



## Dynamics of Regional Finance and Economic Growth in Bali Province

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**ABSTRACT:** This study focuses on examining the relationship between local government financial performance and its economic growth in Bali Province using panel data from nine regencies and cities over the period 2012–2024, covering a total of 117 observations. The dependent variable is region's economic growth, whilst region's fiscal independence (PAD share), region's fiscal transfer dependency, region's expenditure efficiency, and region's capital expenditure are the independent variables. The Autoregressive Distributed Lag (ARDL) approach was employed to analyze both short-term and long-term dynamics, which was further verified by tests of stationarity, cointegration, and Dumitrescu–Hurlin causality. The findings indicate that region's fiscal independence and expenditure efficiency are statistically significantly affect long-term economic growth. We also found that region's fiscal transfer dependency and region's capital expenditure are not statistically significant in the long run. However, in the short-run, only region's capital expenditure has a positive effect on region's economic growth. One important finding is that causality runs in a one-way from economic growth to transfer dependency. Hence, the policy implications highlight the importance of strengthening region's own-source revenue, improving region's spending efficiency, and enhancing the quality of capital expenditures to spur sustainable regional economic growth.

**Keywords:** Regional Fiscal Performance, Economic Growth, ARDL, Causality, Bali Province

**ABSTRAK:** Penelitian ini bertujuan menganalisis hubungan antara kinerja keuangan daerah dan pertumbuhan ekonomi di Provinsi Bali menggunakan data panel sembilan kabupaten/kota periode 2012–2024 dengan total 117 observasi. Pertumbuhan ekonomi digunakan sebagai variabel dependen, sedangkan kemandirian fiskal, ketergantungan dana transfer, efisiensi belanja, dan belanja modal sebagai variabel independen. Metode Autoregressive Distributed Lag (ARDL) digunakan untuk mengkaji dinamika jangka pendek dan jangka panjang, didukung uji stasioneritas, kointegrasi, dan kausalitas Dumitrescu–Hurlin. Hasil penelitian menunjukkan bahwa kemandirian fiskal dan efisiensi belanja berpengaruh signifikan terhadap pertumbuhan ekonomi jangka panjang, sedangkan ketergantungan transfer dan belanja modal tidak. Dalam jangka pendek, belanja modal berpengaruh positif signifikan. Implikasi kebijakan menekankan pentingnya penguatan PAD, peningkatan efisiensi belanja, serta kualitas belanja modal untuk mendorong pertumbuhan ekonomi daerah yang berkelanjutan.

**Kata Kunci:** Kinerja Keuangan Daerah, Pertumbuhan Ekonomi, ARDL, Kausalitas, Provinsi Bali

## **INTRODUCTION**

Economic growth is widely recognized as a primary macroeconomic indicator for assessing the success of regional development strategies. In the mainstream literature on financial development, improvements in financial markets, easier access to financial services, and a richer menu of financial instruments are argued to shape firms' investment decisions, capital structure, and operational efficiency; taken together, these channels propagate into faster aggregate growth (Liu et al., 2025). The Indonesian economy over the last five years reflects both its vulnerability to external shocks and its capacity for recovery. According to Statistics Indonesia report, economic growth contracted by 2.07 percent (c-to-c) in 2020 due to the COVID-19 pandemic. The economy rebounded in 2021, growing by 3.69 percent, supported mainly by provinces on Java Island, which contributed 57.89 percent to national output and recorded growth of 3.66 percent. Economic performance strengthened further in 2022 with growth reaching 5.31 percent, exceeding the 3.70 percent growth recorded in 2021. Growth remained relatively stable in subsequent years, reaching 5.05 percent in 2023 before slightly moderating to 5.03 percent in 2024 (c-to-c). In the more recent period, Indonesia's economy in the third quarter of 2025 grew by 1.43 percent compared to the previous quarter (q-to-q). Overall, these trends indicate a steady post-pandemic recovery and sustained economic resilience.

Across Indonesian provinces, economic growth over the period 2020–2024 exhibited substantial heterogeneity, reflecting differences in economic structure, sectoral dependence, and regional resilience to shocks. According to Statistics Indonesia (2025), provinces with more diversified economic bases, such as those dominated by manufacturing, agriculture, or extractive industries, generally experienced milder contractions during the COVID-19 crisis and more stable recovery paths. In contrast, regions whose economies relied heavily on a limited number of sectors showed greater volatility. This pattern underscores that provinces with high dependence on specific activities are particularly vulnerable to external shocks, especially when those activities are mobility-intensive or demand-sensitive. At the regional level, differences in economic performance are closely related to variations in local government fiscal capacity and spending behavior. Challenges in regional financial capacity are not isolated, but are shaped by broader fiscal dynamics and global economic pressures that influence how local governments respond to shocks and support development objectives (Bato et al., 2025).

The effectiveness of local government spending is therefore crucial, not only for stimulating economic activity but also for narrowing poverty gaps and promoting equitable and sustainable development (Ginanjari et al., 2025). Sound regional financial governance is expected to strengthen regional autonomy, as regions that are able to identify and utilize local resource potential tend to generate higher local own-source revenue and move closer to fiscal independence (Matitaputty, 2024). From a macro-fiscal perspective, increases in aggregate demand through government expenditure, including spending on goods and personnel, have been shown to contribute positively to economic growth across Indonesia's provinces (Ramadhan et al., 2025). In line with fiscal decentralization, intergovernmental transfers to regional governments are intended to enhance regional fiscal capacity and support the expansion of local economic activities, particularly in areas with limited own-source revenue bases (Suharno et al., 2025).

Bali Province exemplifies this structural vulnerability. While sharing the broad national recovery trajectory, Bali's economy is disproportionately anchored in tourism and related services, making it highly exposed to disruptions such as the COVID-19 pandemic. This dependence resulted in one of the deepest regional contractions in Indonesia in 2020, followed by a sharp rebound as mobility restrictions eased and international tourism gradually resumed. By the fourth quarter of 2024, Bali recorded year-on-year growth of 5.19 percent, indicating the normalization of travel flows and the revival of tourism-based value chains. These dynamics make Bali a particularly relevant case for examining how regional fiscal performance interacts with economic growth under conditions of sectoral concentration. Within this context, regional autonomy and fiscal decentralization play a crucial role in mitigating shocks and supporting inclusive recovery, provided that subnational fiscal management is effective (Miranti et al., 2024). Consistent with the tourism-led development model identified by Mas and Pratiwi (2024), Bali's

experience aligns with Todaro and Smith’s view that sustained growth in constant-price GRDP reflects improved regional economic performance (Noviarita et al., 2021).

A glance at Bali’s district-level growth during 2019–2024 underscores the heterogeneity of both the downturn and the recovery. Table 1 synthesizes the official GRDP growth rates reported by Statistics Indonesia Bali Province (2025). The province as a whole experienced a deep contraction of 9.34 percent in 2020 and remained in negative territory in 2021 at 2.46 percent, reflecting the severe disruption to tourism related activities. Districts with the strongest dependence on international tourism were the slowest to recover during the early post pandemic period. Badung, which functions as the core of Bali’s tourism economy, recorded the sharpest contraction in 2020 at 16.55 percent and continued to experience negative growth in 2021 at 6.74 percent, followed by Denpasar with a contraction of 9.44 percent and Gianyar at 8.39 percent. The prolonged downturn in these areas highlights the vulnerability of regions whose economic base is highly concentrated in tourism and hospitality services to external shocks such as the COVID 19 pandemic.

In contrast, districts with more diversified economic structures or greater reliance on agriculture, trade, manufacturing, and local services demonstrated relatively faster and more stable recovery paths. Tabanan, Buleleng, and Klungkung, which combine primary sectors and domestic oriented services alongside tourism, returned to positive growth earlier and recorded steady improvements from 2022 onward. Similarly, Jembrana and Bangli, despite recording lower overall growth rates, experienced more moderate contractions during the pandemic and avoided extreme volatility due to their limited exposure to international tourism flows.

The post 2022 recovery was therefore uneven across districts. Badung showed the fastest acceleration in economic growth, reaching 9.97 percent in 2022 and 11.29 percent in 2023 following the reopening of international travel. However, more peripheral and fiscally constrained districts such as Bangli, Karangasem, and Jembrana recovered at a slower pace within the range of three to five percent annually. By 2023, Bali Province as a whole recorded economic growth of 5.71 percent, yet several districts had not fully returned to their pre pandemic growth trajectories. These contrasting recovery patterns underline the importance of economic diversification and fiscal capacity in strengthening regional resilience, while providing a balanced and non biased rationale for selecting Bali as the focus of this study.

Table 1. GRDP Growth Rate (%) by District/City in Bali, 2019–2024

District/City	2019	2020	2021	2022	2023	2024
Jembrana	5.56	-4.98	-0.65	2.98	3.66	4.98
Tabanan	5.58	-6.17	-1.98	2.93	3.56	4.94
Badung	5.81	-16.55	-6.74	9.97	11.29	5.94
Gianyar	5.62	-8.39	-1.05	4.04	5.06	5.47
Klungkung	5.42	-6.38	-0.23	3.12	4.70	5.08
Bangli	5.45	-4.10	-0.33	2.80	3.50	4.54
Karangasem	5.50	-4.49	-0.56	2.58	3.10	4.33
Buleleng	5.51	-5.80	-1.27	3.11	3.64	5.04
Denpasar	5.82	-9.44	-0.92	5.02	5.69	5.55
<b>Bali Province</b>	<b>5.60</b>	<b>-9.34</b>	<b>-2.46</b>	<b>4.84</b>	<b>5.71</b>	<b>5.48</b>

Source: *Statistics Indonesia Bali Province, 2025*

The divergent recovery pace highlights the salience of within-province fundamentals, particularly fiscal capacity and the quality of local financial management. Under Indonesia’s decentralization framework, districts and cities hold authority to manage Local Own-Source Revenue (LOSR), design spending allocations, and pursue budgetary efficiency. LOSR is both a proxy for fiscal autonomy and a practical indicator of the financial space available to fund development programs. Districts with stronger LOSR can finance infrastructure, enable local economic empowerment, and

experiment with policy innovation more readily; those with weaker LOSR face tighter constraints in crafting and implementing counter-cyclical or growth-enhancing policies (Handraini et al., 2024).

A concise snapshot of LOSR before and after the pandemic illustrates these disparities. Table 2 reports LOSR for 2019–2022. Badung, unsurprisingly, tops the list: roughly Rp4.83 trillion in 2019, halving to Rp2.12 trillion in 2020 and troughing at Rp1.75 trillion in 2021 before recovering to Rp3.71 trillion in 2022. Denpasar and Gianyar also display clear pandemic scarring and subsequent repair. By contrast, fiscally smaller jurisdictions such as Bangli and Jembrana show limited LOSR and sizable volatility relative to their base.

Table 2. LOSR by District/City in Bali, 2019–2022 (thousand rupiah)

District/City	2019	2020	2021	2022
Jembrana	133,689,784	148,045,103	185,004,035	175,992,613
Tabanan	354,558,239	313,042,530	362,314,631	436,408,393
Badung	4,835,188,460	2,116,974,302	1,750,345,226	3,705,745,447
Gianyar	997,478,368	545,869,873	430,172,109	857,553,633
Klungkung	225,063,772	220,893,875	254,494,496	309,462,458
Bangli	127,040,436	104,325,150	163,537,096	144,005,843
Karangasem	233,013,033	219,176,733	252,688,747	301,332,231
Buleleng	365,595,301	318,986,891	391,988,445	410,564,892
Denpasar	1,010,779,481	731,261,281	792,362,414	888,051,856
<b>Bali Province</b>	<b>4,023,156,316</b>	<b>3,069,474,218</b>	<b>3,117,070,009</b>	<b>3,863,191,407</b>

Source: Statistics Indonesia Bali Province, 2023

Conceptually, this study is grounded in modern economic growth theory, which views growth as a sustained increase in real output driven by capital accumulation, efficient resource allocation, sectoral structure, and the role of government policy. At the regional level, economic performance is shaped not only by market forces but also by fiscal capacity and the effectiveness of public financial management. Data from Statistics Indonesia show that Indonesia's economy contracted in 2020 and gradually recovered during 2021–2022, followed by relatively stable growth in 2023–2024 and continued expansion into 2025. However, this recovery has been uneven across regions, with areas characterized by more diversified economic structures and stronger fiscal capacity tending to recover faster than those heavily reliant on a single sector (Statistics Indonesia, 2020–2025). These dynamics underscore the importance of regional fiscal autonomy and revenue-generating capacity in supporting economic resilience, providing a direct conceptual link to the Degree of Fiscal Decentralization as a key indicator of how local financial strength translates into sustainable regional economic growth.

Table 3. Categories of the Degree of Fiscal Decentralization (DDF)

DDF (%)	Category	Interpretation
> 50	Very Independent	Local expenditure largely financed by PAD.
25–50	Moderately Independent	Adequate fiscal space, but transfers still needed.
10–<25	Less Independent	Considerable dependence on central transfers.
< 10	Not Independent	PAD minimal; revenue dominantly from the center.

Source: Halim (2007); Bappenas (2009)

Applying this framework to Bali's districts during 2016–2022 reveals pronounced fiscal disparities that reflect underlying economic structures and policy choices rather than numerical differences alone. Badung records an average Degree of Fiscal Decentralization of approximately 75.56 percent, placing it in the very independent category. This outcome is largely driven by its strong tourism and property tax base, supported by intensive local revenue mobilization policies, including hotel and restaurant taxes and the digitalization of local tax collection. In contrast, Bangli, Karangasem, and Klungkung exhibit much lower average DDF levels of 11.30 percent, 15.29 percent, and 18.82 percent, respectively,

reflecting limited local revenue bases, greater reliance on agriculture and small-scale activities, and constrained fiscal capacity despite ongoing central government transfers. Denpasar and Gianyar occupy an intermediate position, with average DDF values of about 44.03 percent and 35.31 percent, indicating more diversified economic structures and a balanced mix between own-source revenue and transfers.

The COVID-19 shock in 2020 led to a sharp decline in DDF across all districts, most notably in Badung, where DDF fell from 83.47 percent in 2019 to 54.20 percent in 2020. This contraction underscores the vulnerability of highly decentralized revenue systems that depend heavily on a single dominant sector. Consistent with recent fiscal decentralization literature, these patterns suggest that decentralization outcomes are shaped not only by policy design but also by structural and geographical factors that influence local revenue capacity (Martinez-Vazquez, 2025). Accordingly, strengthening local revenue institutions and promoting economic diversification emerge as key policy priorities for enhancing fiscal resilience and reducing interregional disparities.

Intergovernmental fiscal transfers are designed to mitigate horizontal fiscal disparities across regions. Under Law No. 33 of 2004, the intergovernmental transfer system comprises the General Allocation Fund (DAU), the Special Allocation Fund (DAK), and the Revenue Sharing Fund (DBH). In principle, these instruments reduce vertical and horizontal fiscal imbalances, stabilize service delivery, and support national priorities (Hendra, 2016). Table 4 summarizes transfer allocations for 2015–2022. Buleleng, with the largest land area and population and relatively complex development challenges, consistently receives the largest allocations, growing from roughly Rp983.3 billion in 2015 to Rp1.645.5 trillion in 2022. As argued by Halim & Kusufi (2012), DAU tends to be larger in jurisdictions with higher needs and lower own-source capacity—the “fiscal gap” logic. Empirical work by Anwar & Mulyadi (2017) similarly stresses the role of territory size, poverty, population, and human development in the transfer formula. Yet a cautionary note emerges from Gamela et al. (2024) and Sari & Adi (2020): more transfers do not automatically translate into better fiscal efficiency and may, in certain contexts, entrench dependence.

Table 4. Intergovernmental Transfers by District/City in Bali, 2015–2022 (billion rupiah)

District/City	2015	2016	2017	2018	2019	2020	2021	2022
Jembrana	577.5	707.1	727.8	693.2	707.8	631.2	841.9	919.7
Tabanan	815.8	1,102.3	1,096.3	1,063.5	1,075.7	1,040.7	1,371.7	1,347.8
Badung	332.3	543.3	555.9	558.0	568.2	567.5	1,075.2	898.4
Gianyar	673.6	905.9	916.5	929.0	940.1	864.3	1,069.6	1,234.6
Klungkung	542.0	699.5	653.5	669.7	692.6	638.2	853.1	838.3
Bangli	569.3	752.4	736.6	688.0	717.6	655.3	949.3	960.7
Karangasem	706.4	937.6	949.1	937.9	1,011.9	918.0	1,218.9	1,251.3
Buleleng	983.3	1,305.6	1,313.9	1,245.1	1,331.0	1,177.7	1,575.0	1,645.5
Denpasar	681.7	878.2	851.7	879.5	870.0	828.4	862.7	1,202.7
<b>Bali Province</b>	<b>1,070.2</b>	<b>1,867.0</b>	<b>2,536.0</b>	<b>2,494.0</b>	<b>2,548.1</b>	<b>2,564.4</b>	<b>2,801.2</b>	<b>2,017.7</b>

Source: Statistics Indonesia Bali Province, 2023

Intergovernmental transfers constitute only one instrument of fiscal policy, while on the expenditure side the composition and efficiency of public spending largely determine its contribution to economic growth. Both theoretical and empirical studies emphasize that productive capital expenditures in areas such as transport infrastructure, sanitation, education, health services, and digital facilities can stimulate private investment, expand market access, and generate employment, with their growth effects materializing over the long term through improved regional competitiveness (Maddatuang et al., 2021; Liang and Li, 2023; BPS, 2024). In practice, however, subnational budgets are often dominated by operational spending, particularly personnel expenditures, which weakens the transformative role of capital investment and reduces overall fiscal effectiveness. Evidence from Bali at the district level during the period 2018 to 2022, as shown in Table 5, reveals substantial variation in fiscal capacity and spending priorities, where Badung records the highest average capital expenditure

of Rp552.19 billion, indicating strong fiscal space and infrastructure orientation, while districts such as Klungkung and Karangasem allocate considerably smaller capital budgets, reflecting tighter constraints and greater reliance on intergovernmental transfers. The decline in capital spending during the pandemic period followed by partial recovery further reflects broader patterns of fiscal tightening and subsequent normalization at the subnational level.

Table 5. Realized Capital Expenditure by District/City in Bali, 2018–2022 (thousand rupiah)

District/City	2018	2019	2020	2021	2022	Average
Jembrana	344,652,618	218,395,139	83,291,080	85,046,360	128,377,652	171,952,570
Tabanan	218,239,940	187,182,375	184,671,273	310,954,822	146,740,173	209,557,717
Badung	906,765,962	824,668,016	452,909,485	100,428,626	476,196,285	552,193,675
Gianyar	297,026,461	250,352,441	416,037,115	490,427,419	398,529,833	370,474,654
Klungkung	149,850,956	129,434,103	116,438,069	86,144,471	130,873,281	122,548,176
Bangli	181,201,561	151,264,349	57,141,113	183,280,093	293,929,283	173,363,280
Karangasem	144,906,763	152,232,673	81,578,988	143,668,862	139,308,068	132,339,071
Buleleng	204,310,159	274,879,719	259,440,202	202,523,214	155,220,623	219,274,783
<b>Denpasar</b>	<b>258,408,656</b>	<b>293,700,083</b>	<b>95,126,157</b>	<b>102,374,462</b>	<b>198,780,903</b>	<b>189,678,052</b>

Source: Statistics Indonesia Bali Province, 2023

Bringing these strands together, three empirical regularities motivate the present study. First, Bali's districts display *persistent heterogeneity* in growth outcomes tightly correlated with tourism exposure and fiscal capacity. Second, PAD strength and expenditure quality appear to shape recovery speed and depth, but the *mechanisms* (short-run versus long-run channels) remain to be quantified rigorously. Third, the role of intergovernmental transfers is ambiguous: while designed to equalize capacity and stabilize services (Hendra, 2016; Halim & Kusufi, 2012; Anwar & Mulyadi, 2017), increased transfers can fail to improve efficiency or may entrench dependence if not paired with robust local governance (Gamela et al., 2024; Sari & Adi, 2020). These observations open a clear *research gap*: we lack district-level evidence, for an extended period that spans the pandemic cycle, disentangling the short-run and long-run relationships among fiscal independence, transfer reliance, expenditure efficiency, capital spending, and economic growth within a single unified econometric framework.

To fill this gap, the present article adopts a dual time-series/panel perspective covering all nine districts and municipalities in Bali over 2012–2024. The empirical strategy is deliberately designed to separate *equilibrium* relationships from *transitional* dynamics. Specifically, we use an Autoregressive Distributed Lag (ARDL) framework to identify long-run cointegrating links and short-run adjustment paths between the dependent variable (GRDP growth) and four core fiscal indicators: (i) the regional fiscal independence ratio (PAD share), (ii) the fiscal transfer dependency ratio, (iii) the regional expenditure efficiency ratio, and (iv) the capital expenditure ratio. Complementing the ARDL estimates, we implement panel causality tests to assess directionality—whether fiscal performance drives growth, growth drives fiscal metrics, or both. While the methodological details and estimates are presented later, it is useful in the introduction to restate the theoretical priors. At the same time, in settings with concentrated sectoral bases—tourism in Bali—capital outlays may register *short-term* effects via construction and related multipliers, whereas poor project selection or execution may dilute long-term productivity gains (Statistics Indonesia, 2024; Maddatuang et al., 2021; Liang & Li, 2023).

This discussion places Bali within the broader debate on decentralization outcomes by emphasizing that fiscal decentralization involves not only the transfer of authority but also the development of local capacity and institutional coherence. Recent studies show that decentralization can improve efficiency, accountability, public service delivery, and economic growth, yet its outcomes remain uneven in many developing economies due to limited administrative capacity, weak revenue autonomy, and unclear intergovernmental responsibilities (Martinez-Vazquez, 2025). Bali illustrates how a tourism-oriented economy interacts with a decentralized fiscal system following a global shock, demonstrating that dependence on a dominant sector can intensify both the gains and vulnerabilities

of decentralization. These dynamics reinforce the view that the economic benefits of fiscal decentralization ultimately depend on institutional quality and the ability of local governments to mobilize and manage fiscal resources effectively.

Accordingly, the study advances three objectives. First, it examines whether there exists a causal linkage between regional fiscal performance and economic growth in Bali—whether one precedes the other, or whether the relationship is bidirectional. Second, it estimates the *short-run* versus *long-run* dynamics connecting the four fiscal indicators to growth, thereby distinguishing immediate demand-side impulses from structural, supply-side effects. Third, it identifies which fiscal indicators exert the strongest and most reliable influence on regional growth—information that is essential for prioritizing policy levers in a resource-constrained environment. These aims resonate with the practical needs of local governments: to expand PAD sustainably, reduce vulnerability to external shocks, and deploy scarce public funds toward interventions with the highest growth multipliers.

**METHODS**

This study analyzes the relationship between regional fiscal performance and economic growth across nine districts and municipalities in Bali Province, Indonesia, over the period 2012 to 2024, comprising a total of 117 observations. The analysis employs quantitative secondary data consisting of five key variables: economic growth (EG), measured by the growth rate of Gross Regional Domestic Product at constant prices; degree of fiscal independence (DFI), proxied by the ratio of local own source revenue to total regional revenue; transfer dependency ratio (TDR), reflecting the proportion of intergovernmental transfers in total regional revenue; expenditure efficiency ratio (EER), indicating the efficiency of regional government spending; and capital expenditure ratio (CER), measured as the share of capital expenditure in total regional expenditure. The data were obtained from credible institutional sources, including Statistics Indonesia Bali Province, the Directorate General of Fiscal Balance of the Ministry of Finance, and local government budget realization reports, as well as official publications from provincial and district governments. Consistent with Sugiyono (2020), secondary data were utilized because they provide structured, validated, and comparable information across administrative units and time periods.

Data collection was conducted using a documentation method to ensure consistency, accuracy, and comparability across regions and years. This study was conducted in Bali Province, comprising nine regencies and municipalities, with an observation period of thirteen years from 2012 to 2024 based on the availability of secondary data from official government sources. Prior to estimation, all variables were tested for stationarity to avoid spurious regression results. The empirical analysis applies the Granger causality test and the Autoregressive Distributed Lag (ARDL) model to examine the dynamic relationship between regional fiscal performance and economic growth. The Granger causality model, specified in Equation (1), is first employed to identify the direction of causality between variables, namely whether changes in fiscal performance precede economic growth or whether economic growth precedes changes in fiscal variables.

$$Y_t = \alpha_0 + \sum_{i=1}^p \alpha_i Y_{t-i} + \sum_{j=1}^p \beta_j X_{t-j} + \varepsilon_t \dots \dots \dots (1)$$

Subsequently, the ARDL model presented in Equation (2) is used to estimate both short term and long term relationships. In this study, short term effects refer to dynamic adjustments captured by the first differenced variables and their lagged terms, representing immediate responses within one to two years, depending on the optimal lag length selected using information criteria. Long term effects refer to the equilibrium relationship among variables, represented by the lagged level terms in the ARDL specification, which reflect persistent impacts beyond short run fluctuations and operate over a period longer than two years. By incorporating both lagged differences and lagged levels, the ARDL model allows simultaneous estimation of short term dynamics and long term equilibrium relationships between fiscal performance and economic growth in Bali Province.

$$\Delta Y_t = \alpha_0 + \sum_{i=1}^p \alpha_{1i} \Delta Y_{t-i} + \sum_{i=0}^p \alpha_{2i} \Delta X_{1,t-i} + \sum_{i=0}^p \alpha_{3i} \Delta X_{2,t-i} + \sum_{i=0}^p \alpha_{4i} \Delta X_{3,t-i} + \sum_{i=0}^p \alpha_{5i} \Delta X_{4,t-i} + \lambda_1 Y_{t-1} + \lambda_2 X_{1,t-1} + \lambda_3 X_{2,t-1} + \lambda_4 X_{3,t-1} + \lambda_5 X_{4,t-1} + e_t \dots \dots \dots (2)$$

## RESULTS AND DISCUSSION

Prior to presenting the empirical results, it is necessary to outline the general socio economic characteristics of Bali Province, as these conditions underpin regional fiscal capacity and economic performance. Bali exhibits marked interregional heterogeneity in terms of human capital, livelihood structures, and infrastructure endowments. The southern districts, including Badung, Denpasar, and Gianyar, are characterized by higher levels of educational attainment, more developed physical and social infrastructure, and a dense concentration of service oriented economic activities. These structural advantages have supported the dominance of tourism, trade, and other tertiary sectors, contributing to higher productivity and stronger local revenue generation.

Conversely, districts located in northern, eastern, and inland areas such as Bangli, Karangasem, Jembrana, and parts of Buleleng display economic structures that remain largely dependent on agriculture, fisheries, and small scale enterprises, with comparatively limited infrastructure connectivity and market integration. These structural constraints are associated with lower productivity levels and reduced fiscal capacity, as well as greater reliance on intergovernmental transfers. Such spatial and structural disparities provide an important analytical backdrop for interpreting the results of this study, as variations in economic structure, human capital, and infrastructure development help explain differences in regional fiscal performance and economic growth across districts in Bali Province.

The empirical analysis began with a stationarity test to ensure that all variables were statistically stable over time. Both the Augmented Dickey–Fuller (ADF) Fisher Chi-square and ADF Choi Z-stat results in Table 3.1 show that all variables were stationary at the first difference level, with probability values below 0.05. This finding confirms that the data were integrated at order  $I(1)$ , fulfilling the requirement for the Autoregressive Distributed Lag (ARDL) estimation, which can accommodate mixed integration levels of  $I(0)$  and  $I(1)$ . The stability of the data ensures that the subsequent estimations are valid and free from spurious relationships.

Table 6. Stationarity Test Results (Unit Root Test)

Variable	Method	Statistic	Probability	Description
D(EG)	ADF–Fisher Chi-square	65.5406	0.0000	Stationary
D(EG)	ADF–Choi Z-stat	-5.81301	0.0000	Stationary
D(DFI)	ADF–Fisher Chi-square	80.7516	0.0000	Stationary
D(DFI)	ADF–Choi Z-stat	-6.71374	0.0000	Stationary
TDR	ADF–Fisher Chi-square	42.6651	0.0009	Stationary
TDR	ADF–Choi Z-stat	-3.17000	0.0008	Stationary
EER	ADF–Fisher Chi-square	32.1472	0.0211	Stationary
EER	ADF–Choi Z-stat	-2.45234	0.0071	Stationary
CER	ADF–Fisher Chi-square	37.7702	0.0042	Stationary
CER	ADF–Choi Z-stat	-3.08937	0.0010	Stationary

Source: Research data, 2025

Beyond stationarity, the key question is whether fiscal performance and economic growth share a stable long-run path. Table 7. reports the Pedroni residual cointegration test. The Panel PP, Weighted PP, and Group PP statistics are significant at conventional levels, implying a common stochastic trend across Bali’s districts. In substantive terms, cointegration means that fiscal autonomy, transfer dependency, expenditure efficiency, and capital spending are not merely correlated with growth in the short term; instead, they move together with growth around a long-run equilibrium. This directly addresses the first objective of the study by confirming a long-run relationship between regional fiscal performance and GRDP growth.

Table 7. Pedroni Cointegration Test Results

Test	Statistic	Probability	Weighted Statistic	Probability
Panel PP-Statistic	-2.790	0.0026	-3.825	0.0001
Group PP-Statistic	-8.827	0.0000	—	—

Source: Research data, 2025

The presence of cointegration confirms the first research hypothesis, indicating a long term relationship between regional fiscal performance and economic growth. This result is consistent with the theoretical view that fiscal capacity and decentralization play a critical role in sustaining economic development over time. In the case of Bali, this long run linkage is reflected in empirical patterns observed across districts, where regions with stronger local revenue capacity and more efficient spending, such as Badung and Denpasar, tend to exhibit more resilient post pandemic growth trajectories compared to districts with lower fiscal capacity and higher transfer dependence. These patterns suggest that fiscal performance in Bali does not merely respond to economic growth, but gradually shapes regional economic outcomes through investment capacity, service provision, and infrastructure development.

Prior to estimating the ARDL model, the optimal lag length was selected using several information criteria, including the Akaike Information Criterion, Schwarz Criterion, and Hannan Quinn Criterion. The results consistently indicated an optimal lag length of one, implying that changes in fiscal performance variables affect economic growth with a delay of approximately one year. This finding is in line with Bali’s fiscal and economic structure, where adjustments in revenue mobilization, capital spending, and budget efficiency typically require at least one budget cycle to translate into measurable economic effects.

Table 8. Lag Length Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
1	138.88	330.51	7.63e-08*	-2.1997*	-1.4133*	-1.8815*

Source: Research data, 2025

Turning to causality, the Dumitrescu–Hurlin results in Table 4 reveal a one-way causal link running from economic growth to transfer dependency (EG→ TDR). This pattern indicates that when local economies expand, reliance on intergovernmental transfers tends to fall—consistent with stronger own-source revenue and improved fiscal capacity. Notably, none of the fiscal indicators Granger-cause growth in the short horizon, suggesting that fiscal channels operate more as slow-burn mechanisms than immediate triggers. This resolves the second research question: contemporaneous two-way causality is not supported; instead, growth precedes a reduction in transfer dependency.

Table 9. Dumitrescu–Hurlin Causality Test Results

Variable Pair	W-Stat	Zbar-Stat	Probability	Description
EG → TDR	10.136	4.120	0.00004	One-way causality

Source: Research data, 2025

The ARDL estimates refine these insights by distinguishing long run equilibrium relationships from short run adjustments. As reported in Table 10, degree of fiscal independence (DFI) and expenditure efficiency ratio (EER) exert positive and statistically significant effects on economic growth (EG) in the long run. Substantively, an increase in DFI is associated with a meaningful rise in EG, indicating that regions with stronger capacity to mobilize and manage own source revenues are better positioned to sustain long term growth. This result is consistent with observed conditions in Bali, where districts such as Badung and Denpasar, characterized by high local revenue capacity and administrative capability, exhibit more stable and resilient growth performance compared to fiscally constrained districts. The relatively larger coefficient on EER further underscores that growth outcomes depend not

only on the availability of fiscal resources but also on the quality and efficiency of spending, a finding aligned with previous studies emphasizing the role of effective public financial management in regional development.

In contrast, the transfer dependency ratio (TDR) and capital expenditure ratio (CER) do not show statistically significant long run effects on EG. The insignificance of TDR suggests that, within a cointegrated system, intergovernmental transfers in Bali function primarily as equalization instruments rather than as direct drivers of sustained growth, particularly as local economies mature. Meanwhile, the lack of long run significance for CER may reflect the delayed realization of returns from public investment, variations in project quality, and differences in asset productivity across districts, especially between tourism oriented areas and more agrarian or peripheral regions. These findings are consistent with earlier empirical research indicating that capital spending contributes to growth only when accompanied by adequate planning, institutional capacity, and complementary economic structures.

Table 10. ARDL Model Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Probability	Description
Long-Run Equation					
DFI	13.7752	1.9751	6.9745	0.0000	Significant (+)
TDR	-0.2461	1.8182	-0.1354	0.8928	Not significant
EER	32.5349	1.7895	18.1807	0.0000	Significant (+)
CER	-4.5255	2.7931	-1.6202	0.1105	Not significant
Short-Run Equation					
COINTEQ01 (ECT)	-0.7845	0.1848	-4.2455	0.0001	Significant (-)
D(DFI)	4.6581	11.2698	0.4133	0.6809	Not significant
D(TDR)	-4.6706	6.9091	-0.6760	0.5017	Not significant
D(EER)	-9.0599	5.6831	-1.5942	0.1162	Not significant
D(CER)	21.2323	9.9325	2.1377	0.0367	Significant (+)
C (Constant)	-23.3109	5.2524	-4.4381	0.0000	Significant

Source: Research data, 2025

Short run dynamics provide a complementary perspective on the fiscal growth relationship. The results indicate that only changes in the capital expenditure ratio ( $\Delta$ CER) exert an immediate positive and statistically significant effect on economic growth (EG). This finding is consistent with conditions observed in Bali, where capital spending on infrastructure such as roads, local markets, health facilities, educational buildings, and tourism supporting infrastructure tends to stimulate construction activity, employment, and local supply chains within the same fiscal year. Similar short term effects of public investment have been documented in previous empirical studies, which emphasize the role of capital expenditure as a short run demand stimulus, particularly in regions with active construction and service sectors. In contrast, short run changes in degree of fiscal independence ( $\Delta$ DFI), transfer dependency ratio ( $\Delta$ TDR), and expenditure efficiency ratio ( $\Delta$ EER) do not show significant effects on EG, suggesting that improvements in revenue autonomy and spending efficiency operate through gradual institutional and managerial processes whose growth impacts materialize over longer horizons. This pattern aligns with earlier research highlighting that fiscal capacity building and efficiency gains tend to influence growth structurally rather than instantaneously.

The error correction term is negative and statistically significant with a coefficient of  $-0.7845$ , indicating a strong adjustment mechanism toward long run equilibrium. Approximately 78 percent of any short run deviation from the long run growth path is corrected within one year. This relatively rapid convergence is plausible given Bali's fiscal and economic environment, which is characterized by dynamic local revenue flows from tourism and services, as well as the ability of local governments to undertake budget revisions and expenditure reallocations within a fiscal year. Model adequacy is further supported by diagnostic tests, where the correlogram Q statistics indicate no residual autocorrelation up to the fourth lag and the Breusch Pagan Godfrey test suggests homoskedastic

residuals. Together, these results confirm the robustness of the estimated model and support the reliability of the short run and long run inferences drawn from the analysis.

Table 11. Breusch–Pagan–Godfrey Heteroskedasticity Test Results

Variable	Coefficient	Std. Error	t-Statistic	Probability
C	14.0248	12.6456	1.109	0.270
X1	2.3230	9.6493	0.241	0.810
X2	9.4612	10.8267	0.874	0.384
X3	-17.5961	8.6249	-2.040	0.0439
X4	2.1701	3.7502	0.579	0.564

R<sup>2</sup> = 0.0629; Prob(F-statistic) = 0.1497

Source: Research data, 2025

The results address the three research objectives in a coherent manner. First, the existence of cointegration and the statistical significance of the error correction term confirm a robust long run relationship between regional fiscal performance and economic growth (EG). Second, short run causality is asymmetric, as EG is found to reduce the transfer dependency ratio (TDR), while fiscal indicators do not Granger cause EG within the same horizon. This absence of short run fiscal causality is consistent with findings by Putri & Yasa (2024), who argue that regional fiscal policies in Indonesia typically exhibit lag effects, with their economic impacts materializing over longer periods rather than instantaneously. In Bali’s case, this pattern is further explained by the province’s strong exposure to external drivers such as tourist arrivals, private investment, and service sector dynamics, which play a more dominant role in shaping short run growth fluctuations than fiscal variables (Abraham et al., 2024).

These results also resonate with the neutrality hypothesis supported by Opoku et al. (2019), which suggests that financial development and economic growth may evolve independently without a strong causal linkage in the short run. Similar conclusions are reported by Wahyuni et al. (2023), who find no direct causal relationship between fiscal performance and economic growth, indicating that improvements in regional financial indicators do not automatically translate into immediate growth gains. Nevertheless, the long run ARDL estimates show that degree of fiscal independence (DFI) and expenditure efficiency ratio (EER) are the most influential determinants of sustained EG. This finding is consistent with Azizah et al. (2025), who demonstrate that regions with higher fiscal independence, such as Badung and Denpasar, tend to experience more stable and resilient growth trajectories than districts with high fiscal dependence, including Bangli and Klungkung. Such evidence supports the relevance of the fiscal endogeneity hypothesis, whereby economic growth enhances fiscal capacity, which in turn reinforces future growth through improved revenue mobilization and spending quality.

By contrast, transfer dependency (TDR) and capital expenditure ratio (CER) do not exhibit significant long run effects on EG. The insignificance of TDR aligns with studies by Loadini et al. (2023) and Nurmala et al. (2025), which argue that intergovernmental transfers often fail to stimulate productivity because they are frequently allocated to routine expenditures rather than growth enhancing activities. Similarly, the lack of long run significance for CER suggests that capital spending in Bali has not always been executed effectively or evenly across districts. This result is consistent with Kirana (2024), who finds that capital investment may yield limited or even adverse long term effects when project quality is weak or when investments lack sustainable economic value. Taken together, these findings indicate that the study’s hypotheses are partially supported, as only specific fiscal indicators exert significant effects within particular time horizons.

From a policy oriented perspective, the discussion highlights that sustainable economic growth in Bali is more strongly underpinned by strengthening local revenue mobilization and improving expenditure efficiency than by increasing reliance on transfers or expanding capital spending alone. Enhancing tax administration in tourism and service based sectors, institutionalizing performance based budgeting, and improving project appraisal and maintenance frameworks are therefore critical

for converting short run fiscal impulses into durable productivity gains. As economic growth itself contributes to reducing dependence on central transfers, there is scope to recalibrate intergovernmental fiscal arrangements toward incentive mechanisms that reward fiscal autonomy and efficiency, thereby reinforcing a virtuous cycle between fiscal capacity and regional development in Bali.

## **CONCLUSIONS**

This study examined the relationship between regional fiscal performance and economic growth across districts and municipalities in Bali Province over the 2012–2024 period, employing the ARDL approach and panel causality tests. The empirical results confirm the existence of a long-term equilibrium between fiscal indicators and economic growth, demonstrating that fiscal capacity and efficiency are integral to the sustainability of regional development. The analysis reveals that fiscal independence and expenditure efficiency are the most influential determinants of economic growth in the long run, while capital expenditure has a direct yet short-term effect. Conversely, fiscal transfer dependency shows no significant long-term influence, suggesting that excessive reliance on central government funding may not contribute meaningfully to regional growth trajectories.

The findings also indicate a one-way causal relationship from economic growth to fiscal transfer dependency, implying that economic expansion enables local governments to reduce their reliance on central transfers by strengthening their own-source revenues. The stability of the long-run relationship, confirmed by the significant and negative error correction term, highlights the capacity of regional fiscal systems in Bali to self-adjust following short-term shocks. This underscores the role of fiscal decentralization as a mechanism that not only promotes local autonomy but also enhances the resilience of regional economies.

From a policy perspective, the findings indicate that sustainable economic growth in Bali is primarily driven by the strengthening of local fiscal capacity and the effectiveness of public spending, rather than by increased reliance on transfers or higher expenditure volumes alone. The long run significance of fiscal independence reflects the experience of districts such as Badung and Denpasar, where diversified and well-administered revenue bases, particularly in tourism and service sectors, provide greater fiscal flexibility and resilience. Similarly, the strong role of expenditure efficiency underscores that differences in growth performance across districts are closely linked to variations in budgeting quality, institutional capacity, and spending discipline. By contrast, the lack of long run effects from transfer dependency and capital expenditure suggests that equalization transfers and investment spending in Bali often support short term activity or routine expenditure without generating lasting productivity gains, unless accompanied by strong project selection and implementation mechanisms. These results imply that policy efforts should prioritize broadening the local revenue base, strengthening tax administration, institutionalizing performance-based budgeting, and improving project appraisal and maintenance systems to ensure that fiscal resources are translated into durable and inclusive economic growth.

Finally, the evidence supports the notion that fiscal decentralization in Indonesia can serve as a catalyst for inclusive regional growth when accompanied by institutional capacity building and sound fiscal governance. For Bali Province, enhancing local fiscal management, fostering innovation in revenue collection, and institutionalizing efficient budget practices will not only sustain economic momentum but also ensure long-term fiscal sustainability and social welfare.

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