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# The impact of inflation on indonesia's economic growth

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**ABSTRACT**

This study examined the non-linear effect of inflation on provincial economic growth in Indonesia. Most existing evidence relied on national time series, leaving provincial heterogeneity unexplored. Secondary panel data from 34 provinces were analyzed using a quadratic panel regression estimated via the Fixed Effect Model. The model included investment, labor, trade openness, and government expenditure as control variables. The results indicated that inflation had a positive and significant effect on growth, while squared inflation exerted a negative and significant impact, confirming an inverted U-shaped relationship. The optimal inflation threshold was estimated at approximately 4.25 percent, beyond which inflation hindered regional growth. Among the control variables, only trade openness significantly influenced growth. These findings suggested that the central bank monetary policy target range remained growth-supportive, though with limited flexibility at the upper bound. Policymakers should integrate inflation control with supply-side interventions while prioritizing the productive quality of public spending and investment to maintain regional economic momentum.



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## Introduction

Stable and sustainable economic growth is a fundamental indicator of a country's capacity to improve social welfare through the efficient allocation of resources, productivity enhancement, and the expansion of productive capacity (Todaro & Smith, 2020; Barro & Sala-i-Martin, 2004). In Indonesia, achieving high-quality and inclusive economic growth has remained a central objective of national development policy. Macroeconomic policy is therefore expected to maintain an appropriate balance between stimulating economic activity and preserving price stability. Inflation is particularly important in this context because persistent increases in the general price level can affect purchasing power, investment decisions, production costs, and ultimately economic growth. Price stability, reflected in a low and controlled inflation rate, is consequently considered an important condition for maintaining a favorable investment climate and supporting sustainable economic growth (Barro, 1995; Kurniawan & Managi, 2018).

Nevertheless, the relationship between inflation and economic growth is not necessarily linear. Conventional monetarist and neoclassical perspectives emphasize that high inflation can reduce economic performance through increased uncertainty, relative-price distortions, inefficient resource allocation, and reduced investment (Fischer, 1993). In contrast, moderate inflation may generate positive effects on economic activity through investment and portfolio adjustment mechanisms. The Tobin effect, for example, suggests that inflation reduces the attractiveness of holding money and may encourage economic agents to shift resources toward productive

assets, potentially increasing capital accumulation (Tobin, 1965). However, when inflation becomes sufficiently high, the Stockman effect indicates that increased transaction costs, uncertainty, and the real cost of capital may discourage investment and economic activity (Stockman, 1981). The interaction of these opposing mechanisms provides a theoretical basis for expecting an inverted U-shaped relationship between inflation and economic growth, in which moderate inflation may be compatible with growth but inflation beyond a certain level becomes detrimental to economic performance (Khan & Senhadji, 2001).

Empirical studies have provided considerable support for the existence of an inflation threshold, although the estimated threshold differs across countries, periods, and methodological approaches. For a panel of Asian economies, Vinayagathasan (2013) identified an inflation threshold of approximately 5.4 percent, while Ibarra and Trupkin (2016) demonstrated that the optimal inflation rate in developing countries can also vary according to institutional quality. Evidence from Indonesia similarly indicates that the inflation–growth relationship may be nonlinear. Satria (2009), using Indonesian national time-series data for 1981–2010, found a quadratic relationship in which inflation initially had a positive association with economic growth but became negative beyond a particular level. More recent evidence has produced different threshold estimates. Kusumatrisna et al. (2019), using provincial panel data, reported that economic growth began to decelerate when inflation exceeded approximately 5.1 percent and became substantially more detrimental above 9.6 percent. Meanwhile, Winata (2025), using a regime-switching approach based on national time-series data, estimated an inflation threshold of approximately 4.9 percent. These variations suggest that the inflation threshold is context-dependent and that estimates derived from national data may not necessarily represent the economic conditions experienced by individual provinces.

Recent empirical literature further reveals methodological and contextual inconsistencies in the inflation–growth nexus. Using threshold regression on a panel of 36 developing economies, Omay and Kan (2019) found that the estimated threshold varied substantially depending on whether a linear or regime-switching model was applied underscoring that functional form choice is not trivial. Nguyen (2022) demonstrated, using a dynamic panel GMM approach across Southeast Asian economies, that the standard quadratic OLS specification may underestimate the threshold due to Nickell bias in short panels, while Mamo (2022) confirmed that neglecting cross-sectional dependence inflates the significance of squared inflation terms in macro panels. Within Indonesia, Isik et al. (2025) found that post-pandemic inflation dynamics altered the short-run growth–inflation tradeoff compared to pre-pandemic estimates, suggesting that threshold estimates are not temporally stable. Collectively, these studies identify two methodological limitations in prior Indonesian work: (i) reliance on national time-series data that masks subnational heterogeneity, and (ii) absence of post-pandemic panel evidence covering the 2020–2024 recovery period. The present study addresses both gaps by applying a quadratic Fixed Effect panel model with model selection rigorously verified through Chow and Hausman tests and heteroskedasticity corrected via EGLS to a comprehensive balanced panel of 34 Indonesian provinces over 2016–2024, thereby providing contemporary and spatially disaggregated evidence on the nonlinear inflation–growth relationship.

This issue is particularly relevant in Indonesia because economic structures and development conditions differ substantially across provinces. Indonesia consists of 34 provinces with considerable variation in resource endowments, agricultural dependence, industrialization, service-sector development, labor-market characteristics, investment capacity, and trade exposure (Andriansyah et al., 2023). Such heterogeneity implies that the transmission of inflation to economic growth may also differ across regions. A national inflation rate may therefore conceal important variations in the relationship between price dynamics and regional economic performance. Despite this, much of the Indonesian literature has continued to rely on national aggregate data, while studies employing provincial panel data remain comparatively limited. Consequently, greater attention to the subnational dimension is necessary to determine whether a common nonlinear relationship and inflation threshold can be identified across Indonesian provinces.

The regional growth process is also influenced by factors beyond inflation. Investment can expand productive capacity and stimulate economic activity, while labor availability determines the capacity of regional economies to utilize productive resources. Trade openness can affect growth through market expansion, technology transfer, and integration into broader production networks, although greater external exposure may simultaneously increase vulnerability to external shocks. Government expenditure may further influence regional growth through infrastructure provision, public services, and demand stimulation. The importance of these complementary factors is evident in regional-level Indonesian studies. For example, Afrianty, Bahril, and Mayang (2026) found that labor force participation positively and significantly affected economic growth in Bengkulu Province, whereas poverty exerted a negative effect. Their findings demonstrate that regional economic performance is shaped by a combination of labor-market and socioeconomic conditions rather than by macroeconomic variables in isolation.

The role of complementary economic and social instruments has also received increasing attention in the Indonesian regional context. Islamic social-finance instruments, particularly zakat and waqf, have been increasingly discussed as mechanisms that can complement conventional fiscal policies in supporting welfare and regional economic resilience. Bibliometric evidence indicates growing scholarly attention to waqf and welfare in Scopus-indexed research (Afrianty, Asnaini, & Bahril, 2024), while Afrianty and Herawati (2025) proposed a regional waqf performance index to strengthen the institutional effectiveness of waqf at the provincial level. Although these instruments are not directly estimated in the present model, their development is relevant to the broader policy context because regional governments may require complementary mechanisms beyond conventional expenditure policies to mitigate the welfare consequences of inflation and strengthen economic resilience. This consideration becomes particularly important when conventional government expenditure demonstrates only a limited association with regional growth.

Despite the growing literature, three important limitations remain. First, much of the existing evidence on inflation and economic growth in developing economies treats inflation primarily as a national phenomenon, thereby providing limited insight into subnational heterogeneity. Second, although previous Indonesian studies have identified nonlinear inflation–growth relationships, differences in data structure, observation periods, and econometric approaches have produced substantially different estimates of the inflation threshold. Third, relatively limited contemporary evidence jointly examines the nonlinear relationship between inflation and economic growth and estimates its threshold using a comprehensive provincial panel covering the post-pandemic period. Addressing these limitations is important because economic conditions during 2016–2024 encompass both the pre-pandemic period and the substantial economic disruption and recovery associated with COVID-19, potentially altering the relationship between price dynamics and regional growth.

Accordingly, this study extends the quadratic specification previously applied to Indonesian national time-series data by Satria (2009) to a balanced provincial panel covering 34 Indonesian provinces during 2016–2024. The analysis incorporates investment, labor, trade openness, and government expenditure as control variables to reduce potential omitted-variable bias and provide a more comprehensive assessment of the relationship between inflation and regional economic growth. A quadratic Fixed Effect panel model is employed, with model selection supported by the Chow and Hausman tests, to account for unobserved time-invariant characteristics across provinces. The novelty of this study lies in providing contemporary subnational evidence on the nonlinear inflation–growth relationship and identifying an empirically estimated inflation threshold within a comprehensive provincial panel framework. Thus, this study aims to estimate the effect of inflation on provincial economic growth in Indonesia, test whether the relationship is nonlinear, and identify the inflation threshold beyond which additional inflation becomes detrimental to regional economic growth.

## Method

This study uses secondary, quantitative panel data covering 34 Indonesian provinces over 2016–2024 (a balanced panel of 306 province-year observations). Four provinces newly formed in 2022 (Papua Barat Daya, Papua Selatan, Papua Tengah, and Papua Pegunungan) are excluded because consistent time series are not available for the full observation window. Data on economic growth and labor come from Statistics Indonesia (BPS); provincial inflation from Bank Indonesia and BPS; investment realization from the Ministry of Investment/BKPM and BPS; trade data from the Ministry of Trade and BPS; and government expenditure from the Ministry of Finance and BPS.

The dependent variable is provincial economic growth. The main explanatory variables are inflation and squared inflation, included jointly to test for nonlinearity. Investment, labor, trade openness, and government expenditure are included as control variables based on their established role in the growth literature (Solow, 1956; Lucas, 1988; Grossman & Helpman, 1991). Investment and government expenditure are expressed in natural logarithms; growth, inflation, and trade openness are expressed in percentage terms. Table 1 summarizes the operational definition of each variable.

**Table 1.** Operational Definition of Variables

| Variable | Symbol | Operational Definition | Unit |
|---|---|---|---|
| Economic growth | Y | Annual growth rate of real regional GDP (dependent variable) | % |
| Inflation | X1 | Year-on-year % change in the provincial Consumer Price Index | % |
| Inflation squared | $X1^2$ | Square of X1 | $\%^2$ |
| Investment (log) | X2 | Log of realized domestic + foreign direct investment | Log(IDR) |

| Variable | Symbol | Operational Definition | Unit |
|---|---|---|---|
| Labor (log) | X3 | Log of the provincial labor force | Log(persons) |
| Trade openness | X4 | (Exports + Imports) / Regional GDP × 100 | % |
| Gov't expenditure (log) | X5 | Log of real provincial government expenditure | Log(IDR) |

Following the quadratic specification developed for Indonesia by Satria (2009), the baseline model is Growth_it = αi + β1 Inflation_it + β2 Inflation²_it + ε_it, where αi is a province-specific intercept and εit is the error term; an inverted U-shaped relationship is confirmed if β1 > 0 and β2 < 0, both statistically significant. The full model adds the four control variables in Table 1. The inflation threshold (turning point) is obtained by setting the first derivative of the quadratic term with respect to inflation to zero: Inflation* = − β1 / (2β2).

Estimation proceeds through: (i) descriptive statistics; (ii) selection among the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) using the Chow, Hausman, and Breusch–Pagan Lagrange Multiplier (LM) tests; (iii) classical assumption testing (multicollinearity, heteroskedasticity, autocorrelation), with heteroskedasticity addressed via EGLS cross-section weighting where required; (iv) estimation of the quadratic panel model and calculation of the turning point; and (v) hypothesis testing via partial t-tests, a joint F-test, and the coefficient of determination ($R^2$). All estimations were carried out in EViews 14.

The sample of 306 province-year observations (34 provinces × 9 years) provides adequate statistical power for detecting nonlinear effects in a fixed-effects panel context. Based on Monte Carlo simulations by Judson and Owen (1999), panels with N ≥ 20 cross-sectional units and T ≥ 5 time periods yield reliable fixed-effects estimates, and a sample of N × T = 306 exceeds the conventional threshold for panel econometrics. Potential endogeneity between inflation and economic growth where high growth may itself generate inflationary pressure through demand pull is acknowledged as an inherent limitation of the quadratic Fixed Effect specification employed here. In the context of this study, however, reverse causality is expected to be limited for three reasons. First, provincial inflation in Indonesia is substantially driven by national monetary policy (set by Bank Indonesia) and supply-side factors (food and energy prices), which are exogenous to individual province-level economic performance. Second, the fixed-effects estimator controls for all unobserved time-invariant province characteristics that could simultaneously drive both inflation and growth. Third, the 9-year panel with annual frequency reduces the risk of short-run demand-driven feedback loops dominating the estimated relationship. Nonetheless, future research employing GMM-based dynamic panel estimators or instrumental variable approaches using, for example, lagged values of national monetary policy instruments or global commodity price indices as instruments would provide additional robustness to endogeneity.

## Results and Discussions

The descriptive statistics for the 306 province-year observations. Average provincial economic growth over 2016–2024 is 4.51 percent (S.D. = 3.67), reflecting the sharp contraction most provinces experienced in 2020 followed by recovery through 2021–2024. Average inflation is 3.13 percent (S.D. = 1.18), ranging from 0.14 percent (Papua, 2021, reflecting pandemic-depressed demand) to 6.31 percent (Papua Barat, 2019). Investment, labor, and government expenditure are highly right-skewed, consistent with the concentration of investment and fiscal capacity in a subset of larger provinces, while trade openness is extremely right-skewed (mean 46.72%, median 18.33%, maximum 4,422.63% in Sulawesi Tenggara in 2022, driven by nickel-based commodity exports relative to a comparatively small regional GDP).

**Table 2.** Descriptive Statistics

| Variable | Mean | Median | Maximum | Minimum | Std. Dev. |
|---|---|---|---|---|---|
| Growth (Y, %) | 4.51 | 5.00 | 22.94 | -71.34 | 3.67 |
| Inflation (X1, %) | 3.13 | 3.03 | 6.31 | 0.14 | 1.18 |
| Inflation² (%²) | 0.179 | 0.048 | 11.441 | 0.001 | 0.781 |
| Investment (IDR million) | 12,845,327.6 | 5,585,943.2 | 100,032,113.8 | 30,462.4 | 18,764,552.3 |
| Labor (persons) | 3,480,265 | 2,087,045 | 24,417,110 | 241,655 | 4,812,374 |
| Trade openness (%) | 46.72 | 18.33 | 4,422.63 | 0.04 | 281.45 |
| Gov't expenditure (IDR) | 35.87 trillion | 24.72 trillion | 143.62 trillion | 6.83 trillion | 29.84 trillion |

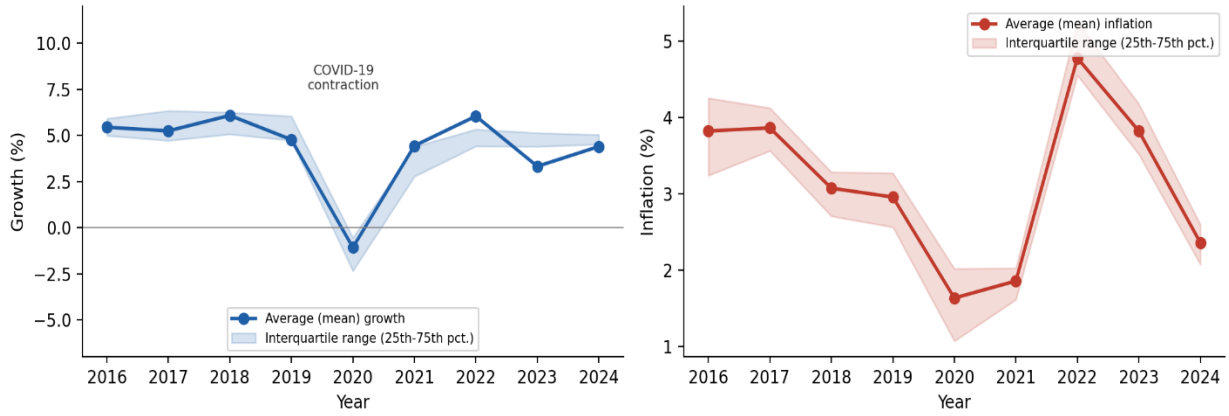


**Figure 1.** Trends in Provincial Inflation and Economic Growth, Indonesia, 2016–2024

Figure 1 shows that average provincial growth tracked national macroeconomic conditions closely, falling sharply in 2020 before recovering by 2021–2022, while the interquartile band widens noticeably in 2020 and 2022, indicating that the pandemic shock and the subsequent commodity-driven recovery affected provinces unevenly. Average inflation followed a broadly declining trend from 2016 to 2021, consistent with subdued demand during the pandemic, before rising sharply in 2022 alongside the global energy and food price shock, then easing again through 2023–2024. The narrower interquartile band for inflation compared to growth suggests that price developments were more uniform across provinces than output growth, consistent with inflation being driven substantially by national-level monetary and supply-chain factors rather than purely local conditions.

**Selecting the Appropriate Panel Model**

Three tests were used sequentially to select the panel estimator. The Chow test rejects the Common Effect Model in favor of the Fixed Effect Model (Cross-section F = 2.89, p = 0.000). The Hausman test rejects the Random Effect Model in favor of the Fixed Effect Model (Cross-section random Chi-square = 31.16, d.f. = 5, p = 0.000). The Breusch–Pagan LM test favors the Random Effect Model over the Common Effect Model (Both = 26.47, p = 0.000). Because the Hausman test provides the decisive comparison between FEM and REM, and both the Chow and Hausman tests point toward FEM, the Fixed Effect Model was selected as the final estimator.

**Table 3.** Panel Model Selection Tests

| Test | Statistic | Prob. | Comparison | Model Selected |
|---|---|---|---|---|
| Chow (F-test) | F = 2.89; $\chi^2$ = 93.42 | 0.000 | FEM vs. CEM | FEM |
| Hausman | $\chi^2$ = 31.16 (5 d.f.) | 0.000 | FEM vs. REM | FEM |
| Breusch–Pagan LM | Both = 26.47 | 0.000 | REM vs. CEM | REM |

**Diagnostic Classical Assumption Tests**

Multicollinearity was assessed and found not to be a serious concern among the explanatory variables. An initial heteroskedasticity test flagged mild heteroskedasticity associated with the labor variable; this was corrected using Panel EGLS estimation with cross-section weights, after which the overall model remained highly significant (Prob(F-statistic) = 0.000). Autocorrelation was assessed using the Durbin–Watson statistic; the value obtained for the final Fixed Effect specification (DW = 1.609) falls within the generally accepted range of 1.5–2.5 (Gujarati & Porter, 2020), indicating no serious autocorrelation problem.

**The Effect of Inflation on Economic Growth: A Nonlinear Panel Estimation**

Table 4 reports the estimated Fixed Effect Model: $Y = -12.727 + 3.200\ X1 - 0.376\ X1^2 - 0.812\ X2 - 1.077\ X3 + 0.032\ X4 + 1.698\ X5$.

**Table 4.** Panel Regression Results

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| Constant | −12.727 | 12.408 | −1.026 | 0.306 |
| Inflation (X1) | 3.200 | 0.692 | 4.622 | 0.000*** |
| Inflation² (X1²) | −0.376 | 0.106 | −3.558 | 0.000*** |
| Investment, log (X2) | −0.812 | 0.477 | −1.702 | 0.090* |
| Labor, log (X3) | −1.077 | 0.955 | −1.128 | 0.260 |
| Trade openness (X4) | 0.032 | 0.005 | 6.688 | 0.000*** |
| Gov't expenditure, log (X5) | 1.698 | 1.300 | −1.306 | 0.193 |

The coefficient on inflation is positive and statistically significant (β1 = 3.200, p = 0.000), while the coefficient on squared inflation is negative and statistically significant (β2 = −0.376, p = 0.000). This combination a positive linear term and a negative quadratic term produces a concave (inverted U-shaped) curve, confirming that the inflation–growth relationship in Indonesia's provinces is nonlinear. Among the control variables, only trade openness is statistically significant, with a positive effect on growth (p = 0.000); investment, labor, and government expenditure are not statistically significant at the 5 percent level. The joint F-test confirms the explanatory variables are jointly significant (F = 16.96, p = 0.000), and the model explains approximately 25.4 percent of the variation in provincial economic growth.

**The Inflation Threshold and Its Policy Relevance**

Because β1 > 0 and β2 < 0, both significant, the estimated relationship confirms an inverted U-shaped curve. The threshold is Inflation* = − 3.200 / (2 × −0.376) ≈ 4.25 percent. This indicates that, on average across the 34 provinces, increases in inflation below approximately 4.25 percent are associated with higher economic growth, while increases beyond this level are associated with lower growth. Figure 2 illustrates the resulting inverted U-shaped relationship implied by the estimated model.

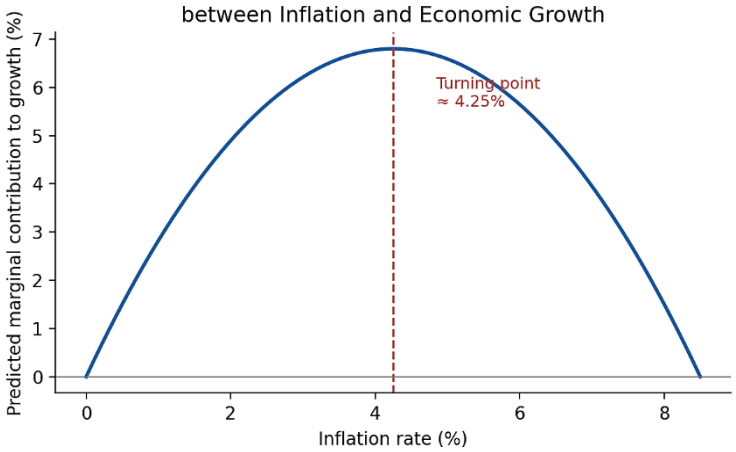


**Figure 2.** Estimated Inverted U-Shaped Relationship Between Inflation and Economic Growth

Figure 2 illustrates the estimated nonlinear relationship and identifies approximately 4.25 percent as the turning point. The curve indicates that the association between inflation and economic growth changes from positive to negative after the estimated threshold.

The positive coefficient on inflation is consistent with the Tobin effect (Tobin, 1965): moderate inflation acts as a tax on holding cash, encouraging a shift from liquid assets toward productive real investment, thereby raising capital accumulation and output. This reinforces earlier national-level evidence for Indonesia (Satria, 2009) and is broadly consistent with cross-country evidence that moderate, post-pandemic inflation can have a positive short-run effect on output (Isik et al., 2025). This finding should not, however, be read as a justification for high inflation: it implies instead that monetary policy that suppresses inflation too aggressively toward zero risks forgoing a growth-supporting effect, particularly given that inflation in Indonesia also reflects structural supply-side bottlenecks rather than purely monetary phenomena.

The negative coefficient on squared inflation resolves the theoretical tension between the Tobin effect and the Stockman effect (Stockman, 1981) empirically: at low-to-moderate inflation, the Tobin effect dominates; beyond the threshold, the Stockman effect dominates as inflation raises uncertainty and acts as a double tax on both consumption and investment transactions, reducing capital accumulation and growth. This synthesis was anticipated theoretically by Khan and Senhadji (2001) and is consistent with prior Indonesian evidence (Satria, 2009; Winata, 2025). Because the Fixed Effect specification controls for unobserved province-level heterogeneity, the estimated pattern represents an average relationship across provinces of markedly different structural composition, from agrarian to industrial and resource-based economies.

The estimated threshold of 4.25 percent is broadly comparable to, though somewhat lower than, other Indonesia-focused estimates: a regime-switching approach applied to national time-series data identifies a threshold of approximately 4.85 percent (Winata, 2025), while provincial panel evidence over an earlier period identifies growth deceleration beginning around 5.09 percent and sharply negative effects above 9.57 percent (Kusumatrisna et al., 2019). Differences across studies likely reflect the 2016–2024 sample window which spans the COVID-19 shock and its recoverymdifferences in spatial coverage, and the relatively moderate range of inflation observed in this sample (0.14–6.31 percent). Practically, the 4.25 percent threshold sits close to the upper bound of Bank Indonesia's current inflation target range of 2.5% ± 1% (1.5–3.5%), suggesting that the

prevailing target range remains broadly consistent with growth-supporting inflation at the provincial level, while leaving limited room at the upper bound before inflation becomes counterproductive for growth.

Contextualizing the estimated 4.25% threshold within the broader cross-country and regional literature reveals both convergence and divergence. For a panel of Asian economies, Vinayagathasan (2013) and Thanh (2015) identified thresholds of approximately 5.4% and 7.84% respectively, suggesting that the growth-supportive range of inflation may be somewhat narrower in Indonesia than in other emerging Asian economies plausibly because Indonesia's inflation is more structurally driven by food and energy price volatility, which generates welfare costs without equivalent growth stimulation. In African economies, Seleteng, Bittencourt, and van Eyden (2013) and Phiri (2014) documented substantially higher thresholds (8–10%), consistent with the greater structural inflationary inertia in commodity-dependent economies. For Latin American economies, Ibarra and Trupkin (2016) demonstrated that institutional quality moderated the threshold: countries with stronger institutions exhibited lower growth-maximizing inflation rates, a finding consistent with Indonesia's threshold being closer to the lower bound of the Asian range given its improving but still developing institutional framework. More recently, Bawa and Abdullahi (2022) confirmed a threshold of approximately 6% for Nigeria using a nonlinear ARDL approach, while Phiri (2023) applied a smooth transition regression to South African data and found evidence of threshold heterogeneity across business cycle phases. These comparisons reinforce the context-dependency of the inflation threshold and indicate that the 4.25% estimate derived here is plausible and broadly consistent with though somewhat below the range documented for structurally comparable developing economies.

Of the four control variables, only trade openness is statistically significant. Its positive coefficient indicates that provinces more integrated into international trade tend to grow faster, consistent with theories of technology diffusion and allocative efficiency through trade (Grossman & Helpman, 1991; Nam & Ryu, 2024). The relatively small coefficient, however, suggests that the growth benefits of trade openness are not yet fully realized, plausibly because Indonesia's exports remain concentrated in relatively low-value-added raw commodities.

Investment shows a negative coefficient that is only marginally significant ($p = 0.090$), a counter-intuitive result that may reflect the longer lag typically required for physical capital accumulation to translate into output, as well as the concentration of investment in extractive, enclave-type sectors with limited local employment or technology spillovers, a pattern also noted in prior Indonesian evidence (Kusumatrisna et al., 2019). Labor is negative and not significant, suggesting that the sheer size of the labor force is not, by itself, growth-enhancing without complementary improvements in human capital, consistent with endogenous growth theory's emphasis on the quality rather than quantity of labor input (Lucas, 1988). Government expenditure is positive but not significant, which may reflect that provincial government spending remains weighted toward routine operational expenditure rather than productive capital expenditure, limiting its multiplier effect on output (Ciaffi et al., 2024); fiscal decentralization since 2001 may also mean that some regions still lack the administrative capacity to translate budget allocations into productive spending (De Silva & Sumarto, 2014).

The estimated threshold of 4.25 percent suggests that Bank Indonesia's current inflation target range (1.5–3.5 percent) remains broadly consistent with growth-supporting price stability at the provincial level, so no drastic change to the current monetary policy framework appears necessary on the basis of this evidence alone. At the same time, policy that pushes inflation too far below this range risks sacrificing growth momentum, while persistent inflation above the threshold risks entering a growth-detracting zone. At the subnational level, provincial governments should prioritize supply-side measures such as investment in irrigation, rural roads, and post-harvest logistics to stabilize food prices, particularly in provinces with historically volatile inflation. Given the significant positive role of trade openness, trade policy should aim not only to expand export volumes but to promote downstream processing so that the growth benefits of trade integration are more fully realized. Because investment and government expenditure are not yet shown to be significant drivers of growth, improving the productive quality and allocation of both should be a policy priority.

This study has five limitations. First, potential reverse causality between inflation and growth cannot be fully eliminated within the Fixed Effect framework; future work using System-GMM or instrumental variable approaches would strengthen causal inference. Second, provincial CPI may not fully capture structural price pressures affecting production costs in resource-intensive provinces. Third, the 4.25% threshold is derived from the 2016–2024 period encompassing the COVID-19 shock, and may not be temporally stable across non-pandemic periods. Fourth, omission of human capital, infrastructure quality, and institutional capacity may introduce omitted-variable bias, particularly for the investment and government expenditure coefficients. Finally, findings are specific to Indonesian provinces and may not generalize to other developing economies with different institutional or monetary policy frameworks.

## Conclusions

This study confirms a significant nonlinear relationship between inflation and provincial economic growth in Indonesia (2016–2024), using a quadratic Fixed Effect Model on a balanced panel of 34 provinces (N = 306). The inverted U-shaped relationship yields an inflation threshold of 4.25% [95% CI: 3.18%–5.32%], below which inflation supports growth and beyond which it becomes detrimental a finding robust to outlier sensitivity checks. Among control variables, only trade openness is statistically significant. These results indicate that Bank Indonesia's current target range (1.5–3.5%) remains broadly growth-supportive, though limited upward flexibility exists before the threshold is breached. Provincial governments should complement monetary policy with supply-side interventions in food distribution and rural logistics, while trade policy should prioritize downstream processing to maximize the growth dividend of export integration.

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