

DETERMINATION OF INDONESIA'S ECONOMIC GROWTH

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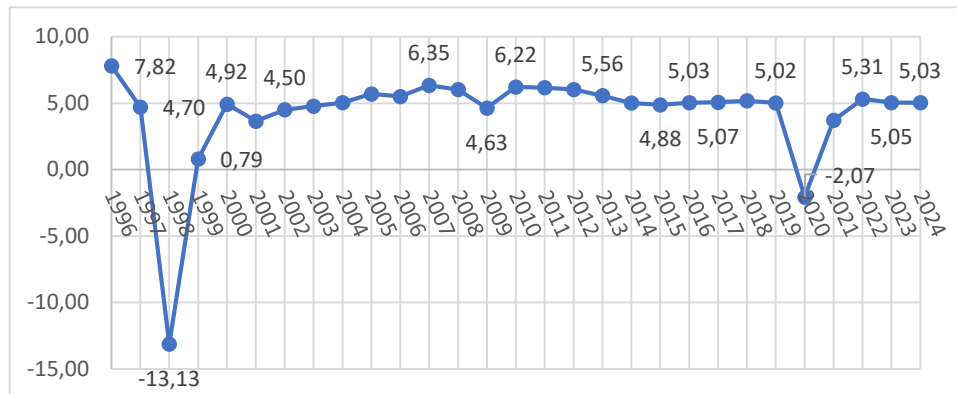
Abstract This study examines the dynamic relationship between agricultural exports, export taxes, inflation, and school participation rates on Indonesia's economic growth from 1994 to 2024, addressing previous inconsistencies in empirical findings. Using the Autoregressive Distributed Lag (ARDL) model, the analysis incorporates stationarity, cointegration, and stability tests to ensure reliability. Results indicate that, in the short run, all variables—agricultural exports, export taxes, inflation, and education participation—positively and significantly influence economic growth. However, in the long run, only agricultural exports maintain a positive and significant impact, while export taxes, inflation, and school participation rates exert negative and significant effects. These findings reveal the dual role of fiscal, monetary, and educational factors: although they may stimulate growth in the short term, they can constrain long-term development if not complemented by structural improvements. The study emphasizes that enhancing agricultural export competitiveness, reviewing export tax policies, maintaining price stability, and prioritizing quality improvements in education are crucial strategies for sustaining Indonesia's economic growth. Overall, the research highlights the need for balanced policies that integrate agricultural, fiscal, and educational dimensions to achieve inclusive and sustainable development.

Keywords: Agricultural Exports, Export Taxes, Inflation, Education, Economic Growth.

1. Introduction

Indonesia, as the world's second-largest agrarian country after Brazil, possesses 36.8 million hectares of agricultural land (FAO, 2023). This strategic potential makes agriculture one of the pillars of national development. However, its contribution to economic growth remains suboptimal, as reflected in Indonesia's GDP per capita of USD 4,248—still far behind Brazil's USD 9,032 (World Bank, 2023). This gap underscores the urgent need for policies that strengthen productive sectors, particularly agriculture, to achieve inclusive and sustainable economic growth.

Economic growth reflects a country's capacity to expand output and improve societal welfare (Blanchard & Johnson, 2014). While microeconomic factors such as consumption, savings, and investment influence growth, macroeconomic determinants—including inflation, exports, fiscal and monetary policies, and human capital—play equally critical roles (Kostis, 2021). In Indonesia, persistent challenges such as low labor absorption, regional disparities, and weak household consumption remain barriers to accelerating growth (Suhada et al., 2019). The following is a picture of Indonesia's economic growth from 2019-2024.



Source: BPS Indonesia 2025

Figure 1. Indonesia's Economic Growth 2019-2024 (percent)

Recent trends show that Indonesia's economic performance rebounded after the COVID-19 crisis but remains heavily reliant on domestic consumption, with limited contributions from exports and investment (Ode, 2025). Agricultural exports, in particular, fluctuate due to both global shocks and regulatory constraints, such as the European Union's sustainability requirements for palm oil (Dermoredjo et al., 2025). Similarly, export taxes serve as an important fiscal instrument but often create trade-offs between revenue generation, competitiveness, and long-term growth (Agusalim, 2017; Gani & Gupta, 2024).

Inflation also plays a dual role: while moderate inflation can stimulate short-term economic activity, uncontrolled inflation erodes purchasing power and undermines macroeconomic stability (Ozili, 2024; Lee et al., 2023). Education, measured through school participation rates, is widely acknowledged as a driver of productivity and long-term growth (Goczek et al., 2021), but in Indonesia, the expansion of participation has not always been matched by improvements in quality (Saputri, 2022).

Given these complexities, the influence of agricultural exports, export taxes, inflation, and education participation on Indonesia's economic growth remains ambiguous, with prior studies showing mixed results. This study seeks to fill that gap by employing the Autoregressive Distributed Lag (ARDL) approach to capture both short-run dynamics and long-run equilibrium. The findings are expected to provide empirical evidence and policy insights on how these key variables shape Indonesia's growth trajectory.

Research Problems

Despite the strategic role of agriculture, fiscal instruments, monetary stability, and education in driving economic growth, their effects on Indonesia's economy remain uncertain and often contradictory across empirical studies. Agricultural exports are expected to stimulate growth, yet their long-term contribution is debated. Export taxes, while designed to generate revenue and encourage value-added industries, may undermine competitiveness. Inflation, though manageable in the short term, can erode long-term stability if not controlled. Similarly, the expansion of school participation does not always translate into productivity gains when quality is insufficient. These ambiguities raise critical questions regarding how these variables interact with Indonesia's economic growth in both the short run and long run. Specifically:

1. How do agricultural exports influence Indonesia's economic growth in the short and long run?
2. What is the impact of export taxes on economic growth in the short and long run?
3. How does inflation affect Indonesia's economic growth in the short and long run?
4. What role does school participation play in shaping economic growth in the short and long run?

Research Objectives

Building on these questions, this study aims to:

1. Analyze the short- and long-run effects of agricultural exports on Indonesia's economic growth.
2. Examine the short- and long-run impacts of export taxes on economic growth.
3. Evaluate the relationship between inflation and economic growth in the short and long run.
4. Assess the role of school participation in influencing economic growth across different time horizons.

Through this framework, the study seeks to provide evidence-based insights for policymakers in designing strategies that strengthen Indonesia's agricultural competitiveness, refine fiscal policies, stabilize inflation, and enhance the quality of education to support sustainable economic development.

2. Literature Review

Agricultural Exports and Economic Growth

Agricultural exports are widely recognized as an engine of growth for developing countries, providing foreign exchange earnings, employment opportunities, and rural development spillovers. According to Gani and Gupta (2024), agricultural exports significantly contribute to structural transformation by linking domestic production with global value chains. In the Indonesian context, agricultural commodities such as palm oil, rubber, and coffee remain major contributors to non-oil exports, although their performance is highly sensitive to global price volatility and trade regulations (Dermoredjo et al., 2025). Empirical studies have shown that while agricultural exports stimulate short-term growth, their long-term contribution depends on value-added processing and diversification strategies (Abokor et al., 2023).

Export Taxes and Economic Growth

Export taxes are often applied to safeguard domestic supply, raise government revenue, and encourage industrial upgrading. However, their long-term impact on growth remains contested. Agusalim (2017) finds that export taxes in Indonesia may reduce competitiveness by increasing transaction costs, whereas more recent evidence highlights the need for balanced policies that align revenue generation with investment in productive capacity (World Bank, 2023). In the agricultural sector, particularly palm oil, export levies have been used to finance downstream development, yet critics argue that such measures reduce farmers' welfare and may undermine international competitiveness (Gani & Gupta, 2024).

Inflation and Economic Growth

The relationship between inflation and economic growth has long been debated in economic literature. Moderate inflation can stimulate economic activity by encouraging spending and investment, while high or volatile inflation erodes purchasing power, reduces savings, and undermines macroeconomic stability. Recent cross-country studies confirm a non-linear

relationship, suggesting that inflation beyond a certain threshold negatively affects growth (Lee et al., 2023; Ozili, 2024). In Indonesia, Bank Indonesia's inflation targeting framework has been relatively effective, though supply-side shocks and energy prices continue to pose challenges.

Education and Economic Growth

Human capital development, often proxied by education indicators, is a critical determinant of long-term economic growth. Goczek et al. (2021) demonstrate that educational attainment significantly improves productivity and innovation capacity. However, in Indonesia, the expansion of school participation has not always been accompanied by quality improvements, leading to skill mismatches in the labor market (Saputri, 2022). Recent OECD and World Bank reports emphasize that the quality of learning outcomes, rather than mere enrollment rates, is the key factor linking education to sustainable growth (OECD, 2023; World Bank, 2023).

Research Gap

Although numerous studies have examined the relationship between agricultural exports, fiscal policy, inflation, and education on growth, empirical findings remain inconsistent, particularly in distinguishing short-run dynamics from long-run equilibrium effects. Few studies in Indonesia employ time-series econometric approaches, such as the Autoregressive Distributed Lag (ARDL) model, to capture these dynamics comprehensively. Thus, this research contributes to the literature by providing updated empirical evidence on Indonesia's economic growth determinants over the 1994–2024 period.

3. Research Methodology

Research Design

This study adopts a quantitative approach with a time-series econometric design to examine the short-run and long-run effects of agricultural exports, export taxes, inflation, and school participation rates on Indonesia's economic growth during the 1994–2024 period. The research applies the **Autoregressive Distributed Lag (ARDL)** model, which is particularly suitable when variables are integrated at a mixed order of stationarity, i.e., I(0) and I(1), but not I(2) (Pesaran et al., 2001).

The following is a general equation model:

$$\Delta Y_t = \alpha_0 + \sum_{i=1}^q \alpha_i \Delta Y_{t-i} + \sum_{j=0}^{q_2} \delta_j X_{t-j} + \varphi_1 y_{t-1} + \varphi_2 x_{t-1} + \mu_t \quad \dots \quad (1)$$

The model in this research that contains short-term and long-term relationships is:

$$\begin{aligned} \Delta PE_t = & \alpha_0 + \sum_{i=1}^{q_1} \alpha_1 \Delta PE_{t-1} + \sum_{i=1}^{q_2} \alpha_2 \Delta \ln EKSP_{t-1} + \sum_{i=1}^{q_3} \alpha_3 \Delta \ln PEKS_{t-1} + \sum_{i=1}^{q_4} \alpha_4 \Delta INF_{t-1} \\ & + \sum_{i=1}^{q_5} \alpha_5 \Delta APS_{t-1} + \alpha_2 ECT(-1) + \beta_1 \Delta \ln EKSP_t + \beta_2 \Delta \ln PEKS_t + \beta_3 \Delta \ln INF_t + \\ & \beta_4 \Delta APS_t + \mu_t \quad \dots \quad (2) \end{aligned}$$

PE: Economic Growth, q₁-q₅: Amount of Data Analysis, α₁-α₆: Short-term coefficients, β₁-β₄: Long-term coefficients, EKSP: Agricultural Exports, PEKS: Export Tax, INF: Inflation, APS: School Participation Rate and μ_t: Error term

Data and Sources

The study utilizes secondary annual data covering 1994–2024. Data on economic growth, agricultural exports, and inflation are obtained from World Bank's World Development Indicators (WDI) and Bank Indonesia publications, while export tax data are collected from Ministry of Finance and Central Bureau of Statistics (BPS) reports. School participation rates are drawn from the Ministry of Education, Culture, Research, and Technology databases and UNESCO Institute for Statistics.

Analytical Techniques

1. Stationarity Test: The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are employed to assess unit roots in the data.
2. Cointegration Test: The Bounds testing procedure is applied to confirm the presence of long-run equilibrium relationships among variables.
3. ARDL Estimation: Short-run dynamics are analyzed through error-correction representation, while long-run coefficients are derived from the ARDL model.
4. Diagnostic and Stability Tests: Serial correlation, heteroscedasticity, normality, and functional form tests are performed. Additionally, the CUSUM and CUSUMSQ tests are conducted to ensure model stability over the study period.

Justification of Method

The ARDL approach is chosen due to its flexibility in handling small samples and mixed stationarity levels, while also allowing simultaneous estimation of both short-run and long-run dynamics. This makes it an appropriate method to capture the complex interactions between agricultural, fiscal, monetary, and educational variables in shaping Indonesia's economic growth.

4. Results And Discussion

Research Findings

The estimation results of the ARDL model reveal significant differences between the short-run and long-run effects of agricultural exports, export taxes, inflation, and school participation rates on Indonesia's economic growth during 1994–2024.

Short-Run Dynamics

In the short run, agricultural exports, export taxes, inflation, and school participation rates all exhibit a positive and statistically significant relationship with economic growth. This indicates that increases in agricultural export performance, fiscal revenue from export taxation, moderate inflation, and broader school participation contribute to stimulating short-term economic activity. These findings are consistent with the Keynesian view, which suggests that fiscal stimulus, external demand, and rising aggregate consumption can drive temporary output expansion.

Long-Run Equilibrium

Contrastingly, the long-run analysis presents a more nuanced picture. Agricultural exports remain positively and significantly associated with economic growth, underscoring their

strategic role as a sustainable driver of Indonesia's economy. However, export taxes, inflation, and school participation rates demonstrate a negative and significant impact on growth. This suggests that, while these factors may support short-run expansion, their prolonged effects can hinder sustainable growth. For instance, excessive reliance on export taxation reduces competitiveness, persistent inflation erodes purchasing power and investment confidence, and increased school participation without parallel improvements in quality fails to translate into enhanced human capital productivity.

Diagnostic and Stability Tests

The model passes various diagnostic tests, including those for serial correlation, heteroscedasticity, and functional form, confirming the robustness of the results. Furthermore, the CUSUM and CUSUMSQ tests indicate parameter stability, reinforcing the reliability of both the short-run and long-run estimates.

Interpretation

These findings highlight a dualistic nature of Indonesia's economic growth determinants. Agricultural exports consistently provide positive contributions, reflecting the importance of strengthening competitiveness and diversification in the sector. Conversely, the adverse long-run effects of export taxation, inflation, and education participation suggest that policy interventions must shift focus from quantity-driven approaches toward structural reforms. Specifically, fiscal instruments should balance revenue generation with competitiveness, monetary policy should safeguard stability while fostering investment, and educational policies must prioritize quality over enrollment expansion.

Discussion

The findings of this study provide new insights into the dynamics of Indonesia's economic growth by distinguishing between short-run and long-run effects of agricultural exports, export taxes, inflation, and school participation rates.

Agricultural Exports as a Consistent Growth Driver

The positive and significant effect of agricultural exports in both the short and long run confirms the critical role of the sector in Indonesia's economy. This result aligns with Gani and Gupta (2024) and Abokor et al. (2023), who argue that agricultural exports are an essential catalyst for structural transformation and rural development in emerging economies. However, the sustainability of this contribution depends on the ability to move beyond primary commodity exports toward higher value-added products. For Indonesia, strengthening downstream processing industries in palm oil, rubber, and cocoa is vital to ensuring that agricultural exports continue to drive long-term growth.

Export Taxes: Short-Term Gain, Long-Term Constraint

The finding that export taxes stimulate short-run growth but negatively affect long-run performance reflects a policy trade-off. While export taxes generate fiscal revenue and finance downstream industrial development, they also reduce international competitiveness and distort market incentives (Agusalim, 2017; Dermoredjo et al., 2025). Over time, these distortions can discourage investment, reduce farmer welfare, and undermine export-led growth strategies. Policymakers must therefore recalibrate export tax schemes to balance revenue needs with the imperative of maintaining competitiveness in global markets.

Inflation: A Dual Role in Growth

The study confirms a dualistic role of inflation: positive in the short run but detrimental in the long run. Moderate inflation may stimulate aggregate demand by encouraging consumption and investment, consistent with Keynesian perspectives. However, sustained or volatile inflation erodes purchasing power, reduces savings, and undermines investor confidence, as also demonstrated by Lee et al. (2023) and Ozili (2024). This underscores the importance of maintaining inflation within a stable and predictable range through effective monetary policy, particularly in an economy vulnerable to supply shocks.

Education Participation and the Quality Gap

The finding that school participation positively affects growth in the short run but negatively in the long run highlights a quality–quantity paradox in Indonesia’s education system. While broader access to education initially raises human capital and labor participation, the absence of quality improvements leads to mismatches between skills and labor market demand. This echoes concerns raised by Goczek et al. (2021), Saputri (2022), and OECD (2023), who emphasize that learning outcomes, not merely enrollment, determine education’s contribution to growth. Consequently, reforms must prioritize curriculum relevance, teacher quality, and vocational training to ensure that education strengthens long-term productivity.

Policy Implications

Overall, the results suggest that Indonesia’s growth strategy should combine short-term stimulus with long-term structural reforms. Policymakers need to:

1. Strengthen agricultural export competitiveness by promoting value-added processing and market diversification.
2. Reform export tax policies to reduce distortions while ensuring adequate fiscal revenues for productive investment.
3. Maintain inflation stability within a conducive range to support consumption and investment without undermining macroeconomic confidence.
4. Shift education policy from expanding access to enhancing quality, particularly through skill-oriented programs and labor market alignment.

By integrating these approaches, Indonesia can harness the short-run benefits of its economic drivers while securing sustainable long-term growth.

5. Conclusion

This study investigated the effects of agricultural exports, export taxes, inflation, and school participation rates on Indonesia’s economic growth during 1994–2024 using the ARDL approach. The results demonstrate clear differences between short-run and long-run impacts. In the short run, all four variables—agricultural exports, export taxes, inflation, and school participation—positively and significantly contribute to economic growth. However, in the long run, only agricultural exports sustain a positive effect, while export taxes, inflation, and school participation exert negative and significant impacts.

These findings highlight the dualistic nature of fiscal, monetary, and educational policies. While these factors may stimulate short-term economic activity, they also carry risks of undermining long-term sustainability if not managed with structural reforms. Agricultural

exports stand out as a consistent driver of growth, reaffirming their strategic importance in Indonesia's development agenda.

Policy Recommendations

Based on these findings, several policy implications can be drawn:

1. Agricultural Development and Export Diversification

- Strengthen downstream processing industries in palm oil, rubber, and cocoa to increase value-added exports.
- Expand market diversification strategies to reduce vulnerability to global price fluctuations and trade restrictions.

2. Revisiting Export Tax Policies

- Recalibrate export taxes to balance fiscal revenue needs with the competitiveness of Indonesian products in global markets.
- Ensure that revenues from export levies are effectively reinvested in infrastructure, technology, and farmer welfare.

3. Inflation Management

- Maintain inflation within a stable range to safeguard purchasing power, encourage investment, and protect macroeconomic stability.
- Enhance coordination between fiscal and monetary authorities to mitigate the impact of global commodity and energy price shocks.

4. Education Quality Improvement

- Shift focus from merely increasing participation rates to improving learning outcomes and labor market relevance.
- Invest in vocational training, teacher quality, and curriculum reforms to align education with future labor market demands.

In conclusion, Indonesia's sustainable economic growth depends on harnessing the strengths of its agricultural sector while simultaneously reforming fiscal, monetary, and educational policies. A comprehensive, quality-driven, and forward-looking policy framework is essential to transform short-term growth impulses into long-term development gains.

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