

DETERMINANTS OF MACROECONOMIC FACTORS ON INDONESIA'S ECONOMIC GROWTH WITHIN THE INFLATION TARGETING FRAMEWORK

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Abstract

Indonesia officially adopted the Inflation Targeting Framework (ITF) in 2005. However, economic growth during the 2008–2024 period experienced significant fluctuations due to both external and domestic shocks, raising empirical questions regarding the effectiveness of the monetary policy transmission mechanism. This study aims to analyze the short-run and long-run effects of inflation, the Bank Indonesia policy interest rate, the rupiah exchange rate, and investment on Indonesia's economic growth over the 2008–2024 period. The study employs a quantitative explanatory approach using quarterly time-series data obtained from Bank Indonesia and Statistics Indonesia (BPS). Data were analyzed using the Error Correction Model (ECM), preceded by stationarity, cointegration, and classical assumption tests. The findings indicate that, in the short run, only investment has a positive and statistically significant effect on economic growth (coefficient = 24.0738; $p = 0.001$). Inflation, the policy interest rate, and the exchange rate are found to be statistically insignificant, suggesting that these variables require a longer transmission lag to influence economic growth. In the long run, the significant Error Correction Term (ECT) (coefficient = -1.331) confirms the existence of a stable equilibrium relationship between all macroeconomic variables and economic growth, while also demonstrating a strong self-correcting mechanism. The study concludes that the Inflation Targeting Framework has been effective as a nominal anchor for maintaining long-term macroeconomic stability, although the short-run impact of its policy instruments remains limited. These findings imply that strengthening the policy mix between monetary and fiscal policies is essential, as interest rate adjustments alone are insufficient to stimulate economic growth. The government should prioritize accelerating investment through regulatory simplification, legal certainty, and investment incentives. Furthermore, maintaining transparent and consistent policy communication is crucial for anchoring market expectations and ensuring the optimal functioning of the economic adjustment mechanism.

Keywords: inflation targeting framework; economic growth; interest rate; inflation; monetary policy

INTRODUCTION

Indonesia officially adopted the Inflation Targeting Framework (ITF) in July 2005 as an integral component of its post-1997/1998 Asian Financial Crisis monetary policy reform. This policy shift was motivated by the weaknesses of the fixed exchange rate regime and the previous monetary policy framework in maintaining macroeconomic stability (Bank Indonesia, 2005). The crisis resulted in soaring inflation, a sharp depreciation of the rupiah exchange rate, and a substantial loss of monetary policy credibility, thereby highlighting the

need for a more transparent, credible, and forward-looking monetary policy framework (Mishkin, 2008). Within this context, the ITF has been recognized as a more effective nominal anchor because it explicitly establishes inflation as the ultimate objective of monetary policy, publicly announces inflation targets, enhances the independence of Bank Indonesia, and strengthens policy communication (Bernanke et al., 2019).

Although Indonesia has operated under the Inflation Targeting Framework since July 2005 with the objective of establishing credible price stability, empirical evidence reveals persistent inflation volatility. The ITF has repeatedly faced significant challenges when confronted with major economic shocks. The first notable example occurred in 2008, when inflation surged to 10.31 percent, substantially exceeding the targeted inflation range due to the transmission of the Global Financial Crisis into the domestic economy (Bank Indonesia, 2009). The limitations of the monetary policy transmission mechanism persisted in 2013, when inflation increased to 6.97 percent. This surge was driven by a combination of external shocks, particularly capital outflows triggered by the Federal Reserve's Taper Tantrum, and domestic factors, including adjustments to subsidized fuel prices (Basri, 2017). Furthermore, during the post-pandemic economic recovery in 2022, when the ITF was expected to operate more effectively, inflation again rose to 4.21 percent, exceeding the upper bound of the inflation target (3 ± 1 percent). This increase was primarily attributed to disruptions in global supply chains and escalating energy prices caused by geopolitical tensions (Bank Indonesia, 2023).

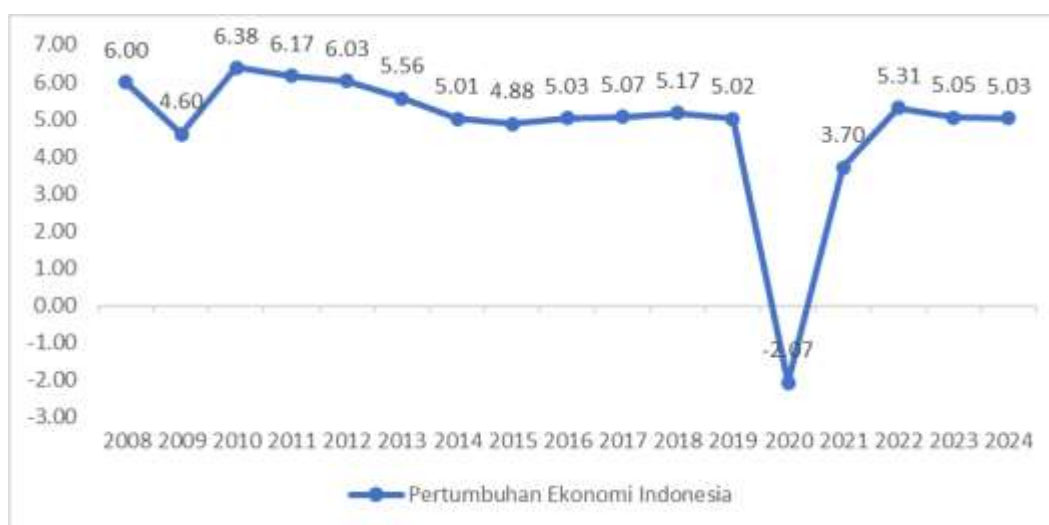
As domestic and global economic challenges have become increasingly complex, the implementation of the Inflation Targeting Framework in Indonesia has evolved beyond treating price stability as a rigid and singular objective. Instead, price stability remains the primary target while simultaneously considering output stability, economic growth dynamics, and financial system stability (Bank Indonesia, 2023). This approach is consistent with contemporary monetary policy practices adopted by many central banks, which recognize that financial market volatility and business cycle fluctuations may impose substantial economic costs if excluded from interest rate policy formulation (Bernanke et al., 2001). Consequently, the ITF enables Bank Indonesia to respond more flexibly to economic shocks without compromising the credibility of inflation control over the medium term.

Within the ITF framework, Bank Indonesia has addressed various economic disturbances not only through adjustments to the policy interest rate but also by strengthening policy coordination with the government, stabilizing the exchange rate, and implementing macroprudential measures to preserve financial system stability (Warjiyo & Juhro, 2016). Nevertheless, Indonesia's economic growth performance during the 2008–2024 period raises an important empirical question regarding the extent to which the monetary policy transmission mechanism under the ITF—through the interest rate, exchange rate, and investment channels—has effectively supported national economic growth amid increasingly complex global economic dynamics.

Economic growth represents one of the primary indicators of a country's development success, reflecting its increasing capacity to produce goods and services. Sustained and high economic growth remains a central objective of macroeconomic policy in many countries, including Indonesia (Norrahman, 2024). Over the past two decades, global economic growth has become increasingly complex and uncertain, characterized by the growing frequency and intensity of large-scale economic shocks. The 2008 Global Financial Crisis marked a major

turning point, ending a prolonged period of stable growth in many advanced economies and exposing the vulnerability of the international financial system to sectoral risk accumulation and macroeconomic imbalances (IMF, 2009). The consequences of the crisis extended beyond temporary disruptions, resulting in slower potential economic growth (secular stagnation), heightened business cycle volatility, and declining global productivity (Summers, 2014). These challenges have been further exacerbated by increasing global economic fragmentation, geopolitical tensions, and disruptions in global supply chains, all of which have hindered post-crisis economic recovery.

Indonesia's economic growth during the 2008–2024 period also exhibited considerable fluctuations. As illustrated in Figure 1, the country's Gross Domestic Product (GDP) growth declined from 6.0 percent in 2008 to 4.60 percent in 2009 due to the impact of the global financial crisis. Economic growth subsequently recovered, averaging 5.43 percent during the 2010–2019 period, before contracting sharply to –2.07 percent in 2020.



Source: Statistics Indonesia (BPS), various published editions (2020–2025)

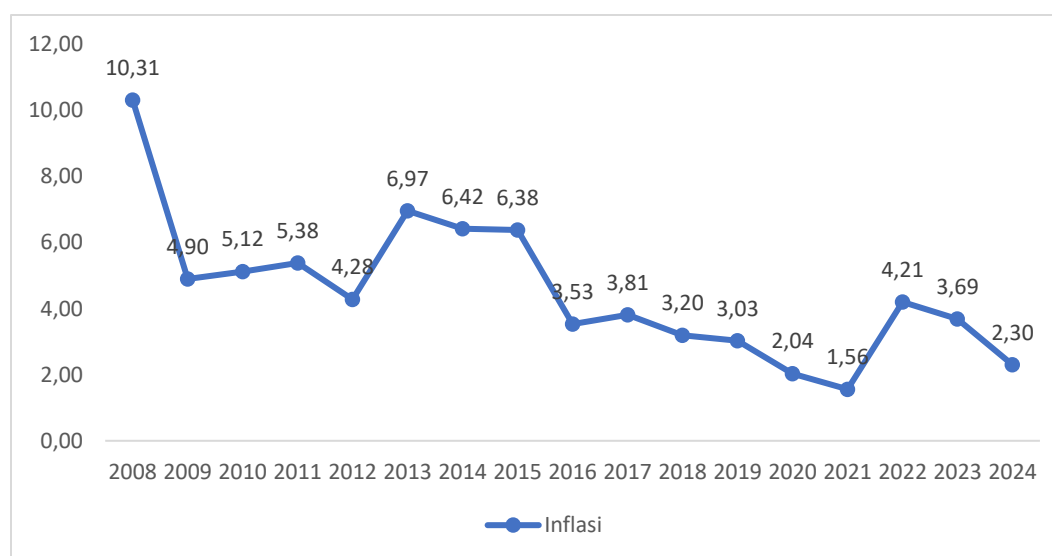
Figure 1. Indonesia's Economic Growth, 2008–2024 (Percent)

The period from 2010 to 2012 marked Indonesia's economic recovery phase, during which economic growth reached its peak at **6.38 percent** in 2010 and remained above **6 percent** until 2012. This period was primarily supported by strong domestic consumption, government infrastructure investment, and the recovery of global commodity trade, particularly coal and crude palm oil. However, economic growth began to decelerate in 2013, declining to **5.56 percent**, and subsequently remained within the range of **4.88 percent to 5.17 percent** through 2019. This slowdown was attributable to several factors, including declining global commodity prices, suboptimal structural reforms, and persistent challenges in enhancing the competitiveness and productivity of the national economy (Patunru, 2012).

The year 2020 represented the most challenging period in Indonesia's modern economic history, as the economy contracted by **2.07 percent** due to the COVID-19 pandemic. Mobility restrictions, the suspension of economic activities, and disruptions to global supply chains resulted in substantial declines in consumption, investment, and exports. In response, the government introduced the **National Economic Recovery (PEN)** program, which included

large-scale social assistance, tax incentives, and support for micro, small, and medium-sized enterprises (MSMEs). These policy measures contributed to a significant economic recovery in 2021, with growth reaching **3.70 percent**, followed by sustained growth ranging from **5.03 percent to 5.31 percent** during the 2022–2024 period, demonstrating the resilience of the Indonesian economy in coping with external shocks (Ministry of Finance of the Republic of Indonesia, 2021).

The dynamics of Indonesia's inflation during the 2008–2024 period are illustrated in **Figure 2**, which reveals considerable volatility reflecting a series of both domestic and external economic shocks. Inflation reached its highest level in 2008 at **10.31 percent**, driven by the surge in global crude oil prices, which peaked at **USD 147 per barrel**, along with rising global food prices. The elevated inflationary pressure prompted Bank Indonesia to increase its policy interest rate in order to maintain price stability and stabilize the rupiah exchange rate. However, the global financial crisis that emerged in late 2008 caused inflation to decline sharply to **4.90 percent** in 2009, reflecting weaker aggregate demand and falling global commodity prices (Bank Indonesia, 2009).



Source: Bank Indonesia, various published editions (2008–2024)

Figure 2. Indonesia's Inflation Rate, 2008–2024 (Percent)

The 2010–2012 period was characterized by relatively stable inflation, ranging from **5.12 percent to 5.38 percent**, reflecting the effectiveness of monetary policy in maintaining price stability amid robust economic growth (Warjiyo & Juhro, 2016). However, inflation increased significantly in 2013, reaching **6.97 percent**, primarily due to the government's decision to raise subsidized fuel prices in June 2013 as part of its efforts to reduce the fiscal burden of energy subsidies on the state budget. The fuel price adjustment generated broad increases in transportation and production costs, which subsequently exerted upward pressure on inflation. Inflation then gradually declined to **6.42 percent** in 2014 and further decreased to **6.38 percent** in 2015 (BPS, 2014).

Since 2016, Indonesia's inflation has exhibited a consistent downward trend, reaching its lowest level of **1.56 percent** in 2021 amid the COVID-19 pandemic, when aggregate demand weakened as a result of restrictions on economic activities. Inflation subsequently accelerated

to **4.21 percent** in 2022, exceeding the upper limit of the Inflation Targeting Framework (ITF) target range of **3 ± 1 percent**. Inflationary pressures in 2022 were mainly driven by disruptions in global supply chains following sharp increases in global energy and food prices, as well as imported inflation resulting from the depreciation of the rupiah exchange rate (Bank Indonesia, 2023). This phenomenon demonstrates that, in an open economy such as Indonesia, price stability is determined not only by domestic monetary policy but is also substantially influenced by external shocks beyond the control of Bank Indonesia. Inflation became more contained in **2023** and **2024**, recording rates of **3.69 percent** and **2.30 percent**, respectively. This achievement reflects the successful coordination between Bank Indonesia's monetary policy and the government's fiscal policy in containing inflationary pressures. Bank Indonesia succeeded in maintaining inflation within the target range of **3.0 ± 1 percent**, thereby reinforcing the credibility of its monetary policy in preserving price stability (Bank Indonesia, 2023).

The relationship between macroeconomic variables and economic growth, particularly in countries implementing the Inflation Targeting Framework, has been extensively examined in previous studies with inconsistent findings. Regarding inflation, Safira et al. (2025) and Abdullah et al. (2024) reported a significant negative effect on economic growth, consistent with the findings of Su and Soon (2024) in the ASEAN-5 economies and Adaramola and Dada (2020) in Nigeria, who concluded that rising prices reduce real output. However, these findings contradict those of Tesar Tesar Bramtheo et al. (2025) and Sugiyanto et al. (2024), who found that inflation has no significant effect on economic growth in several developing countries.

Similar inconsistencies are evident with respect to the interest rate variable. Lubis et al. (2025) and Fadli et al. (2024) reported that higher interest rates negatively affect Indonesia's economic growth. In contrast, Mustofa and Faizin (2025) and Mail et al. (2024) found a positive relationship, suggesting that monetary policy transmission through the interest rate channel may operate differently under varying economic conditions. Regarding the exchange rate, Judijanto et al. (2024), Mathias Efi et al. (2024), and Cahyani (2023) consistently identified a significant positive effect, indicating that a competitive exchange rate enhances exports and promotes economic growth, in line with the cross-country evidence reported by Thi Ha An et al. (2020). Nevertheless, Lubis and Syarvina (2023) as well as Anoruo et al. (2024) found either negative or statistically insignificant effects, arguing that exchange rate depreciation may increase the burden of external debt and intensify imported inflation. Likewise, empirical findings on investment remain inconclusive. Martin (2025), Antari et al. (2025), and Sari et al. (2025) confirmed that investment positively contributes to economic growth, whereas Emako et al. (2022) and Mawutor et al. (2023) reported insignificant or even negative effects in several developing economies. These conflicting findings suggest that the relationships among macroeconomic variables are highly dependent on structural characteristics and the period under investigation.

Based on the empirical phenomena and theoretical gaps outlined above, this study aims to quantitatively examine the effects of inflation, interest rates, the exchange rate, and investment on Indonesia's economic growth within the **Inflation Targeting Framework**. From a theoretical perspective, this research is expected to enrich the macroeconomic literature by providing further evidence on the monetary policy transmission mechanism in emerging

market economies and by validating the relevance of the Inflation Targeting Framework in the Indonesian context. From a practical perspective, the findings are expected to provide strategic insights for Bank Indonesia and the government in formulating an optimal **policy mix**. Strengthening the synergy between price stability and economic growth stimulus is essential to achieving sustainable economic development, particularly in the face of increasing uncertainty in the global economy.

METHOD

This study employs an explanatory research design, which aims to explain the causal relationships among the research variables through hypothesis testing (Sugiyono, 2023). The object of this study is Indonesia's economic growth as influenced by macroeconomic variables within the Inflation Targeting Framework (ITF) during the 2008–2024 period. Specifically, the study examines the dynamic relationships among inflation, the Bank Indonesia policy interest rate, the rupiah exchange rate against the U.S. dollar, investment, and economic growth, which is measured by the growth rate of Indonesia's real Gross Domestic Product (GDP). The data were analyzed using the Error Correction Model (ECM) to investigate both the short-run and long-run relationships among the variables. Prior to estimating the ECM, a series of preliminary tests were conducted, including the stationarity test, cointegration test, and **classical assumption tests**, to ensure the validity and reliability of the econometric model.

RESULTS AND DISCUSSION

Stationarity Test

According to Engle and Granger (1987), the primary requirement for estimating an Error Correction Model (ECM) is that all variables must be stationary at the same order of integration and cointegrated. Before estimating the model, each variable was tested for stationarity using the Augmented Dickey–Fuller (ADF) unit root test. This procedure is essential to ensure that the data do not contain unit roots, which could otherwise lead to spurious regression results. A variable is considered stationary when the ADF probability value is less than 0.05 ($\alpha = 0.05$).

Table 1. Results of the Stationarity Test

Variables	Level		First Difference	
	t-Statistic	Probability	t-Statistic	Probability
Economic Growth (Y)	-8.627	0.0000	-10.047	0.0000
Inflation (X_1)	-2.012	0.281	-5.721	0.0000
Interest Rate (X_2)	-1.563	0.502	-4.311	0.0004
Ln Exchange Rate (X_3)	-0.944	0.773	-6.515	0.0000
Ln Investment (X_4)	-3.899	0.002	-8.243	0.0000

Source: Processed Data, 2026

As presented in Table 1, the stationarity test at the level form indicates that two of the five variables economic growth (Y) and Ln investment (X_4) are stationary, with probability values of 0.0000 and 0.0020, respectively. In contrast, inflation (X_1), the Bank Indonesia policy interest rate (X_2), and Ln exchange rate (X_3) are non-stationary at the level, with probability

values of 0.281, 0.502, and 0.773, respectively, all of which exceed the 5 percent significance level.

After applying the first-difference transformation, all variables became stationary. The ADF probability values for all variables were 0.0000, except for the interest rate variable, which recorded a probability value of 0.0004, remaining well below the 5 percent significance level. These results satisfy the prerequisite for conducting the cointegration test and estimating the ECM. Therefore, it can be concluded that all independent and dependent variables successfully passed the unit root test, as their ADF probability values at the first difference are below 0.05 ($\alpha = 0.05$).

Cointegration Test

After confirming that all variables are stationary at the first difference, the next step is to examine the existence of a long-run equilibrium relationship using the Johansen cointegration test. Cointegration testing is an econometric procedure employed to determine whether a stable long-run equilibrium relationship exists among the variables included in an empirical model (Gujarati & Porter, 2009). The Johansen approach evaluates long-run equilibrium using two test statistics: the Trace Statistic and the Maximum Eigenvalue Statistic.

Table 2. Results of the Johansen Cointegration Test
Cointegration Rank Test (Trace)

Trace Statistic	5% Critical Value	1% Critical Value	Conclusion
168.1789	68.52	76.07	Cointegrated
Cointegration Rank Test (Maximum Eigenvalue)			
Maximum Eigenvalue Statistic	5% Critical Value	1% Critical Value	Conclusion
94.7779	33.46	38.77	Cointegrated

Source: Processed Data, 2026

As shown in Table 2, the results of the Johansen cointegration test using a lag length of 2–2 indicate that the Trace Statistic is 168.18, exceeding both the 5 percent critical value (68.52) and the 1 percent critical value (76.07). Likewise, the Maximum Eigenvalue Statistic is 94.78, which is substantially higher than the corresponding 5 percent critical value (33.46) and 1 percent critical value (38.77). The consistency of these two test statistics confirms the existence of a significant long-run equilibrium relationship among all variables included in the model, thereby satisfying the cointegration requirement for estimating the Error Correction Model (ECM).

Classical Assumption Tests

Before interpreting the ECM estimation results, a series of diagnostic tests were conducted to ensure that the regression model satisfied the classical linear regression assumptions, commonly referred to as the Best Linear Unbiased Estimator (BLUE) criteria. These tests are intended to verify that the estimated parameters are valid, unbiased, and consistent (Wooldridge, 2021).

The normality test, presented in Table 3, was performed using the Kolmogorov–Smirnov (K–S) method to examine the distribution of the residuals. The test produced a probability value of 0.050, which is equal to the 5 percent significance level ($0.050 \geq 0.05$). Therefore, the residuals are normally distributed, indicating that the normality assumption is satisfied.

Table 3. Results of the Normality Test

Description	D	p-Value	Conclusion
z_resid	0.0735	0.479	
Cumulative	-0.1648	0.025	
Combined K–S	0.1648	0.050	Residuals are normally distributed

Source: Processed Data, 2026

The autocorrelation test, reported in Table 4, was conducted using the Breusch–Godfrey Lagrange Multiplier (LM) test. The results indicate a chi-square statistic of 0.374 with a probability value of 0.5407. Since the probability exceeds the 5 percent significance level, the null hypothesis of no autocorrelation cannot be rejected. Accordingly, the regression model is free from autocorrelation.

Table 4. Results of the Autocorrelation Test

Chi-Square	df	p-Value	Conclusion
0.374	1	0.5407	No autocorrelation detected

Source: Processed Data, 2026

The heteroskedasticity test, shown in Table 5, was performed using the Breusch–Pagan/Cook–Weisberg test. The test yielded a chi-square statistic of 1.83 with a probability value of 0.1761. Because the probability value is greater than 0.05, the null hypothesis of homoskedasticity cannot be rejected. Therefore, the regression model does not exhibit heteroskedasticity, indicating that the residual variance is constant.

Table 5. Results of the Heteroskedasticity Test

Test	Chi-Square	df	p-Value	Conclusion
Breusch–Pagan/Cook–Weisberg	1.83	1	0.1761	No heteroskedasticity detected

Source: Processed Data, 2026

The multicollinearity test, presented in Table 6, was evaluated using the Variance Inflation Factor (VIF). The VIF values for all independent variables are relatively low, with the highest VIF observed for the interest rate variable at 1.54. The mean VIF is 1.42, which is substantially below the commonly accepted threshold of 10. These findings indicate the absence of harmful multicollinearity among the explanatory variables.

Table 6. Results of the Multicollinearity Test

Variables	VIF	1/VIF	Conclusion
Inflation (X_1)	1.35	0.7421	No multicollinearity
Interest Rate (X_2)	1.54	0.6505	No multicollinearity
Ln Exchange Rate (X_3)	1.26	0.7962	No multicollinearity
Ln Investment (X_4)	1.45	0.6887	No multicollinearity

Variables	VIF	1/VIF	Conclusion
Mean VIF	1.42	—	No multicollinearity

Source: Processed Data, 2026

Error Correction Model (ECM) Estimation Results

The ECM estimation was conducted using the two-step procedure proposed by Engle and Granger. The first stage involved estimating the long-run equation using the Ordinary Least Squares (OLS) method to obtain the residuals, which were subsequently used as the Error Correction Term (ECT). The second stage estimated the short-run equation by incorporating the stationary ECT. Prior to the econometric estimation, the exchange rate and investment variables were transformed into their natural logarithm (ln) forms. This transformation is a standard econometric procedure intended to reduce scale disparities among variables, given that the exchange rate and investment are measured in substantially larger nominal values than the other variables, which are expressed as percentages (Wooldridge, 2021).

In this study, the long-run estimation model specifies economic growth as the dependent variable, while inflation, the Bank Indonesia policy interest rate, the natural logarithm of the exchange rate (Ln Exchange Rate), and the natural logarithm of investment (Ln Investment) serve as the independent variables.

The long-run estimation model is expressed as follows:

$$Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 \ln X_{3t} + \beta_4 \ln X_{4t} + \varepsilon_t \quad 1$$

Table 7. Long-Run Estimation Results of the Determinants of Indonesia's Economic Growth

Variables	Coefficient	Standard Error	t-Statistic	Probability
Constant	19.389	21.668	0.89	0.374
Inflation (X_1)	0.033	0.233	0.15	0.882
Interest Rate (X_2)	-0.135	0.382	-0.35	0.725
Ln Exchange Rate (X_3)	-1.268	2.698	-0.47	0.640
Ln Investment (X_4)	-0.413	2.295	-0.18	0.858
R-squared	0.0168			
Adjusted R-squared	-0.045			
F-statistic	0.27			
Prob. (F-statistic)	0.896			

Source: Processed data from Statistics Indonesia (BPS) and Bank Indonesia, 2026.

Based on Table 7, inflation has a coefficient of 0.033 with a probability value of 0.882 (> 0.05), indicating that inflation does not have a statistically significant long-run effect on economic growth. The interest rate has a coefficient of -0.135 with a probability value of 0.725 (> 0.05), suggesting no significant long-run effect. Likewise, the ln exchange rate records a coefficient of -1.268 with a probability value of 0.640 (> 0.05), while ln investment has a coefficient of -0.413 with a probability value of 0.858 (> 0.05). These findings indicate that neither the exchange rate nor investment exerts a statistically significant long-run influence on Indonesia's economic growth.

The R-squared value of 0.0168 indicates that inflation, interest rates, the exchange rate, and investment jointly explain only 1.68 percent of the variation in long-run economic growth, while the remaining 98.32 percent is explained by other variables outside the model. Furthermore, the Prob. (F-statistic) of 0.896, which exceeds the 5 percent significance level, indicates that all independent variables are jointly insignificant in explaining long-run economic growth.

Table 8. Short-Run ECM Estimation Results of the Determinants of Indonesia's Economic Growth

Variables	Coefficient	Standard Error	t-Statistic	Probability
Constant	-0.385	0.322	-1.20	0.236
Inflation (X_1)	0.089	0.287	0.31	0.758
Interest Rate (X_2)	0.251	0.796	0.32	0.753
Ln Exchange Rate (X_3)	-9.838	7.748	-1.27	0.209
Ln Investment (X_4)	24.073	7.047	3.42	0.001
Error Correction Term (ECT)	-1.331	0.140	-9.48	0.000
R-squared	0.627			
Adjusted R-squared	0.597			
F-statistic	20.58			
Prob. (F-statistic)	0.000			

Source: Processed data from Statistics Indonesia (BPS) and Bank Indonesia, 2026.

The short-run ECM specification is expressed as follows:

$$\Delta Y_t = \beta_0 + \beta_1 \Delta X_{1t-1} + \beta_2 \Delta X_{2t-1} + \beta_3 \Delta X_{3t-1} + \beta_4 \Delta X_{4t-1} + \gamma ECT_{t-1} + \mu_t \quad 2$$

$$\Delta Y_t = -0,3858 + 0,089\Delta X_{1t} + 0,251\Delta X_{2t} - 9,838\Delta X_{3t} + 24,073\Delta X_{4t} - 1,331ECT_{t-1} \quad 3$$

Based on the short-run estimation results presented in Table 8, the Error Correction Term (ECT) has a coefficient of -1.331 with a probability value of 0.000 (< 0.05). The negative and statistically significant coefficient confirms the validity of the Error Correction Model (ECM) and indicates the existence of an adjustment mechanism that corrects short-run disequilibrium toward the long-run equilibrium. Specifically, the ECT coefficient of -1.331 implies that approximately 133.1 percent of any disequilibrium from the previous period is corrected within one quarterly period. The magnitude of the coefficient suggests a rapid adjustment process, indicating that deviations from long-run equilibrium are eliminated relatively quickly.

The R-squared value of 0.627 indicates that inflation, the interest rate, the ln exchange rate, and ln investment jointly explain 62.7 percent of the variation in short-run economic growth, while the remaining 37.3 percent is attributable to other variables not included in the model. Moreover, the Prob. (F-statistic) of 0.000, which is below the 5 percent significance level, indicates that all independent variables are jointly significant in explaining short-run economic growth.

Discussion

A. The Effect of Inflation on Economic Growth

The estimation results indicate that, in the short run, inflation has a positive coefficient of 0.089 with a probability value of 0.758 (> 0.05), suggesting that it does not have a statistically significant effect on economic growth. This implies that a 1 percent increase in the aggregate inflation rate during the current quarter is associated with an estimated 0.0891 percent increase in economic growth. In the long run, inflation also exhibits a positive coefficient of 0.033 with a probability value of 0.882 (> 0.05). Therefore, inflation does not exert a statistically significant influence on Indonesia's economic growth in either the short run or the long run.

These findings suggest that quarterly fluctuations in inflation do not immediately translate into changes in real output growth. Within the forward-looking Inflation Targeting Framework (ITF), Bank Indonesia does not respond mechanically to every inflation deviation; instead, it emphasizes a comprehensive assessment of the trade-off between price stability and future output growth (Bank Indonesia, 2023; Svensson, 1997). Moreover, the transmission of monetary policy operates with a time lag, implying that policy adjustments require time before their effects are fully reflected in the real sector (Mishkin, 2021).

The findings are consistent with those of Sugiyanto et al. (2024), who examined five ASEAN countries and concluded that under moderate inflation, economic agents tend to incorporate rising prices into their expectations, thereby preventing immediate disruptions to consumption and investment. Similar evidence was also reported by Tesar Bramtheo et al. (2025) in their study of member countries of the Organisation of Islamic Cooperation (OIC), where inflation was likewise found to have no significant effect on economic growth.

B. The Effect of the Bank Indonesia Policy Interest Rate on Economic Growth

In the short run, the Bank Indonesia policy interest rate has a positive coefficient of 0.251 with a probability value of 0.753 (> 0.05), indicating that a 1 percent increase in the policy interest rate is associated with an estimated 0.251 percent increase in economic growth. In the long run, the coefficient becomes -0.135 with a probability value of 0.725 (> 0.05). These results indicate that the Bank Indonesia policy interest rate does not have a statistically significant effect on Indonesia's economic growth in either the short run or the long run.

The positive short-run coefficient, which contrasts with conventional theoretical expectations, may be explained by the signaling effect within the Inflation Targeting Framework. An increase in the policy interest rate is often interpreted by financial markets as a credible commitment by the central bank to maintaining price stability, thereby strengthening investor confidence and encouraging capital inflows (Can et al., 2020). The absence of statistical significance in both the short run and the long run is also consistent with the concept of transmission lag, whereby changes in the Bank Indonesia policy rate must first pass through banking interest rates, credit markets, and private investment decisions before influencing real economic activity (Fauzi et al., 2023; Yunita, 2022).

This relatively lengthy transmission process represents one of the principal challenges of monetary policy implementation in emerging economies, where financial market deepening remains incomplete (Hatmanu et al., 2020). Furthermore, rational economic agents respond primarily to real interest rates rather than nominal interest rates.

Consequently, the net effect of policy-induced interest rate changes on economic growth becomes more difficult to predict over relatively short time horizons (Handa, 2009).

C. The Effect of the Natural Logarithm of the Exchange Rate on Economic Growth

In the short run, the natural logarithm of the exchange rate ($\ln$ Exchange Rate) has a negative coefficient of -9.838 with a probability value of 0.209 (> 0.05). This indicates that a 1 percent depreciation of the Indonesian rupiah is associated with a 0.0983 percent decline in the economic growth rate. In the long run, the estimated coefficient is -1.268 with a probability value of 0.640 (> 0.05). Therefore, the natural logarithm of the exchange rate does not have a statistically significant effect on Indonesia's economic growth in either the short run or the long run.

The negative coefficients observed in both periods are consistent with the import cost channel, whereby a depreciation of the rupiah increases the cost of imported raw materials and capital goods, thereby reducing domestic production capacity. As an economy that relies heavily on imported intermediate and capital goods in its production process, Indonesia is particularly vulnerable to imported inflation resulting from exchange rate depreciation (Krugman et al., 2022). The absence of statistical significance further suggests that the adverse effects of currency depreciation through higher import costs are not sufficiently large to generate a measurable contraction in economic growth. This finding is also consistent with the J-curve hypothesis, which posits that the economic effects of exchange rate depreciation generally become observable only over a longer adjustment period (Krugman et al., 2022).

These findings are consistent with the study by Lubis and Syarvina (2023), who reported a negative relationship between the exchange rate and Indonesia's economic growth, as well as with Anoruo et al. (2024), who found either negative or statistically insignificant effects of exchange rate depreciation on economic growth in eleven African countries due to the burden of external debt and imported inflation.

D. The Effect of the Natural Logarithm of Investment on Economic Growth

In the short run, the natural logarithm of investment ($\ln$ Investment) has a positive coefficient of 24.073 with a probability value of 0.001 (< 0.05), indicating a positive and statistically significant effect on economic growth. This implies that a 1 percent increase in realized investment is associated with approximately a 0.2407 percent increase in economic growth in the short run. In contrast, the long-run coefficient is -0.413 with a probability value of 0.858 (> 0.05), indicating that investment does not exert a statistically significant long-run effect on economic growth.

According to the Solow (1956) neoclassical growth model, capital accumulation through investment constitutes one of the principal determinants of short- and medium-term economic growth. Mankiw (2021) argues that additional productive capital generated by new investment increases real output within a relatively short period before the phenomenon of diminishing returns to capital becomes dominant in the long run. Realized investment directly stimulates aggregate demand and contributes to gross fixed capital formation, representing a transmission channel that operates considerably faster than monetary policy instruments, which require multiple stages before influencing real economic activity (Mishkin, 2021).

The absence of a significant long-run effect may be explained by the argument that, over time, continued capital accumulation is subject to diminishing returns, thereby reducing its contribution to sustained economic growth. The short-run findings are consistent with

Imam et al. (2024), whose cross-country analysis of 123 countries identified investment as one of the primary drivers of economic growth.

Furthermore, the Error Correction Term (ECT) produced a coefficient of -1.331 , which is statistically significant at the 0.000 probability level. This finding confirms the validity of the Error Correction Model (ECM) and demonstrates the existence of a robust adjustment mechanism through which short-run disequilibria converge toward the long-run equilibrium. The adjustment speed of 133.1 percent per quarter reflects Bank Indonesia's proactive policy response in maintaining macroeconomic stability and sustainable economic growth through the implementation of the Taylor Rule principles within the Inflation Targeting Framework (ITF) (Bank Indonesia, 2023; Taylor, 1993).

CONCLUSION

Based on the findings of this study, which employed the **Error Correction Model (ECM)** to examine the effects of macroeconomic variables on Indonesia's economic growth within the **Inflation Targeting Framework (ITF)** over the 2008–2024 period, several conclusions can be drawn.

First, **inflation** does not have a statistically significant effect on economic growth in either the short run or the long run. The transmission of monetary policy requires a time lag before its effects are transmitted to the real sector; consequently, quarterly fluctuations in inflation do not immediately influence real output growth.

Second, the **Bank Indonesia policy interest rate** does not exert a statistically significant influence on economic growth in either the short run or the long run. Changes in the policy interest rate must pass through several stages of the monetary transmission mechanism, including adjustments in banking interest rates, financial market responses, and subsequent investment and consumption decisions in the real sector, before affecting economic growth. Third, the **natural logarithm of the exchange rate (Ln Exchange Rate)** does not have a statistically significant effect on economic growth in either the short run or the long run. Although the estimated coefficients are negative and consistent with the **import cost channel**, the depreciation of the Indonesian rupiah primarily increases the cost of imported raw materials and capital goods, thereby placing downward pressure on domestic production capacity in the short run. However, this effect is not sufficiently strong to produce a statistically significant impact on economic growth.

Fourth, the **natural logarithm of investment (Ln Investment)** has a positive and statistically significant effect on economic growth in the short run. A **1 percent increase in realized investment** is associated with an approximately **0.2407 percent increase** in economic growth. Investment is the only explanatory variable found to have an immediate and direct effect on output growth during the observation period. As the principal component of capital formation, investment contributes directly to expanding productive capacity and increasing national output. Consequently, higher levels of realized investment are immediately reflected in stronger aggregate demand and greater gross fixed capital formation, thereby stimulating economic growth.

Finally, the **Error Correction Term (ECT)** coefficient confirms the existence of a valid error-correction mechanism and a stable long-run equilibrium relationship among inflation, the Bank Indonesia policy interest rate, the exchange rate, and investment. The estimated

adjustment speed of **133.1 percent per quarter** indicates the resilience and responsiveness of the Indonesian economy in correcting short-run disequilibria and converging toward its long-run equilibrium.

RECOMMENDATIONS

Based on the findings of this study, several policy recommendations can be proposed. The results provide empirical evidence that can support the formulation, implementation, and evaluation of monetary policy instruments within the Inflation Targeting Framework (ITF). In particular, policymakers should strengthen the policy mix by enhancing coordination between monetary and fiscal policies to achieve an optimal balance between maintaining price stability and promoting sustainable economic growth. Such coordination is essential for improving the effectiveness of macroeconomic policy, especially in addressing future domestic and global economic uncertainties.

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