Etikonomi
Volume 25(1), 2026: 201 - 218
P-ISSN: 1412-8969; E-ISSN: 2461-0771
https://doi.org/10.15408/etk.v25i1.49619

Determinants of Indonesia's Economic Growth: Short-Run and Long-Run Analysis

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JEL Classification:
E62
F43
O11

Received:

Revised:

Accepted:

Available online: May 2026

Abstract

Research Originality: The originality of this study lies in its integrated approach to analyzing Indonesia's economic growth from a long-term structural perspective, capturing dynamic interactions among key macroeconomic variables within a cointegrated framework, and emphasizing the interconnected effects of policy reforms, external shocks, and macroeconomic forces.

Research Objectives: This research aims to analyze the short-run and long-run effects of government expenditure, gross fixed capital formation, foreign direct investment, exports, and inflation on Indonesia's economic growth.

Research Method: The study uses annual time-series data from 1993 to 2024 (32 observations) and applies the ARDL model to analyze both short- and long-run dynamics.

Empirical Result: Short-run analysis shows that government spending, investment, and exports have positive effects on economic growth, while inflation has a negative effect, and foreign direct investment has no significant effect. Long-run analysis indicates that government spending and exports have positive effects, while all other factors have a negative impact on economic growth.

Implications: Policy implications highlight the need to strengthen institutional quality, enhance investment effectiveness, ensure targeted government spending, and maintain inflation control to support long-term macroeconomic stability.

Keywords:
capital investment, external trade, fiscal policy, inflation dynamics, macroeconomic performance

How to Cite:

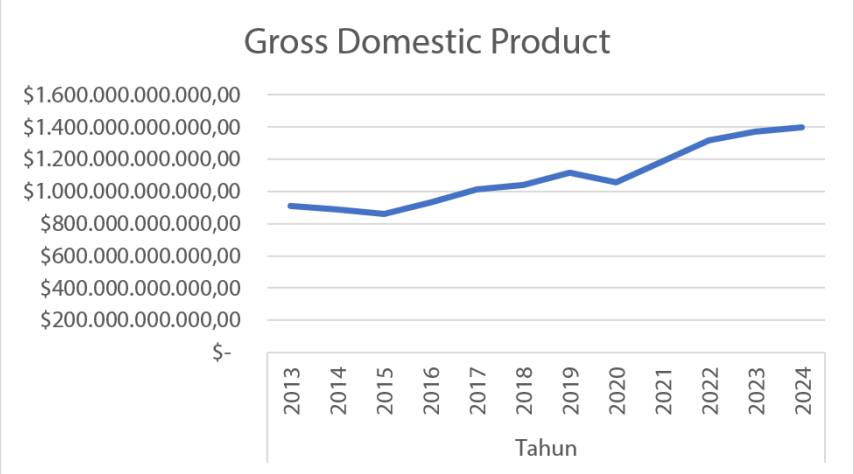
Zahra, Z. N., Anggraini, D. F., Nasution, N. A. H., & Kausar, F. (2026). Determinants of Indonesia's Economic Growth: Short-Run and Long-Run Analysis. *Etikonomi, 25*(1), 201 – 218. https://doi.org/10.15408/etk.v25i1.49619.

INTRODUCTION

Economic growth is a fundamental indicator for measuring a country's development performance. It is a crucial aspect for any nation, as it reflects increased public income and indicates improving economic conditions. In many cases, rising economic growth is considered a measure of government success in implementing national development. Economic growth is expected to improve societal welfare and foster positive social changes in people's lives (Putra, 2021). Therefore, countries continuously strive to enhance economic growth through various policies and development strategies.

Economic growth is typically measured by increases in real national income or in Gross Domestic Product (GDP). GDP represents the total value added generated by all business units in a country or the total value of final goods and services produced by all economic activities during a specific period. Consequently, a country's economic growth can be determined by examining changes or growth in GDP from year to year. An economy is considered to have progressed if its current level of economic activity is higher than in the previous period. Sustainable economic growth is generally supported by several factors, including investment, exports, government expenditure, and labor (Mankiw, 2019). Indonesia, as a developing country with the fourth-largest population in the world, continues to strive for sustainable economic growth to enhance public welfare (Saragih, 2022). Over the past decades, Indonesia has experienced dynamic economic growth, with GDP serving as the main indicator of the total value of final goods and services produced in the country during a given period.

Figure 1. Indonesia's Economic Growth in the Period 2013–2024



Indonesia's economic performance during 2013–2024 shows a fluctuating pattern but reveals a long-term upward trend. At the beginning of the period, a decline is observed, reflecting economic pressures; however, since 2016, economic activity has recovered and continued to rise, reaching its highest point in 2024. Despite a temporary decline in 2020 due to weakened global economic conditions, the subsequent recovery was rapid

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DOI: https://doi.org/10.15408/etk.v25i1.49619

and sustained. These data indicate that although some years experienced downturns, Indonesia's long-term economic growth trend remains upward (World Bank, 2024).

A comprehensive understanding of the factors influencing economic growth is essential for policymakers in formulating effective and targeted development strategies. Both classical and contemporary economic growth theories have identified various determinants that shape a country's growth trajectory. The Solow growth theory emphasizes the importance of capital accumulation and technological progress, whereas endogenous growth theory highlights the role of investment in human capital and innovation. Indonesia has several key factors, such as government expenditure, inflation, exports, investment, and gross fixed capital formation, which must be analyzed comprehensively to understand national economic growth dynamics. Each factor affects aggregate economic activity through different transmission mechanisms (Syahputra, 2017).

Government expenditure is one of the main components of GDP and plays a vital role in stimulating economic growth through fiscal policy. The Indonesian government consistently allocates budgets to develop infrastructure, education, and health, as well as various national programs, to enhance economic activity (Albasyari & Priyadi, 2023). Inflation is another macroeconomic indicator affecting economic growth in both the short and long term. Stable inflation can support economic activity by encouraging consumption and promoting investment incentives. Conversely, high inflation can create economic uncertainty, reduce purchasing power, and hinder long-term investment, making price stability a primary objective of economic policy (Albasyari & Priyadi, 2023).

Export performance is also a key factor influencing economic growth. Exports contribute to increasing national income by expanding domestic production markets and generating foreign exchange. Indonesia has a comparative advantage in primary commodities such as palm oil, coal, and mineral products, making the export sector a significant contributor to national economic growth. Strong export performance positively impacts the economy by increasing GDP, creating jobs, and promoting technology transfer (Marcal et al., 2024). Investment, reflected in gross fixed capital formation, is another determinant of economic growth. Gross fixed capital formation represents the accumulation of productive physical assets used to enhance national production capacity, making it crucial for long-term economic growth (Martadinata, 2022). The Indonesian government has implemented policy reforms to encourage investment through deregulation, simplified licensing, and the development of supporting infrastructure. Investment, realized through gross fixed capital formation, not only increases production capacity but also multiplies economic activity. In recent years, the government has also increased infrastructure spending to improve connectivity, reduce logistics costs, and promote inclusive and equitable economic growth (Kurniawan et al., 2021). Theoretically, within the framework of classical and neoclassical growth theories, particularly the Solow model, capital accumulation is a crucial driver of long-term economic growth. Gross Fixed Capital Formation serves as an important indicator because it directly reflects domestic investment activity.

Meanwhile, in macroeconomic theory, inflation can negatively affect growth if it becomes excessive, as it creates uncertainty. However, moderate levels of inflation may also signal increased economic activity. Nevertheless, most previous studies have focused primarily on foreign direct investment or government expenditure as proxies for investment, with limited research specifically employing Gross Fixed Capital Formation as an indicator of domestic capital formation. Several studies have not thoroughly examined the long-term relationship between inflation and investment and their effects on economic growth, particularly within the structural dynamics of the Indonesian economy.

Shabira and Amri (2023) found that government expenditure, both in the short and long term, does not have an n effect on economic growth. In contrast, Annisa et al. (2023) reported that government spending had a positive impact, whereas inflation negatively affected economic growth. Susilawati and Wibowo (2025) observed that inflation did not affect growth, whereas government expenditure had a positive effect, and exports did not have a meaningful impact. Similarly, Fazaalloh (2024) highlighted the importance of investment, particularly foreign direct investment, which was found to positively influence economic growth, particularly in sectors such as manufacturing and mining. However, these findings differ from Bonokeling and Sholeh (2022), who identified a negative long-term effect of investment on economic growth, while government expenditure and imports exerted positive effects. Few studies have investigated the simultaneous effects of variables such as government expenditure, investment, exports, and inflation in both the short and long term, particularly in the context of developing economies such as Indonesia. Although numerous studies have explored the determinants of economic growth, most have focused on individual factors in isolation. The diversity of these findings, combined with the limited focus on specific variables, indicates a significant research gap. There remains a need to integrate variables such as Gross Fixed Capital Formation and inflation into a single analytical model to assess their impact on economic growth comprehensively. This study aims to address this gap by analyzing the simultaneous effects of government expenditure, Gross Fixed Capital Formation, foreign direct investment, exports, and inflation, thereby providing a more thorough understanding of the short-term and long-term dynamics of economic growth.

METHODS

This study employs annual time-series data covering the period 1993–2024. The data consist of economic growth, government expenditure, gross fixed capital formation, foreign direct investment, exports, and inflation. Economic growth is measured by the annual growth rate of gross domestic product, while government expenditure is the total of government spending. Gross fixed capital formation reflects domestic investment in fixed assets, and foreign direct investment captures capital inflows from foreign investors. Exports represent the total value of goods and services sold to international markets, while inflation is measured using the annual percentage change in the consumer price index. The data are obtained from internationally recognized databases such as the World Bank and the International Monetary Fund to ensure consistency and reliability.

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DOI: https://doi.org/10.15408/etk.v25i1.49619

The ARDL model was chosen for this study because it is effective for examining both short- and long-run relationships in time-series data. This approach offers several advantages that align with the research's needs. Another advantage of the ARDL model is its ability to provide efficient and unbiased estimates even when the explanatory variables have different orders of integration. While the NARDL (Nonlinear Autoregressive Distributed Lag) model could be considered to capture potential asymmetric relationships, the objective of this research is to identify the general short-run and long-run effects of government expenditure, gross fixed capital formation, foreign direct investment, exports, and inflation on economic growth, focusing on linear dynamic relationships. As the research does not aim to investigate asymmetric responses but rather to explore the linear interactions among variables, the ARDL model is considered sufficient and appropriate for capturing these dynamics.

In this study, the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) tests are employed to assess the presence of unit roots and determine the stationarity of the variables. The criteria for interpreting the results are as follows: if the probability value (P-value) is less than the chosen significance level (for instance, 5%), the series is considered stationary. Conversely, if the P-value exceeds the significance threshold, the series is deemed non-stationary (Syamputri et al., 2021). The purpose of determining the optimal lag length is to identify the dynamic behavior and interactions among the variables. This procedure also helps address autocorrelation issues within VAR models, using several established criteria such as the Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC), Hannan–Quinn Criterion (HQ), and the Final Prediction Error (FPE) (Syamputri et al., 2021). The selection of the optimal lag is based on the criterion that displays the highest number of asterisks (*) (Enders, 2004).

Cointegration testing is used to determine whether a long-term relationship exists among non-stationary variables. In this study, the Johansen Cointegration Test is employed to examine cointegration. The decision criterion for the cointegration test is as follows: if the trace statistic is greater than (>) the critical value, the variables in the model exhibit a long-term relationship, indicating that the data are cointegrated. Conversely, if the trace statistic is smaller (<) than the critical value, the variables in the model do not exhibit a long-term relationship, indicating that the data are not cointegrated (Syamputri et al., 2021). The F-statistic is compared with the critical upper and lower bound values. The lower bound assumes that all variables are stationary at level, I(0), while the upper bound assumes that all variables are stationary at first difference, I(1). If the F-statistic exceeds the upper bound, it indicates the existence of cointegration among the variables.

The Autoregressive Distributed Lag (ARDL) model is a dynamic econometric model. The ARDL model allows the analysis of the effects of both dependent and independent variables over time, including the impact of past values of the dependent variable on its current value. The ARDL model used in this study is specified as follows:

$$GDP_t = a_0 + \sum_{i=1}^{p} a_1\, GDP_{t-1} + \sum_{i=1}^{q} a_2\, GFCFx_{t-1} + \sum_{i=1}^{r} a_3\, GEXP_{t-1} + \sum_{i=1}^{s} a_4\, FDI_{t-1} + \sum_{i=1}^{t} a_5\, EKP_{t-1} + \sum_{i=1}^{u} a_6\, INF_{t-1} + et$$

The residual estimation test for the ARDL model is a crucial step in regression analysis that must be conducted. This study involves three classical assumption tests: normality, heteroskedasticity, and autocorrelation. The normality test is used to determine whether the distributions of the independent variables, the dependent variable, or both in the regression model are normal. The heteroskedasticity test assesses whether the variance of the residuals is constant across observations in the regression model. Meanwhile, the autocorrelation test is used to determine whether there is a correlation between consecutive observations in the regression model.

RESULTS AND DISCUSSION

The empirical analysis provides several important findings regarding the determinants of Indonesia's economic growth within a cointegrated macroeconomic framework. The results indicate that government expenditure, gross fixed capital formation, and exports play a significant role in stimulating economic growth in the short run. These variables increase aggregate demand and production capacity, thereby supporting short-term economic expansion. In contrast, inflation negatively affects economic growth by eroding purchasing power and raising production costs. Foreign direct investment does not show a statistically significant short-run impact, suggesting that the immediate growth effect of foreign investment depends on the economy's structural and institutional conditions.

In the long run, the results show that government expenditure and exports remain key drivers of Indonesia's economic growth. These findings highlight the importance of fiscal policy and export performance in sustaining economic expansion. However, gross fixed capital formation, foreign direct investment, and inflation exhibit negative long-run effects, suggesting possible inefficiencies in investment allocation, weak economic absorptive capacity, and persistent macroeconomic pressures. Based on economic growth theory, this research expects that productive government spending, capital accumulation, and export expansion will support economic growth, while high inflation will hinder long-term economic performance. The following empirical analysis examines these relationships through several econometric tests.

Table 1. ADF and Phillips-Perron Stationarity Test

Variable	Level	First Difference
GDP	0.0001	0.0000
GFCF	0.0000	0.0009
GEXP	0.2803	0.0000
FDI	0.0124	0.0000
EKP	0.0000	0.0000
INF	0.0000	0.0000

Source: processed data (2025

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DOI: https://doi.org/10.15408/etk.v25i1.49619

The results of the unit root test indicate that all variables must be stationary to avoid spurious regression problems. In this study, the stationarity of the series was examined at both levels and first differences. The null hypothesis of the unit root test assumes the presence of a unit root; it is rejected only when the test statistic is significant. As reported in the table, the variables GDP and FDI are found to be stationary at the level (I(0)), as their probability values are statistically significant at this stage. In contrast, the variables GFCF, GEXP, EKP, and INF become stationary only after first differencing, suggesting that these series are integrated of order one, I(1). Overall, the findings confirm that the dataset contains a mixture of I(0) and I(1) variables. None of the variables is stationary at the second difference, I(2). These results provide a consistent basis for applying econometric techniques that allow for mixed orders of integration, such as the ARDL bounds testing approach.

Before estimating the regression results, the optimal lag length was determined in order to ensure the robustness and efficiency of the model. The choice of lag length is crucial, as it influences the consistency of parameter estimates and the validity of diagnostic tests. According to Henry et al. (2021), several lag selection criteria can be employed for this purpose, including the Sequential Modified LR test statistic (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan–Quinn Information Criterion (HQ). The results of the lag length selection are reported in Table 2. As shown, the AIC and FPE criteria suggest a lag length of two (2), while the SC and HQ criteria indicate a lag length of one (1). Given that the AIC and FPE are widely regarded as reliable in small- to medium-sample contexts, the lag length of two (2) was selected for this study. This choice is consistent with the objective of minimizing information loss and improving the model's explanatory power.

Table 2. Optimal Lag Test Results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-741.0119	NA	70396.09	28.18913	28.41218	28.27490
1	-437.9421	526.0834	2.983432	18.11102	19.67239*	18.71145*
2	-390.8756	71.04377*	2.069719*	17.69342*	20.59309	18.80849

Source: processed data (2025)

This study employed the ARDL bounds testing approach to investigate the existence of a long-run co-integration relationship among the variables: GDP, GFCF, GEXP, FDI, EKP, and INF. The results are reported in Table 3. The computed F-statistic of 15.37844 is greater than the upper bound critical values at all conventional significance levels (10%, 5%, 2.5%, and 1%). Consequently, the null hypothesis of no co-integration is strongly rejected. This finding indicates that the variables in the model are co-integrated, suggesting a long-run equilibrium relationship among them. In other words, shocks to the system will not cause persistent divergence; instead, the variables tend to adjust towards a stable long-run path.

Table 3. Cointegration Test Results

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	15.37844	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: processed data (2025)

The short-run coefficients of the ARDL error correction model are presented in Table 4. Government expenditure has a strong, positive effect on short-run GDP growth (D(GEXP) = 13.08), indicating that a 1% increase in government expenditure leads to a 13.08% increase in short-run economic growth. Fiscal spending increases output by creating immediate demand in the economy. Public spending on goods, services, and local projects moves money into productive activities. This pushes firms to increase production. It also supports household income and raises consumption. These conditions strengthen short-term economic performance.

Table 4. Short-Term Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GEXP)	13.07530	1.659050	7.881197	0.0000
D(GFCF)	9.349923	2.913624	3.209035	0.0033
D(INF)	-0.071943	0.028978	-2.482640	0.0193
D(EKP)	0.175567	0.025376	6.918547	0.0000
FDI**	-0.069586	0.337737	-0.206037	0.8383
CointEq(-1)*	-0.406688	0.057863	-7.028514	0.0000

Source: processed data (2025)

Findings from Zulkarnain et al. (2020) show that routine and development spending raise regional economic activity and strengthen growth. Additional evidence is provided by Owusu-Mensah et al. (2023), who find that government expenditure can stimulate both short- and long-run economic growth in developing economies when supported by strong institutional quality. Further evidence is provided by Tammar (2023), who finds a positive relationship between government spending and economic growth across a panel of developing countries. The study explains that government expenditure stimulates effective demand and improves productive capacity, particularly when public spending is directed toward sectors such as education, health, and infrastructure. Panjaitan et al. (2026) show that not all categories of government expenditure contribute equally to economic growth. Their findings indicate that health expenditure has a positive effect on growth, whereas several large budget components, such as economic affairs and public order spending, do not have a significant effect on growth. This suggests that the effectiveness and strategic allocation of public spending are crucial in determining its impact on

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DOI: https://doi.org/10.15408/etk.v25i1.49619

economic performance. The impact of government expenditure thus underscores the need for a more targeted and strategic approach to spending, particularly for long-term growth sustainability.

Gross fixed capital formation contributes positively to GDP (D(GFCF) = 9.35), indicating that a 1% increase in investment leads to a 9.35% increase in economic growth in the short run. This highlights the important role of capital accumulation in supporting short-run economic performance. Investment plays a central role in economic growth by expanding productive capacity and improving infrastructure and technology. Lorato et al. (2025) show that gross fixed capital formation significantly contributes to economic growth by improving access to capital, technology, and infrastructure, thereby supporting structural transformation and economic development. Similar findings are reported by Wijayanti and Darma (2019) and Mohamud and Abdulle (2025), who find that investment strengthens regional output and produces short-run gains in economic activity. Tabash et al. (2025) also demonstrate that capital formation contributes to improved socio-economic outcomes in BRICS countries through stronger infrastructure and industrial activity, while Chingiz et al. (2025) report that investment plays a positive role in promoting green growth. These findings suggest that sustained capital formation is an important driver of short-term economic expansion when investment is effectively allocated across productive sectors. Capital formation, therefore, remains a cornerstone for fostering immediate growth, but its long-term impact will depend on strategic sectoral allocations that target emerging industries and sustainable practices.

By contrast, inflation has a negative impact on short-run economic growth (D(INF) = -0.07), indicating that a 1% increase in inflation leads to a 0.07% decrease in short-run economic growth. In Indonesia, higher inflation reduces purchasing power, raises production costs, and triggers tighter monetary policy. These factors slow consumption and investment, thereby weakening short-run economic performance. Evidence from Ndoricimpa (2017) supports this view. The study shows that inflation above 6.7 percent lowers economic growth. High inflation reduces output when price increases pass the threshold. This pattern is also consistent with the findings of Destiartono et al. (2025), who show that persistent inflation weakens economic growth by increasing macroeconomic uncertainty and reducing purchasing power. High short-term inflation not only impairs household and firm decision-making but also discourages long-term investment, thereby hindering productivity growth. This finding calls for a stronger emphasis on inflation-control policies, as their ability to stabilize the economy has direct implications for sustained growth.

Exports make a positive contribution to GDP (D(EKP) = 0.18), indicating that a 1% increase in exports leads to a 0.18% increase in economic growth in the short run, although the magnitude remains relatively modest. This finding supports the export-led growth hypothesis widely documented in the literature. In Indonesia, the relatively small magnitude of the export effect reflects the continued reliance on primary commodities whose prices fluctuate in global markets, limiting the strength of export-

driven growth. Manufactured exports have expanded in recent years but still account for a relatively small share of total exports. Nevertheless, external demand continues to support domestic output and to provide foreign exchange to finance imports of capital goods and intermediate inputs. Similar findings are reported by Orhan et al. (2022), who show that export expansion strengthens economic performance in European transition economies by boosting external demand and productivity. More recent evidence from Adelakun et al. (2025) also confirms that stronger export activity promotes economic growth in developing economies through technology spillovers, improved competitiveness, and higher productivity. These results reinforce the important role of export performance as a driver of economic expansion in emerging economies. The export sector, however, remains constrained by Indonesia's reliance on commodity exports. Thus, diversifying exports into higher-value-added, manufactured goods could provide a stronger, more sustainable impact on growth.

More importantly, the error-correction term is negative and statistically significant, confirming the presence of a stable long-run equilibrium relationship among the variables. The coefficient of –0.406 indicates that approximately 40 percent of deviations from the long-run equilibrium are corrected within one period, suggesting a relatively rapid adjustment process following short-run shocks. This implies that when the system moves away from its long-run equilibrium path, economic forces gradually restore stability through adjustments in the explanatory variables. Such findings are consistent with earlier empirical studies using ARDL–ECM frameworks, which emphasize that a negative, significant error-correction term indicates convergence toward long-run equilibrium (Pokhrel & Khadka, 2019). The significant and rapid adjustment of the system toward equilibrium highlights the robustness of the relationships among the variables and the effectiveness of economic forces in restoring stability in the face of short-term disturbances.

Table 5. Long-Term Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GEXP	3.539638	0.815420	4.340875	0.0001
GFCF	-1.507699	0.347737	-4.335751	0.0001
FDI	-0.813727	0.284021	-2.865022	0.0065
INF	-0.142697	0.031444	-4.538072	0.0000
EKP	0.259740	0.056013	4.637118	0.0000

Source: processed data (2025)

The long-run coefficients from the ARDL model are presented in Table 5 and represent the equilibrium relationship between the explanatory variables and economic growth. Government expenditure (GEXP) exhibits a positive coefficient, indicating that this variable plays a crucial role in sustaining long-run economic growth. Specifically, a 1% increase in government expenditure leads to a 3.54% increase in GDP. The relatively large magnitude of this coefficient suggests that fiscal policy plays a dominant role in

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DOI: https://doi.org/10.15408/etk.v25i1.49619

supporting long-run economic expansion, operating through multiple channels, including the stimulation of infrastructure development, the enhancement of regional connectivity, and the facilitation of productive economic activities. This finding is broadly consistent with Keynesian theory, which posits that public spending multiplies into aggregate demand and output, particularly in economies where private investment remains insufficient to sustain growth momentum.

The positive impact of government expenditure on economic growth found in this study is consistent with recent empirical findings across various regions. Jama et al. (2024) demonstrated that government expenditure positively affects long-run economic growth across ASEAN-5 countries, affirming the Keynesian view that public spending is a key driver of output expansion. Similarly, Oyadeyi (2024) confirmed this positive relationship in ECOWAS countries, highlighting that increased government spending stimulates real economic growth even in the presence of institutional challenges such as corruption and conflict. In the context of Sub-Saharan Africa, Buthelezi (2023) further corroborated these findings by showing that productive government expenditure contributes positively to economic growth in South Africa, while Mohamed and Abdulle (2025) provided additional evidence from Somalia, where a one percent increase in government expenditure was associated with a 1.27 percent rise in long-run economic development. Collectively, these findings across diverse economic contexts reinforce the view that government expenditure constitutes a powerful and consistent driver of long-run economic growth, particularly in developing economies where market failures and infrastructure gaps remain prevalent.

In the Indonesian context, this result carries important policy implications. Government spending has historically served as a central fiscal instrument for financing large-scale infrastructure projects, enhancing inter-regional connectivity, and reducing logistics costs, thereby lowering production costs, attracting private investment, and sustaining broader economic activity. The National Medium-Term Development Plan (RPJMN) has consistently prioritized infrastructure expenditure as a cornerstone of Indonesia's growth strategy, reflecting the government's recognition that public investment in physical and human capital is indispensable for long-run productivity gains. The magnitude of the coefficient found in this study is substantially larger than unity, further suggesting a strong fiscal multiplier effect in the Indonesian economy, in which each unit of government spending generates more than proportional gains in aggregate output. This outcome may be attributed to the productive nature of Indonesia's public expenditure in recent periods, particularly investments in transportation infrastructure, energy, and digital connectivity, which have expanded market access, reduced transaction costs, and stimulated private sector activity across regions.

The negative long-run coefficient for gross fixed capital formation (GFCF) (-1.51) is counterintuitive and warrants careful interpretation. In neoclassical growth theory, capital accumulation is expected to expand productive capacity, yet this relationship is conditional on investment efficiency, institutional quality, and the degree to which capital spending translates into genuine productivity gains. Ansar et al. (2016) caution

that infrastructure investments, a major component of GFCF, may fail to deliver positive returns when projects are poorly managed, debt-financed, or implemented without adequate governance capacity. Zhang and Zhang (2023), drawing on Chinese provincial panel data from 1978 to 2022, further demonstrate that a persistently high investment rate can adversely affect total factor productivity when driven by growth-target pressures rather than allocative efficiency, reinforcing the view that investment quantity alone does not guarantee productive output expansion.

Additionally, the negative coefficient may reflect a crowding-out effect, whereby public capital expenditure financed through borrowing displaces private investment by raising domestic interest rates, particularly in economies with shallow financial markets. Semenya and Ogujiuba (2024) report that persistent GFCF inefficiencies have contributed to long-term growth stagnation in South Africa, while Alkhafagy et al. (2023) document a similar negative long-run effect in Iraq, attributing it to weak institutional oversight and inefficient capital allocation. In the Indonesian context, this result may reflect the concentration of capital formation in capital-intensive sectors with limited productivity spillovers, compounded by implementation delays and cost overruns that reduce the productive returns of public investment. These findings collectively suggest that improving investment efficiency and institutional quality, rather than simply expanding investment volume, is essential for capital formation to meaningfully contribute to long-run economic growth.

The negative long-run coefficient for foreign direct investment (FDI) (-0.81) suggests that, contrary to conventional expectations, FDI inflows have not translated into sustained economic growth in Indonesia over the study period. This result implies that a one percent increase in FDI is associated with a 0.81 percent decrease in GDP in the long run, a finding that challenges the standard view of FDI as an unconditional driver of economic development and points instead to the importance of structural and institutional preconditions in determining whether foreign investment generates productive returns.

This negative effect may reflect structural challenges common to developing host economies. Amighini et al. (2017) demonstrate that in many developing countries, the entry of foreign firms can potentially displace less efficient domestic firms and limit technology spillovers when absorptive capacity is weak. Without strong linkages between foreign investors and domestic firms, FDI may crowd out local investment or fail to generate productivity gains, resulting in a net negative effect on economic growth. Emako et al. (2022) reinforce this argument, showing that while manufacturing FDI can support output expansion, FDI in the tertiary sector may have a weaker or even negative impact on economic growth. Similarly, Joo and Shawl (2023), using a panel ARDL model for BRICS economies, find that a one-percentage-point increase in FDI leads to a 0.70 percentage-point decrease in long-run economic growth, suggesting the importance of macroeconomic conditions, particularly inflation, as well as structural characteristics such as human capital and financial development.

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DOI: https://doi.org/10.15408/etk.v25i1.49619

In the Indonesian context, these dynamics are particularly evident. Foreign investment has often been concentrated in extractive industries and low-value-added sectors that generate limited technological spillovers for domestic firms. Weak linkages between multinational companies and local suppliers reduce the potential benefits of technology transfer and productivity improvement. Furthermore, regulatory uncertainty, bureaucratic barriers, and limited human capital constrain domestic firms' absorptive capacity, preventing them from capturing the productivity gains that FDI theoretically offers. Consequently, although FDI inflows increase capital availability, the magnitude of -0.81 suggests that their long-run contribution to economic growth remains negative when institutional quality and industrial capacity are insufficient to support productive integration of foreign capital into the domestic economy.

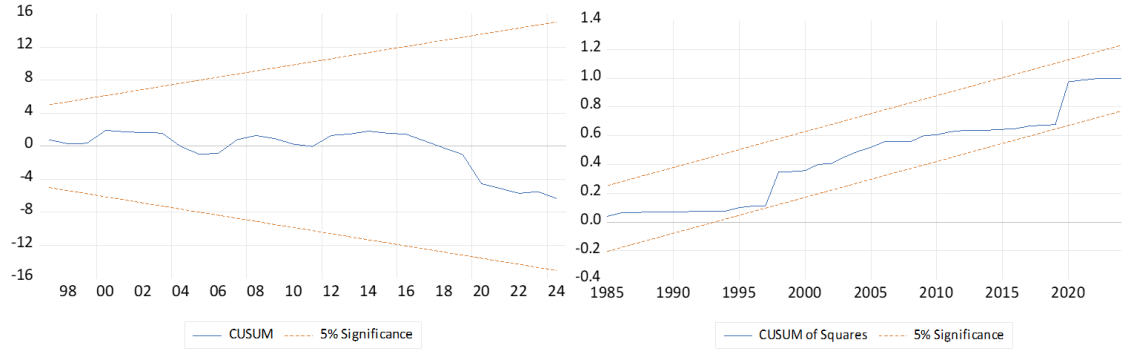
Persistent inflation typically erodes real incomes, creates macroeconomic uncertainty, and discourages investment. According to mainstream economic theory, high inflation is detrimental to economic performance because it complicates business planning, raises the cost of capital, and discourages long-term saving, ultimately constraining economic growth. In the long run, sustained inflation therefore acts as a corrosive force on economic expansion. Empirical evidence also supports this argument. Nyoni and Mutongi (2019) find that inflation has a negative relationship with economic growth in both the short- and long-run, indicating that persistent price instability can reduce economic output and weaken long-term growth performance. This result suggests that sustained inflationary pressures reduce purchasing power, discourage investment, and limit long-term economic performance.

In contrast to the negative effect of inflation, the export sector provides a stabilizing and growth-enhancing role in the Indonesian economy. The positive long-run export coefficient indicates that exports contribute significantly to Indonesia's economic growth. This finding suggests that export activities help offset macroeconomic pressures by strengthening aggregate demand and expanding output through increased participation in international markets.

This result is consistent with the export-led growth hypothesis, which posits that greater integration into global trade enhances productivity, encourages specialization, and improves efficiency within the domestic economy. In the Indonesian context, export expansion has supported foreign exchange earnings, enabling the import of capital goods and intermediate inputs necessary for production. At the same time, exposure to international competition encourages firms to improve quality, adopt better technology, and enhance overall competitiveness.

The stability of the ARDL model was confirmed by the CUSUM and CUSUM of Squares tests. As shown in Figure 2, both plots remain within the 5% significance bounds throughout the sample period, indicating parameter constancy and absence of structural instability. This result validates the model's robustness for both long- and short-run analysis.

Figure 2. CUSUM Test and CUSUM of Square Test



CONCLUSION

Based on the empirical findings, it can be inferred that government expenditure and exports exert a positive and statistically significant influence on economic growth in both the short and long run. Gross fixed capital formation demonstrates a positive and significant effect in the short term; however, it exerts a negative and statistically significant impact over the long term. Foreign direct investment is found to have a negative association with economic growth, with a statistically significant long-run effect but an insignificant short-run impact. Inflation consistently exhibits a negative effect on Indonesia's economic growth across both time horizons. Overall, all variables under investigation are shown to influence economic growth in Indonesia, although the direction and degree of statistical significance differ between the short-run and long-run periods.

Based on the empirical findings, several policy recommendations can be advanced to promote sustainable economic growth in Indonesia. First, government expenditure should remain a priority, particularly in productive sectors such as infrastructure, education, and health, as it positively influences growth in both the short and long term. Second, policies aimed at promoting exports should be strengthened in order to enhance competitiveness, reduce trade barriers, and support strategic industries, given the consistently positive contribution of exports to economic growth. Third, domestic investment strategies warrant careful evaluation, as gross fixed capital formation stimulates short-term growth but has a negative long-term effect, underscoring the need to channel capital into high-value, innovation-driven sectors. Fourth, foreign direct investment policies should emphasize attracting high-quality investments that facilitate technology transfer and integrate with domestic industries to offset negative long-term effects. Fifth, maintaining price stability is essential, as inflation adversely affects growth across both time horizons, underscoring the need for prudent monetary and fiscal management. Overall, an integrated approach that aligns fiscal, monetary, and trade policies is recommended to ensure that government expenditure, domestic investment, foreign investment, exports, and inflation collectively support sustainable economic growth.

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DOI: https://doi.org/10.15408/etk.v25i1.49619

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