Rates and Economic Growth of ASEAN-5**

The statistical result shows that exchange rates have a significant effect on economic growth, as indicated by a probability value of 0.0059, which is lower than the 0.05 significance level. This finding indicates that exchange rate movements play an important role in explaining economic growth in ASEAN-5 countries during 2004 to 2023. Exchange rates affect growth through export competitiveness, import costs, inflation transmission, purchasing power, capital flows, and investor confidence. Depreciation can strengthen export competitiveness by making domestic products cheaper in international markets, but it can also increase the cost of imported raw materials, energy, and capital goods. Conversely, excessive appreciation may reduce import costs, but it can weaken export performance and reduce external demand. From a macroeconomic perspective, this result implies that exchange rate stability is a key factor in maintaining growth performance in ASEAN-5. These economies are strongly connected to international trade, foreign investment, manufacturing networks, and global supply chains. Therefore, exchange rate volatility can directly affect production costs, trade balance, inflation, and investment decisions. A stable exchange rate can reduce uncertainty, support export planning, maintain purchasing power, and improve business confidence. In contrast, sharp currency fluctuations can weaken macroeconomic stability and reduce the effectiveness of growth policies.

The policy implication is that ASEAN-5 countries need credible exchange rate management supported by consistent monetary and fiscal policies. Central banks should maintain exchange rate stability without ignoring inflation control, foreign reserve adequacy, and external competitiveness. Governments also need to strengthen export diversification, reduce excessive dependence on imported inputs, deepen domestic supply chains, and improve financial market resilience. Exchange rate policy should not only focus on currency stability, but also support trade competitiveness, investment confidence, and long-term productive capacity. The significant effect of exchange rates also reflects the heterogeneity of ASEAN-5 economies. Indonesia and the Philippines have large domestic markets, but both remain exposed to exchange rate pressure through imported fuel, food, capital goods, and external financing. Vietnam and Thailand are more export-oriented, so exchange rate movements strongly affect manufacturing competitiveness, tourism, and trade performance. Malaysia has deeper financial and industrial integration, making its economy sensitive to capital flows, commodity prices, and global demand. These differences show that exchange rates influence economic growth through different channels across ASEAN-5, although the panel result confirms their overall significance.

Theoretically, this finding can be linked to Solow-Swan Neoclassical Growth Theory, developed by Solow (1956) and Swan (1956). Although exchange rate is not a direct production input in the Solow-Swan model, it can influence capital accumulation, technology adoption, and

productivity through investment and trade channels. Exchange rate instability can increase production costs and reduce investment efficiency, especially when firms depend on imported machinery, technology, and intermediate goods. Therefore, the significant effect of exchange rates complements the Solow-Swan framework by showing that external price stability supports capital formation and long-term output growth. Purchasing Power Parity Theory, introduced by Cassel (1918), provides the most direct explanation for this finding. PPP theory explains that exchange rates tend to reflect relative price differences between countries. In this context, exchange rate movements influence purchasing power, inflation, export competitiveness, and trade balance. When exchange rates move in line with relative price fundamentals, international transactions become more stable and predictable. However, persistent misalignment can weaken competitiveness, increase import costs, and create inflationary pressure. Therefore, the significant effect of exchange rates in ASEAN-5 supports the PPP view that currency value and price stability are closely related to macroeconomic performance.

Keynesian Theory, developed by Keynes (1936), also helps explain the role of exchange rates in economic growth. From the Keynesian perspective, exchange rate movements affect aggregate demand through exports, imports, consumption, and investment. Depreciation may increase external demand by encouraging exports, but it can also reduce domestic purchasing power if import prices rise. Appreciation may support consumption through cheaper imports, but it can reduce export demand and weaken output in trade-dependent sectors. This means that exchange rates influence growth through demand-side channels, especially in open economies such as ASEAN-5. This finding is consistent with previous studies showing that exchange rates significantly influence economic growth in different economic contexts. Prior studies found that exchange rate movements affect growth in E7 economies, including Russia, Indonesia, Mexico, China, India, Brazil, and Turkey, as well as in Ghana, through trade competitiveness, inflation, investment confidence, and macroeconomic stability (Usman, 2023; Odoom et al., 2025; Berko et al., 2026). In the ASEAN-5 context, the result confirms that exchange rates are not only monetary indicators, but also strategic macroeconomic variables that shape trade performance, investment behavior, price stability, and long-term economic growth.

### **Foreign Direct Investment (FDI) and Economic Growth of ASEAN-5**

The statistical result shows that Foreign Direct Investment has a significant effect on economic growth, as indicated by a probability value of 0.0001, which is lower than the 0.05 significance level. This finding indicates that foreign capital inflows play an important role in explaining economic growth in ASEAN-5 countries during 2004 to 2023. FDI supports growth through capital accumulation, technology transfer, managerial capability, productivity improvement, industrial upgrading, job creation, and wider access to international production networks. Therefore, FDI is not only a source of external financing, but also a channel for strengthening productive capacity and long-term economic performance. From a macroeconomic perspective, this result implies that ASEAN-5 economic growth is strongly connected to investment openness, capital mobility, technology diffusion, and global production integration. FDI can increase domestic investment capacity, especially when domestic savings and public investment are not sufficient to finance industrial expansion. In developing and emerging economies, FDI also helps accelerate modernization in manufacturing, services, infrastructure, and export-oriented sectors. However, the growth effect of FDI depends on the ability of host countries to absorb technology, create linkages with domestic firms, and direct investment toward productive sectors rather than merely extractive or low value-added activities.

The policy implication is that ASEAN-5 countries need to attract higher-quality FDI rather than only increasing the volume of foreign investment. Governments should improve regulatory certainty, infrastructure quality, investment licensing, fiscal incentives, human capital readiness, and institutional transparency. FDI policy should also encourage technology transfer, local supplier development, research and development activity, and integration between multinational firms and domestic industries. Without these supporting conditions, FDI may increase capital

inflows but produce limited spillover effects for domestic productivity and long-term growth. The significant effect of FDI also reflects the heterogeneity of ASEAN-5 economies. Vietnam has benefited strongly from export-oriented FDI in manufacturing and global value chains. Thailand has long used FDI to support automotive, electronics, tourism, and industrial production. Malaysia has a more advanced investment structure, with FDI linked to technology, finance, and high-value manufacturing. Indonesia and the Philippines have large domestic markets, but FDI contribution depends on infrastructure, regulatory consistency, labor quality, and sectoral allocation. These differences show that FDI affects growth through different national channels, although the overall panel result confirms its significant role in ASEAN-5 economic growth.

Theoretically, this finding is consistent with Solow-Swan Neoclassical Growth Theory, developed by Solow (1956) and Swan (1956). This theory explains that economic growth is driven by capital accumulation, labor, and technological progress. In this framework, FDI functions as external capital that expands production capacity and accelerates technology adoption in host countries. For ASEAN-5 economies, FDI can support capital deepening, improve production efficiency, and strengthen convergence toward higher income levels. The significant effect of FDI confirms that capital inflows and technology diffusion remain important engines of growth in developing and emerging economies. Purchasing Power Parity Theory, introduced by Cassel (1918), does not directly explain FDI as a production input, but it helps clarify the macroeconomic environment that shapes foreign investment decisions. Exchange rate stability, price levels, and purchasing power affect the cost of investment, expected returns, and investor confidence. When exchange rates are stable and price conditions are predictable, foreign investors face lower uncertainty in production costs, profit repatriation, and long-term planning. Therefore, from the PPP perspective, FDI contributes more effectively to growth when supported by stable currency values and balanced price conditions.

Keynesian Theory, developed by Keynes (1936), also supports the role of FDI through the aggregate demand channel. FDI can stimulate investment, employment, income, and production, which then increases aggregate demand and output. Foreign investment may also create multiplier effects when it generates employment, increases household income, expands business activity, and strengthens government revenue. In the ASEAN-5 context, FDI can support economic growth when it enters productive sectors and creates real economic activity. However, its effect may weaken if investment is concentrated in capital-intensive sectors with limited domestic linkages or low employment creation. This finding is consistent with previous studies showing that FDI supports economic growth in various country contexts, including African countries, Vietnam, Poland, Ukraine, Morocco, and South Africa. These studies show that FDI contributes to growth through capital inflows, technology transfer, productivity improvement, industrial development, and stronger investment performance (Anetor, 2025; Xuan, 2025; Chorny & Chorna, 2026; Chtioui & Boushib, 2026; Dawai & Zakaria, 2026). In the ASEAN-5 context, the result confirms that FDI is a strategic macroeconomic variable for strengthening production capacity, global competitiveness, and long-term economic growth.

### **Labor, Inflation, Exchange Rate, Foreign Direct Investment (FDI) and Economic Growth A Sharia Economics Analytical Perspective**

From A Sharia Economics Analytical Perspective, macroeconomic variables are assessed not only by their effect on output, but also by their alignment with justice, transparency, stability, and real-sector productivity. Labor must be managed as a dignified production factor through fair contracts, clear obligations, and timely wages, as reflected in Surah At-Taubah verse 105, the hadith on wage payment, and Fatwa No. 09/DSN-MUI/IV/2000 on ijarah. In relation to economic growth, labor contributes when it improves productivity, supports efficient production, and strengthens value-added economic activity. Inflation must be controlled because excessive price increases weaken purchasing power, raise production costs, and disrupt market stability. This principle aligns with Surah Hud verse 85, which emphasizes fairness in measurement and

exchange, as well as Islamic prohibitions against *ihtikar*, *najasy*, speculation, and market manipulation (Masudul Alam Choudhury, 2017).

Exchange rate management in Islamic economics must ensure lawful exchange, transparency, and freedom from *gharar*, *maysir*, and speculative transactions. Surah An-Nisa verse 29 emphasizes trade based on mutual consent, while Fatwa No. 28/DSN-MUI/III/2002 on Al-Sharf permits foreign exchange transactions when they are conducted clearly, fairly, and without speculation. In relation to economic growth, exchange rate stability supports trade, investment certainty, import cost control, and external competitiveness. FDI is also permissible when directed to halal and productive sectors, based on transparency, mutual benefit, and protection from *riba*, *gharar*, *maysir*, exploitation, and harm. This view aligns with Surah Al-Ma'idah verse 2 and Fatwa No. 107/DSN-MUI/X/2016, which require investment to be lawful, transparent, and beneficial for real economic activity (Akilu Aliyu Shinkafi, Nor Aini Ali, 2017).

In this framework, economic growth is understood as output expansion that remains connected to justice, real-sector development, price stability, and productive investment. Surah Al-A'raf verse 96 links prosperity with ethical conduct and social balance, while Fatwa No. 40/DSN-MUI/X/2003 requires economic activities to avoid prohibited elements. Therefore, Islamic economics provides an ethical foundation for interpreting the empirical results: labor should strengthen productivity, inflation should be managed to maintain price stability, exchange rates should support fair and stable transactions, FDI should expand productive sectors, and economic growth should be achieved through lawful, stable, and real-sector-based economic activity

## CONCLUSION

This study finds that labor quantity has no significant effect on economic growth in Indonesia, Vietnam, Malaysia, the Philippines, and Thailand during the period 2004 until 2023, confirming that workforce size alone is unproductive without adequate skills, productivity, and human capital quality. Inflation, exchange rates, and FDI significantly drive growth through preserved purchasing power, strengthened trade competitiveness, and technology transfer. Islamic economic principles further require that growth embody justice, welfare, equitable distribution, ethical investment, and environmental sustainability. The empirical contribution is threefold. First, it provides panel evidence debunking the labor quantity growth assumption in middle-income ASEAN, thereby redirecting analytical focus toward human capital quality. Second, it disentangles the distinct transmission channels of inflation, exchange rates, and FDI. Third, it bridges conventional growth empirics with Islamic ethical imperatives, enriching development economics through a value-based dimension.

The policy implications for ASEAN are direct. Member states must urgently reorient workforce strategies toward human capital deepening through vocational training and education reform, so that labor growth translates into inclusive output. Prudent inflation targeting and exchange rate stability remain essential to underpin regional competitiveness and investor confidence within the ASEAN Economic Community. FDI promotion must embed technology transfer, local industry linkages, and sustainability standards. Furthermore, integrating Islamic economic values such as distributive justice, ethical investment, and environmental stewardship into ASEAN development frameworks can steer the region toward balanced and equitable growth. However, several methodological limitations must be acknowledged. The study covers only five ASEAN economies over the period 2004 until 2023, omits human capital quality, domestic investment, government spending, external debt, institutional quality, and technological innovation, and employs a linear panel framework that may overlook nonlinearities and cross-sectional dependencies. Future research should expand country and temporal coverage and incorporate the omitted variables to overcome these limitations.

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