

THE EFFECT OF INFLATION, FOREIGN DIRECT INVESTMENT, AND LABOR FORCE ON INDONESIA'S GDP GROWTH FROM 1990 TO 2024

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ABSTRACT

This study analyzes the long-run and short-run effects of foreign direct investment (FDI), inflation, and labor force on Indonesia's GDP growth over the period 1990–2024 using an Error Correction Model (ECM). Annual time series data for GDP growth, consumer price inflation (CPI), FDI net inflows, and labor force were obtained from the World Bank. Unit root tests show that all variables are stationary at first difference, while Johansen cointegration tests confirm the existence of two cointegrating relationships among the variables. The long-run ECM estimates indicate that inflation significantly reduces economic growth, whereas FDI significantly promotes growth; the labor force has a negative and significant effect in the long run. In the short run, inflation still exerts a significant negative impact, FDI maintains a significant positive effect, while the labor force has no influence and is not statistically significant. The error correction term is negative and highly significant, suggesting a rapid adjustment toward long-run equilibrium. These findings highlight the importance of maintaining price stability and attracting productive FDI, while simultaneously improving the quality and absorptive capacity of the labor force to sustain Indonesia's economic growth.

Keyword: GDP Growth; Inflation; FDI; Labor Force; Error Correction Model (ECM).

ABSTRAK

Penelitian ini menganalisis pengaruh jangka panjang dan jangka pendek foreign direct investment (FDI), inflasi, dan angkatan kerja terhadap pertumbuhan PDB Indonesia selama periode 1990–2024 dengan menggunakan Error Correction Model (ECM). Data deret waktu tahunan untuk pertumbuhan PDB, inflasi harga konsumen (CPI), Penanaman Modal Asing (FDI, net inflows), dan tenaga kerja diperoleh dari World Bank. Uji akar unit menunjukkan bahwa semua variabel bersifat stasioner pada diferensi pertama, sementara uji kointegrasi Johansen mengonfirmasi adanya dua hubungan kointegrasi di antara variabel-variabel tersebut. Hasil estimasi ECM jangka panjang menunjukkan bahwa inflasi secara signifikan menurunkan pertumbuhan ekonomi, sedangkan FDI secara signifikan mendorong pertumbuhan; tenaga kerja memiliki pengaruh negatif dan signifikan dalam jangka panjang. Dalam jangka pendek, inflasi tetap memberikan dampak negatif yang signifikan, FDI mempertahankan pengaruh positif yang signifikan, sementara tenaga kerja tidak berpengaruh dan tidak signifikan secara statistik. Koefisien error correction term bernilai negatif dan sangat signifikan, yang mengindikasikan proses penyesuaian yang cepat menuju keseimbangan jangka panjang. Temuan ini menegaskan pentingnya menjaga stabilitas harga dan menarik FDI yang produktif, sekaligus meningkatkan kualitas dan kapasitas serap angkatan kerja untuk menopang pertumbuhan ekonomi Indonesia secara berkelanjutan.

Kata Kunci: Pertumbuhan PDB; Inflasi; FDI; Tenaga Kerja; Error Correction Model (ECM).

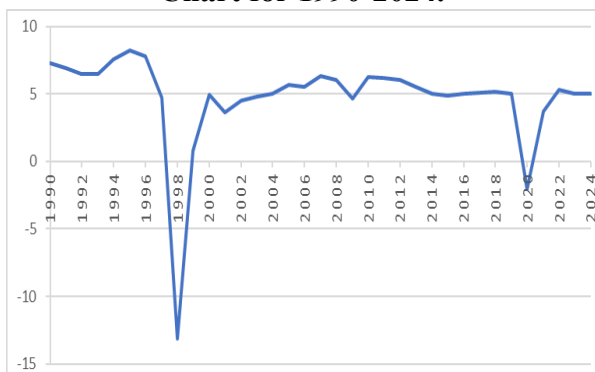
1. Introduction

A country's ability to produce goods and services in an environmentally sustainable manner is indicated by economic growth. Identifying the determinants of economic growth is essential for improving a country's economic performance. The objective is to design sustainable development strategies and to guide policy decisions more effectively. The

comprehension of these pivotal factors is deemed paramount in both academic and practical domains, each with its distinct rationales. Understanding the basic determinants of economic growth helps governments develop appropriate economic policies to promote growth (Çalışkan, 2024). Economic growth is a key indicator of the extent to which economic activity will

generate additional income for the community within a specified timeframe (Irvansyah, 2024). According to (Boldeanu & Constantinescu, 2015), economic growth is influenced by both direct and indirect factors. Direct factors encompass, human and natural resources, capital accumulation, and technological improvements. Conversely, indirect factors encompass bureaucracy, interest rates, investment, fiscal policy, and financial system efficiency (Paksi, 2020).

Figure 1. Indonesia's Economic Growth Chart for 1990-2024.



Source: (Worldbank, n.d.)

As shown in Figure 1, Indonesia's economic growth fluctuated throughout the period from 1990 to 2024. The highest growth was recorded in 1995, with an annual increase of 8.22 per cent, due to economic stability, favourable investment policies and controlled inflation. Conversely, the lowest growth rate was recorded in 1998 at -13.12 per cent, a period that coincided with the Asian monetary crisis, which had a significant impact on the national economy. After the crisis, Indonesia's economic growth showed a strong recovery, maintaining a relatively stable trend until the emergence of the pandemic. However, the emergence of COVID-19 caused a sharp decline, with the economy shrinking by 2.06 per cent in 2020. In the context of a developing country such as Indonesia, achieving economic growth is a key development priority. Although the post-crisis period saw an average annual growth rate of 4–6 per cent, inflationary pressures, dependence on commodity exports and macroeconomic uncertainty remain challenges that could potentially disrupt foreign investment flows and national economic stability.

Inflation has been a common phenomenon in various countries for many years. Inflation is a condition in which the prices of goods and services continue to increase. If only one or two goods experience price increases, this cannot be called inflation. In fact, inflation is considered one of the classic challenges in economics because it can affect people's real income and ultimately have a negative impact on macroeconomic performance. In practice, inflation is usually measured by changes in the Consumer Price Index (CPI) over time. In recent decades, foreign direct investment (FDI) has become a cornerstone of global economic integration, playing a pivotal role in the economic development of both developed and developing countries. These capital flows have been promoted as drivers of economic growth, job creation, and technology transfer, especially in emerging markets. Since the early 1990s, governments have sought to attract FDI to stimulate economic activity, increase productivity, and improve the overall investment climate. Along with the significant increase in FDI flows, the study of its impact on economic growth has become a crucial area of research, policy discussion, and international relations (Udeh et al., 2025). Globalisation has created mutual dependencies among countries around the world. Globalisation is currently based on investment incentives by multinational corporations (MNCs) and is characterised by multilateral and bilateral cooperation. Labor productivity is one of the indicators used to measure progress in achieving the Sustainable Development Goals (SDGs). According to (Todaro, 2000), rapid population growth has been shown to have deleterious effects on development prospects, including the exacerbation of underdevelopment. Furthermore, it is said that population problems are not caused by large family sizes, but rather it is due to high population concentrations in urban areas, which are caused by high rates of migration from rural to urban areas. Consequently, there are many people with high levels of education and skills who can drive economic growth. When the productive age population is large, it will increase the available labor force and ultimately increase production output in a region (Muqorrobin, 2015).

The relevance of this study lies in its attempt to build on previous studies on economic growth by adding a focus on the variables of Foreign Direct Investment (FDI), inflation, and labour. Unlike previous studies, this research uses an Error Correction Model (ECM) to analyse the short-term and long-term dynamics of the relationship between these variables. The main objective of this study is to analyse the impact of FDI, inflation, and labour on economic growth in both the short and long term using the ECM model.

2. Literature Review and Hypotheses Growth Economic (GDPG)

Economic growth is an increase in public output or output that describes economic development in a given year compared to the previous year, regardless of whether the increase causes changes in the economic structure or not (Fadillah, 2021). Economic growth is generally defined as an increase in the value of goods and services produced by an economy over time, often measured by an increase in Gross Domestic Product (GDP). Growth can be driven by demand-side factors (such as consumption and investment) and supply-side factors (including technological advances, labor expansion, and capital accumulation). In the context of developing countries, the pursuit of economic growth is frequently associated with the processes of industrialization, infrastructure development, and the enhancement of living standards. As noted by (Solow, 1956), capital accumulation and technological progress are the main determinants of long-term growth, especially in economies transitioning from agriculture to manufacturing and services (Udeh et al., 2025).

The Influence of Inflation (CPI) on Growth Economic

In a macroeconomic context, inflation is considered a key indicator of a country's economic stability. Therefore, inflation plays an important role in maintaining economic stability. Inflation is an economic phenomenon whose fluctuations can trigger economic instability (Mukarramah et al., 2025). (Kaimuddin, 2024) defines inflation as an increase in consumer prices expressed as an

annual percentage. However, if the price of one good increases, it can affect other goods and cause their prices to rise as well. Most inflation is caused by increases in the prices of one or two types of goods (Firdaus & Septiani, 2022). The Quantitative Theory of Money states that the overall price level is inversely proportional to the money supply. The complex interaction between inflation and economic growth is influenced by various factors, such as the inflation rate, economic structure, and prevailing policy conditions (Su & Soon, 2024). Based on the Quantity Theory of Money, an increase in the amount of money in circulation without being offset by an increase in real output will create inflationary pressure that can hamper economic growth (Mankiw, 2016).

Empirical findings on FDI and inflation on economic growth from (Bahri et al., 2024) show demonstrates that elevated inflation levels negatively impact economic growth, while foreign direct investment (FDI) has a substantial and positive impact in the short and long term. These results are in line with research findings (Adamu & Adeola, 2025) related to gross capital formation (GCF), exports, inflation, and government final consumption expenditure (GFE) on economic growth using the Panel Vector Error Correction Model method, which shows that high inflation has a negative effect on economic growth.

H₁ : Inflation (CPI) has a negative effect on Economic Growth.

The Influence of Foreign Direct Investment (FDI) on Growth Economic

Foreign direct investment (FDI) is defined as investments made by foreign entities in a country's productive assets, including manufacturing facilities, infrastructure, and the service sector. FDI flows can be categorised into Greenfield investments (new investments), mergers and acquisitions (M&A), or reinvested earnings (Udeh et al., 2025). Investment acts as a macroeconomic regulator in a country; increased investment has an impact on job creation. This reduces unemployment, increases income, and drives long-term economic growth. (De Mello, 1999; Feldstein, 2000), further supported by

(Onafowora et al., 2019) argue that foreign direct investment (FDI) can directly increase growth through the provision of capital and technology transfer, given the unavailability of local capital and technology in the host country, so that foreign direct investment plays an important role in the economic development of developing countries (Safira & Setyowati, 2025). According to (Domar, 1946; Harrod, 1939), economic growth is greatly influenced by the level of investment, as investment increases a country's production capacity and aggregate demand. In the context of FDI, the inflow of foreign investment not only adds to the domestic capital stock, but also brings positive effects in the form of technology transfer, increased productivity, and job creation. The Harrod–Domar theory, investment plays an important role in driving growth through increased production capacity and capital formation (Kaimuddin, 2024). This theory asserts that foreign capital flows can accelerate the pace of economic growth in developing countries through increased efficiency and global economic integration. Thus, FDI has a strategic role in strengthening the economic structure and expanding the national production base.

Research (Kaimuddin, 2024) examining the effects of FDI, inflation, and exports on economic growth using the Error Correction Model (ECM) shows that FDI has a significant positive effect on Indonesia's economic growth, especially in the long term. These results are in line with research (Millia et al., 2023), which examined exports, FDI, and imports on economic growth using the ECM-ARDL model and found that the interaction between FDI plays a synergistic role in strengthening growth, especially when inflation stability is maintained.

H₂ : Foreign Direct Investment (FDI) has a positive effect on Economic Growth.

The Influence of Labor force on Growth Economic

The Labor force Theory posits that the labor force comprises the productive population, generally aged 15–64 years, who are either employed or seeking employment. The workforce is defined as the working-age population, which covers the age range of 15

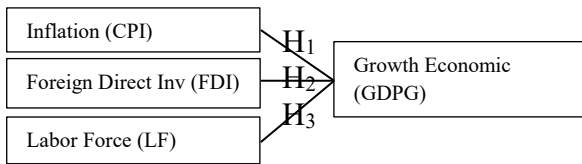
to 64 years. This group includes segments of the population that have the ability to produce goods and services and are willing to engage in such activities. The active labor force, on the other hand, is the segment of the labor force that is involved in the production of goods and services (Sukirno, 2013). Individuals outside the age range considered to be part of the labor force are also included in this category (Saputra et al., 2021). (Dumairy, 1996) defines the 'labor force' is defined as the subset of the productive population (i.e., individuals aged 15-64) who currently have a job but are temporarily not working and are actively seeking employment. The labor force participation rate is a key indicator of the available employment opportunities. A growing number of studies have shown a positive correlation between the expansion of employment opportunities and an increase in a country's aggregate production (Sari et al., 2023). In general, a country's population is divided into two categories: labor force and non-labor force. The population of each country can be considered part of the labor force once individuals reach the age specified in the country's legal framework. At the same time, the population can be considered part of the non-labor force if they are deemed unable or unwilling to work, even if there is a demand for labor. Individuals outside the age range considered to be part of the labor force also fall into this category (Saputra et al., 2021).

Research by (Anggraini et al., 2025), which analysed the relationship between economic growth, population, labor, domestic investment, and foreign investment using the ARDL approach, showed that labor had a positive but not significant effect on economic growth in the long and short term. This indicates that although, in theory, labor and investment have the potential to influence growth, the effects are not immediately apparent in the short term. In a study by (Salsabila & Murtala, 2024) on the effect of inflation, exports, and labor force on economic growth using the ARDL approach, it was found that the labor force did not have a significant effect on Indonesia's GDP per capita.

H₃ : Labor Force (LF) has a positive effect on Economic Growth.

3. Research Model

Figure 2. Conceptual Framework



4. Research Methods

This study uses a quantitative approach in testing. This approach involves classifying research variables in a concrete, measurable, and causal manner using numbers (Sugiyono, 2013). This study focuses on the dependent variable of economic growth in Indonesia and the independent variables of investment, inflation, and labor. This study uses secondary time series data from 1990 to 2024 obtained from the World Bank. The analysis method used is the Error Correction Model (ECM). The ECM model allows for the necessary adjustments to correct short-term imbalances and achieve long-term equilibrium. ECM is used to analyse the long-term and short-term relationships between research variables. This model is applied when the data is not stationary at a certain level but becomes stationary. In addition, multiple regression analysis was performed using the Ordinary Least Squares (OLS) method after differentiation, and the variables showed cointegration. The Ordinary Least Squares (OLS) method has been used to obtain model coefficients by minimising the sum of squares of differences between the observed values of the dependent variable and the predicted values of the linear model (Gujarati & Porter, 2009).

The model equation is as follows:

$$GDPG_t = f(CPI_t, FDI_t, LF_t) \dots\dots\dots(1)$$

The above model can be described in a long-term model, as follows:

$$GDPG_t = \beta_0 + \beta_1 CPI_t + \beta_2 FDI_t - \beta_3 LF_t + \varepsilon_t \dots\dots\dots(2)$$

The general ECM model is as follows:

$$\Delta Y_t = \alpha_0 - \beta_1 \Delta X1_t + \beta_2 \Delta X2_t - \beta_3 \Delta X2_t - \beta_k ECT_{t-1} + \varepsilon_t \dots\dots\dots(3)$$

The above model can be interpreted for the short term, as follows:

$$\Delta GDPG_t = -\alpha_0 - \beta_1 \Delta CPI_t + \beta_2 \Delta FDI_t + \beta_3 \Delta LF_t - \beta_k ECT_{t-1} + \varepsilon_t \dots\dots\dots(4)$$

In which:

$GDPG_t$ = GDP Growth

CPI_t = Consumer Price Inflation

FDI_t = Foreign Direct Investment

LF_t = Labor Force

α_0 = Constant

$\beta_{1,2,3}$ = Coefficient

ECT_{t-1} = Error Correction Term

Δ = The Change in Variable

t = Time

ε = Error Term

4. Result and Discussion

Stationarity Test. In analysing the results of the ECM model estimation, the first step is to test the stationarity of the data using the unit root test with Augmented Dickey-Fuller (ADF). This test aims to determine whether the data is stationary at the level, 1st difference, or 2nd difference. If the data is not stationary at the level, the test is continued to the first difference, and if it is still not stationary, it is continued to the second difference. With a significance level of 5%, all variables in this study are declared stationary at the first difference.

Table 1. Stationarity Test Result

Variabel	Unit Root Test			
	Level		First Difference	
	ADF	Prob	ADF	Prob
GDPG	4.219702	0.0108	-5.911925	0.0002
CPI	-3.344756	0.0773	-8.360754	0.0000
FDI	-2.428165	0.3595	-5.463829	0.0005
LF	-3.334399	0.0783	-5.357032	0.0007

Source: EViews 12 Output, Stationarity Test Result

Based on Table 1, it is known that at the level, only GDPG is stationary, while at the 1st Difference level, it can be seen that all variables are stationary. Thus, an ECM model can be applied.

Table 2. Simultaneous Stationarity Test Result

Method	Unit Root Test	
	1 st Difference	
	Statistic	Prob
ADF - Fisher Chi-square	55.1803	0.0000
ADF - Choi Z-stat	-5.94073	0.0000

Source: EViews 12 Output, Simultaneous Stationarity Test Result

Based on the test results, it is known that the ADF-Fisher Chi-square probability value is smaller than the significance level of 0.05. Thus, it can be concluded that all GDPG, CPI, FDI, and LF variable data are stationary at the first difference level, so that the value of $d = 1$.

Cointegration Test, after all the variables were declared stationary, a cointegration test was conducted to determine the long-term relationship between the variables in the model. This test ensures that the resulting model is not a spurious regression and that the ECM model is based on cointegrated variables in the long term.

Table 3. Cointegration Test Result

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.*
None *	0.712661	71.86603	47.85613	0.0001
At most 1 *	0.432125	30.71198	29.79707	0.0391
At most 2	0.290577	12.03882	15.49471	0.1551
At most 3	0.021279	0.709801	3.841465	0.3995

Source: EViews 12 Output, Cointegration Test Result

The statistical calculations yielded the following results: an asterisk (*) appears on the 'None' and 'At most 1' hypotheses, indicating that the probability value is less than α (0.05). Therefore, it can be concluded that there are two cointegrations between the GDPG, CPI, FDI, and LF variables. Thus, the analysis can continue using the Error Correction Model (ECM).

Error Correction Model (ECM), long-term and short-term imbalances can be analyzed using the ECM (error correction model). This model is used to show the long-term relationship with the dependent variable. The testing stages include: first, conducting a cointegration test; second, estimating and analysing the model in the long-term equation;

and third, analysing the parameters in the model.

Table 4. Long-Term ECM Results

Variable	Coefficient	t-Statistic	Prob.
C	16.80895	9.085465	0.0000
CPI	-0.343038	-10.53618	0.0000
FDI	0.530729	2.283150	0.0294
LF	-8.87E-08	-5.650296	0.0000
R-squared	0.813888		
Adjusted R-squared	0.795877		
Durbin-Watson stat	1.595205		

Source: EViews 12 Output, Long-Term Error Correction Model (ECM) Results

Based on Table 3 of the long-term model estimation results, it is known that all independent variables, namely CPI, FDI, and LF, have a significant effect on Economic Growth (GDPG), because the probability value of each variable is less than α (0.05). The R-squared value of 81.38% indicates that the CPI, FDI, and LF variables are able to explain 81.38% of the variation in Economic Growth, while the remaining 18.62% is explained by other variables not included in the model. The Adjusted R-squared value of 79.58% indicates that the model has a strong level of suitability because it is close to 100%. In addition, the Prob(F-statistic) value, which is less than 0.05, shows that the model as a whole is significant and suitable for use in analysis.

Residual Stationarity Test

Table 5. Residual Unit Root Test Results

Method	Unit Root Test	
	Level	
	Statistic	Prob
Augmented Dickey-Fuller test statistic	-4.614302	0.0008
Test critical values	1% level	-3.639407
	5% level	-2.951125
	10% level	-2.614300

Source: EViews 12 Output, Residual Unit Root Test Results

Based on the results of the ADF test at the level, it is known that the probability value is smaller than the significance level of 0.05. This indicates that the ECT data is stationary at the level. Thus, it can be concluded that the model

meets the requirements to proceed to the short-term estimation stage using the Error Correction Model (ECM).

Short-Term Error Correction Model (ECM)

Table 6. Short-Term ECM Results

Variable	Coefficient	t-Statistic	Prob.
C	-0.868896	-1.741234	0.0922
D(CPI)	-0.346611	-15.12855	0.0000
D(FDI)	0.903582	3.274990	0.0027
D(LF)	3.69E-07	1.672046	0.1053
ECT(-1)	-0.968665	-5.161780	0.0000
R-squared	0.894460		
Adjusted R-squared	0.879902		
Durbin-Watson stat	1.989547		

Source: EViews 12 Output, Short-Term Error Correction Model (ECM) Results

Based on Table 4, it is known that the results of the short-term model estimation show that Inflation (CPI), Foreign Direct Investment (FDI) variables, and Error Correction Term (ECT) have a significant effect on Economic Growth (GDPG), while the Labor force (LF) variable has no significant effect. The coefficient of determination (R-squared) value of 89.44% indicates that 89.44% of the variation in economic growth can be explained by the variables in the model, while the remaining 10.56% is explained by other factors outside the model. The adjusted R-squared value of 87.99% indicates that the relationship between the independent and dependent variables in this model is very strong because it is close to 100%.

After all ECM stages have been carried out, two equations are obtained which form the basis of this method. Based on the results of the long-term equation estimation in Table 3, the following equation is obtained:

$$GDPG_t = 16.80895 - 0.343038CPI_t + 0.530729FDI_t - 8.87E - 08LF_t + \varepsilon_t$$

Interpretation:

- Constant / $\alpha_0 = 16.80895$, meaning that when all independent variables are zero, Economic Growth is 16.80895%.
- CPI on Economic Growth: a 1% increase in CPI will decrease Economic Growth by 0.343038%, assuming other variables remain constant, and vice versa.

- FDI on Economic Growth: a 1% increase in FDI will increase Economic Growth by 0.530729%, assuming other variables remain ceteris paribus, and vice versa.
- LF on Economic Growth: a 1-unit increase in LF will decrease Economic Growth by -8.87E-08%, assuming other variables remain ceteris paribus, and vice versa.

Meanwhile, from the short-term estimation results in Table 4, the following equation is obtained:

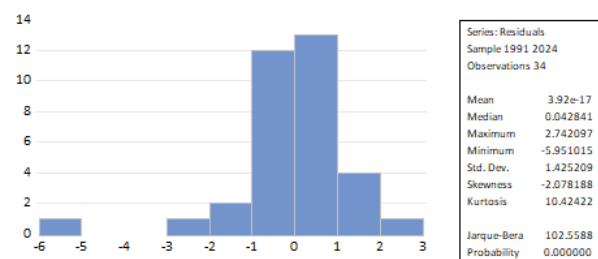
$$\Delta GDPG_t = -0.868896_0 - 0.346611CPI_t + 0.903582FDI_t + 3.69E - 07LF_t - 0.968665ECT_{t-1} + \varepsilon_t$$

Interpretation:

- Constant / $\alpha_0 = -0.868896$, economic Growth decreases by -0.868896%.
- CPI on Economic Growth: a 1% increase in CPI will decrease Economic Growth by 0.346611%, assuming other variables remain ceteris paribus, and vice versa.
- FDI on Economic Growth: a 1% increase in FDI will increase Economic Growth by 0.903582%, assuming other variables remain ceteris paribus, and vice versa.
- LF on Economic Growth: a 1-unit increase in LF will increase Economic Growth by 3.69E - 07%, assuming other variables remain ceteris paribus, and vice versa.
- $\beta_k ECT_{t-1} = -0.968665$, a negative and significant ECT coefficient indicates that economic growth is adjusting towards long-term equilibrium, where approximately 96.87% of the previous period's imbalance can be corrected in the current period.

Normality Test and Classical Assumption

Figure 3. Normality Test



Source: EViews 12 Output, Normality Test Error Correction Model (ECM) Results

The normality test shows that the residuals are not perfectly normally distributed, which is acceptable in ECM time-series analysis.

Table 7. Heterokedasticity Test

Heteroskedasticity Test: White

Null hypothesis: Homoskedasticity

F-statistic	2.4749	Prob. F(14,19)	0.0338
Obs*R-squared	21.958	Prob. Chi-Square(14)	0.0795

Source: EViews 12 Output, Normality Test Error Correction Model (ECM) Results

The White test indicates no heteroskedasticity in the model.

Table 8. Autokorelation Test

Breusch-Godfrey Serial Correlation LM Test:

Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.02289	Prob. F (2,27)	0.9774
Obs*R-squared	0.05755	Prob. Chi-Square (2)	0.9716

Source: EViews 12 Output, Auto Error Correction Model (ECM) Results

The Breusch-Godfrey test confirms the absence of autocorrelation.

Table 9. Multicollinearity Test

Variance Inflation Factors

Sample: 1990 2024

Included observations: 34

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.249013	3.662916	NA
D(CPI)	0.000525	1.068064	1.067852
D(FDI)	0.076123	1.066476	1.066006
D(LF)	4.87E-14	3.818902	1.193523
ECT(-1)	0.035217	1.248896	1.248642

Source: EViews 12 Output, Multicollinearity Error Correction Model (ECM) Results

The VIF values are below the critical threshold, indicating no multicollinearity.

6. Conclusion, Suggestion, and Limitations

Based on the results of ECM analysis of Indonesia's GDP growth data for the period 1990–2024, it can be concluded that there is a long-term relationship between economic growth, inflation, FDI, and the labor force. In the long term, inflation (CPI) has a negative and significant effect on economic growth, indicating that high price pressures tend to hamper increases in output and national income. Conversely, FDI has a positive and significant effect, proving that foreign direct investment plays a role as an engine of growth

through increased production capacity, technology transfer, and job creation. The labor force variable has a negative and significant effect in the long term, indicating that labor force growth that is not balanced with job creation and increased productivity can actually suppress economic growth.

In the short term, inflation continues to have a significant negative impact on economic growth, while FDI has a positive and significant impact. Labor does not have a significant effect or impact, meaning that short-term changes in the labor force are not yet strong enough to affect GDP growth dynamics. The error correction term (ECT) coefficient, which is negative and significant, is close to one, indicating that most of the short-term imbalances are immediately corrected towards long-term equilibrium in the following period. Overall, the results of the study confirm the importance of maintaining price stability, encouraging quality FDI flows, and improving the quality and productivity of the labor force so that Indonesia's economic growth can be sustainable in both the short and long term.

The present study is subject to several limitations. Firstly, the variables examined are constrained to inflation, FDI, and labor. Consequently, other factors that also affect economic growth are not included. Secondly, the use of annual data from 1990 to 2024 simplifies short-term economic dynamics. Thirdly, the application of the ECM model, which only captures linear relationships and is sensitive to the number of observations, is problematic. Furthermore, the labor variable employed exclusively encapsulates quantity without incorporating quality dimensions. Concurrently, structural factors, such as institutions, productivity, and labor market conditions, remain unexamined. It is also important to note that the study does not include crisis dummies such as those from 1998, 2008, and 2020. Consequently, the effects of major shocks may not be fully reflected in the estimation results.

REFERENCES

- Adamu, I., & Adeola, K. A. (2025). Unraveling the Macroeconomic Factors

- Affecting Economic Growth in AANZFTA Countries. *EcceS (Economics, Social, and Development Studies)*, 12(1), 20–37. <https://doi.org/10.24252/ecc.v7i1.13382>
- Anggraini, D., Ismadharliani, A., & Sudharyati, N. (2025). Pengaruh Jumlah Penduduk, Tenaga Kerja, Investasi PMDN dan Investasi PMA terhadap Pertumbuhan Ekonomi di Provinsi Jambi Selama Periode 2010-2023. *Ekonomis: Journal of Economics and Business*, 9(2), 1253. <https://doi.org/10.33087/ekonomis.v9i2.2632>
- Bahri, A. N., Zaenuri, W., & Mutardho, A. (2024). *THE INFLUENCE OF FOREIGN DIRECT INVESTMENT AND INFLATION ON ECONOMIC GROWTH IN INDONESIA FOR THE 2013-2023 PERIOD*. 7(2), 88–99. <https://jurnal.iain-bone.ac.id/index.php/altsarwah>
- Blinder, Alan. S. (n.d.). *Keynesian Economics*. Retrieved November 24, 2025, from <https://www.econlib.org/library/Enc/KeynesianEconomics.html>
- Boldeanu, F. T., & Constantinescu, L. (2015). The main determinants affecting economic growth. In *Bulletin of the Transilvania University of Braşov Series V: Economic Sciences* • (Vol. 8, Issue 57).
- Çalışkan, Z. D. (2024). On the Key Determinants of Economic Growth. *JOURNAL OF SOCIAL HUMANITIES AND ADMINISTRATIVE SCIENCES*, 10(6), 731–744. <https://doi.org/https://doi.org/10.5281/zenodo.14249881>
- Domar, E. D. (1946). CAPITAL EXPANSION, RATE OF GROWTH, AND EMPLOYMENT'. In *Source: Econometrica* (Vol. 14, Issue 2).
- Fadillah, A. (2021). Determinants of Labor Productivity and Economic Growth in Indonesia. *IOSR Journal of Economics and Finance*, 12(2), 49–57. <https://doi.org/10.9790/5933-1202054957>
- Firdaus, E. N., & Septiani, Y. (2022). EFFECT ANALYSIS OF INFLATION, EXPORTS AND IMPORTS ON ECONOMIC GROWTH IN INDONESIA. In *JOURNAL OF HUMANITIES, SOCIAL SCIENCES AND BUSINESS (JHSSB)* (Vol. 2). <https://ojs.transpublika.com/index.php/JHSSB/>
- Gujarati, D. N., & Porter, D. C. (2009). *Basic Econometrics* (5th ed.). McGraw-Hill Irwin.
- Harrod, R. F. (1939). An Essay in Dynamic Theory. In *Source: The Economic Journal* (Vol. 49, Issue 193).
- Irvansyah, M. R. N. (2024). Analisis VECM Hubungan Tingkat Inflasi, Pengeluaran Pemerintah, Dan Ekspor Terhadap Pertumbuhan Ekonomi di Indonesia. *EKOMA : Jurnal Ekonomi*, 3(5).
- Kaimuddin, A. M. (2024). Determinan Pertumbuhan Ekonomi Indonesia Tahun 1991-2022. In *Jurnal Ilmu Ekonomi (JIE)* (Vol. 08, Issue 02).
- Mankiw, N. G. (2016). *MACROECONOMICS*.
- Millia, H., Ernawati, E., & Heriberta, H. (2023). Do foreign direct investment, trade and their interactions affect economic growth in Indonesia? *Jurnal Perspektif Pembiayaan Dan Pembangunan Daerah*, 11(1), 1–16. <https://doi.org/10.22437/ppd.v11i1.22698>
- Mukarramah, Zulkarnain, M., & Arif, R. (2025). Inflasi Dalam Pertumbuhan Ekonomi: Studi Empiris di Indonesia Periode 1991 – 2024. *EKONOMIKAWAN: Jurnal Ilmu Ekonomi Dan Studi Pembangunan*, 25(1). <https://doi.org/10.30596/ekonomikawan.v%vi%i.25065>
- Muqorrobin, Y. (2015). FACTORS INFLUENCING ECONOMIC GROWTH IN INDONESIA: ERROR CORRECTION MODEL (ECM). In *Jurnal Ekonomi dan Studi Pembangunan* (Vol. 16, Issue 1).

- Paksi, R. P. (2020). DETERMINANTS OF ECONOMIC GROWTH: CASE OF INDONESIA. In *JDEP* (Vol. 3, Issue 3). https://ejournal.undip.ac.id/index.php/dinamika_pembangunan/index
- Safira, A., & Setyowati, E. (2025). Analisis Pengaruh Ekspor, Impor dan Investasi Asing Langsung terhadap Pertumbuhan Ekonomi di ASEAN-4 Tahun 2018-2023. *JAFM: Journal of Accounting and Finance Management*, 6(2), 861–870. <https://doi.org/10.38035/jafm.v6i2>
- Salsabila, V., & Murtala, M. (2024). PENGARUH INFLASI, EKSPOR DAN ANGKATAN KERJA TERHADAP PDB PERKAPITA DI INDONESIA. *Jurnal Ekonomi Regional Unimal*, 7(3), 1–11.
- Saputra, R. A., Susilowati, D., Arifin, Z., Pembangunan, E., & Bisnis, D. (2021). EFEKTIVITAS TENAGA KERJA DAN INVESTASI ASING DALAM PERTUMBUHAN PDB PERKAPITA NEGARA ASEAN. In *Jurnal Ilmu Ekonomi (JIE)* (Vol. 5, Issue 1).
- Sari, Y., Winarni, E., & Amali, M. (2023). Analisis Hubungan Pertumbuhan Ekonomi, Angkatan Kerja dan Inflasi di Indonesia: Pendekatan Vector Error Correction Model (VECM). *Ekonomis: Journal of Economics and Business*, 7(1), 627. <https://doi.org/10.33087/ekonomis.v7i1.821>
- Solow, R. M. (1956). A Contribution to the Theory of Economic Growth. In *The Quarterly Journal of Economics* (Vol. 70, Issue 1).
- Su, S. K. W., & Soon, S. V. (2024). The impact of inflation on economic growth. *Issues and Perspectives in Business and Social Sciences*, 4(2), 187–201. <https://doi.org/10.33093/ipbss.2024.4.2.6>
- Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta.
- Sukirno, S. (2013). *Mikroekonomi Teori Pengantar Edisi Ketiga* (3rd ed.). Rajawali Pers.
- Team, T. I. (2025, August 10). *Understanding the Phillips Curve: Inflation and Unemployment Dynamics*. <https://www.investopedia.com/terms/p/Phillipscurve.asp>
- Todaro, M. P. (2000). *Pembangunan ekonomi di dunia ketiga; Jilid 2 = Economic development* (Y. Sumiharti, Ed.; 7th ed.). Erlangga.
- Udeh, E., Ibrahim, D., & Sesay, B. (2025). The Relationship between Foreign Direct Investment and Economic Growth: A Review of the Literature (1994-2023). *International Journal of Science and Management Studies (IJSMS)*, 57–65. <https://doi.org/10.51386/25815946/ijsms-v8i1p107>
- Worldbank. (n.d.). *GDP Growth (annual %) - Indonesia*. Retrieved November 25, 2025, from <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2024&location=ID&start=1990>