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BIGGER GOVERNMENT, SLOWER GROWTH? A PANEL ANALYSIS OF INDONESIAN PROVINCES

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ABSTRACT

Research Originality – Most studies examining the relationship between fiscal conditions, government size, and growth have been conducted in a piecemeal manner and have focused on national cases. This study fills that gap by comprehensively analyzing the impact of these fiscal variables on economic growth within the framework of the Armey curve theory.

Research Objectives – This study aims to analyze the effect of government size on economic growth at the provincial level in Indonesia.

Research Methods – This study analyzed the data using a Two-Step Difference GMM as the main estimator. The data were pooled at the provincial level across 33 provinces, covering the years 2014–2024. This study used government size, transfer ratio, and fiscal capacity as independent variables, with economic growth as the dependent variable.

Empirical Result – The baseline shows significant persistence in provincial economic growth, while government size, transfer ratio, and fiscal capacity do not exhibit a statistically significant linear effect on growth. However, the quadratic specification produces a positive coefficient for the squared term, which is significant at the 10% level. It provides suggestive evidence of an inverted U relationship consistent with the Armey Curve.

Implications – The findings suggest that the growth implications of provinces government size in Indonesia are better understood as nonlinear rather than uniformly positive or negative. Fiscal expansion may be associated with stronger growth at relatively low levels of government size, whereas further expansion beyond the estimated turning point may generate diminishing or adverse growth effects.

Keywords: Government Size; Fiscal Decentralization; Transfer Ratio; Fiscal Capacity; Economic Growth; Difference-GMM

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INTRODUCTION

In 2001, Indonesia began a new era of governance marked by regional autonomy and fiscal decentralization, which granted regions a significant responsibility for budget administration and development (Mendy, 2024; Mudjahid Zein et al., 2022). Since then, the public sector has expanded with the creation of at least 7 new provinces, 26 cities, and 115 regencies (Ibrahim, 2023). Decentralization has not, however, always improved development. However, it has often led to contradictions, including higher routine expenditures, bureaucratic inefficiency, and domination of staff costs in the regional budget (Ibrahim, 2023). This situation raises questions about the effectiveness of regional budgets and their influence on the pace of economic growth. Local governments, mainly in provinces level face diseconomies of scale through increased bureaucracy, causing public administration costs grow faster than development gains. This brings up a simple question. Is the government size today still a stimulus for growth, or is it beginning to stifle growth?

Economist have studied and debated the connection between government size and economic growth. This complexity and diversity of outcomes stem from several factors. An empirical study shows that the

impact of government size on economic growth can be positive or negative, depending on the context, governance quality, the institutional environment within a country, and other economic factors.

Research has shown that effective government spending is important for improving economic growth. Chan et al. (2017) suggest that more efficient government expenditure contributes substantially to economic growth. This supports the Keynesian idea that government can support growth through focused interventions. Nirola & Sahu (2019) also supporting this finding, applying a GMM model to panel data from 23 Indian states during 2005-2014. They argue that although bigger government size tends to be detrimental to growth, the benefits of institutional quality highlight the role of good governance in ensuring sustainable economic performance. In addition, Akram & Rath (2020) established a favorable correlation between government size and economic growth using the Panel Threshold model. Their results suggest that to sustain an accelerated rate of economic growth, policymakers must restrict the size of government to the threshold they identify.

On the other hand, the size of government can also adversely affect economic growth, especially when the expenditures are not properly controlled. Haini & Wei Loon (2021) provide evidence of a negative relationship between government size and economic growth. This implies that government ideology might mediate this association, and results could differ across governance types. Asimakopoulos & Karavias (2016) provide further support, finding a non-linear relationship that suggests an optimal size of government, beyond which growth declines. Research conducted by Awolaja et al. (2021) confirms this: a proportionate government size is indeed beneficial. However, if it becomes too large, it leads to inefficiency.

The topic of fiscal decentralization is highly relevant in Indonesia. Regional transfers from the central government, allegedly to promote equitable development, account for a third of all national spending. But the predominance of routine and personnel costs has constrained the room for capital and development expenditures that translate directly into economic growth. Considerable regional discrepancies remain, suggesting that budgetary transfers have not always led to better local economic performance.

Despite this extensive body of work, three limitations constrain the applicability of existing findings to the Indonesian case. First, most empirical evidence on government size and growth, including the panel-threshold and GMM-based studies of Nirola & Sahu (2019), Akram & Rath (2020), and Asimakopoulos & Karavias (2016), is derived from national cross-country panels or single-country state-level data outside a fiscal-decentralization setting, so the central-local transfer mechanism that shapes subnational fiscal behavior in Indonesia is absent from these models altogether. Second, research incorporating decentralization variables—such as the study by Sohail et al. (2022)—has indeed found that government size and institutional quality significantly influence economic growth. However, such studies do not treat fiscal transfers within the context of decentralization as an independent factor. This raises the question of whether economic growth is driven by the extent of the government's role or, rather, by the financing structure that underpins that role. Third, in the Indonesian context, previous research remains fragmented in both variable use and in the research period and coverage area. This research is generally carried out in parts and does not examine Indonesia's regional context as a whole. This is important because fiscal decentralization in Indonesia is divided into provincial and district/city areas. Apart from that, the formation of several new regions in the form of 7 provinces, 26 cities, and 115 new districts also needs to be considered (Ibrahim, 2023).

Consequently, conducting this research is crucial within the Indonesian context. The rise of new autonomous regions during decentralization has expanded the size of government, yet this often fails to align with the expected acceleration in regional economic growth. Meanwhile, the central government is obligated to provide fiscal equalization instruments in the form of transfer funds—resources largely utilized for personnel costs and other unproductive expenditures (Bharanti, 2020). Building on the limitations identified above, this study addresses two research gaps. Conceptually, prior studies rarely model government size jointly with the channels through which subnational government is financed externally (transfer dependency) and autonomously (own-source fiscal capacity), even though decentralization theory implies that the growth effect of government size should depend on how that spending is funded.

APPLICATIONS FOR PRACTICE

- Government size has a nonlinear relationship with regional economic growth, with an estimated turning point of approximately 5.59% of GRDP.
- Provinces below the turning point may still benefit from productive fiscal expansion, while those above it should prioritize spending efficiency and reallocation.
- Transfer dependence and fiscal capacity do not show significant individual effects on growth in the baseline Difference GMM model.
- Regional fiscal policy should therefore emphasize expenditure quality, efficiency, and province-specific fiscal conditions rather than uniform fiscal expansion.

Empirically, no study to date has tested this joint specification across Indonesia's set of 33 provinces over a decade (2014–2024) using an estimator capable of addressing the dynamic and endogenous nature of subnational fiscal panel data. Accordingly, this study pursues three specific and hierarchically ordered objectives: first and primarily, to examine the effect of government size on provincial economic growth; second, to examine the role of the transfer ratio as the channel of fiscal dependency in shaping that relationship; and third, to examine the role of fiscal capacity as the channel of fiscal autonomy. This study is expected to offer a new perspective on regional economic growth within the context of fiscal decentralization, specifically through the lenses of government size and financing structure. Furthermore, it aims to provide recommendations regarding productive provincial government spending to foster sustainable fiscal policy in the future.

LITERATURE REVIEW

In the context of fiscal decentralization, analyzing the determinants of regional economic growth, specifically in relation to government size, central-to-regional fiscal transfers, and fiscal capacity, is of critical importance. Previous studies have also found results consistent with this perspective, particularly regarding sustainable regional economic growth.

This study employs at least three theoretical mechanisms to explain the relationship between the rate of economic growth and the size of government. These three mechanisms frequently serve as key references in prior research addressing similar topics. The first theory is Wagner's Law, which posits a correlation between economic growth and government size, measured by government expenditure. Overall, this theory illustrates a demand-side mechanism in which government size is a consequence of economic growth. Thus, the direction of causality runs from economic growth to government size, rather than the reverse. The second theory comes from the Keynesian perspective. Overall, this view contradicts the arguments presented in Wagner's Law. The mechanism described by this theory posits that government spending directly increases aggregate demand, which in turn stimulates private consumption and investment, thereby resulting in crowding-in. Consequently, the size of government is considered a determinant of economic growth. The third theoretical framework is the Armey curve. This curve essentially reconciles the two preceding theories by illustrating an inverted-U-shaped, non-linear relationship between economic growth and the size of government (government spending). In the initial phase of the Armey curve, the Keynesian perspective prevails, with positive economic growth driven by increased government size through capital expenditure, infrastructure investment, and the like. However, beyond an optimal threshold, the economy experiences diminishing returns because private investment is crowded out and administrative inefficiencies rise; consequently, further expansion of government spending reduces economic growth. An empirical analysis of the impact of government size on economic growth can examine the economy's position along this Armey curve.

Empirical evidence on the relationship between government size and economic growth has been studied for a long time and produces varying results, both in methodology and in scope (developed and developing countries). Nyasha & Odhiambo's (2019) empirical findings support this argument. Thus, these findings refute Bergh & Henrekson's (2011) empirical findings, which stated that in developed countries, government size tends to be negatively correlated with economic growth. This is largely due to inefficiencies in government spending. However, cases in developing countries, such as that of Nguyen & Lee (2025) show that this relationship can be more complex than in developed countries. Factors such as trade openness, and investment may explain this. Then, in the context of the Armey curve, research conducted by Asogwa et al. (2019) and Jain & Sinha (2022) found that optimal government size can accelerate economic growth. However, Bergh (2011) reminds us that the relationship between government size and economic growth can occur in two directions, one of which can be detrimental to economic growth.

As explained above, the Armey Curve basically shows a non-linear relationship between government size and economic growth in the form of an inverted U-shaped curve. Before the peak point, there is a positive correlation between government size and economic growth. In the initial stage, government expansion encourages economic growth through productive public spending. However, after the curve's peak, the correlation becomes negative as shown by the curve's decline. This phenomenon arises from diminishing returns caused by inefficiencies in government spending, financing distortions, and crowding-out effects, all of which collectively hinder economic growth. In Indonesia, each province's position along this curve may vary. Therefore, this study empirically examines whether the relationship between government size and economic growth follows an inverted U-shaped pattern.

H1: Government size has an inverted-U-shaped relationship with economic growth, indicating a positive effect at lower levels of government size and a negative effect beyond the growth-maximizing threshold.

The relationship between fiscal transfers and economic growth is highly complex, and previous studies have yielded varied results, ranging from positive to negative depending on the specific context examined. Mastomo et al. (2025), for instance, found that central government transfer funds positively influenced economic growth in South Kalimantan by boosting regional spending. However, the study cautioned that ineffective or inefficient fund allocation could lead to different outcomes. Similarly, Z. Chen (2024) found that while fiscal transfers in China positively impacted regional economic growth, their effectiveness depended heavily on how the funds were utilized and managed. Mose (2021) offered a different perspective, finding that fiscal transfers could enhance regional economic growth even when the impact of the associated capital expenditure was relatively minor. Overall, these studies confirm that the relationship between fiscal transfers and economic growth hinges significantly on efficiency, proper targeting, and institutional quality.

Empirical evidence on the relationship between fiscal transfers and economic growth also varies widely, largely because institutional design differs across study contexts. For instance, Mastomo et al. (2025) and Mose (2021) found that transfer funds allocated through routine expenditure tend to support the "Flypaper Effect" hypothesis—a phenomenon in which provincial governments rely on central government transfers as their primary revenue source, reducing the incentive to maximize locally generated revenue through taxation. In contrast, Z. Chen (2024), in a study on decentralization in China, found that the impact of transfer funds on economic growth depends heavily on the extent to which the funds are strictly earmarked for specific desired outcomes. This implies that even with identical transfer ratios, the impact on economic growth can vary based on the associated conditions and monitoring mechanisms. In this regard, and in accordance with conditions in Indonesia, where transfer funds, consisting of DAU, DAK, and DBH, are largely general transfers (without specific requirements), it seems that conditions in Indonesia will be more supportive of the flypaper effect study conducted by Mastomo et al. (2025) and Mose (2021) than the directed transfer mechanism proposed by Z. Chen (2024). This underlies the second hypothesis in this study.

H2: The transfer ratio has a negative effect on provincial economic growth in Indonesia.

Furthermore, the relationship between fiscal capacity and economic growth is increasingly important, particularly for sustainable development, and is supported by many empirical studies, both those highlighting the direct relationship and those examining its institutional dimensions. For instance, Jamil et al. (2022) show that, within Indonesia's decentralized system, fiscal capacity significantly affects economic growth through public service provision and more efficient resource allocation. Similarly, Belmonte et al. (2023) find that stronger fiscal capacity can foster mindset shift while enhancing tax literacy and compliance, thereby enabling the government to spend more effectively on public goods.

Jamil et al. (2022) and Belmonte et al. (2023) both share a common view: local fiscal capacity of local governments can drive economic growth through revenue mobilization. A broader local revenue base enables governments to finance public goods without relying on central government transfers. However, both studies assume that revenue mobilization must be accompanied by robust public financial management. This assumption becomes an obstacle for regions with weak capacity and budgeting, as documented by Lu (2007) and Ali (2022) for most regions in Indonesia outside Java. If institutional capacity constraints outweigh the benefits of revenue mobilization in these areas, increased fiscal capacity may be absorbed by inefficient recurrent spending rather than productive investment, thereby weakening or even reversing the positive relationship identified by Jamil et al. (2022) and Belmonte et al. (2023). Given the documented disparities in institutional capacity across Indonesian provinces, this study proposes a third, more conservative hypothesis.

H3: Fiscal capacity has a positive effect on provincial economic growth in Indonesia

In conclusion, prior literature and empirical studies show that government size, fiscal transfers, and fiscal capacity determine economic growth, especially in fiscal decentralization studies. While an optimal government size can foster economic growth through efficient public spending, excessive expansion can lead to inefficiencies that ultimately hinder economic performance. Similarly, the impact of fiscal transfer funds depends heavily on governance quality, allocation efficiency, and institutional integrity; poorly targeted transfers can undermine intended development goals. Meanwhile, fiscal capacity acts as the backbone of growth, enabling governments to mobilize revenue, finance public goods, and strengthen institutional performance.

METHODS

This study employs an explanatory quantitative research design to test the previously proposed research hypotheses. This study uses panel data (pooled data), combining time series and cross-sectional data, with dynamic panel model specifications. The unit of analysis comprises 33 provinces in Indonesia,

covering an 11-year study period (2014–2024) with a total of 363 observations. North Kalimantan was excluded as a unit of analysis to maintain panel balance, as some data were unavailable for the study period. Conversely, West Papua was retained because data for all its variables were complete and consistent throughout the study period. The analysis considered the administrative expansion in the Papua region in 2022, which created several new provinces; however, these provinces were not included in the analysis due to insufficient data availability.

Each independent variable is defined and measured following established convention in the fiscal decentralization literature, since no single universally codified formula exists for these subnational fiscal indicators and the choice of denominator materially affects interpretation. Government size (*gov_size*) is measured as the ratio of total of provincial government expenditure to nominal GRDP, expressed as a percentage. This expenditure-to-output ratio is the standard proxy for public-sector size in Armey Curve studies such as Chekouri et al. (2022) and Asimakopoulous & Karavias (2016), because it captures the relative weight of government activity within the regional economy, independent of the nominal size of the budget. The transfer ratio (*trans_rat*) is measured as the ratio of total fiscal transfers received from the central government, comprising the General Allocation Fund (DAU), Special Allocation Fund (DAK), and Revenue Sharing Fund (DBH), to total regional government revenue. This revenue-composition measure follows the convention used in flypaper-effect and fiscal-dependency studies such as Fitrianti et al. (2025) and Rahmasari et al. (2024), and is deliberately defined on the revenue side rather than the expenditure side so that it isolates the financing channel of provincial government level, which is conceptually distinct from the spending channel already captured by *gov_size*. Fiscal capacity (*fis_cap*) is measured as the ratio of Local Own-Source Revenue (Pendapatan Asli Daerah, PAD) to total regional government revenue, following Rahman & Rahmadian (2021) and Jamil et al. (2022), as a measure of the extent to which a region can finance its expenditure independently of external transfers. Defining *trans_rat* and *fis_cap* both as shares of total revenue, rather than mixing revenue-side and expenditure-side denominators, ensures that the two variables are conceptually complementary, namely external dependency versus own-source capacity, and that their estimated coefficients are directly comparable in magnitude.

Meanwhile, the Generalized Method of Moments (GMM) was used within a dynamic panel model framework to estimate the relationship between variables. This methodology mitigates potential biases and inconsistencies that traditional estimation methods, such as Ordinary Least Squares (OLS), may incur due to endogeneity between variables (Albarran & Arellano, 2019; Vujacic et al., 2020). In addition, GMM is appropriate for panel data because it can produce more efficient and robust estimates (Li & Cui, 2024). Thus, the basic GMM research model can be formulated as follows:

$$growth_{it} = \rho growth_{it-1} + \beta_1 gov_size_{it} + \beta_2 trans_ratio_{it} + \beta_3 fis_cap_{it} + \mu_i + \tau_t + \varepsilon_{it} \quad (1)$$

where μ_i is the province fixed effect, τ_t is the time effect, and ε_{it} is an idiosyncratic error.

The choice of dynamic panel GMM is based on three methodological considerations. First, pooled OLS and conventional static fixed-effects or random-effects estimators are insufficient for a model with a lagged dependent variable. In a short dynamic panel, the lagged dependent variable may be correlated with the province-specific effects and the transformed error term, producing biased and inconsistent estimates. Second, a conventional IV/2SLS strategy would require credible external instruments that affect provincial fiscal variables without directly affecting regional economic growth, and such instruments are difficult to identify consistently across provinces. Third, government size, transfer dependence, and fiscal capacity may themselves respond to regional economic conditions, creating potential reverse causality and endogeneity. Dynamic panel GMM addresses these concerns by exploiting appropriately lagged observations as internal instruments.

To eliminate unobserved time-invariant provincial effects, Equation (1) is transformed into first differences:

$$\Delta growth_{it} = \rho \Delta growth_{it-1} + \beta_1 \Delta gov_size_{it} + \beta_2 \Delta trans_ratio_{it} + \beta_3 \Delta fis_cap_{it} + \Delta \mu_i + \Delta \tau_t + \Delta \varepsilon_{it} \quad (2)$$

Although first differencing removes the province-specific effect, $\Delta growth_{it-1}$ remains correlated with $\Delta \varepsilon_{it}$. Therefore, we use lagged levels as internal instruments within the Difference GMM framework. To avoid imposing strong exogeneity assumptions on the fiscal variables, we also treat *gov_size*, *trans_ratio*, and *fis_cap* conservatively as potentially endogenous.

We estimate the baseline specification using a two-step Difference GMM estimator with two-way effects. The GMM-style instrument set is deliberately restricted to the second and third lags, which can be expressed generally as:

$$E(Z_{i,t-s} \cdot \Delta \varepsilon_{it}) = 0, \quad s \in \{2,3\} \quad (3)$$

where Z denotes the lagged values of the endogenous variables used as instruments. The same restricted lag window is applied to the lagged dependent variable, government size, transfer ratio, and fiscal capacity.

The estimation strategy controls instrument proliferation. Rather than using all available lags, we retain only lags 2–3 and collapse the instrument matrix. The baseline specification therefore generates 17 instruments for 33 cross-sectional units. This parsimonious strategy keeps the instrument count well below the number of groups and reduces the risk that an excessive instrument set overfits the endogenous variables or weakens the informativeness of the overidentification test (Roodman, 2009).

We assess the validity and consistency of the GMM specification using the Arellano–Bond tests for first and second-order serial correlation and the Hansen–Sargan test of overidentifying restrictions. We report first-order serial correlation in differenced residuals because it commonly arises after first differencing, in contrast, the absence of second-order serial correlation is particularly important for the validity of lagged instruments. The Hansen–Sargan test evaluates whether the data reject the overidentifying restrictions. We report the number of instruments explicitly and compare it with the number of cross-sectional units. We include time effects in all specifications to control for common shocks affecting Indonesian provinces in a given year.

We estimate the model using a two-step procedure with robust covariance estimation. We implement the empirical analysis in R using the *plm package*, with two-way effects, first-difference transformation, restricted lag instruments, and a collapsed instrument matrix. We use robust inference for the reported coefficients and serial-correlation tests, consistent with the finite-sample concerns associated with two-step GMM estimation (Windmeijer, 2005).

To directly test the nonlinear relationship predicted by the Armey Curve, the baseline dynamic specification is extended by including the squared term of government size:

$$growth_{it} = \rho growth_{it-1} + \beta_1 gov_size_{it} + \beta_2 gov_size_{it}^2 + \beta_3 trans_ratio_{it} + \beta_4 fis_cap_{it} + \mu_i + \tau_t + \varepsilon_{it} \quad (4)$$

Evidence consistent with an inverted-U relationship requires a positive coefficient on the linear government-size term ($\beta_1 > 0$) and a negative coefficient on its squared term ($\beta_2 < 0$).

RESULT AND DISCUSSION

This study analyzes the effect of government size on provincial-level economic growth in Indonesia. To complement the analysis, we used regional fiscal indicators as explanatory variables. As a preliminary step, descriptive computed descriptive statistics for the research variables. The results are presented in Table 1 below:

Table1 Descriptive Statistics

Variable	Growth	Gov_Size	Trans_Ratio	Fis_Cap
Mean	4.7147	4.6131	53.1542	39.5075
Median	5.0500	3.8217	54.2105	38.7442
Std. Dev.	3.6023	2.6839	17.4290	16.7228
Minimum	-15.7400	1.2505	10.4410	4.2657
Maximum	22.9400	15.8219	93.3722	76.1971
Skewness	0.5675	1.3299	-0.1789	0.0533
Kurtosis	12.2140	4.4917	2.3993	2.2913
Obs.	363	363	363	363

Source: Processed by the authors

As shown in Table 1, the descriptive statistics indicate that the average regional economic growth during the research period was 4.72 percent, with a median of 5.05 percent. This shows that most regions still record positive economic growth. However, the data distribution was quite spread out, as shown by a standard deviation of 3.57 and a range of -15.74% to 22.94%. The negative minimum value indicates economic contraction in several periods or regions, while the maximum value reflects a significant surge in growth. The data distribution is right-skewed (skewness of 0.56) and has high kurtosis (9.44), indicating outliers and a distribution that is more sharply peaked than a normal distribution. This means that although regional economic growth is generally positive, it is highly unstable across periods and regions. Extreme values indicate vulnerability to local and national economic shocks. Therefore, policy analysis needs to account for regional heterogeneity so that development strategies are more targeted and sustainable.

Furthermore, the average size of provincial governments is 4.61, slightly higher than the median of 3.82, indicating an asymmetrical distribution. The data are nearly normal, with a standard deviation of 2.68 and a range of 1.25 to 15.82. This shows striking differences in public sector size across regions. The skewness value of 1.33 and the kurtosis value of 4.49 indicate that the government size data distribution is normal. Economically, this finding suggests that Indonesian provinces operate at markedly different fiscal scales. Most provinces have relatively modest government expenditure relative to the size of their regional economies, whereas a smaller group operates with substantially larger government sectors. This

heterogeneity suggests that the growth consequences of government size may not be uniform across provinces (Sakti et al., 2024). At relatively low levels, additional public expenditure may still support economic activity through infrastructure provision, public services, and other productivity-enhancing functions. However, at higher levels of government size, the marginal contribution of additional expenditure may diminish as administrative costs, inefficiency, and potential crowding-out effects become more pronounced (Khan et al., 2025). The observed range of government size from 1.25% to 15.82% of GRDP therefore provides sufficient variation to examine whether the relationship between government size and economic growth is nonlinear, as suggested by the Armey Curve framework.

Then, the average transfer ratio was 53.15, slightly lower than the median of 54.21. The small difference between the mean and median suggests a balanced distribution, with only a slight tendency toward negative skewness. The standard deviation of 17.42 indicates considerable variation in transfer dependence across regions. This heterogeneity is also reflected in the wide range of observations, from a minimum of 10.44 to a maximum of 93.37, suggesting substantial differences in the extent to which regional governments rely on intergovernmental transfers. The skewness value of -0.18 indicates a nearly symmetric distribution with only a slight leftward skew. The kurtosis value of 2.39 indicates a flatter distribution than normal, meaning extreme observations don't dominate the dataset. The significant variation in transfer ratios points to real differences in fiscal dependency across regions, reflecting a lack of uniformity in provincial governments' financing structures and fiscal capacities. These disparities may help explain variations in economic growth across regions (Khoirunisa & Sulaeman, 2022).

Lastly, the average regional fiscal capacity is 39.51, with a median of 38.74. It is close enough to indicate a distribution balanced around its central value. A standard deviation of 16.72 and a range from 4.27 to 76.19 show significant variation in fiscal capacity across regions, reflecting heterogeneity in provincial-level governments' ability to generate and mobilize their own revenue. A skewness value of 0.05 points to a nearly symmetrical distribution with a very slight rightward skew, and a kurtosis value of 2.29 indicates a flatter distribution than normal, with no strong presence of extreme observations. This variation in fiscal capacity points to disparities in fiscal autonomy across regions (Crowley & Sobel, 2011). Regions with higher fiscal capacity can finance public needs more readily through their own revenue sources, while regions with lower fiscal capacity rely more heavily on intergovernmental transfers. This heterogeneity provides a solid empirical basis for examining whether differences in regional fiscal capacity are linked to variations in economic growth across regions (Zulyanti & Badriah, 2024).

After outlining the data characteristics via descriptive statistics, the next stage involves estimating a dynamic panel model using the Two-Step Difference Generalized Method of Moments (Difference GMM) approach. A dynamic model allows current-period economic growth to be influenced by previous-period growth, while also accommodating potential endogeneity between economic growth and the fiscal variables in the model. Estimation incorporates both individual and time effects (two-way effects), at the same time, internal instruments are restricted to the second and third lags and organized using a "collapsed instruments" structure to keep the total number of instruments manageable.

The analysis runs two specifications. Model 1 (Eq.2) is the baseline, estimating the linear relationship among economic growth, government size, the transfer ratio, and fiscal capacity. Model 2 (Eq.4) extends the baseline by adding the squared term of government size (Gov_Size^2), to test explicitly for the non-linear relationship the Armey Curve predicts. Before interpreting the estimated coefficients, the study evaluates model specification using the Arellano–Bond test for first- and second-order autocorrelation, the Hansen–Sargan test for the validity of overidentifying restrictions, and a check on the number of instruments used in the estimation.

Table 2 Two-Step Difference GMM Estimation Results

Variable / Diagnostic	Model (1): Baseline
Growth(t-1)	0.5498 (0.0048)*
Gov_Size	-0.7286 (0.2868)
Trans_Ratio	-0.0287 (0.2582)
Fis_Cap	-0.0943 (0.3062)
AR(1), p-value	0.0501
AR(2), p-value	0.7884
Hansen–Sargan, p-value	0.7653
Number of instruments	17
Number of groups	33

*significant at a = 5%

**significant at a = 10%

Source: Processed by the authors

Before interpreting the estimated coefficients of Model (1), the model's consistency and the validity of the instruments employed must first be tested and evaluated (Hendayanti et al., 2025; Sebki, 2021). Table 2 summarizes the testing and estimation results for the equation in Model (1). The Arellano-Bond test detects first- and second-order autocorrelation. Subsequently, the Hansen-Sargan test assesses the validity of overidentifying restrictions and examines the number of instruments in the model (Gunawan et al., 2023). These two tests are crucial, as the validity of Difference GMM results relies heavily on the fulfillment of these underlying assumptions.

The results of the Arellano-Bond test show that the p-value for AR(1) is 0.0501, which means it is marginally significant, while the p-value for AR(2) is 0.7884, which means it is not significant. In the Arellano-Bond test, primary attention is focused on the AR(2) value rather than the AR(1) value. Thus, the research model meets the main serial correlation requirements for consistent Difference GMM estimation.

Furthermore, the Hansen-Sargan test produced a p-value of 0.7653. This value exceeds conventional significance levels, meaning we cannot reject the null hypothesis that the overidentifying restrictions are valid. Thus, the results provide no statistical evidence that the instruments used in Model (1) are invalid. These results must also be considered alongside the number of instruments employed in the estimation. Model (1) utilizes only 17 instruments for 33 provincial groups, keeping the instrument count below the number of cross-sectional units. This indicates that the strategy of limiting lags and using collapsed instruments successfully kept the number of instruments under control and mitigated the risk of instrument proliferation.

After testing model consistency and instrument validity, we can interpret the estimation results. Based on the estimation results of Model (1), the baseline model shows that economic growth in the previous period ($Growth_{t-1}$) has a probability p of 0.0048 and a positive estimated coefficient of 0.5498. A probability value below 0.05 indicates that economic growth in the previous period significantly influences current economic growth. The positive sign indicates a positive relationship, with a coefficient of 0.5498. These results show a strong, positive link between provincial-level economic growth in one period and economic growth performance in the subsequent period.

These findings align with Indonesia's economic growth patterns during the 2014–2024 observation period. Before the COVID-19 outbreak, Indonesia's economic growth was relatively stable at around 5% per year. However, the pandemic triggered an economic shock, causing a sharp contraction in 2020, followed by a gradual recovery in 2021 and a return to 5% growth during 2022–2024. This pattern shows that economic growth shocks affect not only the year of occurrence but also subsequent periods (Rahman & Rahmadian, 2021). A similar dynamic is observed at the regional level, where the impact of economic shocks is felt more deeply and tangibly because a province's economic structure, production base, investment, infrastructure, and sectoral composition tend to evolve gradually (Pusdiktasari et al., 2021). Theoretically, these results support a dynamic growth model, in which the economic growth process exhibits path dependence and is influenced by pre-existing economic conditions (Basuki et al., 2020).

In contrast to the lagged economic growth variable, the government size variable has a probability value of 0.2868 and a coefficient of -0.7286. Because the probability value exceeds the 5% significance level ($\alpha = 0.05$), this variable does not significantly affect economic growth; therefore, the direction and magnitude of its regression coefficient cannot be meaningfully interpreted.

This variable's significance may reflect that large fiscal transfers or balancing funds from the central government to regions (in this case, the provincial level) are not immediately transmitted into economic growth by regional governments. This figure merely indicates the extent of the central government's role or involvement in the economy through fiscal transfers. Furthermore, the variable fails to reflect the quality of budget utilization by provincial governments (Suriadi et al., 2023). Personnel expenditure, spending on goods and services, and capital expenditure each possess distinct transmission mechanisms regarding their impact on economic growth (Y. Chen et al., 2024; Song et al., 2025). The SIKD data reveal that, in aggregate, provincial government spending on personnel and on goods and services in 2024 far exceeded capital expenditure. This situation demonstrates that an increase in total regional spending does not automatically lead to a proportional rise in expenditures that directly enhance the region's productive capacity.

Existing empirical evidence further supports this argument. Suriadi et al. (2023) found that growth depends not merely on the magnitude of government expenditure, but on the productive nature of that spending; expenditures on education, health, security, and public order contributed to provincial growth following decentralization. These findings indicate that the relationship between government expenditure and growth depends more on the composition and productivity of spending than on its aggregate size alone. Theoretically, these results add nuance to the Keynesian perspective. Within the Keynesian framework, increased government spending can boost aggregate demand and stimulate economic activity through the multiplier effect (Mankiw, 2010). However, this mechanism does not imply that every increment of spending yields an identical growth effect. When additional spending is directed toward productive

activities, infrastructure development, or productivity-enhancing public services, the impact on growth can be positive. Conversely, if inefficiencies or diminishing returns hamper additional spending, or if it is largely absorbed by administrative requirements, the impact on growth may be diminished. Therefore, the lack of significance of the Gov_Size variable in the linear model may indicate that the relationship is not uniform across all levels of government size.

These findings are also significant for testing H1. H1 predicts an inverted-U-shaped, non-linear relationship between government size and economic growth. Therefore, we cannot yet accept or reject H1 based on Model (1). The linear model merely indicates that 'Gov_Size' does not have a significant linear effect. Therefore, the testing of H1 must be based on Model (2) by including Gov_Size², as predicted by the Armeey Curve.

Furthermore, the transfer ratio has a coefficient of -0.0287 with a *p-value* of 0.2582 . Since the *p-value* exceeds 0.05 , the transfer ratio has no significant effect on economic growth. Thus, although the coefficient is negative, the results provide no statistical evidence that increased reliance on central government transfers reduces provincial economic growth. Consequently, the research findings do not support H2, which posits that the transfer ratio negatively affects economic growth.

Two simultaneous functions of transfers can explain the transfer ratio's lack of significance. On the one hand, provincial governments on central government transfer funds to finance routine expenditures ultimately creates fiscal issues. A notable phenomenon is the lack of motivation among provincial governments to tap into local potential to generate locally sourced revenue, thereby increasing the likelihood of the "flypaper effect" (Rahmasari et al., 2024). Nevertheless, these transfer funds present a paradox, as they essentially serve as the central government's primary instrument for narrowing fiscal capacity disparities and financing public services at the local level (Ningsih et al., 2023). The General Allocation Fund (DAU) is provided to equalize financial capacity across regions (addressing horizontal inequality). In contrast, the Special Allocation Fund (DAK) and Revenue-Sharing Fund (DBH) serve different functions and operate through distinct allocation mechanisms. In this study, transfer funds are treated in the aggregate, without distinguishing between the specific types of funds. Consequently, the observed negative influence of transfer funds may mask the positive impacts that would otherwise arise from one or more components of these balancing funds.

The fiscal capacity variable has a coefficient of -0.0943 with a *p-value* of 0.3062 . Since the *p-value* exceeds 0.05 , fiscal capacity does not significantly affect economic growth. In addition to lacking significance, the coefficient is negative, whereas H3 predicted a positive relationship. Therefore, the research findings do not support H3, which posits that fiscal capacity positively influences economic growth. However, given the lack of statistical significance, this result should not be interpreted as evidence that increasing fiscal capacity causes a decline in economic growth.

These findings may reflect significant heterogeneity in fiscal capacity across regions. Descriptive statistics indicate that the mean fiscal capacity ratio in the sample is 39.51 percent, yet values range from about 4.27% to 76.20%. This reveals vast disparities in provincial governments' abilities to generate their own revenue. Provinces with substantial economic activity, urbanization, trade, services, and tax bases have a greater likelihood of generating Locally-Generated Revenue (PAD) compared to provinces with more limited economic bases. Consequently, high fiscal capacity may, in some instances, reflect a robust regional economic base rather than directly driving economic growth. Another explanation is that increased fiscal capacity does not necessarily translate into productive expenditure (Khoirunisa & Sulaeman, 2022). Theoretically, fiscal decentralization can enhance efficiency because local governments have superior information about local community needs. However, such benefits materialize only when revenue-raising capabilities are matched by the ability to allocate budgets efficiently. Research at the provincial level in Indonesia indicates that increases in fiscal autonomy have been uneven, with most provinces still exhibiting relatively low levels of independence. Thus, greater revenue capacity does not automatically yield growth if the additional fiscal space is directed toward infrastructure, public services, human resource investment, or other productive expenditure.

Overall, Model (1) yields three key findings. First, economic growth in the previous period has a positive and significant effect on economic growth in the current period, indicating the persistence of regional growth. Second, government size has no significant linear effect on economic growth; thus, the baseline model cannot support H1 and requires testing with a quadratic specification. Third, neither the transfer ratio nor fiscal capacity significantly affects economic growth. Consequently, the estimation results do support H2 and H3.

The estimation results for Model (2) as present ini Table 3, show that government size has a positive coefficient of 2.2696 with a *p-value* of 0.3498 , rendering it insignificant at both the 5% and 10% levels. Meanwhile, the Gov_Size² variable has a negative coefficient of -0.2031 with a *p-value* of 0.0741 , making it significant at the 10% level. The combination of a positive linear coefficient and a negative quadratic

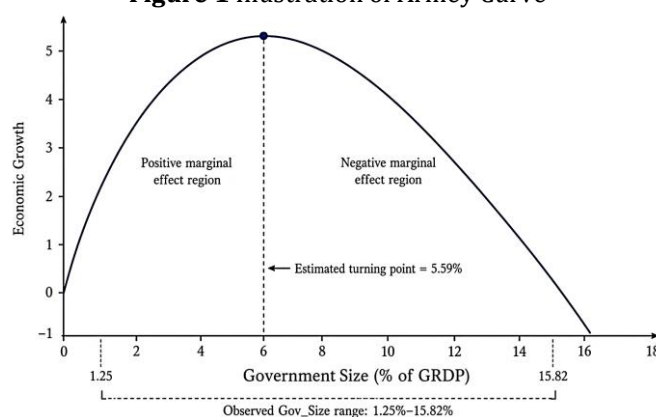
coefficient indicates an inverted-U pattern, as predicted by the Armeý Curve, however the statistical evidence is relatively limited because significance was found only in the quadratic component at the 10% level.

Table 3 Armeý Curve Model Estimate

Variabel	Koefisien	p-value
Growth(t-1)	0.4078	0.0446
Gov_Size	2.2696	0.3498
Gov_Size ²	-0.2031	0.0741
Trans_Ratio	-0.0271	0.4579
Fis_Cap	-0.0620	0.5992
Turning Point Gov_Size	5.59	—

Source: Processed by the authors

Figure 1 Illustration of Armeý Curve



Source: Estimation of Model 2 (Eq.4), Processed (2026)

Based on these coefficients, the estimated turning point is approximately 5.59% of GRDP as shown in Figure 1 above. This value falls within the actual range of government size observed in the study sample (approximately 1.25% –15.82% of GRDP). Mathematically, the marginal relationship between government size and growth is positive below this turning point, then declines and turns negative once it government size exceeds approximately 5.59% of GRDP. Thus, this turning point indicates that the impact of government size on growth is not uniform across all levels.

Theoretically, this pattern is consistent with the Armeý Curve. At relatively low levels of government size, increased government spending can support growth by providing infrastructure, public services, and activities that enhance economic productivity. However, as government size increases, the marginal benefits of additional spending may diminish due to diminishing returns, administrative inefficiencies, and the potential crowding out of private-sector activity (Asogwa et al., 2019; Jain & Sinha, 2022). In the Indonesian context, the heterogeneity of government spending-to-GRDP ratios across provinces implies that different regions may occupy different positions along this curve.

Given that Gov_Size² is significant at the 10% level and negative, H1 receives empirical support at the 10% significance level. However, because the linear coefficient for Gov_Size is not significant and the statistical evidence for the quadratic component is only at the 10% level, these findings are better interpreted as limited support for the Armeý Curve rather than strong confirmation. The 5.59% figure should also be treated as an estimated turning point within the model, rather than as a universal policy optimum.

CONCLUSION

This study analyzes the impact of government size, balancing funds (fiscal transfers), and fiscal capacity on economic growth in Indonesian provinces during 2014–2024, using the Two-Step Difference GMM method. Estimation results indicate that economic growth in the previous period has a statistically significant effect on current economic growth. These findings persistence in regional economic growth dynamics and underscore the importance of dynamic panel models for capturing intertemporal linkages in economic growth variables.

The baseline model estimation results indicate that government size, balancing funds, and fiscal capacity do not have a statistically significant effect on economic growth. Consequently, the study rejects both the second and third hypotheses; there is no empirical evidence that these three variables influence on economic growth. This suggests that the effectiveness of regional fiscal policy likely depends more on

the quality, composition, and efficiency of fiscal resources than merely on the volume or magnitude of transfer funds or the region's capacity to generate revenue.

Meanwhile, testing using model (2), namely a nonlinear model for analysis of the Armey curve, provides a more specific picture regarding the relationship between government size and economic growth. Estimation results indicate that the coefficient for Gov_Size is positive, while the coefficient for Gov_Size² is negative and significant at the 10% level. Consequently, this combination yields an inverted U-shaped curve consistent with the Armey curve. The turning point of the curve is 5.59% of GRDP, a value that falls within the observed range of government size.

RESEARCH LIMITATIONS

While confirming several key findings in the research context, this study still has limitations that offer opportunities for future research. First, the government size variable employed is the ratio of total or provincial government expenditure to Gross Regional Domestic Product (GRDP). This variable does not distinguish between productive expenditure and routine or administrative expenditure. Consequently, the absence of an observed effect of government size on economic growth makes it impossible to determine whether this result stems from the magnitude of expenditure or from the composition of government spending.

Second, the transfer fund variable uses an aggregate value by combining all transfer funds received by provincial governments without disaggregating them. However, these three types of transfer funds differ in their objectives, allocation mechanisms, and transmission mechanisms; consequently, their potential economic impacts likely vary. Similarly, the fiscal capacity variable—which emphasizes a region's ability to generate its own revenue—does not directly reflect administrative quality, revenue efficiency, or the effectiveness of fiscal space. Future research could address this by disaggregating transfer fund types and fiscal capacity components, thereby capturing a more detailed picture of the mechanisms through which fiscal policy influences growth.

Third, the evidence regarding the Armey Curve in this study requires cautious interpretation. Although the coefficient sign and the position of the turning point are consistent with an inverted-U pattern, the quadratic coefficient is significant only at the 10% level. In contrast, the linear coefficient for government size is statistically insignificant. Therefore, the 5.59% figure cannot be regarded as a universal, optimal government size for all provinces; rather, it represents a turning point specific to this study's model specification and sample period. Future studies could strengthen the non-linear analysis by employing formal U-shape tests, threshold approaches, or other non-linear methods to verify the stability and accuracy of this turning point.

Finally, the study covers 2014–2024, including the years affected by COVID-19, which impacted economic growth at both the national and regional levels. Additionally, the study utilizes 33 provinces as the cross-sectional component of the dynamic panel model employed. Future research could expand on this work by extending the observation period or narrowing the geographical scope to the regency/city level, given that Indonesia's focus and locus of fiscal decentralization lie at this level. Furthermore, incorporating other factors—such as institutional quality, governance standards, economic structure, and additional variables—would likely help explain regional variations in the relationship between fiscal policy and economic growth.

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